Permit No.	Date	Document ID No.
98-01	**September 08, 2010**	**11544**

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Received Dated: August 23, 2010 and revised through September 02, 2010
Approved Date **September 09, 2010** By **Ming-Tai Chao**

RECORD DOCUMENTATION REPORT AND AS-BUILT DRAWINGS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM

MP Wilson, LLC
WILSON COUNTY LANDFILL

Volume 1 of 2

Prepared For:
North Carolina Department of Environment and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

Prepared By:

Ratliff Engineering & Consulting, PLLC
(License No. P-0835)
4224 Lazyriver Drive
Durham, NC 27712
919-294-4770

August 2010

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98-01	**September 08, 2010**	**11544**

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919-294-4770

August 2010

Permit No.	Date	Document ID No.
98-01	**March 21, 2011**	**13344**

RECEIVED
March 18, 2011 via an e-mail
Solid Waste Section
Raleigh Central Office

Chao, Ming-tai

From: Amy Ratliff [amy@methanepower.net]
Sent: Friday, March 18, 2011 4:44 PM
To: Chao, Ming-tai
Subject: Issuance of authorization for operating LFGCCs at Wilson County MSWLF, permit # 98-01
Attachments: Condensate Certificate of Analysis 11-19-10.pdf; Condensate Test Results 11-19-10.pdf; Authorization to Discharge.pdf; Site Plan.pdf

Ming,

I hope you are doing well.

Attached is the information you requested in your letter dated September 9, 2010 to Andy Davis for the Authorization for Operating a LFGCCs. This is for Permit No. 98-01, Document ID No. (Doc ID) 11541. I would like to go ahead and close out this project since I am not sure when we will move forward with the expansion.

I understand that Andy Davis sent in the information on the Financial Assurance Plan adding our decommissioning cost to his original plan.

Attached are copies of the map of the flare site and the acceptance letter by the City of Wilson for the condensate including the test results from the sampling. Would you like me to send a hard copy of those to you via snail mail also?

That should close out everything requested in your letter dated.

Let me know if you need anything else.

Thank you for your help with this.

Amy

From: Andy Davis [mailto:adavis@wilson-co.com]
Sent: Friday, March 18, 2011 9:43 AM
To: amy@ratliffengineering.com
Subject: RE: Issuance of authorization for operating LFGCCs at Wilson County MSWLF, permit # 98-01

Hello Amy,

We have already sent in the Financial Assurance. But please note any decommissioning of the LFGCC would be at the expense of Methane Power. If I can help in anyway let me no.

Thanks,

ANDY DAVIS
WILSON COUNTY SOLID WASTE DIRECTOR
PO BOX 1728
WILSON NC,27894-1728
PHONE # (252) 399-2823
FAX # (252) 399-0904

From: Amy Ratliff [mailto:amy@ratliffengineering.com]
Sent: Thursday, March 17, 2011 6:38 PM
To: Andy Davis
Subject: FW: Issuance of authorization for operating LFGCCs at Wilson County MSWLF, permit # 98-01

Hi Andy,

I hope you have been doing well.

I am trying to make sure Ming-Tai Chao has all the final submittals for the flare project. The last bullet in the attached document from Ming indicates:

• Revise the year 2010 financial assurance for the post-closure cares at Wilson County MSWLF – Permit Number 98-01 by increasing the additional amount of $20,771.00 dollars for decommissioning the LFGCCs in the future. The financial assurance shall be updated annually pursuant to Rule 15A NCAC 13B .1628.

I would like to submit the updated Financial Assurance with bullets 2 (flare site as-built) and 3 (condensate acceptance). Can you tell me if you submitted the updated Financial Assurance to Ming and if so would you please send a copy to me? If it has not been submitted, what can I do to assist in getting that completed? I have attached a copy of the Decommission Cost that was included in the RDR document (Volume 2, Section 11, Page 73).

Please give me a call if you have any questions.

Thanks for your help!

Amy Ratliff, PE
Regulatory Manager
amy@methanepower.net

CH4POWER smart energy

Methane Power, Inc.
methanepower.net
919-294-4770 - office 4224 Lazyriver Drive
919-475-9948 - cell Durham, NC 27712

From: Chao, Ming-tai [mailto:ming.chao@ncdenr.gov]
Sent: Thursday, September 09, 2010 9:02 AM
To: Andy Davis
Cc: Amy Ratliff
Subject: Issuance of autheraztion for operating LFGCCs at Wilson County MSWLF, permit # 98-01

Hey Andy: Attached is the letter to authorize Wilson County to operate the constructed Landfill Gas Collection and Control System (LFGCCs) at the closed Wilson County MSWLF (permit # 98-01). The signed and dated cover page of the approved *Record Documentation Report and As-built Drawings* is also attached with this e-mail. The electronic copy of the approved documents can be accessed in DWM web site at http://acp.ncdenr.org/pls/apex/f?p=2136:25:3347715273472351. The hard copy of the letter and the cover page will be sent to you by the regular mail today. Please contact me if you have any questions of this matter.

Best regards,

Ming-Tai Chao, P.E.
Environmental Engineer II
Permitting Branch, Solid Waste Section
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646
401 Oberlin Road, Suite 150, NC 27605
Tel: 919.508.8507, Fax 919.733.4810
ming.chao@ncdenr.gov
http://portal.ncdenr.org/web/wm/sw

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

Fayetteville Division

2592 Hope Mills Rd
Fayetteville, NC 28306
910.864.1920 Phone
910.864.8774 Fax

Certificate of Analysis

Methane Power Ryan Hennessy 111 Blue Ridge Drive Stanley NC, 28164	Project: **Gas condensate sample - Wilson Co. Landfill** Sampled By: R. Sanders	Date Reported: November 19, 2010 Date Received: November 11, 2010 Date Sampled: November 11, 2010

DRAFT: Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac - Fayetteville Division						
Ammonia as N	519	mg/L	11/19/10 10:30	AMM	SM 20th Ed. 4500 NH3 G	
Arsenic	<0.00200	mg/L	11/18/10 14:02	RAS	SM 20th Ed. 3113 B	
BOD	4780	mg/L	11/11/10 14:00	ARS	SM 20th Ed. 5210 B	
Oil & Grease (HEM)	<5.00	mg/L	11/11/10 16:15	RAS	EPA 1664	
Total Dissolved Solids	5360	mg/L	11/11/10 15:30	AMM	SM 20th Ed. 2540 C	
Total Suspended Solids	172	mg/L	11/17/10 16:00	AMM	SM 20th Ed. 2540 D	
Zinc	0.239	mg/L	11/18/10 15:58	RAS	SM 20th Ed. 3111 B	

Nitrate and Nitrite was analyzed twice at two different dilutions. Matrix effects were observed in both samples. All data is valid but qualified.

Nitrate and Nitrite was analyzed twice at two different dilutions. Matrix effects were observed in both samples. All data is valid but qualified.

Qualifier Definitions

State Certifications:
NCDNR #11
NCDOH #37714
USDA #3787

Respectfully Submitted
R. W. Sanders
R. W. Sanders, VP/Managing Director

Thank you for your business. *We invite your feedback on our level of service to you. Please contact the VP/Managing Director, Ron Sanders at 910-864-1920, James Nokes, President, at jnokes@microbac.com or Trevor Boyce, CEO, at tboyce@microbac.com with any comments or suggestions.*

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Fayetteville, NC 28306
910.864.1920 Phone
910.864.8774 Fax

Certificate of Analysis

Methane Power
Ryan Hennessy
111 Blue Ridge Drive
Stanley NC, 28164

Project: **Gas condensate sample - Wilson Co. Landfill**

Sampled By: R. Sanders

Date Reported: December 03, 2010
Date Received: November 11, 2010
Date Sampled: November 11, 2010

Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac - Fayetteville Division						
Ammonia as N	519	mg/L	11/19/10 10:30	AMM	SM 20th Ed. 4500 NH3 G	
Arsenic	<0.00200	mg/L	11/18/10 14:02	RAS	SM 20th Ed. 3113 B	
BOD	4780	mg/L	11/11/10 14:00	ARS	SM 20th Ed. 5210 B	
COD, Total	7600	mg/L	11/19/10 12:00	ARS	SM 20th Ed. 5220 D	
Nitrate as N	<0.500	mg/L	11/29/10 10:39	TDA	EPA 300.0	
Nitrite as N	<0.750	mg/L	11/29/10 10:39	TDA	EPA 300.0	
Oil & Grease (HEM)	<5.00	mg/L	11/11/10 16:15	RAS	EPA 1664	
Total Dissolved Solids	5360	mg/L	11/11/10 15:30	AMM	SM 20th Ed. 2540 C	
Total Suspended Solids	172	mg/L	11/17/10 16:00	AMM	SM 20th Ed. 2540 D	
Zinc	0.239	mg/L	11/18/10 15:58	RAS	SM 20th Ed. 3111 B	
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Barium	0.17	mg/L	11/18/10 12:20	RPL	EPA 200.8 Rev 5.4	
Chromium	0.042	mg/L	11/18/10 12:20	RPL	EPA 200.8 Rev 5.4	
1,1,1-Trichloroethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,1,2,2-Tetrachloroethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,1,2-Trichloroethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,1-Dichloroethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,1-Dichloroethene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,2-Dichlorobenzene	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,2-Dichloroethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,2-Dichloropropane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,3-Dichlorobenzene	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
1,4-Dichlorobenzene	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
2-Chloroethyl vinyl ether	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
2-Hexanone	<0.50	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Benzene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U

State Certifications:
NCDNR #11
NCDOH #37714
USDA #3787

Respectfully Submitted
R. W. Sanders
R. W. Sanders, VP/Managing Director

Thank you for your business. *We invite your feedback on our level of service to you. Please contact the VP/Managing Director, Ron Sanders at 910-864-1920, James Nokes, President, at jnokes@microbac.com or Trevor Boyce, CEO, at tboyce@microbac.com with any comments or suggestions.*

Fayetteville Division

2592 Hope Mills Rd
Fayetteville, NC 28306
910.864.1920 Phone
910.864.8774 Fax

Certificate of Analysis

Methane Power
Ryan Hennessy
111 Blue Ridge Drive
Stanley NC, 28164

Project: **Gas condensate sample - Wilson Co. Landfill**

Sampled By: R. Sanders

Date Reported: December 03, 2010
Date Received: November 11, 2010
Date Sampled: November 11, 2010

Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Bromodichloromethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Bromoform	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Bromomethane	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Carbon Disulfide	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Carbon tetrachloride	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Chlorobenzene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Chloroethane	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Chloroform	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Chloromethane	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
cis-1,3-Dichloropropene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Dibromochloromethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Ethylbenzene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Methylene chloride	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Methyl-t-Butyl Ether	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Tetrachloroethene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Toluene	0.21	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	D
Total 1,2-Dichloroethene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Total Xylenes	0.13	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	D
trans-1,2-Dichloroethene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
trans-1,3-Dichloropropene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Trichloroethene	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Trichlorofluoromethane	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Vinyl Acetate	<0.10	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Vinyl chloride	<0.20	mg/L	11/19/10 18:09	jln	EPA 624 Rev 7/95	U
Surrogate: 1,2-Dichloroethane-D4	*113 %*	*88.2-132*	*11/19/10 18:09*	*jln*	*EPA 624 Rev 7/95*	
Surrogate: 4-Bromofluorobenzene	*99.4 %*	*80-120*	*11/19/10 18:09*	*jln*	*EPA 624 Rev 7/95*	

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Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Surrogate: Dibromofluoromethand	*102 % 80-120*		*11/19/10 18:09*	*jln*	*EPA 624 Rev 7/95*	
Surrogate: Toluene-D8	*100 % 80-120*		*11/19/10 18:09*	*jln*	*EPA 624 Rev 7/95*	
1,2,4-Trichlorobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
1,2-Dichlorobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
1,2-Diphenylhydrazine	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
1,3-Dichlorobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
1,4-Dichlorobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,2´-oxybis(1-chloropropane)	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4,5-Trichlorophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4,6-Trichlorophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4-Dichlorophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4-Dimethylphenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4-Dinitrophenol	<540	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,4-Dinitrotoluene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,6-Dichlorophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2,6-Dinitrotoluene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Chloronaphthalene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Chlorophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Methylnaphthalene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Methylphenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Nitroaniline	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
2-Nitrophenol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
3,3´-Dichlorobenzidine	<540	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
3/4-Methylphenol	220	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
3-Nitroaniline	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4,6-Dinitro-2-methylphenol	<270	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	

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NCDOH #37714
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R. W. Sanders, VP/Managing Director

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Date Reported: December 03, 2010
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Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
4-Bromophenyl phenyl ether	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4-Chloro-3-methylphenol	<220	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4-Chloroaniline	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4-Chlorophenyl phenyl ether	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4-Nitroaniline	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
4-Nitrophenol	<540	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Acenaphthene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Acenaphthylene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Acetophenone	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Aniline	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Anthracene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzidine	<540	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzo[a]anthracene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzo[a]pyrene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzo[b]fluoranthene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzo[g,h,i]perylene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzo[k]fluoranthene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzoic acid	180	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Benzyl alcohol	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Bis(2-chloroethoxy)methane	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Bis(2-chloroethyl)ether	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Bis(2-ethylhexyl)phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Butyl benzyl phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Carbazole	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Chrysene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	

State Certifications:
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NCDOH #37714
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Respectfully Submitted
R. W. Sanders
R. W. Sanders, VP/Managing Director

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Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Dibenz[a,h]anthracene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Dibenzofuran	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Diethyl phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Dimethyl phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Di-n-butyl phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Di-n-octyl phthalate	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Fluoranthene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Fluorene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Hexachlorobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Hexachlorobutadiene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Hexachlorocyclopentadiene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Hexachloroethane	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Indeno[1,2,3cd]pyrene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Isophorone	140	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Naphthalene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Nitrobenzene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
N-Nitrosodimethylamine	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
N-Nitrosodi-n-propylamine	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
N-Nitrosodiphenylamine	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Pentachlorophenol	<540	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Phenanthrene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Phenol	200	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Pyrene	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Pyridine	<110	µg/L	11/23/10 15:01	cr	EPA 625 Rev 7/95	
Surrogate: 2,4,6-Tribromophenol	*10.4 % 15.2-143*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*
Surrogate: 2-Fluorobiphenyl	*5.40 % 17.3-110*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*

State Certifications:
NCDNR #11
NCDOH #37714
USDA #3787

Respectfully Submitted
R. W. Sanders
R. W. Sanders, VP/Managing Director

Thank you for your business. *We invite your feedback on our level of service to you. Please contact the VP/Managing Director, Ron Sanders at 910-864-1920, James Nokes, President, at jnokes@microbac.com or Trevor Boyce, CEO, at tboyce@microbac.com with any comments or suggestions.*

Fayetteville Division

2592 Hope Mills Rd
Fayetteville, NC 28306
910.864.1920 Phone
910.864.8774 Fax

Certificate of Analysis

Methane Power Ryan Hennessy 111 Blue Ridge Drive Stanley NC, 28164	Project: **Gas condensate sample - Wilson Co. Landfill** Sampled By: R. Sanders	Date Reported: December 03, 2010 Date Received: November 11, 2010 Date Sampled: November 11, 2010

Gas Condensate Liquid
1011281-01

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Surrogate: 2-Fluorophenol	*3.83 % 10-67.1*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*
Surrogate: Nitrobenzene-d5	*5.44 % 10-115*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*
Surrogate: Phenol-d5	*3.53 % 10-50.9*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*
Surrogate: Terphenyl-d14	*5.43 % 10.1-131*		*11/23/10 15:01*	*cr*	*EPA 625 Rev 7/95*	*D*
Phenolics, Total Recoverable	0.87	mg/L	11/19/10 10:52	GJM	EPA 420.4 Rev 1.0	
Analyzed by: TestAmerica						
Dichlorprop	<18.0	ug/L	11/23/10 20:04	TA	EPA 8151A	
Disulfoton	<4.0	ug/L	11/23/10 20:04	TA	EPA 8141A	

Gas Condensate Liquid
1011281-01RE1

Analyte	Result	Unit	Analysis Date/Time	Analyst	Method	Qualifier
Analyzed by: Microbac Laboratories, Inc. - Chicagoland						
Acetone	46	mg/L	11/19/10 19:16	jln	EPA 624 Rev 7/95	D

Nitrate and Nitrite was analyzed twice at two different dilutions. Matrix effects were observed in both samples. All data is valid but qualified.

Nitrate and Nitrite was analyzed twice at two different dilutions. Matrix effects were observed in both samples. All data is valid but qualified.

Qualifier Definitions

U	Analyte included in the analysis, but not detected
D	Dilution performed on sample

State Certifications:
NCDNR #11
NCDOH #37714
USDA #3787

Respectfully Submitted
R. W. Sanders
R. W. Sanders, VP/Managing Director

Thank you for your business. *We invite your feedback on our level of service to you. Please contact the VP/Managing Director, Ron Sanders at 910-864-1920, James Nokes, President, at jnokes@microbac.com or Trevor Boyce, CEO, at tboyce@microbac.com with any comments or suggestions.*

WILSON
NORTH CAROLINA

January 3, 2011

CERTIFIED MAIL
RETURN RECEIPT

Amy Ratcliff
Regulatory Manager
Methane Power/ MP Wilson
4224 Lazyriver Drive
Durham, NC 27712

SUBJECT: Authorization to Discharge: Landfill Gas Condensate

Dear Ms. Ratcliff:

The City of Wilson has reviewed Methane Power's request for Authorization to Discharge the Landfill Gas Condensate as described in a letter dated April 14, 2010. Follow up discussions describing the process of collecting the condensate were held with Mr. James Voss, President and CEO of Methane Power, LLC.

Per our discussion and based on information provided, the City's position is to grant the request. Methane Power will be using Mitchell's Septic Service to haul approximately ***2 loads of 1,500 gallons per week maximum.***

Please find enclosed a Sewer Discharge Permit Application to be completed and submitted on or before **March 1, 2011.** The City will be issuing Methane Power a Non-Significant Industrial Use Permit (NSIU). NSIU permits are locally regulated and have minimal requirements; however, they expire every 5 years as opposed to an annual Authorization to Discharge.

The review (and approval) of the discharge shall in no way relieve Methane Power from the responsibility to produce an effluent acceptable to the city's wastewater treatment system.

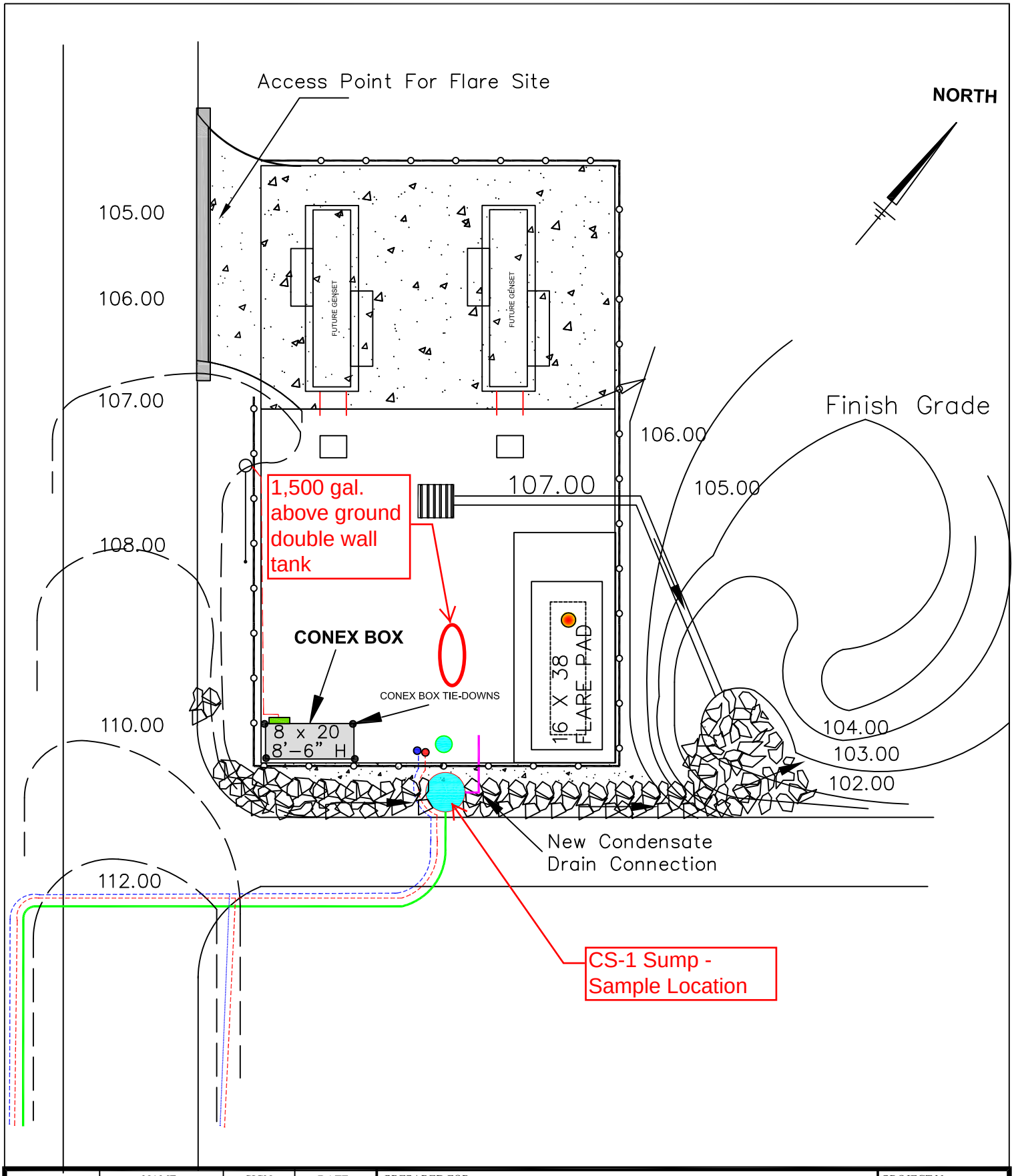
If you have any questions, or I may be of further assistance, please contact me at (252) 399-2499.

Sincerely,

JoEllen Gay
Pretreatment Coordinator

cc: Barry Parks, Assistant Director of Public Services/ Water Resources
Jimmy Pridgen, Water Reclamation Manager
Ryan Hennessy, Methane Power

Enclosure: SDP Application



	NAME	SIGN.	DATE
DESIGNED by:	JLH		
DRAWN by:	JLH		
CHECKED by:	RCFK		
APPROVED by:	RCFK		09/12/2010

PREPARED FOR: **MP WILSON LLC**

PROJECT NAME: **LANDFILL GAS TO ENERGY**

PROJECT No.: 10838

DATE: September 2010

PREPARED BY:

Applied Testing & Geosciences, LLC
Computer Modeling, Hydrogeology, Environmental Studies
401 E. Fourth Street, Bldg 12B, Bridgeport, PA 19405
Phone: 610-313-9200
Fax: 610-313-9667
Web: appliedtesting.com

DRAWING TITLE: **CONEX BOX LOCATION**

Figure No.: 1

SHEET No.: 1 of 1

SCALE: AS SHOWN

September 1, 2010

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Re: Permit # 98-01, DIN 7315 – Wilson County Landfill, Wilson County
Requested Revisions to Record Document Report

Dear Mr. Chao:

On behalf of MP Wilson, LLC, Ratliff Engineering & Consulting is providing the following information as requested in your email dated August 26, 2010:

1. (Section 3, the 2nd paragraph, on page 3-4) The description of completion of Well GW31 is not consistent with the well logs in Section 3 and the field daily log dated July 13, 2010 in Section 2. Please clarify.

   Page 3-4 has been revised to indicate well GW31 has two bentonite seals with two screened intervals with stone and soil placed in between as indicated in the field daily log.

2. (Section 3) The screen length of the completed Well GW29 shall be 14 feet (ref. the July 12 daily log), not 7 feet. Please correct this typo.

   The log for Well GW 29 has been corrected to reflect a screen length of 14 feet.

3. (Section 4) The "48-inch **CS-1** sump, 16 feet deep" tested on 08/21/10 is reported on the South Side Test Results. The CS-1 is a typo. CS-2 is the correct ID for the sump. Please correct this typo.

   The South Side Test Results has been corrected to reflect CS-2.

4. (Section 4) The Note #10 in the As-built Drawing Sheet 6/6 specifies that "Lengths of pressure testing not to exceed 500 linear feet without owner's approval." The test reports indicate that piping lengths, all but one, subjected to pressure testing exceeding 500 feet. Please provide an owner's approval of this deviation according to the specification stated in Note #10.

4224 Lazyriver Drive
Durham, NC 27712

919-294-4770
amy@ratliffengineering.com

MP Wilson, LLC has provided a letter approving air pressure tests in excess of 500 feet in length.

5. (Section 8) The As-built drawing must be signed, dated, and sealed by a professional engineer registered in the State of North Carolina.

   As-built Sheets 1, 4, 5 and 6 have been signed, dated and sealed by a NC professional engineer. As-built Sheet 2 is signed by the NC professional surveyor and Sheet 3 is unsigned per our phone conversation.

6. (Section 8) The figure references shown on the drawings Sheet 4/6 and Sheet 6/6 are incorrect. Please make necessary corrections.

   The figure references on Sheet 4/6 and Sheet 6/6 have been corrected.

7. (Section 11) Please address the following concerns:

   i. According to the As-built drawing Sheet 2/6, the number of the extraction wells of the constructed LFGCCs is 30, not 33. Please correct this typo throughout the Section 11.

      There are 35 total wells shown on Sheet 2/6. Of the existing wells, GW-1, GW-2, GW-3 and GW-13 were not included in the LFGCCS. These wells will remain capped. There are 31 active wells in the system including Well GW-PVC1. The typo has been corrected on Pages 8 and 9.

   ii. (Sub-Section 3.2) Please provide the "Gas Well Liquid Level" form to Appendix C.

      Gas Well Liquid Level form has been provided.

   iii. (Sub-Section 3.2) Please add the requirements to ensure the well identification tags are well maintained.

      A requirement for maintenance of well tag identification has been added to Page 16.

   iv. (Sub-Section 4.1) Please provide the As-built drawing (s) of Flare Station/ Blower/ Lock-out sump/ Data collection/ monitoring system/ Emergency shutdown valves or devices. And the reference of the flare station to As-built Sheet 2 (on Page 17) is incorrect.

      As we discussed on the phone, the flare is to be installed in the next two weeks at which time MP Wilson will commence startup and testing. Figure 3

referenced in Sub-Section 4.1.1 will be furnished within 2 weeks of installation. The Flare Site has been shown on As-built Sheet 2.

v. (Sub-Section 10) Will the technician (s) be on-site 24/7? Please describe the working schedule of the LFG Technician.

The work schedule for the LFG Technician has been added to Page 50.

vi. (Sub-Section 12 – Landfill Fire) Pursuant to NC Solid Waste Management Rule 15A NCAC 13B .1626(5)(d), the proper notifications must be stated in this sub-section. And add the DWM contact info to Section 12.6 – Solid Waste Section: (919)508-8400; Ben Barnes at Raleigh Central Office: (919)621-3680, & Dennis Shackelford at Fayetteville Regional Office: (910)433-3349. The emergency contact info must be posted in the landfill office, scale house, and the fencing enclosing the flare station.

The requested contact information has been added to the Emergency Contact List and placards are being made to post in the requested locations. Pages 57 and 58 have been revised and Pages 57-64 have been reprinted due to spacing. A copy of the placard has also been included.

vii. (Sub-Section 16) Please provide a cost estimate associated with the system decommissioning.

A decommissioning cost estimate has been provided.

8. (Section 13) Please provide a time frame for the submittal of condensate sample results and the final approval letter from the City of Wilson POTW to DWM (For example: 14 working days after the samples results is available and 7 day after the approval letter is issued by City of Wilson). Additionally, the approve letter and the sample results must be placed to the Operating Record at the landfill facility. Please add these requirements to this section.

A timeline has been provided on Page 13-1 for obtaining the final approval letter from the City of Wilson.

In addition to the requested revisions above, revised Pages 11-67, 11-69 and 11-70 have also been included to correct typos.

A hardcopy of the revised Pages and Drawings of the report are attached for your review and a CD with complete report.

MP Wilson anticipates that the flare will be installed in the next two weeks. Please let this letter serve as our notice to begin startup and testing on or about September 15, 2010.

If you have any questions about these revisions or need any additional information, please do not hesitate to contact me at amy@ratliffengineering.com or 919-294-4770.

Regards,

Amy Ratliff, PE
CEO, Chief Civil Engineer

Ratliff Engineering & Consulting, PLLC

Cc: James Voss, President - MP Wilson, LLC
Andy Davis, Solid Waste Director - Wilson County
Richard King, Principal - Applied Testing & Geosciences

August 23, 2010

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Dear Mr. Chao:

As requested in your Letter of Authorization dated April 21, 2009, we are providing the following:

1. The payment of $3,000 permit activity fee (Modification to Post-Closure Land Use Permit) was submitted by Wilson County separately.
2. The LFGCCS construction completion documentations (as described in the Proposal dated March 27, 2009).
   a. It includes documentation that previously installed gas wells GW-1, GW-2, GW-3, and GW-13 were not incorporated into the LFGCCS. These wells were not disturbed and were left in place as-is (with their PVC caps on to prevent gas escape or air intake).
   b. The survey coordinates and elevations of the final locations of gas wells, valves, and condensate traps/sumps have been provided by Randy Ward, NC PLS – Crescent Moon Surveying.
3. The modified Post-Closure Plan, including the Operations Monitoring and Maintenance Plan addresses the following:

   - Site security and measures/actions against vandalism.
   - The Contingency and Emergency Response Plan
   - Methane gas monitoring plan augmenting the existing Post-Closure Plan by including additional monitoring requirements as appropriate for the operation of the LFGCCS.
   - Personnel training and safety working around the LFGCCS.
   - Condensate management – routine inspection of the leachate level in the holding tanks and sumps and spillage prevention and response.
   - Requirements (such as frequency, checklist, report/recordation) of the routine inspection, repair, and maintenance of the LFGCCS.
   - Descriptions of steps necessary to decommission the components of the LFGCCS (wells, piping, holding tanks, flare, blower, instrument panels, etc.) and restoration of the final cover system damaged by removing collection system at the end of their useful life.
   - The revised post-closure care cost estimate and updated financial assurance.
4. A copy of updated air quality permit approved by the Division of Air Quality.
5. A copy of the permit approved by the Wilson County Waste Water Treatment Plant to accept the condensate/leachate.
6. A copy of the Erosion and Sedimentation Control Permit approved by NC DENR.
7. No Electrical, Mechanical, Plumbing or other permits were required by any other local or state agencies.

4224 Lazyriver Drive
Durham, NC 27712

919-294-4770
amy@ratliffengineering.com

This documentation has been provided by hard copy and an electronic copy for your review and use. It is anticipated that the flare will begin startup and testing on September 15, 2010.

If you have any questions or need any additional information, please do not hesitate to contact me at amy@ratliffengineering.com or 919-294-4770.

Regards,

Amy Ratliff, PE
CEO , Chief Civil Engineer

Ratliff Engineering & Consulting, PLLC

Cc: James Voss, President - MP Wilson, LLC
Andy Davis, Solid Waste Director - Wilson County
Richard King, Principal - Applied Testing & Geosciences

Record Documentation Report and As-Built Drawings

Table of Contents

Section	Contents
1	Description of Construction
2	Daily Field Logs
3	Well Construction Logs
4	Leak Testing Forms
5	Construction Photographs
6	Clay Cap Repairs
7	Well Abandonment
8	As-Built Drawings
9	North Carolina Professional Engineer Certification
10	Survey Data
11	Operations Monitoring and Maintenance Plan (Attachment for the Post Closure Plan) (Volume 2 of 2)
12	Air Quality Permit
13	Waste Water Permit

Section 1: Description of Construction

Introduction

The following Record Documentation Report (RDR) presents the As-Built drawings, Operation, Maintenance and Monitoring Plan (as a stand-alone attachment for the Post Closure Plan), Certification, and description of the construction of the Landfill Gas Collection and Control System (LFGCCS) at the Wilson County Landfill (Site), located at 4537 Landfill Road, Wilson, North Carolina 27893. Figure 1-1 shows the site location. The site layout is shown on Figure 1-2.

Landfill Background

The Wilson County Landfill is a closed municipal solid waste (MSW) landfill located east of the City of Wilson in Wilson County, North Carolina, and is owned and operated by the Wilson County. The site was operated as a sanitary landfill under Permit No. 98-01 from 1974 to 1997. In addition to MSW, the facility also accepted yard waste and construction and demolition (C&D) material.

The MSW landfill was closed in 1997 and the County continued operation of an onsite C&D disposal area. The closed MSW landfill does not have a Subtitle D liner system or leachate collection system. In 1998 a final cover system was installed over the MSW portions of the landfill. The cover system consists of a clay cap (1×10^{-6} cm/sec) with 18 inches of vegetative cover. Included with the final cover was the installation of passive gas vents.

Parties Involved

Ratliff Engineering & Consulting, PLLC provided overall engineering control. CQA was completed by Ratliff Engineering with assistance from Carlson Environmental Consultants, PC and Applied Testing & Geosciences LLC who assisted in completing documentation for this project. Chandler Construction Services, Inc. was the main contractor.

The installation of the LFGCCS involved the following parties:

Regulatory Authority: North Carolina Department of Environment and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, North Carolina 27699

Site Owner/Operator: Wilson County Landfill
4537 Landfill Road
Wilson, North Carolina 27893

System Owner/Operator:	MP Wilson, LLC 13801 Reese Blvd. West, Suite 110 Huntersville, North Carolina 28078
System Designer:	Carlson Environmental Consultants, PC 305 South Main Street Monroe, North Carolina 28112
System Construction:	Chandler Construction Services, Inc. 1511 Ninety Six Highway Ninety Six, South Carolina 29666
Drilling Services:	Kellett's Well Boring, Inc. 3447 Fork Shoals Road Simpsonville, South Carolina 29680
Survey Services:	Crescent Moon Surveying 3607 Main Street Loris, South Carolina 29569
Construction CQA:	Ratliff Engineering & Consulting, PLLC 4224 Lazyriver Drive Durham, North Carolina 27712
	Applied Testing & Geosciences, LLC 401 East Fourth Street, Building 12-B Bridgeport, Pennsylvania 19090

Permits/Certification: Ratliff Engineering & Consulting, PLLC

4224 Lazyriver Drive

Durham, North Carolina 27712

Description of Construction Work

Construction and documentation of the construction was completed in accordance with the March 27, 2009 correspondence from Carlson Environmental Consultants, PC (included as Attachment 1-1).

The installation of the LFGCCS was based on the permit drawings included as Attachment 1-2. Copies of approval letters for the Erosion and Solid Waste construction-related permits are included in Attachment 1-3. There was no requirement for building, electrical, plumbing or mechanical, etc. permits based on the work completed. The Air Permit is included in Section 12 and the Waste Water Permit/Acceptance Letter is included in Section 13.

Construction activities conducted by Chandler Construction included:

- Pipe route field location and mark-out;
- Excavation of trenches for pipework;
- Butt-fusion welding pipe to appropriate lengths for installation;
- Installation of header pipe and laterals;
- Installation of cutoff valves and sample ports to pipework;
- Backfilling of pipework (including applying caution tape above pipework indicating buried gas line, and applying re-seeding cover to disturbed soil);
- Pressure testing of pipework;
- Excavation and installation of condensate sumps; and,
- Installation of Landtec manifolds to well heads, and tubing to laterals.

Construction activities conducted by Kellett's Well Boring included:

- Drilling and installation of landfill gas wells

Construction activities conducted by Crescent Moon Surveying included:

- Surveying the final locations and elevations of pipework, gas wells, valves, and condensate sumps.

Materials Used

Materials used for this project included:

- HDPE Pipe (2-inch, 3-inch, 4-inch, 6-inch, 8-inch, and 10-inch diameter)
- HDPE elbows, reducers and flange adapters
- Flanges (various dimensions)
- Butterfly valves (6-inch and 8-inch diameter)
- HDPE Condensate sumps (2)

For well construction, materials included:

- Schedule 80 PVC riser and screen (6-inch diameter), with bell couples;
- Schedule 80 PVC caps and connectors (6-inch diameter);
- 2-inch washed stone;
- Soil (obtained from on-site borrow);
- Granular bentonite;
- Geotextile fabric;
- Landtec well manifolds; and,
- Flex tubing (to connect well to lateral).

The shipping receipts and further description of materials used for this project are presented in Attachment 1-4.

Equipment Used

The following equipment was used during the construction of the LFGCCS:

- Bobcat E80 Excavator (rubber track) (2)
- Caterpillar 930G loader (2)
- McElroy Butt Fusion Welders (4)
- Kubota 4x4 utility vehicle (temporarily replaced by John Deere 4x4 utility vehicle)
- Wacker RT Soil Compacter
- Track Mounted Auger Bucket Drill Rig
- Caterpillar CP-433E Sheepsfoot roller
- John Deere 450J Dozer
- Water Truck
- Roll-Off Dumpsters (For drill cuttings/waste from gas well installation)
- Backhoe
- Service Vehicle
- Survey Equipment

Representative Photos of Various phases of Construction:

The following are photos of construction of the LFGCCS. The complete collection of project photographs is presented in Section 5.

Pipe route field location and mark-out

Excavation of trenches for pipework

Butt-fusion welding pipe to appropriate lengths for installation

Installation of header pipe and laterals

Installation of cutoff valves and sample ports to pipework

Backfilling of pipework

Pressure testing of pipework

Excavation and installation of condensate sumps

Installation of Landtec manifolds to well heads, and tubing to laterals

Report Organization

The remainder of this report consists of the following sections:

Section 2 Daily Field Logs

Section 3 Well Construction Logs

Section 4 Leak Testing Forms

Section 5 Construction Photographs

Section 6 Clay Cap Repairs

Section 7 Well Abandonment

Section 8 As-Built Drawings

Section 9 North Carolina Professional Engineer Certification

Section 10 Survey Data

Section 11 Revised Post-Closure Plan

Section 12 Air Quality Permit

Section 13 Waste Water Permit

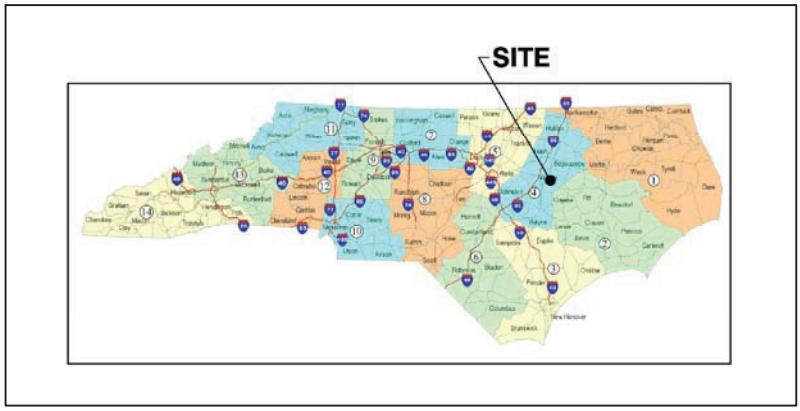
Post-Closure Cost Estimate and Financial Assurance

A post-closure cost estimate was originally prepared as part of the Post-Closure Plan. The cost estimate indicates the amount of money that was determined necessary on an annual basis to meet landfill post-closure obligations in accordance with 15A NCAC 13B.1627(d) AND .1628. The County of Wilson continues to financially assure the post-closure care period with annual updates to the determined dollar value. The installation and operation of the LFGCC system is not included as part of this process. If operation of the LFGCC system is terminated, the landfill gas collection system will be decommissioned as described in Section 11, Sub-Section 16 by MP Wilson, LLC. Financial assurance for monitoring the LFGCC system is currently under negotiation between the County and MP Wilson, LLC.

Section 1

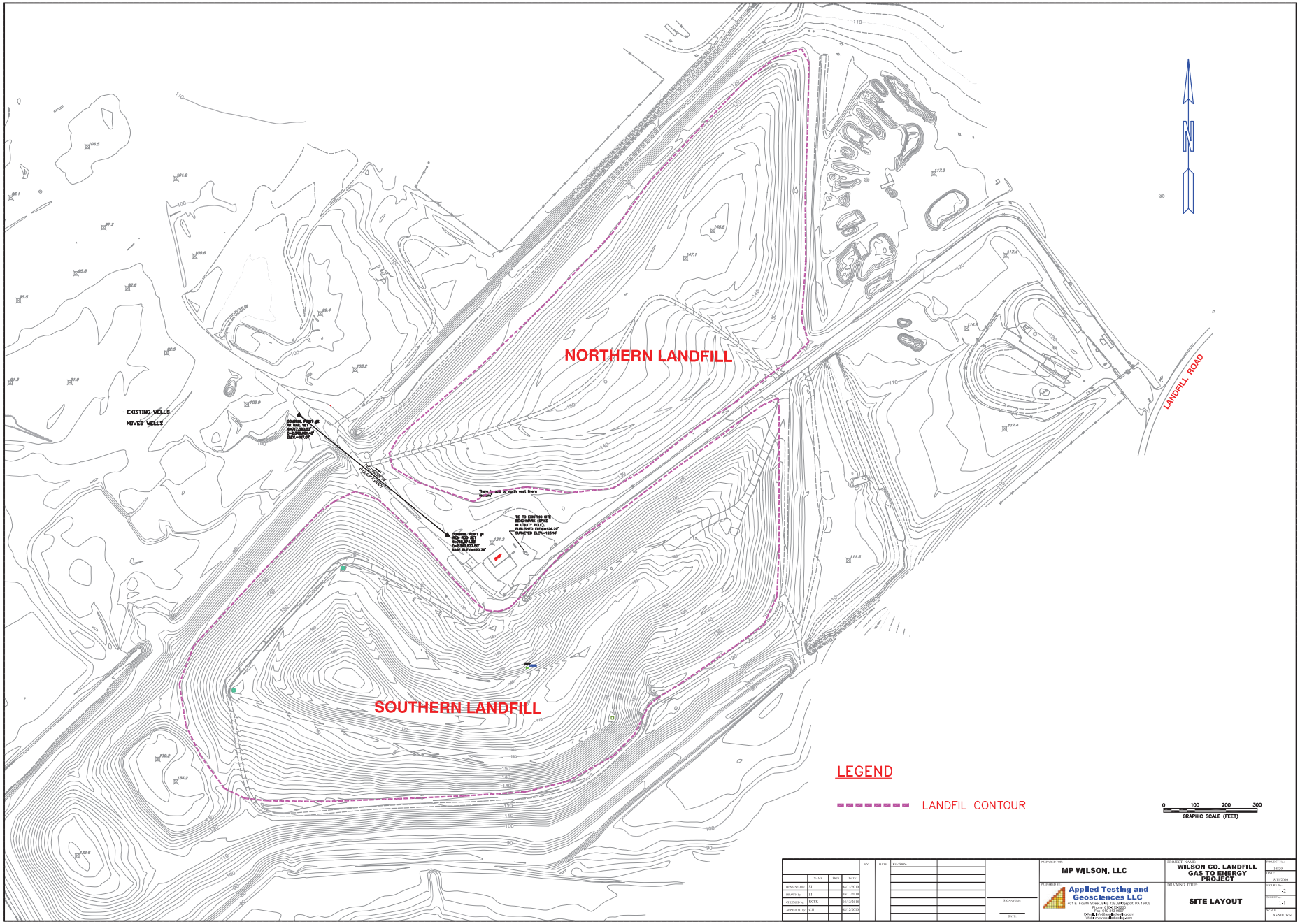
Figures

N



MP WILSON, LLC SITE ADDRESS:
4537 Landfill Road
Wilson, North Carolina 27893

APPLIED TESTING & GEOSCIENCES Inc.	CH4POWER smart energy	TITLE: SITE LOCATION MAP	
	CLIENT: MP WILSON, LLC	DATE: 8/11/2010 SCALE: NTS	FIGURE 1-1



	NAME	INIT.	DATE
DESIGNED by:	H		06/12/2018
DRAWN by:	H		06/12/2018
CHECKED by:	RCTS.		06/12/2018
APPROVED by:	CJJ		06/12/2018

BY:	DATE:	REVISION:

SIGNATURE:

DATE:

PREPARED FOR:
MP WILSON, LLC

PREPARED BY:
Applied Testing and Geosciences LLC
401 E. Fourth Street, Bldg 138, Bethlehem, PA 18015
Phone:(610-865-6020
Fax:(610-865-6089
E-mail:jmcgrath@appliedtg.com
Web:www.appliedtg.com

PROJECT NAME:
WILSON CO. LANDFILL GAS TO ENERGY PROJECT

DRAWING TITLE:
SITE LAYOUT

PROJECT No.: 18029
DATE: 6/12/2018
DRAWING No.: 1-2
SHEET No.: 1-1
SCALE: AS SHOWN

Section 1

Attachment 1-1

March 27, 2009 Correspondence

Carlson Environmental Consultants, PC

305 South Main Street
Monroe, NC 28112
704-283-9765
704-283-9755 fax

March 27, 2009
File No. J1-20421-00

Mr. Ed Mussler
Solid Waste Permit Engineer
NCDENR – Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

Subject: Request for NCDENR Division of Waste Management Approval
Construction and Operation of Landfill Gas System
Wilson County Landfill – Wilson, NC

Dear Mr. Mussler:

On behalf of Wilson County, North Carolina (County) and MP Wilson LLC, Carlson Environmental Consultants, PC (CEC) is submitting this request for approval from the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Waste Management to construct and operate an active landfill gas (LFG) collection and control system at the Wilson County Landfill (Landfill) located near Wilson, North Carolina.

MP Wilson, LLC and Wilson County, NC have entered into a contract such that MP Wilson will recover landfill gas from the Wilson County Landfill to use for "greenpower" or other beneficial uses. Wilson County has leased MP Wilson LLC land at the Wilson County Landfill to install and operate a landfill gas blower and flare system. The first phase of this project will involve the installation of a landfill gas collection system and the installation of a 1,000 SCFM blower and open flare system. CEC has submitted an application for an air permit with NCDENR DAQ for the blower and flare system.

LANDFILL BACKGROUND

The Wilson County Landfill is a closed municipal solid waste (MSW) landfill located east of the City of Wilson in Wilson County. The facility is owned and operated by Wilson County, North Carolina. The Landfill was operated as a sanitary landfill under D Permit No. 98-01 from 1974 to 1997. In addition to MSW, the facility also accepted yard waste and construction and demolition (C&D) material.

The MSW landfill was closed in 1997 and the County continued operation of an onsite C&D disposal area. The closed MSW Landfill does not have a Subtitle D liner system or a leachate collection system. In 1998, a final cover system was installed over the MSW

portions of the Landfill that consisted of a clay cap ($1x10^{-6}$ cm/sec) with 18 inches of vegetative cover overtop. Included with the final cover was the installation of passive gas vents.

The Landfill is not subject to the New Source Performance Standards (NSPS) as listed in 40 CFR Part 60 – Subpart WWW or the National Emission Standards for Hazardous Air Pollutants (NESHAP) as listed in 40 CFR Part 61.

PROPOSED LANDFILL GAS SYSTEM

The overall objective of this project is to collect the Landfill's generated gas and use it in a beneficial use project, such as to generate heat and/or electricity for the facility or other end-users, thus providing an environmental benefit by reducing the potential for offsite migration and fugitive emissions of LFG.

As a first step, the County and MP Wilson LLC desire to connect existing passive gas vents and new gas wells to an active gas blower and route this gas to a small open flare control device for combustion. See the attached landfill gas drawings and details for additional information. The installation of the LFG system will be performed in two (or more) phases depending on construction costs. The installation and operation of gas-to-energy devices has not been decided upon at this time and will be determined based upon actual gas collection once the LFG system is installed.

Header and Lateral Piping

The header and lateral collection piping which delivers the LFG to the blower/flare station has been sized considering the head losses throughout the piping network to minimize the vacuum requirements of the system. Based upon the LandGEM Modeling and field testing, the Landfill is expected to generate in the range of 300 to 750 scfm. In the event that the Landfill generates more LFG than expected, CEC has conservatively sized the collection and control system components for a LFG recovery of up to 1,000 scfm.

The header piping has been designed to be 8-inch diameter SDR 17 HDPE, with the laterals being 4 and 6-inch diameter SDR 17 HDPE. While slightly oversized for this project, the 8-inch diameter HDPE piping also provides more protection from landfill settlement and it allows condensate and gas to flow more easily in opposite directions. The header and lateral piping is proposed to be installed below grade to be out of the way of post closure operations or landfill activities.

Condensate Sumps

Condensate is formed as the temperature of LFG extracted from a landfill decreases in the collection system piping. The preliminary design provides for two sumps to be

located at low points in the LFG collection system piping; however, additional sumps may be added in the future as needed.

The sumps will be designed to meet the NCDENR regulations, which prohibit the discharge of condensate into a non-Subtitle D constructed landfill cell. The sumps will be designed as a reservoir to collect and retain liquids or to allow pumping of condensate to a central location at the blower/flare station or holding tank(s). The condensate sumps and/or holding tank(s) will be sized to handle the maximum weekly condensate collection anticipated. The sumps will be periodically evacuated by pump truck and the condensate will be disposed offsite at the Wilson County Waste Water Treatment Plant.

Condensate formed in header piping can form a blockage if it collects in a low point and is not removed from the header system. To maintain positive drainage, a 2 percent slope is specified for collection piping on the landfill surface (where possible). Differential settlement under the collection piping is less of a concern in areas off the refuse mound, therefore a minimum slope of 1 percent is specified for piping located on natural soil.

Wellheads and Isolation Valves

The existing gas vents and any new gas wells will be fitted with gas wellheads consisting of a control valve and sampling ports. These wellheads will allow individual gas well control and analysis of the LFG at each gas well. Since this is a voluntary LFG system, the wellheads will not be monitored to meet any regulatory requirements; however, the collection of LFG will be routinely monitored to maximize LFG extraction and minimize the infiltration of ambient air (for the prevention of landfill fires). Isolation valves will be installed in the main header piping to allow additional control over sections of the wellfield. Flanges will also be installed in the main header to allow for expansion of the wellfield as needed.

Landfill Gas Blower and Open Flare

Based upon the LandGEM modeling and the collected field data, it is assumed that an open flare and blower capable of about 1,000 scfm will be sufficient for the LFG collection system. An exact blower/flare system has not been selected at this time; however, it is anticipated that a small skid-mounted 6 to 8-inch diameter open flare with two (2) small centrifugal or fan-style blower capable of 500 scfm (each) will be used. At a minimum, the blower/flare will be equipped with a flame arrestor, shut-off valves, sample ports, a flow meter or orifice plate, and a condensate knock-out pot.

LFG SYSTEM CONSTRUCTION

As stated above, the construction of the LFG collection and control system will be completed in two (or more) phases depending on construction costs. The first stage will concentrate on completing the main header system, the condensate sumps, and the

blower/flare station. Based on these costs, as many of the existing vents as possible will be connected to the main header.

MP Wilson LLC may also install several new gas wells in areas of the waste that do not have existing gas vents. All wells will be 36-inch diameter and drilled to a depth of no deeper than 10 vertical feet above the historical groundwater elevations for the site (data provided by the County). If significant liquid is observed in the well bore during drilling, the well will be terminated at that depth. The wells will be constructed in a similar manner to typical active gas wells with solid piping extending 15 to 20 feet below the ground surface and perforated piping with stone backfill extending the remainder of the well depth.

Bentonite clay will be used to seal the well bore at two (2) locations: one being just above the stone backfill and the second being the observed depth of the clay landfill cap. The bentonite will be used to seal around the well penetration and to match the existing clay cap thickness.

The construction will be monitored by construction quality assurance (CQA) personnel. The primary item(s) that will be observed will be the header/lateral trenching over the existing landfill final cover system and the new vertical gas well installation(s). The LFG piping will be installed in the vegetative soil cover (approximately 18 inches thick) which overlies the clay cap. All solid wall header/lateral piping will be pressure tested with air to check for leaks. These tests will be performed at various intervals during construction.

The contractor will be required to take care while excavating the soil cover and installing the LFG system to prevent damage to the final cover system. For this reason, trenchers will not be allowed and a contractor who is experienced with LFG and landfill construction will be used. The contractor will be required to minimize damage to the vegetative cover system during construction. The contractor will be required to restore all trenched and disturbed areas of the cap to the pre-construction condition. This will include reseeding with the existing mix of grasses and foliage, liming, fertilization, and mulching the areas. The contractor will be required to take all necessary precautions, such as covering the trenches with plastic sheeting, to protect open trenches if precipitation occurs during daily construction activities or if trenches are left open overnight.

If any portion of the clay cap is impacted during excavation, the contractor will be required to immediately make repairs to the cap. The repairs will consist of resealing the areas with bentonite clay. CQA personnel will document all areas in which the clay cap was impacted and repaired.

CONSTRUCTION DOCUMENTATION

Upon completion of the LFG collection and control system installation, CEC will provide to the NCDENR Division of Waste Management as-builts of the LFG system as well as a Record Documentation Report. The Record Documentation Report will include (at a minimum) the following:

- A description of the construction work, parties involved, and materials and equipment used;
- Daily field logs from the CQA personnel as well as the contractor (as appropriate);
- Well Construction Logs;
- Header and lateral pipe leak testing forms;
- Photographs from the construction;
- Documentation on any repairs made to the clay cap (as needed);
- As-built drawings; and.
- Certification from a North Carolina Professional Engineer.

LANDFILL GAS SYSTEM OPERATIONS AND MAINTENANCE

Once operational, the LFG collection and control system will be maintained in accordance with the blower/flare system manufacturer's recommendations and generally accepted practices for operating active LFG systems. These include (at a minimum) inspecting and greasing the blowers, observing the operation of the flare, checking the liquid levels in the condensate sumps, checking and recording the LFG quality, pressure, and temperature at each gas well, checking the LFG quality, pressure, and temperature of the gas at the blower/flare station, recording the gas flow at the blower/flare station, and inspecting the wellheads for damaged or loose fittings. Spare parts for the most common maintenance items such as blower grease, spare blower belts, wellhead parts, fuses, and the like will be kept at the Landfill for quick replacement or will be quickly available via third party LFG O&M services.

While the Landfill is not subject to the requirements of the NSPS, which prescribe monthly monitoring, specific limits on wellhead pressure and oxygen, and continuous operation of the LFG system, the County and MP Wilson LLC will maintain the Landfill's LFG system similar manner to the NSPS in order to maximize available gas collection and minimize methane migration and the potential for landfill fires.

Based on recent liquid level measurements in the existing gas wells, subsurface liquid does not appear to be a problem at the Landfill; therefore, the active LFG system does not provide for the use of downwell pumps in the existing gas wells. However, if in the future, subsurface liquids do become a problem, downwell pumps can be added with

minimal difficulty. The collected condensate from these pumps would be pumped via pipeline to a holding tank for removal from the site via pumper truck.

If in the future a well becomes unusable to the active LFG system due to poor gas quality or low gas flow, it may be temporarily decommissioned from the LFG system. This will involve closing the wellhead valve for an indeterminate period of time to allow the well to regenerate and/or to allow additional testing to be performed. A gas well may be permanently decommissioned by removing the wellhead and placing a cap on the well.

Landfill Fires

Due to the clay final cover system, ambient air infiltration into the waste mass due to the active gas system will be minimized thus reducing the potential for a landfill fire. However, the LFG system will be routinely monitored for temperature and oxygen content at each wellhead, and the wells will be adjusted accordingly if conditions for a landfill fire become favorable, such as high well temperatures (in excess of 140 degrees F) and high oxygen content (in excess of 7.5 percent).

Should a landfill fire be suspected, the County and MP Wilson LLC will follow the existing procedures in its Solid Waste Closure Plan, which include notifying NCDENR and the local fire department. MP Wilson LLC personnel will turn off all nearby active gas wells to prevent additional air infiltration and monitor the carbon monoxide levels in the nearby wells to determine the extent of the fire. MP Wilson LLC personnel who work on the LFG system will be trained on the proper responses to a suspected landfill fire.

FINANCIAL ASSURANCE

The installation of the LFG collection and control system is being funded by MP Wilson LLC. Additional upgrades, future work, and LFG O&M will be paid for by MP Wilson LLC under contract with Wilson County. Wilson County, as the owner of the Landfill, and MP Wilson LLC, as the LFG system operator, understand and accept the appropriate financial responsibility for this project.

CLOSING

I appreciate your assistance on this project and look forward to your comments. The permit plans and a similar letter report have also been submitted to the Division of Air Quality for approval. The County and MP Wilson would like to begin construction on the LFG system as soon as possible.

If you have any questions or need additional information, please feel free to contact me at (704) 283-9765.

Respectfully Submitted,

Kristofer L. Carlson, P.E.
Principal
Carlson Environmental Consultants, PC

Attachments

cc: Ming Chao, NCDENR - DAQ
Jim Voss, MP Wilson, LLC
Richard King, PE, Applied Testing & Geosciences, LLC
Steve Clayton, Wilson County
Gary Ahlberg, PE – Blackrock Engineering
Jeff McNabb, CEC
Amy Nunes, PE, CEC

C:\Users\Kris\Desktop\Wilson.NCDENR.SWpermit.letter.doc

Section 1

Attachment 1-2

LFGCCS Design Drawings

PERMIT DRAWINGS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM INSTALLATION
WILSON COUNTY LANDFILL

OWNER:

WILSON COUNTY, NORTH CAROLINA
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893
(252) 399-2823

IN PARTNERSHIP WITH:

METHANE POWER, INC.
P.O. BOX 65837
TUSCON, ARIZONA 85728
(520) 615-8995

ENGINEER:

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765

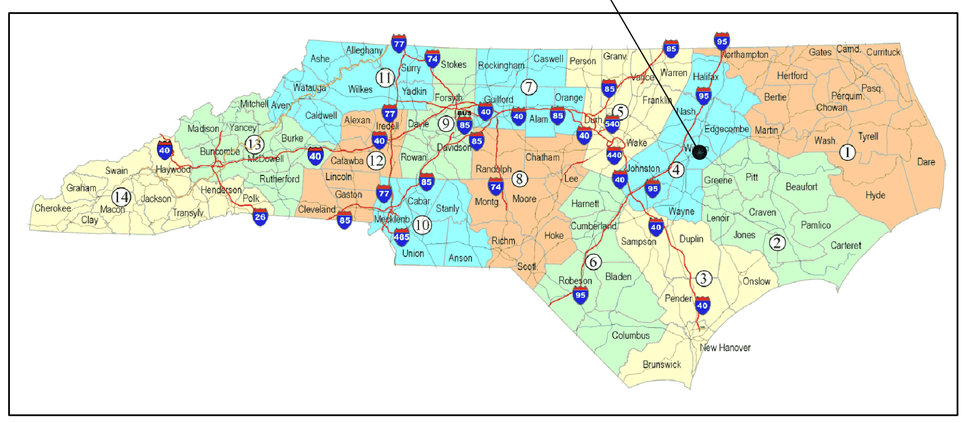
CEC JOB NO. J1-209205-00

FEBRUARY 2009

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN
3	DETAILS
4	BLOWER/FLARE STATION

SITE



AREA MAP
SCALE: AS SHOWN

DRAWING TITLE:	TITLE SHEET
PROJECT:	LFG COLLECTION SYSTEM DESIGN WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA
CLIENT:	METHANE POWER, INC.

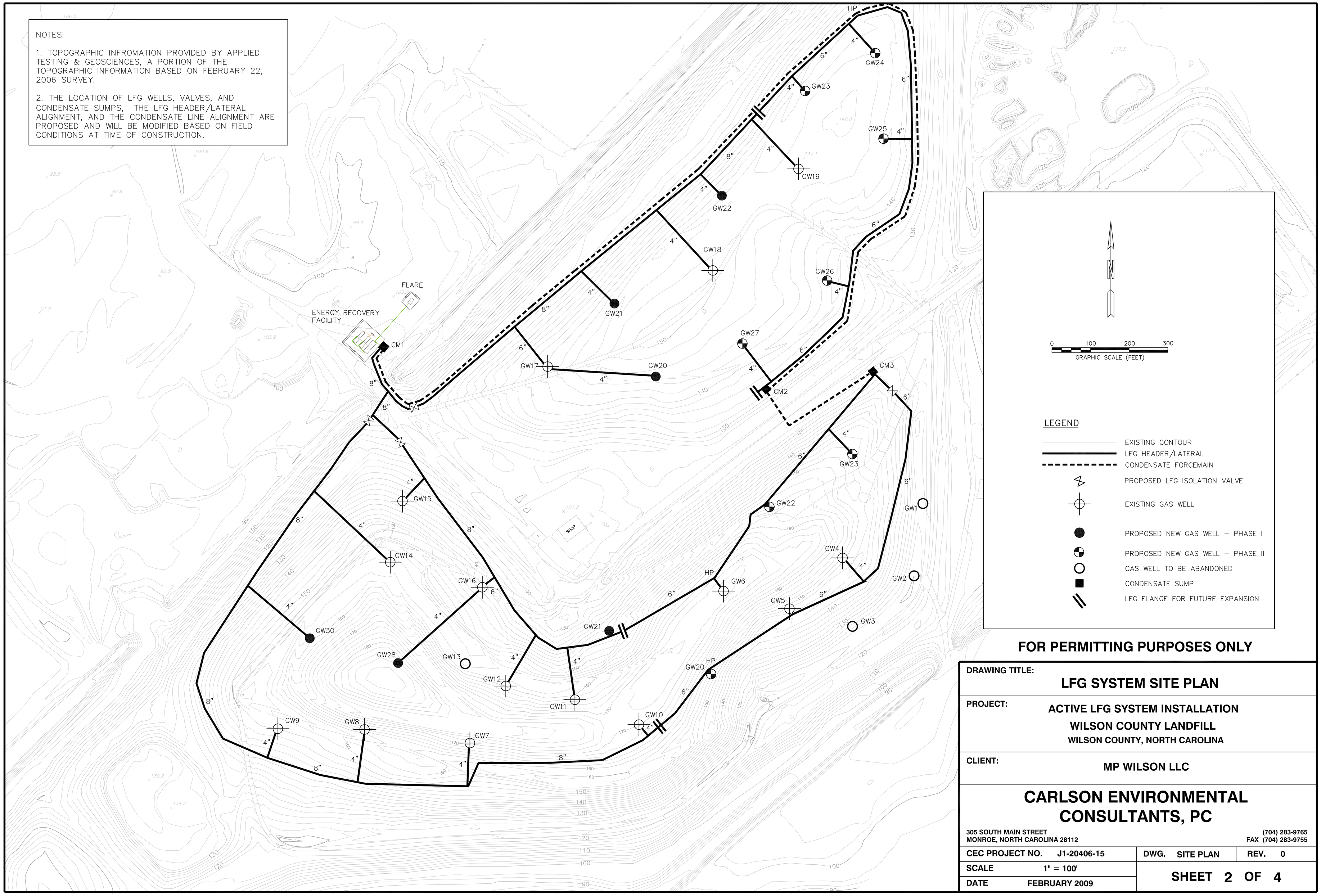
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-209205-00	DWG. WILSON.LFG.TITLE	REV. 0
SCALE	NO SCALE	SHEET 1 OF 4	
DATE	FEBRUARY 2009		

NOTES:

1. TOPOGRAPHIC INFROMATION PROVIDED BY APPLIED TESTING & GEOSCIENCES, A PORTION OF THE TOPOGRAPHIC INFORMATION BASED ON FEBRUARY 22, 2006 SURVEY.

2. THE LOCATION OF LFG WELLS, VALVES, AND CONDENSATE SUMPS, THE LFG HEADER/LATERAL ALIGNMENT, AND THE CONDENSATE LINE ALIGNMENT ARE PROPOSED AND WILL BE MODIFIED BASED ON FIELD CONDITIONS AT TIME OF CONSTRUCTION.



FOR PERMITTING PURPOSES ONLY

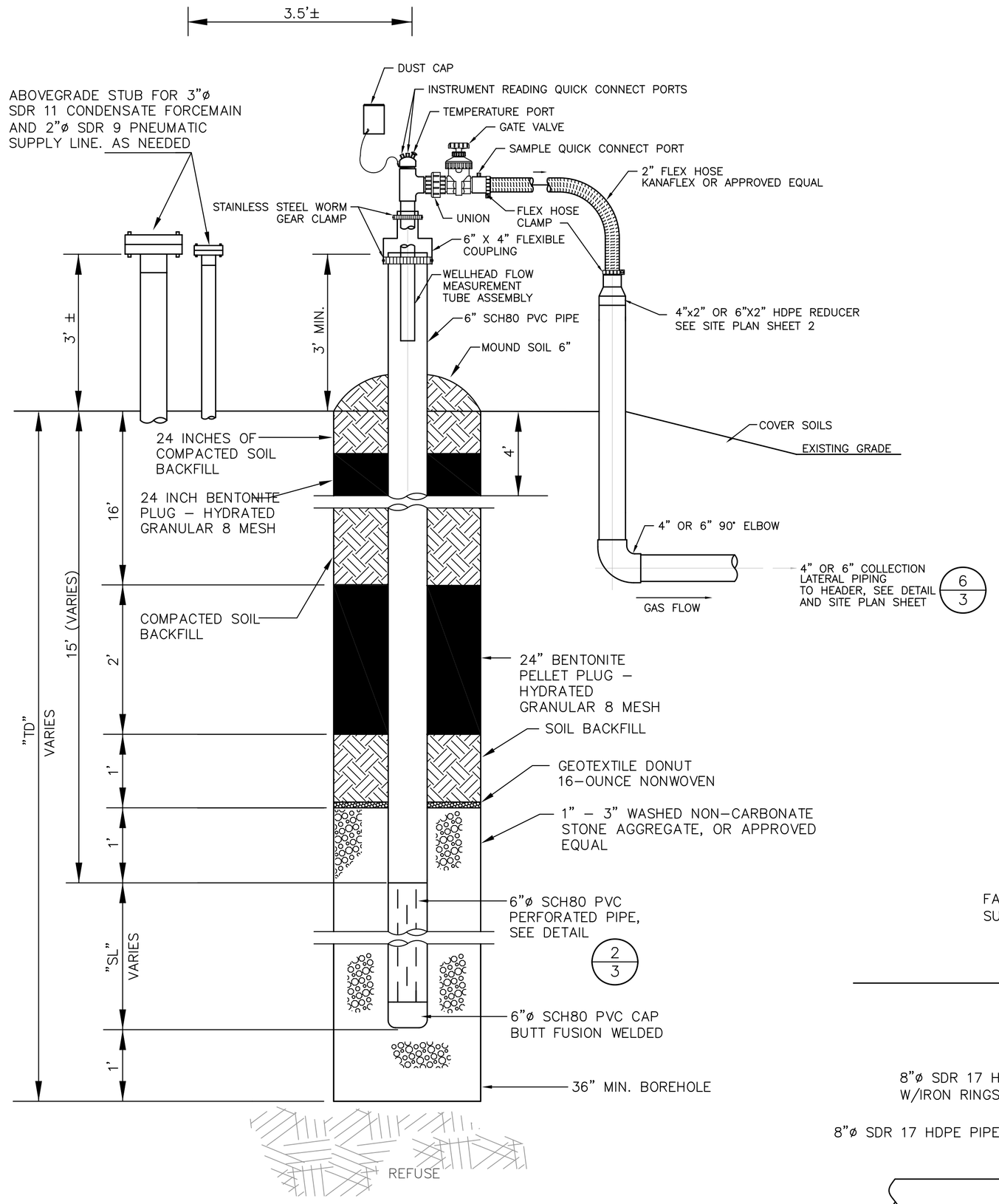
DRAWING TITLE:	**LFG SYSTEM SITE PLAN**
PROJECT:	**ACTIVE LFG SYSTEM INSTALLATION** **WILSON COUNTY LANDFILL** **WILSON COUNTY, NORTH CAROLINA**
CLIENT:	**MP WILSON LLC**

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112

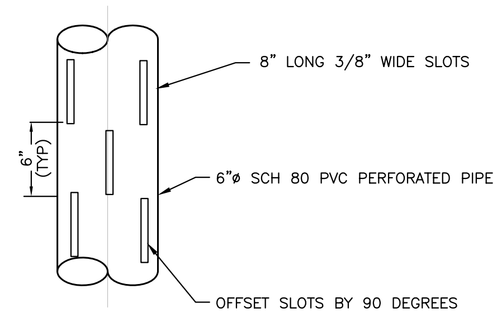
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-20406-15	DWG. SITE PLAN	REV. 0
SCALE	1" = 100'	SHEET 2 OF 4	
DATE	FEBRUARY 2009		

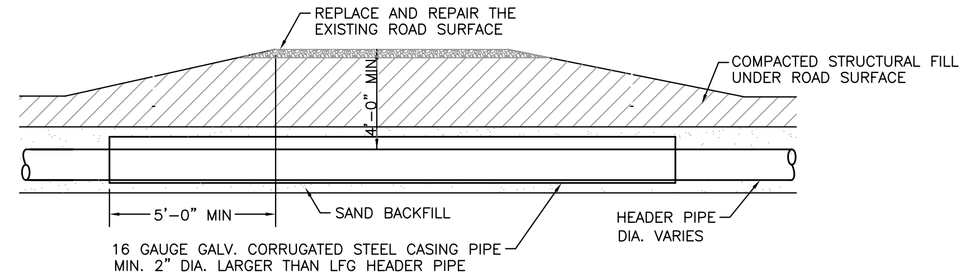


VERTICAL EXTRACTION WELL DETAIL (1/3)
NOT TO SCALE

NOTES:
1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL AF2V WELLHEAD ASSEMBLY, TEL. 1-800-LANDTEC, FAX 213-895-5866.

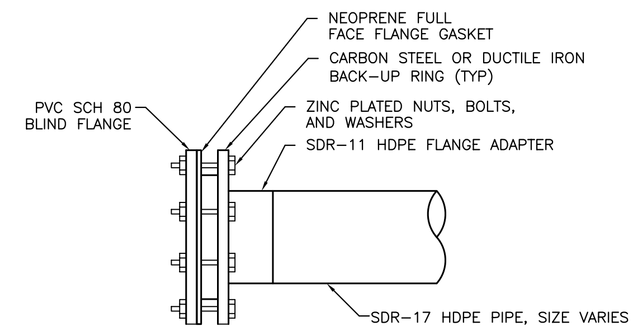


SLOTTED PIPE FOR VERTICAL WELLS DETAIL (2/3)
NO SCALE

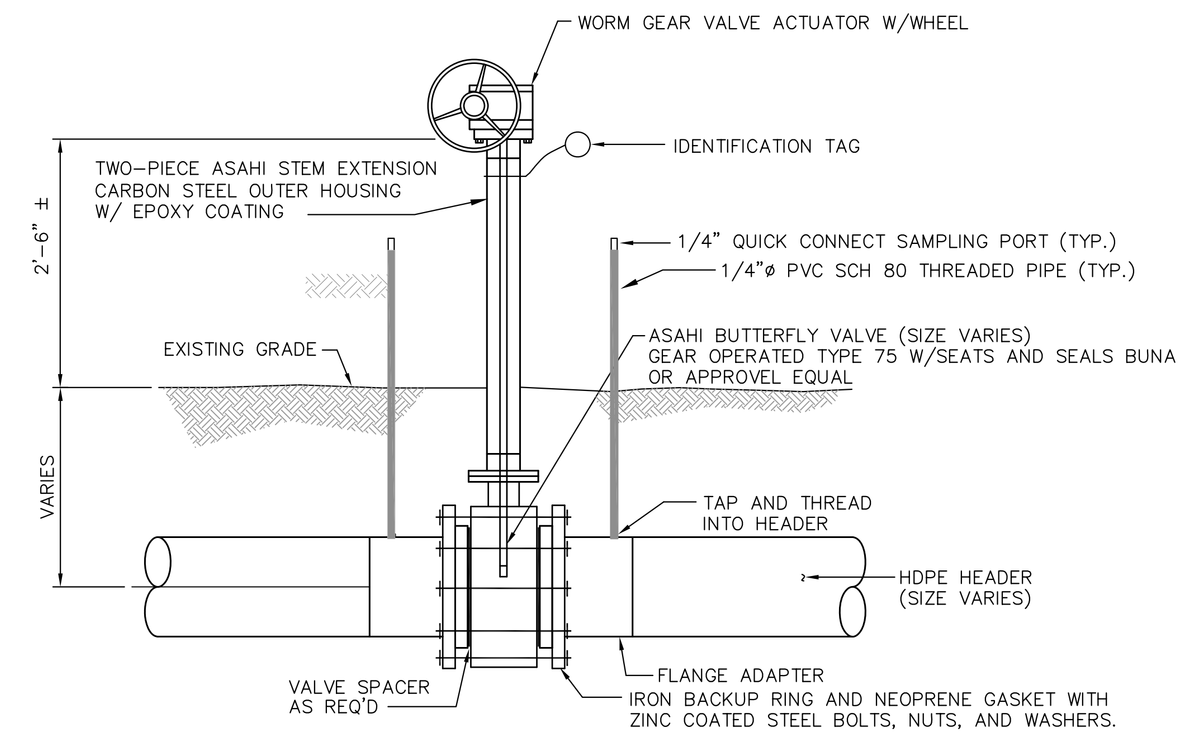


ROAD CROSSING DETAIL (3/3)
NOT TO SCALE

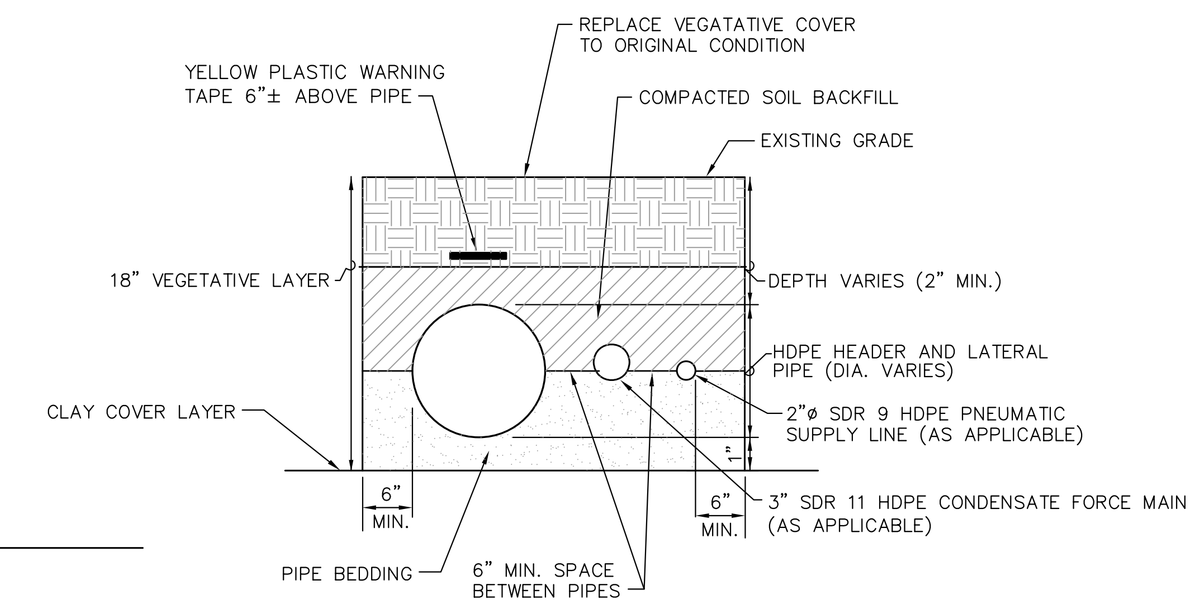
NOTE: ROAD CROSSING DETAIL DEPICTED HERE IS AN EXAMPLE OF A TYPICAL PIPE ENCASEMENT TO BE UTILIZED IN AREAS WHERE THE LFG HEADER MAY REQUIRE ADDITIONAL PROTECTION FROM LANDFILL POST-CLOSURE ACTIVITIES. SECTIONS FOR ENCASEMENT TO BE IDENTIFIED BY LANDFILL OWNER PRIOR TO CONSTRUCTION.



HEADER PIPE BLIND FLANGE (4/3)
NOT TO SCALE

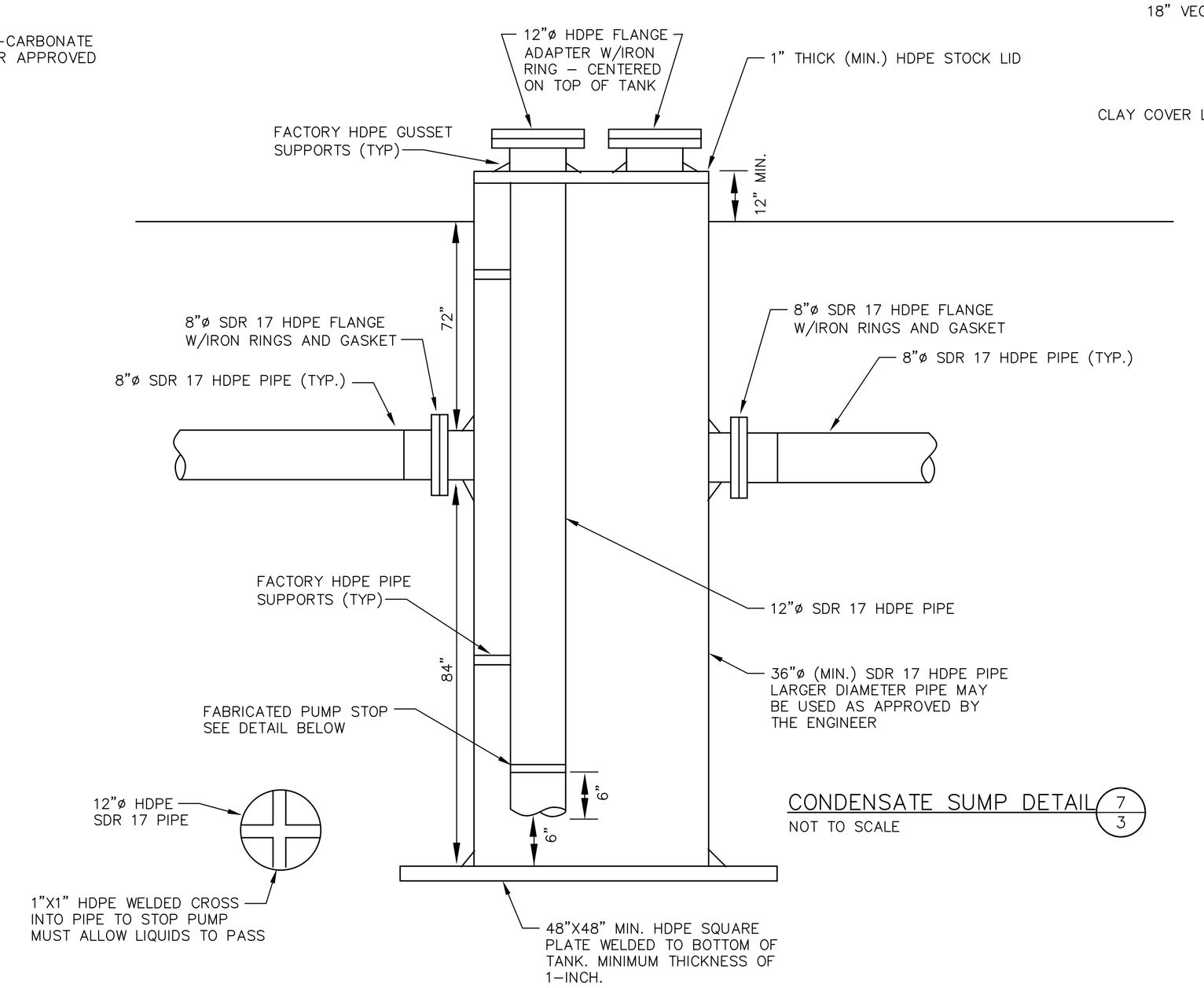


LFG COLLECTION SYSTEM BUTTERFLY VALVE DETAIL (5/3)
NOT TO SCALE



HEADER/LATERAL TRENCH DETAIL (6/3)
NO SCALE

NOTE: LFG SYSTEM DETAILS SHOWN ON THIS SHEET ARE TYPICAL, BUT MAY BE MODIFIED TO MEET ACTUAL FIELD CONDITIONS, LFG-TO-ENERGY SYSTEM REQUIREMENTS, REGULATORY COMPLIANCE, AND OTHER FACTORS. AS-BUILT DRAWINGS AND INFORMATION WILL BE COMPILED AND PROVIDED TO NCDENR BASED ON ACTUAL CONSTRUCTION CONDITIONS.



CONDENSATE SUMP DETAIL (7/3)
NOT TO SCALE

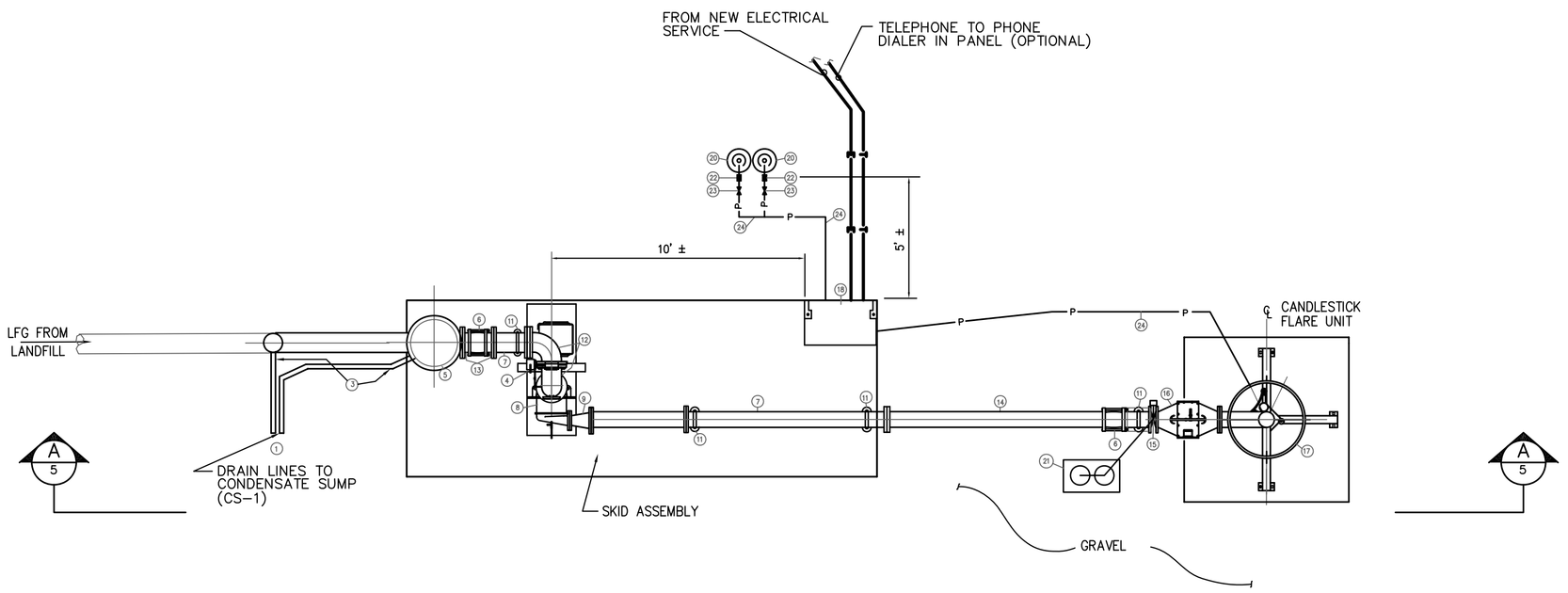
FOR PERMIT PURPOSES ONLY

DRAWING TITLE:	**LFG DETAILS**
PROJECT:	**LANDFILL GAS COLLECTION AND CONTROL SYSTEM PERMIT DRAWINGS**
SITE:	**METHANE POWER, INC. WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA**

CARLSON ENVIRONMENTAL CONSULTANTS, PC

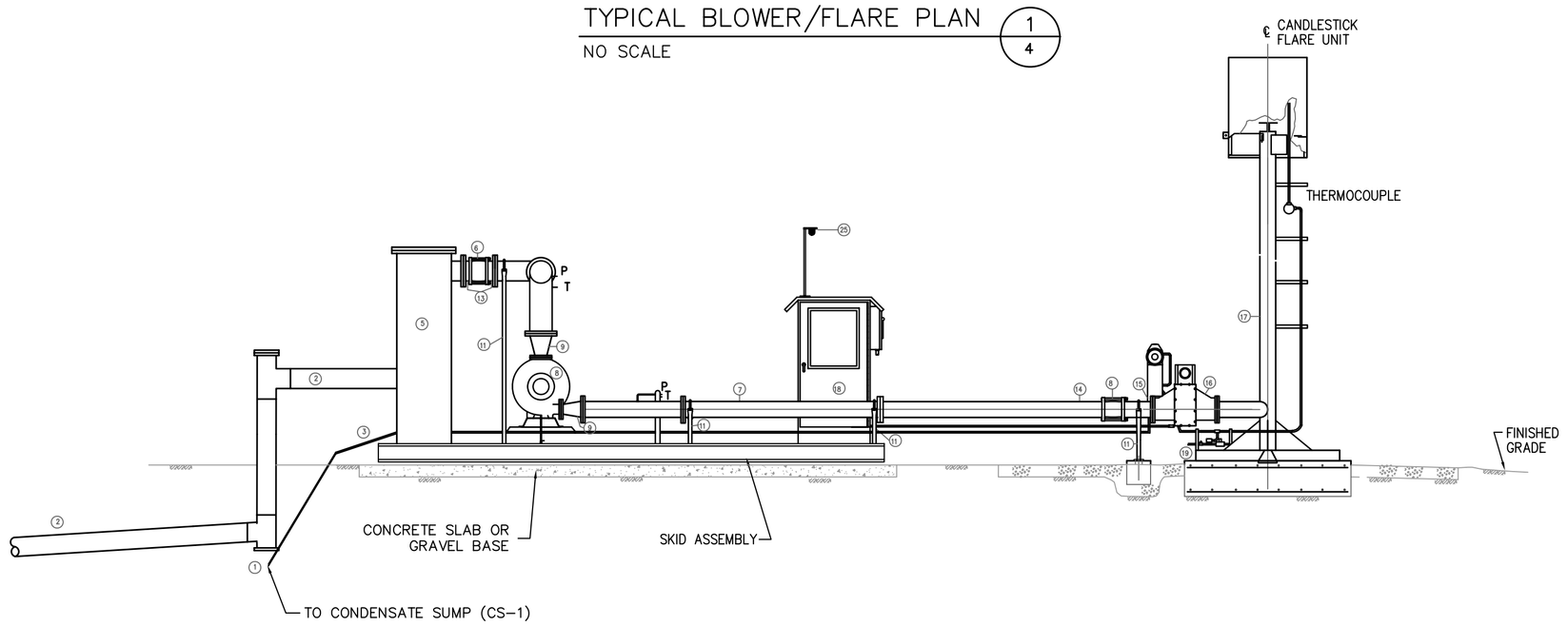
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-20905-00	DWG. WILSON.LFG	REV. 0
SCALE	NO SCALE	SHEET 3 OF 4	
DATE	FEBRUARY 2009		



TYPICAL BLOWER/FLARE PLAN (1/4)

NO SCALE



TYPICAL BLOWER/FLARE ELEVATION (A/4)

NO SCALE

LEGEND

1. CONDENSATE SUMP
2. HDPE HEADER PIPE
3. CONDENSATE DRAIN LINE
4. BUTTERFLY VALVE
5. FLANGED MOISTURE SEPARATOR w/ DE-MISTER PAD
6. FLANGED EXPANSION JOINT
7. CONNECTOR PIPE
8. BLOWER/MOTOR ASSEMBLY
9. FLANGED EXPANSION JOINT REDUCER
10. NUMBER NOT USED
11. PIPE SUPPORT
12. 90° FLANGED BEND
13. FLANGE ADAPTER
14. FLANGED PIPE
15. AUTOMATIC SHUT-OFF VALVE
16. FLANGED FLAME ARRESTOR
17. VERTICAL CANDLESTICK FLARE UNIT w/ WINDSHIELD
18. CONTROL PANEL W/SUN SHIELD
19. PILOT ASSEMBLY VALVE TRAIN
20. PROPANE TANKS WITH GAUGES
21. NITROGEN TANKS AND BASE
22. PRESSURE REGULATOR
23. VALVE
24. PIPE AND FITTINGS.
25. WEATHERPROOF LIGHT FIXTURE PROVIDED ON SKID ASSEMBLY

P – PRESSURE GAUGE

T – TEMPERATURE GAUGE

NOTE:

1. DIMENSIONS AND MATERIALS SHOWN MAY BE MODIFIED TO SUIT INDIVIDUAL SKID MANUFACTURER'S (OR EXISTING SKID'S) REQUIREMENTS.

NOTES:

1. THE BLOWER/FLARE PLAN AND ELEVATION SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. IT IS A SCHEMATIC LAYOUT AND DETAILS SHOWN HERE MAY DIFFER FROM FINAL BLOWER/FLARE SYSTEM. FINAL BLOWER/FLARE DESIGN TO BE PROVIDED BY THE MANUFACTURER OR FIELD FABRICATED BY CONTRACTOR AND APPROVED BY THE ENGINEER.
2. BLOWER/FLARE MAY BE EXISTING EQUIPMENT, DELIVERED FROM DIFFERENT SITE.
3. BLOWER/FLARE MAY BE SKID MOUNTED AS ONE ASSEMBLY, PARTIALLY SKID-MOUNTED AS DEPICTED HERE, OR MOUNTED ON A TRAILER.

NOT FOR CONSTRUCTION
FOR PERMIT PURPOSES ONLY

DRAWING TITLE:
LFG DETAILS - BLOWER/FLARE SYSTEM

PROJECT:
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
PERMIT DRAWINGS

SITE:
METHANE POWER, INC.
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112

(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-20905-00	DWG. WILSON.DETAILS	REV. 0
SCALE	NO SCALE	SHEET 4 OF 4	
DATE	FEBRUARY 2009		

Section 1

Attachment 1-3

Erosion Permit

Solid Waste Permit

CERTIFICATE OF PLAN APPROVAL

The posting of this certificate certifies that an erosion and sedimentation control plan has been approved for this project by the North Carolina Department of Environment and Natural Resources in accordance with North Carolina General Statute 113A - 57 (4) and 113A - 54 (d) (4) and North Carolina Administrative Code, Title 15A, Chapter 4B.0007 (c). This certificate must be posted at the primary entrance of the job site before construction begins and until establishment of permanent groundcover as required by North Carolina Administrative Code, Title 15A, Chapter 4B.0027 (b).

Landfill Gas Collection and Control System Installation - Wilson Co.

Project Name and Location

May 3, 2010

Date of Plan Approval

NCDENR

Regional Engineer

NCDENR

North Carolina Department of Environment and Natural Resources

Division of Land Resources

Land Quality Section

James D. Simons, PG, PE
Director and State Geologist

Beverly Eaves Perdue, Governor
Dee Freeman, Secretary

May 03, 2010

LETTER OF APPROVAL WITH MODIFICATIONS

Methane Power
ATTN :- Lewis Gay
122 Harbor Cove Lane
Mooresville, NC 28117

RE: Project Name: Landfill Gas Collection and Control System Installation
Project ID: WILSO-2010-004 Acres Approved: 6.00
County: Wilson, 4537 Landfill Road, Wilson
River Basin: Neuse Stream Classification: Other
Submitted By: Amy Ratliff, Ratliff Engineering & Consulting, PLLC
Date Received by LQS: 5/3/10
Plan Type: New

Dear Sir or Madam:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable with modifications and hereby issue this letter of Approval with Modifications. The Modifications Required for Approval are listed on the attached page. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

Please be advised that Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, you should consider this letter to give the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG01000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Due to the location of this project, it should be noted that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997 The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0233) applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with existing vegetation on the adjacent land or "riparian area". In riparian areas with existing vegetation in the first 30 feet directly adjacent to the stream, the rule prohibits land disturbance or new development within the first 30 feet of land next to the water (the remaining 20 feet of the total buffer must be revegetated upon completion of any proposed land-disturbing activity). In riparian areas with existing vegetation that is less than 30 feet wide, the rule prohibits land disturbance or new development within the area that contains the existing vegetation (but not the entire 50 foot riparian area). For more information about this riparian area rule, please contact the Division of Water Quality's Wetland/401 Unit at 919-733-1786, or a Division of Water Quality representative at this regional office.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,

Karyn Pageau

Karyn Pageau, EIT, CPESC
Assistant Regional Engineer
Land Quality Section

Enclosures: Certificate of Approval
Modifications Required for Approval
NPDES Permit

cc: Amy Ratliff, PE, Ratliff Engineering & Consulting, PLLC, 4224 Lazyriver Drive, Durham, NC 27712
Danny Smith, DWQ – SWP Supervisor, Raleigh Regional Office

MODIFICATIONS REQUIRED FOR APPROVAL

Project Name: Landfill Gas Collection and Control System Installation

Project ID: WILSO-2010-004

County: Wilson

1.Provide statement on the drawings for maintenance of sediment control measures.Provide 1 copy of drawings revised as a result of requested changes to this office by May 25, 2010 or prior to construction beginning, whichever is sooner.

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
Division of Waste Management
Beverly Eaves Perdue
Governor
Dexter R. Matthews
Director
Dee Freeman
Secretary
Solid Waste Section

April 21, 2009

Mr. Steve Clayton, Director
Wilson County Landfill
P.O. Box 1728
Wilson, North Carolina 27893

Subject: Authorization for the Installation of a Landfill Gas Collection and Control System
Wilson County Landfill, Wilson County,
Permit #98-01, Document ID No. (DIN) 7315

Dear Mr. Clayton:

The Division of Waste Management, Solid Waste Section has reviewed the document titled *Request for NCDENR Division of Waste Management Approval Construction and Operation of Landfill Gas System (Proposal)*, dated March 27, 2009. DIN 7160. This document was submitted on your behalf by Carlson Environmental Consultants, PC (CEC) and was received by the Solid Waste Section on March 27, 2009.

Based on this review, the Solid Waste Section hereby grants Wilson County Landfill the authorization for installing a landfill gas collection and control system (LFGCCs) in accordance with the above-referenced document. Please note that this authorization for the installation of LFGCCs does not remove any responsibilities Wilson County may have to comply with any permit condition, or any local, state or federal regulation.

Upon completion of the construction of LFGCCs, the Solid Waste Section may grant Wilson County Landfill a final authorization to operate the constructed system. This authorization will be issued pending receipt and approval of the following:

1. Payment of $3000 permit activity fee (Modification to Post-Closure Land Use Permit).

2. The LFGCCs construction completion documentations (as described in the Proposal dated March 27, 2009). Additionally, the document should include the well abandoned report (wells GW-1, GW-2, GW-3 & GW-13 are proposed to be abandoned as shown on the drawing Sheet 2 of 4), if the activities were conducted. The survey coordinates and elevations of the final locations of gas wells, valves, condensate traps/sumps must be provided by the licensed surveyor registered in the State of North Carolina.

3. The modified Post-Closure Plan by including the Operation and Maintenance Plan of LFGCCs. The plan should address the following issues, but not limited to:

- Site security and measures/actions against vandalism.
- The Contingency and Emergency Response Plan to manage fire fighting, prevention, and notification, power outrage/inclement weather, odor and noise nuisances.
- Methane gas monitoring plan by including additional monitoring activities around LFGCCs.
- Personnel training and safety working around the LFGCCs.
- Condensate management – routine inspection of the leachate level in the holding tanks and sumps and spillage prevention and response.
- Requirements (such as frequency, checklist, report/recordation) of the routine inspection, repair, and maintenance of the LFGCCs.
- Descriptions of steps necessary to decommission the components of the LFGCCs (wells, piping, holding tanks, flare, blower, instrument panels, etc.) and restoration of the final cover system damaged by removing collection system at the end of their useful life.
- The revised post-closure care cost estimates and updated financial assurance mechanism by including the costs for decommission the components of the LFGCCs and repair the final cover system at the end of their useful life.

4. The copy of updated air quality permit approved by the Division of Air Quality.

5. The copy of the permit approved by the Wilson County Waste Water Treatment Plant to accept the condensate/leachate.

Please incorporate requested document (items 2 to 5) to a submittal including a written hard copy and an electronic copy (including as-built drawings) of the Permit Application for Post-Closure Land Use. If you should have any questions regarding this matter please contact me at 919-508-8507.

Sincerely,

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section

cc: Kristofer L. Carlson, P.E., CEC
Donna Wilson, DWM
Dennis Shackelford, DWM
Ed Mussler, Permitting Branch Supervisor
Ben Barnes, DWM
Central Files

Section 1

Attachment 1-4

Construction Materials

ISCO INDUSTRIES

ISCO Industries
926 Baxter Avenue
Louisville, KY 40204

REMIT TO
ISCO Industries
1974 Solutions Center
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PAGE	1 OF 1

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008951	05/14/10	Outlaw Trucking/Logistics	5703
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	05/27/10	RODNEY	2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
10031118 3" DR 11 IPS PIPE, HDPE 3408/3608 AWWA, F714	2800	2800	0	1.23	FT	3,444.00
10020911 2" DR 9 IPS LENGTHS PIPE, HDPE 3408/3608 AWWA	2800	2800	0	0.68	FT	1,904.00
10101714 10" DR 17 IPS PIPE, HDPE 3408/3608 AWWA, F714	300	300	0	7.90	FT	2,370.00
10041714 4" DR 17 IPS PIPE, HDPE 3408/3608 AWWA, F714	2960	2960	0	1.39	FT	4,114.40

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
11,832.40	0.00	1,410.00	1,026.30	0.00	USD	14,268.70

PAYMENT TERMS ARE BASED UPON INVOICE DATE
THE TERMS AND CONDITIONS ON THE REVERSE SIDE ARE AN INTEGRAL PART OF THIS INVOICE
A LATE CHARGE OF 1.5% PER MONTH (18% PER YEAR) WILL BE ADDED TO ALL PAST DUE BALANCES.

ISCO INDUSTRIES

ISCO Industries
926 Baxter Avenue
Louisville, KY 40204

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
14002984	05/25/10	Anderson Trans	5703
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	05/26/10		2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
10081717 8" DR 17 IPS PIPE, HDPE 3408/3608 AWWA	6250	6250	0	4.98	FT	31,125.00
10061716 6" DR 17 IPS PIPE, HDPE 3408/3608 AWWA, F714	2680	2680	0	3.00	FT	8,040.00

Special Instructions:
SHIPPED 05/26/10 VIA: ANDERSON TRANSPORTATION & LOGISTICS
DT# 88062292 & 88062293

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
39,165.00	0.00	1,578.51	3,157.62	0.00	USD	43,901.13

PAYMENT TERMS ARE BASED UPON INVOICE DATE
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Tel: 800-345-4726 • Fax: 800-831-4726
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PAGE	1 OF 2

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008951	05/14/10	Anderson Trans	5703
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	06/01/10	12383231	2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
40101126 10" DR 11 IPS 22.5 DEG ELBOW FABBED HDPE 3408/3608 2-PIECE	1	1	0	55.38	EA	55.38
53080032 8" DR 11 IPS BACKUP RING DUCTILE IRON	2	2	0	20.00	EA	40.00
50061136 6" X 4" DR 11 IPS CONCENTRIC REDUCER, MOLDED	4	4	0	25.00	EA	100.00
53061012 BOLTPACK FOR 6" MFA & BUR 8-3/4" X 5 7/8" BOLT W/NUT &WA	2	2	0	14.00	EA	28.00
50041712 4" DR 17 IPS 90 DEG ELBOW MOLDED HDPE 3408/3608	19	19	0	14.00	EA	266.00
53041018 4" NEOPRENE GASKET 1/8" THICK	1	1	0	2.00	EA	2.00
50031113 3" DR 11 IPS 45 DEG ELBOW MOLDED HDPE 3408/3608	2	2	0	11.00	EA	22.00

Amount: 7309.32
Job No./GL No.: 1047
Task Code: 02612
L E M S O X
Field Approval:
P.M. Approval:

APPROVED
By Ted at 9:23 am, Jun 16, 2010

,-4726

REMITTANCE ADDRESS:
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PAGE	2 OF 2

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008951	05/14/10	Anderson Trans	5703
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	06/01/10	12383231	2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
50031114 3" DR 11 IPS 90 DEG ELBOW MOLDED HDPE 3408/3608	1	1	0	11.00	EA	11.00
50020915 2" DR 9 IPS 45 DEG ELBOW MOLDED HDPE 3408/3608,	5	5	0	6.00	EA	30.00
53021014 BOLTPACK FOR 2" MFA & BUR 4-5/8" X 4" BOLT W/NUT & WASH	2	2	0	5.66	EA	11.32
50061125 6" DR 11 IPS CAP MOLDED HDPE 3408/3608	7	7	0	25.44	EA	178.08
98000101 50LB BAG BENTONITE GRANDULAR 8 MESH	720	720	0	6.50	EA	4,680.00
50041122 4" DR 11 IPS CAP MOLDED HDPE 3408/3608	6	6	0	11.52	EA	69.12
63060018 6" SCH 80 PVC SLIP CAP #847-060	13	13	0	33.13	EA	430.69

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
5,923.59	0.00	860.00	525.73	0.00	USD	7,309.32

PAYMENT TERMS ARE BASED UPON INVOICE DATE
THE TERMS AND CONDITIONS ON THE REVERSE SIDE ARE AN INTEGRAL PART OF THIS INVOICE
A LATE CHARGE OF 1.5% PER MONTH (18% PER YEAR) WILL BE ADDED TO ALL PAST DUE BALANCES.

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PAGE	1 OF 1

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008956	05/14/10	Outlaw Trucking/Logistics	5703
WRITTEN BY	**SHIP DATE**	**TRACKING #**	**JOB NUMBER**
BRUCE T., Ext. 6625	06/03/10	12383386	2895
SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
49489999 48" CONDENSATE SUMP	1	1	0	6500.00	EA	6,500.00
50081135 8" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	4	4	0	24.00	EA	96.00

Amount: 8,545.65
Job No./GL No.: 1047
Task Code: 02612
L E M S O X
Field Approval:
P.M. Approval: Ted Thompson

APPROVED
By Ted at 9:22 am, Jun 16, 2010

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
6,596.00	0.00	1,335.00	614.65	0.00	USD	8,545.65

PAYMENT TERMS ARE BASED UPON INVOICE DATE
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A LATE CHARGE OF 1.5% PER MONTH (18% PER YEAR) WILL BE ADDED TO ALL PAST DUE BALANCES.

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PAGE	1 OF 1

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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
01014189	06/03/10	FEDEX GROUND COM'L	WILSON
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	06/04/10	89935	2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
49180010 18" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	1	1	0	113.00	EA	113.00
50061122 6" DR 11 IPS FLANGE ADAPTER MOLDED HDPE 3408/3608	1	1	0	22.89	EA	22.89
53060019 6" DR 13.5 IPS 316 SS BACKUP RING (CF8M)	1	1	0	145.00	EA	145.00
53011119 1" DR 11 IPS MPT TRANS FIT STAINLESS STEEL 304	2	2	0	30.76	EA	61.52
53021123 2" DR 11 IPS MPT TRANS FIT STAINLESS STEEL 304	2	2	0	35.05	EA	70.10

Amount: 469.80
Job No./GL No.: 1047
Task Code: 02612
L E M S O X
Field Approval:
P.M. Approval: Ted Thompson

APPROVED
By Ted at 7:36 am, Jun 22, 2010

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
412.51	0.00	23.49	33.80	0.00	USD	469.80

PAYMENT TERMS ARE BASED UPON INVOICE DATE
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ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008951	05/14/10	Quality Express	5703
WRITTEN BY	**SHIP DATE**	**TRACKING #**	**JOB NUMBER**
BRUCE T., Ext. 6625	06/09/10	12383789	2895
SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
50061136 6" X 4" DR 11 IPS CONCENTRIC REDUCER, MOLDED	3	3	0	24.00	EA	72.00
53061012 BOLTPACK FOR 6" MFA & BUR 8-3/4" X 5 7/8" BOLT W/NUT &WA	2	2	0	14.00	EA	28.00
49030012 3" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	2	2	0	11.30	EA	22.60
53031011 BOLTPACK FOR 3" MFA & BUR 4-5/8" X 5" BOLT W/NUT & WASH	2	2	0	6.13	EA	12.26
53031017 3" NEOPRENE GASKET 1/8" THICK	2	2	0	1.36	EA	2.72
49020013 2" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	2	2	0	9.78	EA	19.56
53021018 2" NEOPRENE GASKET 1/8" THICK	2	2	0	1.17	EA	2.34

[illegible] · Geomembrane Liners · HDPE Fusion Equipment

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06008951	05/14/10	Quality Express	5703
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BRUCE T., Ext. 6625	06/09/10	12383789	2895
SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
49080012 8" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	1	1	0	25.00	EA	25.00
59080021 ASAHI 8" PVC BUTTERFLY VALVE NITRILE,GEAR OPERATED 3721080	4	4	0	450.00	EA	1,800.00
53089999 8' STEM EXTENSIONS FOR 8" TYPE 57 ASAHI BUTTERFLY	4	4	0	450.00	EA	1,800.00
50041129 4" X 2" DR 11 IPS CONCENTRIC REDUCER, MOLDED	23	23	0	7.05	EA	162.15
50061136 6" X 4" DR 11 IPS CONCENTRIC REDUCER, MOLDED	2	2	0	25.45	EA	50.90
50041129 4" X 2" DR 11 IPS CONCENTRIC REDUCER, MOLDED	2	2	0	7.05	EA	14.10
98030024 3" NON METALLIC TAPE 1000F CAUTION GAS LINE BURRIED BELOW	16	16	0	20.00	RL	320.00

NOT APPROVED

Should be $405
per P.O. 5703

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06008951	05/14/10	Quality Express	5703
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BRUCE T., Ext. 6625	06/09/10	12383789	2895
SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
98020035 2" POWER LOCK CLAMP 2.375" PS	60	60	0	11.55	EA	693.00
63060013 6" SCH 80 PVC PIPE PE X BE	280	280	0	5.75	FT	1,610.00
53060024 6" X 4" FLEXIBLE COUPLING FERNCO 1056-64	29	29	0	10.50	EA	304.50
53040032 4" X 2" REDUCER BUSHING/ DONUT FERNCO 4.380-2.380R	9	9	0	10.50	EA	94.50
53049999 4" X 1.5" FERNCO BUSHING PART 4.380-1.900R	20	20	0	18.50	EA	370.00
35061799 6" SCH 80 PVC PIPE SLOTTED	360	360	0	7.63	FT	2,746.80
50061122 6" DR 11 IPS FLANGE ADAPTER MOLDED HDPE 3408/3608	4	4	0	29.00	EA	116.00
53060031 6" DR 11 IPS BACKUP RING DUCTILE IRON	4	4	0	10.00	EA	40.00

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SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
59060021 ASAHI 6" PVC BUTTERFLY VLVE NITRILE,GEAR OPERATED 3721060	1	1	0	360.00	EA	360.00
59060021 ASAHI 6" PVC BUTTERFLY VLVE NITRILE,GEAR OPERATED 3721060	1	1	0	360.00	EA	360.00
53069999 4' STEM EXTENSION FOR 6" ASAHI TYPE 57 BUTTERFLY VALVE	3	3	0	395.00	EA	1,185.00
50081138 8" X 6" DR 11 IPS CONCENTRIC REDUCER, MOLDED	5	5	0	55.00	EA	275.00

SALES TOTAL	MISC. CHARGE	SHIPPING/HANDLING	SALES TAX	DEPOSIT APPLIED	CUR	INVOICE TOTAL
14,664.38	0.00	1,360.00	1,241.90	0.00	USD	17,266.28

PAYMENT TERMS ARE BASED UPON INVOICE DATE
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INVOICE #	06010058
INVOICE DATE	06/10/10
PAYMENT TERMS	NET 30
PAGE	1 OF 6

JUN 1 4 2010

BILL TO
103574
CHANDLER CONSTRUCTION SERVICES, INC.
1511 NINETY SIX HIGHWAY
NINETY SIX, SC 29666

SHIP TO
WILSON LANDFILL
C/O CHANDLER CONSTRUCTION
BOB 864-992-3698
4537 LANDFILL RD
WILSON, NC 27893

ORDER NUMBER	ORDER DATE	SHIP VIA	CUSTOMER P/O NUMBER
06008951	05/14/10	Quality Express	5703
WRITTEN BY	**SHIP DATE**	**TRACKING #**	**JOB NUMBER**
BRUCE T., Ext. 6625	06/09/10	12383789	2895
SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
53100045 BOLTPACK FOR 10" MFA & BUR 12-7/8" X 7 3/4" BOLT W/NUT	1	1	0	51.66	EA	51.66
40081137 8" X 6" DR 11 IPS REDUCING TEE FABBED	2	2	0	133.00	EA	266.00
40081137 8" X 6" DR 11 IPS REDUCING TEE FABBED	1	1	0	133.00	EA	133.00
40081137 8" X 6" DR 11 IPS REDUCING TEE FABBED	4	4	0	133.00	EA	532.00
50081135 8" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	15	15	0	24.00	EA	360.00
50081135 8" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	1	1	0	24.00	EA	24.00
50081135 8" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	1	1	0	24.00	EA	24.00

Amount: 17,266.28
Job No./GL No.: 1047
Task Code: 02612
L E M S O X
Field Approval:
P.M. Approval:

APPROVED
By Ted at 7:39 am, Jun 22, 2010

ISCO Industries, LLC
926 Baxter Avenue • Box 4545
Louisville, Kentucky 40204
Tel: 800-345-4726 • Fax: 800-831-4726
www.isco-pipe.com

REMITTANCE ADDRESS:
ISCO Industries
1974 Solutions Center
Chicago, IL 60677-1009

ISCO INDUSTRIES
Coming through.

Polyethylene Pipe & Fittings • HDPE Fabrication • Culvert Liners • HDPE Fusion Equipment

Invoice

INVOICE #	06010058
INVOICE DATE	06/10/10
PAYMENT TERMS	NET 30
PAGE	2 OF 6

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SALES REP		**FREIGHT TERMS**	**ORDERED BY**
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
50081135 8" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	3	3	0	24.00	EA	72.00
40081125 8" DR 11 IPS 22.5 DEG ELBOW FABBED HDPE 3408/3608 2-PIECE	7	7	0	33.85	EA	236.95
53080070 BOLTPACK FOR 8" MFA & BUR 8-3/4 X 6 1/8" BOLT W/NUT & WA	6	6	0	16.50	EA	99.00
53080070 BOLTPACK FOR 8" MFA & BUR 8-3/4 X 6 1/8" BOLT W/NUT & WA	3	3	0	16.50	EA	49.50
50061135 6" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	8	8	0	24.00	EA	192.00
50061135 6" X 4" DR 11 IPS BR SADDLE HDPE 3408/3608, ROUND BASE	1	1	0	24.00	EA	24.00
40061118 6" DR 11 IPS 22.5 DEG ELBOW FABBED HDPE 3408/3608 2-PIECE	4	4	0	28.46	EA	113.84

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926 Baxter Avenue • Box 4545
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www.isco-pipe.com

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ISCO Industries
1974 Solutions Center
Chicago, IL 60677-1009

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PAGE	3 OF 6

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SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
50061136 6" X 4" DR 11 IPS CONCENTRIC REDUCER, MOLDED	3	3	0	24.00	EA	72.00
53061012 BOLTPACK FOR 6" MFA & BUR 8-3/4" X 5 7/8" BOLT W/NUT &WA	2	2	0	14.00	EA	28.00
49030012 3" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	2	2	0	11.30	EA	22.60
53031011 BOLTPACK FOR 3" MFA & BUR 4-5/8" X 5" BOLT W/NUT & WASH	2	2	0	6.13	EA	12.26
53031017 3" NEOPRENE GASKET 1/8" THICK	2	2	0	1.36	EA	2.72
49020013 2" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	2	2	0	9.78	EA	19.56
53021018 2" NEOPRENE GASKET 1/8" THICK	2	2	0	1.17	EA	2.34

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Polyethylene Pipe & Fittings • HDPE Fabrication • Culvert Liners • HDPE Fusion Equipment

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NINETY SIX, SC 29666

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C/O CHANDLER CONSTRUCTION
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06008951	05/14/10	Quality Express	5703
WRITTEN BY	SHIP DATE	TRACKING #	JOB NUMBER
BRUCE T., Ext. 6625	06/09/10	12383789	2895
SALES REP		FREIGHT TERMS	ORDERED BY
CARL ERDLE		PREPAID AND ADD	

PRODUCT/DESCRIPTION	QUANTITY OPEN	QUANTITY SHIPPED	QUANTITY BACKORDERED	PRICE	U/M	EXTENSION
49080012 8" IPS HDPE BLIND FLANGE 3408/3608 1" THICK	1	1	0	25.00	EA	25.00
59080021 ASAHI 8" PVC BUTTERFLY VALVE NITRILE,GEAR OPERATED 3721080	4	4	0	450.00	EA	1,800.00
53089999 8' STEM EXTENSIONS FOR 8" TYPE 57 ASAHI BUTTERFLY	4	4	0	450.00	EA	1,800.00
50041129 4" X 2" DR 11 IPS CONCENTRIC REDUCER, MOLDED	23	23	0	7.05	EA	162.15
50061136 6" X 4" DR 11 IPS CONCENTRIC REDUCER, MOLDED	2	2	0	25.45	EA	50.90
50041129 4" X 2" DR 11 IPS CONCENTRIC REDUCER, MOLDED	2	2	0	7.05	EA	14.10
98030024 3" NON METALLIC TAPE 1000F CAUTION GAS LINE BURRIED BELOW	16	16	0	20.00	RL	320.00

HD SUPPLY WATERWORKS

Local Service, Nationwide
P.O. Box 1419
Thomasville, GA 31799-1419

INVOICE

BRANCH ADDRESS
HDSWW - WILSON NC
Branch 023
2212 Warehouse Court
Wilson NC 27893

252/237-5914

JUL 23 2010

Ted

INVOICE #	1648519
INVOICE DATE	7/20/10
ACCOUNT #	054844
SALESPERSON	JEFF CLOWER
BRANCH #	023
Total Amount Due	**$4,820.52**

Remit To:
HD SUPPLY WATERWORKS, LTD.
PO BOX 277838
ATLANTA, GA 30384 7838

113 1 MB 0.382 E0101 I0152 D230319813 P578787 0002:0002

CHANDLER CONSTRUCTION SVCS INC
1511 NINETY SIX HWY
NINETY SIX SC 29666-9261

Shipped to:
4537 LANDFILL RD
WILSON, NC

CUSTOMER JOB- W L WILSON LANDFILL

Return Top Portion With Payment For Faster Credit

Thank You For The Opportunity To Serve You. We appreciate your prompt payment.

Date Ordered	Date Shipped	Customer PO No.	Job Name	Job No.	Bill of Lading	Shipped Via	Order Number
7/15/10	7/16/10	1047	WILSON LANDFILL	W L		DIRECT	1648519

Product Code	Description	Quantity Ordered	Quantity Shipped	Back-Ordered	Price	Per	Amount
	HD SUPPLY WATERWORKS PO#- 4758160						
0910P0617	1000 6" SDR17 IPS HDPE PIPE BLACK	1100	1120		2.99000	FT	3,348.80

Amount: 4,820.52
Job No./GL No.:
Task Code:
L E M S O X
Field Approval:
P.M. Approval:

This transaction is governed by and subject to HD Supply Waterworks standard terms and conditions, which are incorporated herein by this reference and accepted. To review these terms and conditions, please point your web browser to http://waterworks.hdsupply.com/TandC/.

Terms	SubTotal
NET 30	3,348.80

Freight	Delivery	Handling	Restock	Misc.	Tax	INVOICE TOTAL	$4,820.52
1,125.00					346.72		

HDSWW - WILSON NC
Branch 023
2212 Warehouse Court
Wilson NC 27893

THANK YOU FOR YOUR ORDER
VISIT
WATERWORKS.HDSUPPLY.COM
FOR OTHER SERVICES OFFERED

INVOICE:	1648519

0002:0002

Section 2: Daily Field Logs

Daily field logs were prepared during the construction of the LFGCCS. The logs document personnel on site, equipment used, materials used, activities conducted, and time on site.

The Daily Field Logs are presented on the following pages in sequential order by date. Construction was conducted from June 1, 2010 to August 7, 2010. Dates during this period with no Daily Field Log are dates in which no construction took place on site (off days, or inclement weather, etc.)

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-001

Inspection Date: June 1, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4).

Activity: Travel to site from Philadelphia. Introductions with landfill staff. Stage equipment and supplies in stage area 1 (small, north landfill at top near well GW18). Begin butt fusion welding of 8-inch diameter HDPE pipe. 13 lengths (50 feet each) welded for 650 feet on the day.

Photos:

001	6" pipe inventory
002	8" pipe inventory
003	Machinery on site
004	Storage box
005	Pipe fusers
006	Lantec box
007	Caniflex tube
008	Misc parts
009	Pre-fab part
010	Pre-fab part

Materials Inventory: 8" HDPE pipe (50 foot lengths): 125 total on site

6" HDPE pipe: (40 foot lengths): 68 total

Misc fittings in 2 crates

5 boxes Lantec well heads

2 rolls Kaniflex tube

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-002

When Quality Counts **Inspection Date:** June 2, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4).

Activity: Continue to butt fusion weld 8-inch diameter HDPE pipe. Staged additional materials (pipe, parts, bentonite).

Photos:

011	8' diam HDPE pipe (650') fusion welded 1 June
012	2" diam pipe inventory
013	2" diam pipe inventory
014	2" diam pipe inventory
015	10" diam pipe inventory
016	10" diam pipe inventory
017	3" and 4" diam pipe inventory
018	3" and 4" diam pipe inventory
019	Butt fusion welding 8" diam pipe
020	Misc parts
021	Bentonite (12 palates, 60 bags per, 50# bags)

Materials Inventory: 2" HDPE pipe (40 foot lengths): 70 total on site

3" HDPE pipe: (40 foot lengths): 70 total

4" HDPE pipe: (40 foot lengths): 73 total

10" HDPE pipe: (40 foot lengths): 7 total, plus 1 at 20 feet

Bentonite (12 pallets, 60 bags per pallet, 50# per bag)

Misc parts(elbows, reducers, hardware) will be inventoried as its installed.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-003

Inspection Date: June 3, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility vehicle (delivered today).

Activity: Continue to butt fusion weld 8-inch diameter HDPE pipe. Welded 7 lengths: 6@700 feet, 1@650 feet).

Photos: 022 4x4 Utility Vehicle delivered today.

Materials Inventory: no new materials delivered.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-004

Inspection Date: June 4, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility vehicle.

Activity: Butt fusion weld 2-inch and 3-inch diameter HDPE pipe at Stage 1 area, Weld 6-inch diameter pipe.

Photos: No Photos taken today.

Materials Inventory: no new materials delivered.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-005

Inspection Date: June 5, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Ted Thompson, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility vehicle.

Activity: Excavate, place, backfill Sump CS-1 (see attached sketch). No connections to sump yet (buried flanges wrapped in 8-mil plastic and taped prior to backfill). CS-1 built per spec sheet. Butt fusion weld 60 feet of 10-inch diameter pipe, move it to CS-1 area. Move stock of 8-inch and 6-inch pipe to Stage 2 area (large landfill near gas well GW-10).

Photos:

023	Excavation for Sump CS-1
024	Excavation for Sump CS-1
025	Excavation for Sump CS-1
026	Place Sump CS-1
027	Place Sump CS-1
028	Backfill Sump CS-1
029	Backfill Sump CS-1

Materials Inventory: no new materials delivered.

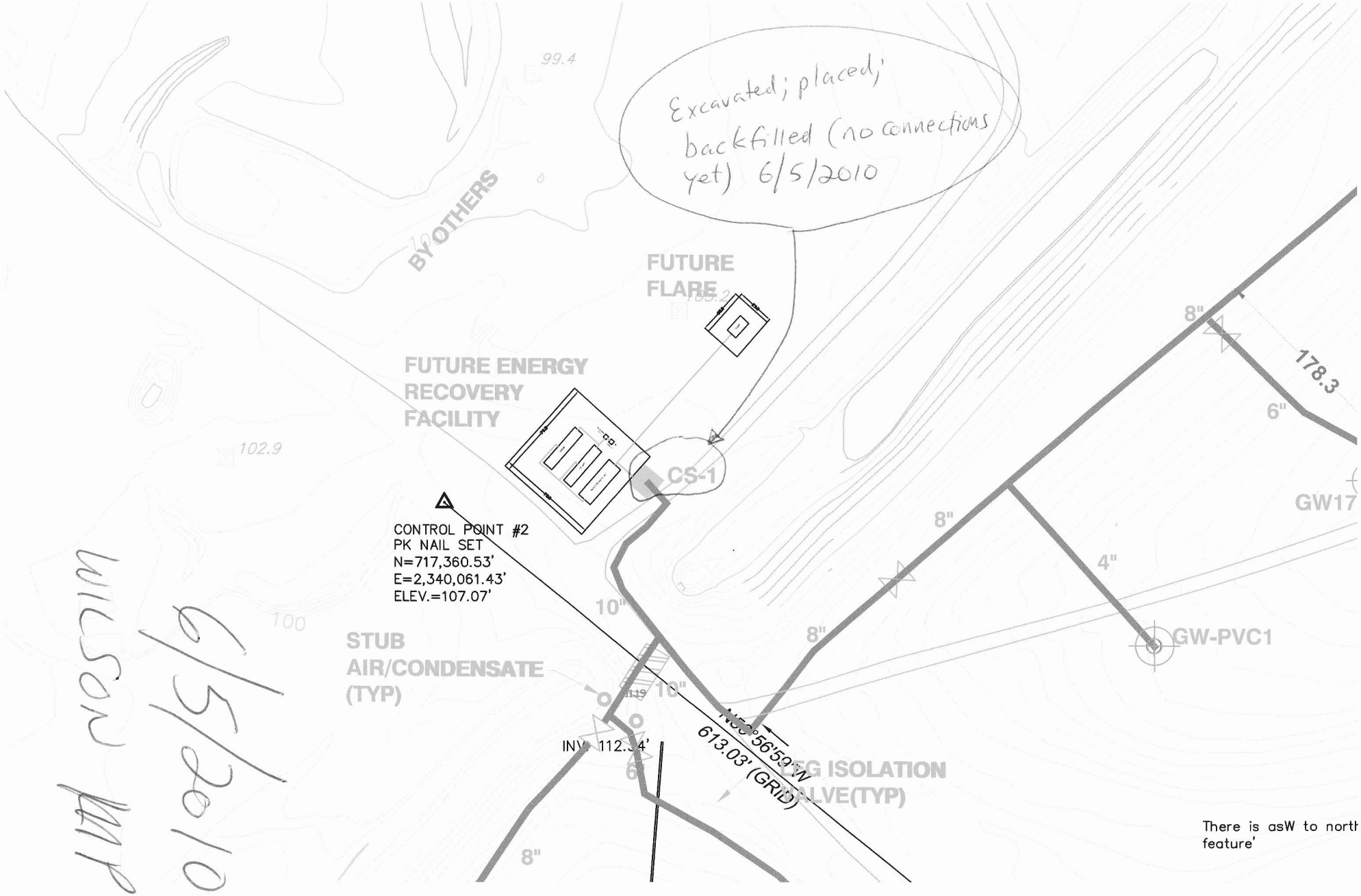
On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager



6/5/2010
WILSON MP

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-006

Inspection Date: June 6, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility vehicle.

Activity: Move more stock of 8-inch and 6-inch pipe to Stage 2 area (large landfill near gas well GW-10). 30# of 8-inch pipe (50 foot lengths), and 57# of 6-inch pipe. Move 4 pallets of bentonite. Begin welding 8-inch diameter pipe at Stage 2 area.

Photos: 030 Staging area (small landifll)

031 Staging area (large landfill)

Materials Inventory: no new materials delivered.

On Site: 0700 - 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-007

Inspection Date: June 7, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter (delivered today).

Activity: Welded 8-inch diameter pipe at Stage 2 area (10#, 500 feet), weld 6-inch pipe (4 at 240 feet (6# each), 1 at 280 feet (7#), 1 at 200 feet (5#).

Photos: 032 Large Pipe Welder (McElroy)

033 Medium Pipe Welder (McElroy)

Materials Inventory: no new materials delivered.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-008

Inspection Date: June 8, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Ted Thompson, Mike, Scott, Edwin)

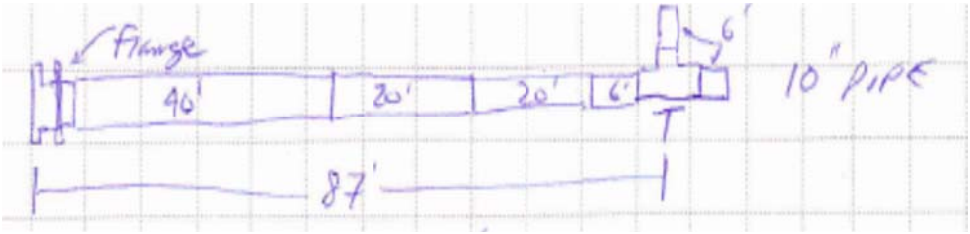
Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers (delivered today).

Activity: Modified route of 10-inch pipe near CS-1 (see attached), prepared 10-inch string of pipe for CS-1 area (see sketch below). Welded additional 160 feet of 10-inch pipe (4#), and moved additional 40 foot length of 10-inch pipe to CS-1 area. Trucked approximately 10 loads of fill soil each to Stage 1 area and Stage 2 area (Morgan Trucking). Surveyor on site (John – Crescent Moon Surveying) to locate new wells and shoot elevations for Bob. Finished welding string of 6-inch pipe at Stage 2 area (240 feet, 6#). Offload drill equipment at Stage 1 area.



Photos:

034	Wacker compacter (delivered 7 June)
035	Bob's notes on 10" pipe re-route at CS-1
036	Gravel delivered 8 June
037	welding 10" pipe and "T" at CS-1 area
038	Soil and gravel stocked at Stage 1 (small LF)
039	Preparing string of 10" pipe with T and flange
040	Preparing string of 10" pipe with T and flange

Materials Inventory: Load of 2-inch gravel delivered to Stage 1 area (Morgan Trucking). Morgan trucked 10 loads of soil (obtained on site) to both Stage 1 and Stage 2 area.

On Site: 0700 - 1700

Respectfully Submitted,

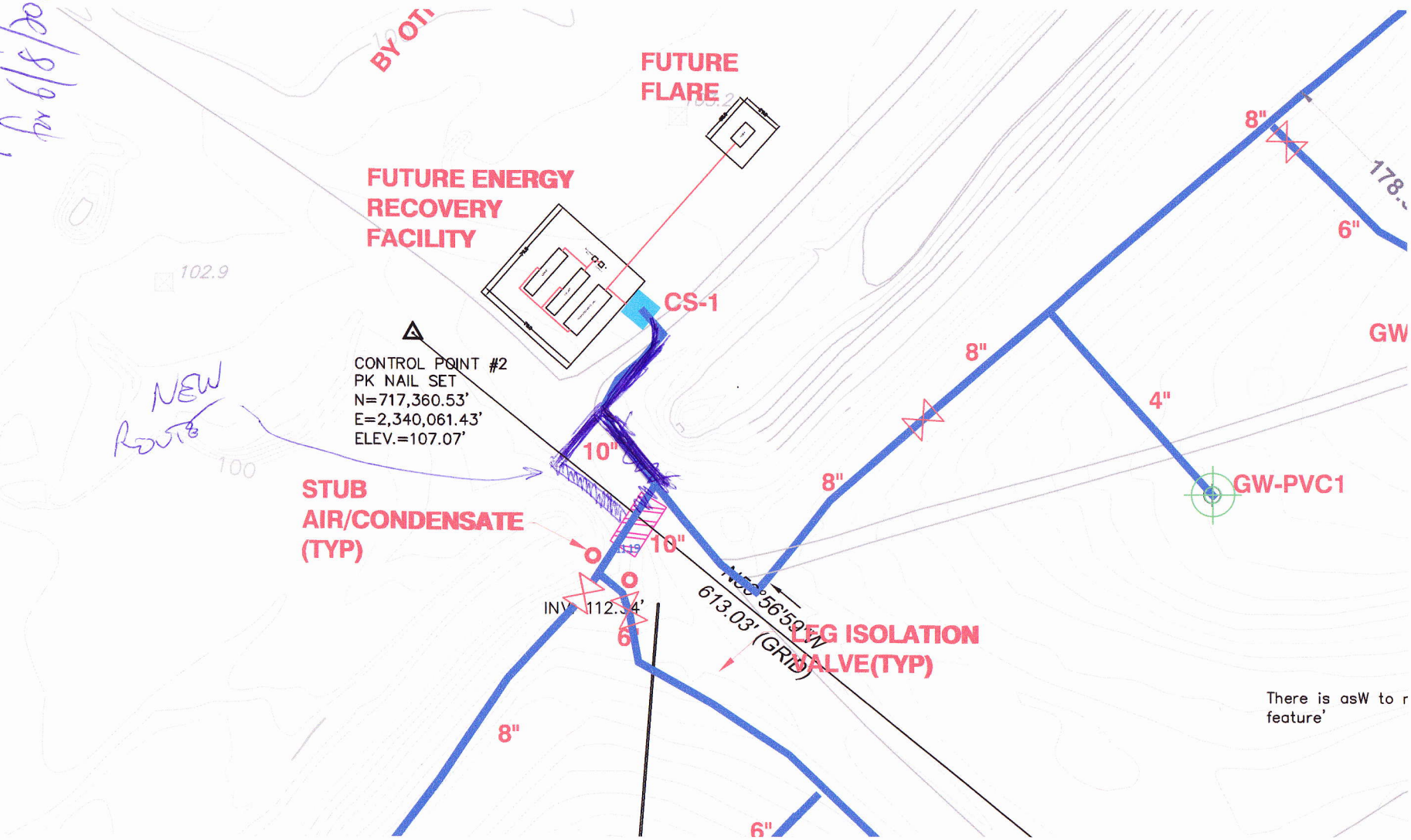
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

6/8/2010 PROPOSED RE-ROUTE OF 10" PIPE NEAR CS-1

p. 2 of 2 for 6/8/2010



Applied Testing & Geosciences, LLC **Report No.** 10838-009

When Quality Counts **Inspection Date:** June 9, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers.

Activity: Excavated trench to install 10-inch pipe to CS-1 (see attached map, page 2). Installed 100 feet of 2-inch and 100 feet of 3-inch pipe (air/condensate line) backfill in 6-inch lifts, place "Caution Buried Gas Line" tape over lines. Flange connection from 10-inch line to CS-1 (at southeast connection to CS-1) covered with 8-mil plastic sheeting and taped. Relocated remaining stock of 2-inch and 3-inch pipe from west side of Stage 1 to east side adjacent to 8-inch pipe (to accommodate mowing of LF). Offload materials.

Photos:

041 Drill equipment delivered 8-June

042 Excavate at Sump CS-1 for 10" line install

043 Excavate at Sump CS-1 looking East

044 Excavate at Sump CS-1 looking northwest

045 Preparing to install 10" pipe at CS-1

046 Preparing to install 10" pipe at CS-1, T Joint

047 Flange connection at CS-1 (10" pipe)

048 Finished connection at CS-1

049 Wrapping connection in 8 mil plastic

050 Wrapped connection

051 Backfilled connection with stone

052 compact soil backfill over 10" pipe at CS-1

053 Add 2" and 3" Air/Condensate lines over 10"

054 Add 2" and 3" Air/Condensate lines over 10"

055 Add 2" and 3" Air/Condensate lines over 10"

056 Seal open ends of 10" pipe off T

057 Seal open ends of 10" pipe off T

058 Warning tape installed over 10", 2" and 3" pipe

Materials Inventory: Corrugated metal and HDPE culverts for road crossings. Straw net blankets (32 rolls, each roll: 8-feet wide x 120 feet long), Propex 601 Geo-fabric: 12.5 feet wide x 360 feet long

On Site: 0700 - 1530 **Chandler off site 6/9/10. J Heely off site Thursday 6/10/10.**

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-010

Inspection Date: June 14, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Ted Thompson, Mike, Scott, Edwin)

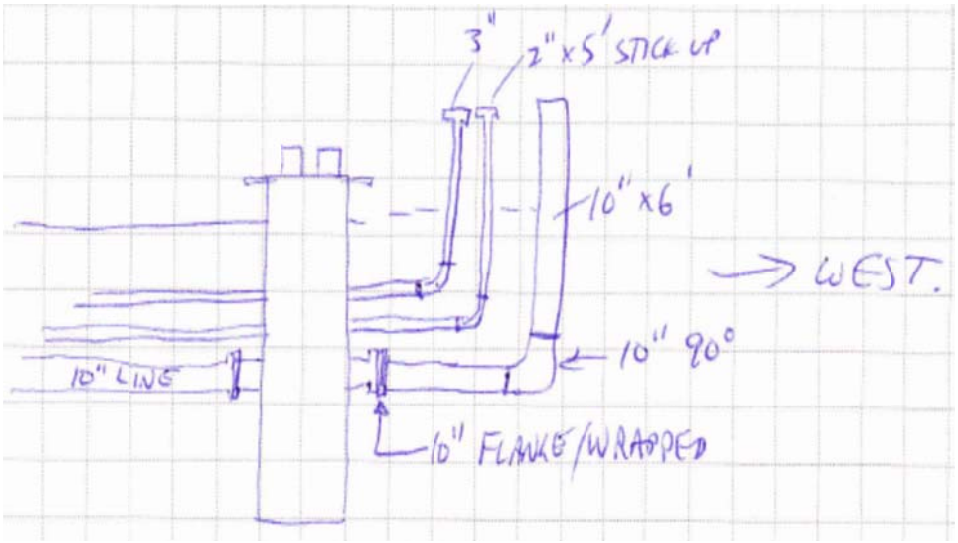
Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig (delivered over weekend).

Activity: Add 10" pipe to northwest connection on CS-1, add 90-degree elbows and stick ups to 2-inch, 3-inch and 10-inch pipe as show in sketch below and photos. Continue to prep pipe for move around landfill (awaiting bush hog to mow landfill). SG-1 Sketch:



Photos:

	059	Pipe installation at CS-1
	060	Small pipe welder used for 2" and 3" pipe
	061	Prep 2" pipe for CS-1
	062	Excavate T area in 10" line (but no installs)
	063	CS-1 with 10", 2" and 3" pipe

Materials Inventory: No new materials delivered

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-011

When Quality Counts **Inspection Date:** June 15, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Ted Thompson, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig.

Activity: Prepared 10-inch pipe near SG-1 (37 foot length, 90 degree elbow to 107 foot length with 10x8 inch reducer on end of 107 foot length (see Photo 048). Backfill and grading around flare pad. Weld 6-inch pipe in Stage 2 area.

Photos:

064	Kellett's Drill Rig
065	6-inch Sch 80 Slotted pipe and riser pipe
066	Section of 10-inch pipe 37' x 107' with 90 Elbow
067	Backfill around CS-1 looking southwest

Materials Inventory: Well materials (6 inch slotted Sch80 pipe – 18 total at 20 feet each), (6-inch riser pipe 13 total at 20 feet each). Large box of HDPE fittings (manifest missing). Two 40-yard dumpsters for drill waste.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-012

Inspection Date: June 16, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Ted Thompson, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig, Sheepsfoot roller.

Activity: Backfill and grading around flare pad. Fabric added 6.5 feet below finished grade in NE corner of pad (see sketch on 6/18 Daily). Weld various fittings (elbows, flanges) near job box at Stage 1. Determining approach to drilling and any cap work with respect to asbestos. As this is being sorted out, Chandler is basically working on non-intrusive work and work near the flare pad.

Photos: 068 Grading at Flare Pad (New camera)

Materials Inventory: No new materials.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-013

Inspection Date: June 17, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig, Sheepsfoot roller.

Activity: Backfill and grading around flare pad. Place Erosion control permit on landfill gate (Photo 003). Site personnel mowing landfill with bush hog along header pipe installation areas.

Photos:

069	Erosion Permit on front gate of site
070	Grading at Flare Pad
071	Mowing landfill with bush hog

Materials Inventory: No new materials. 65 total truck loads of on-site fill soil used to grade flare pad 80 feet x 80 feet area.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-014

Inspection Date: June 18, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scott, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (rubber track), Cat 930G loader, Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig.

Activity: Position pipe around north landfill as shown on attached map. Work on flare pad layout. Measure current layout. See attached sketches for pad work and pipe layout around north landfill.

Photos:

072	8" line looking NE from near CS-1 pre-install
073	6" line looking West near CS-1 area pre install
074	Shooting 8" line NW boundary of North LF
075	8" line NW boundary of North LF
076	Flare Pad NW corner
077	Past Flare pad (stake on container = 50' NW)
078	Past Flare pad (past container)
079	Panorama of flare pad

Materials Inventory: No new materials.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

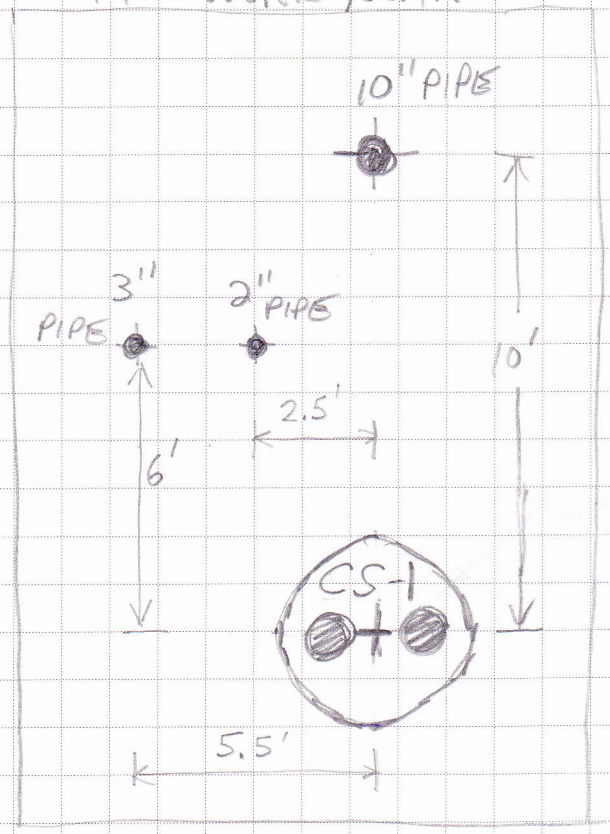
Richard C. King, P.G.

Environmental Manager

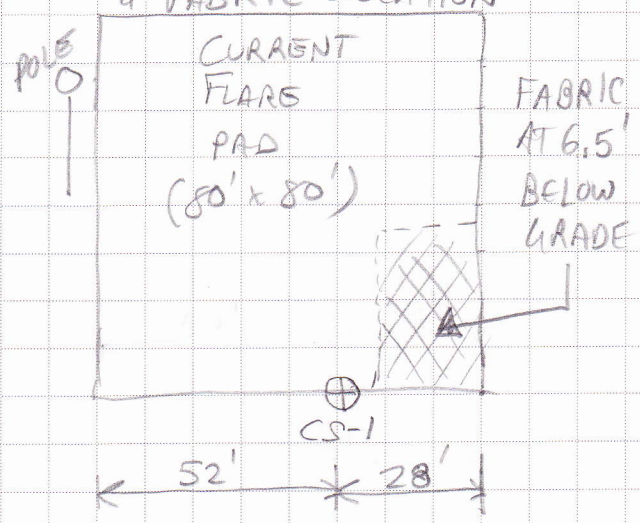
Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB: WILSON 10838
SHEET NO. 2 OF 3
CALCULATED BY: DATE 6/18/10
CHECKED BY: DATE
SCALE

PIPEWORK NEAR CS-1



CS-1 OFFSET & FABRIC LOCATION



6/18/2010 WILSON 10838 3 of 3

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-015

Inspection Date: June 28, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Edwin Dye)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer.

Activity: Prepare trench and install 4 inch pipe (approx 310 feet) as shown on attached map. Prep to install 8-inch pipe tomorrow. Weld (Edwin) 4-inch lateral pipe (40 foot lengths).

Photos: None

Materials Inventory: No new materials. Extra equipment on site: Bobcat E80, Loader, and dozer added this week.

On Site: 0700 - 1700

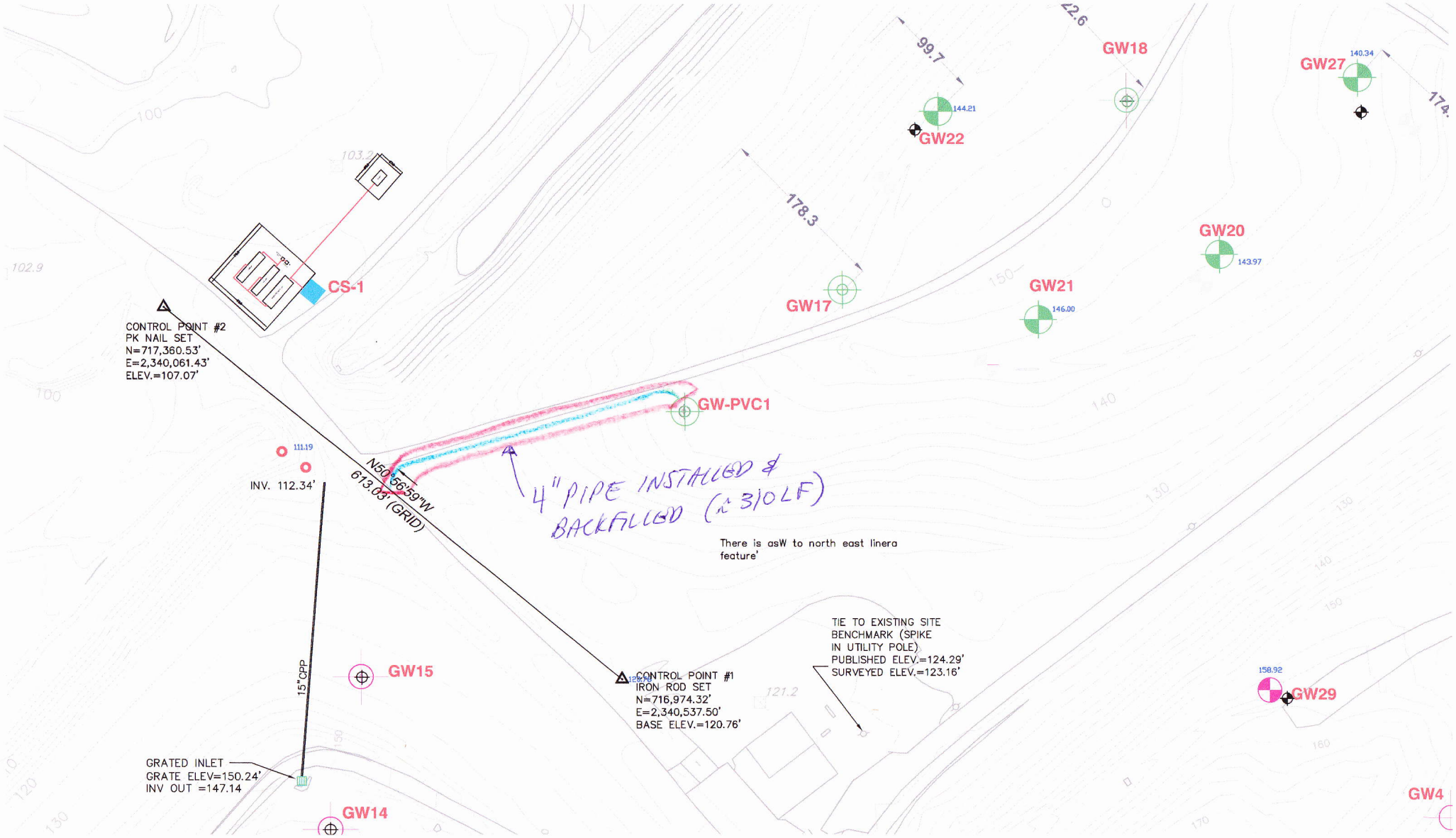
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

6/28/2010 p.2012



Applied Testing & Geosciences, LLC **Report No.** 10838-016

When Quality Counts **Inspection Date:** June 29, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike Bunch, Scotty Morgan)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer.

Activity: Excavated trench and installed 8-inch, 3-inch, and 2-inch pipe on northwest side of north landfill to from intersection of main haul road and the north landfill access road to approximately 560 feet to the northeast as shown on attached map. Installed 8 x 6 T at junction of 6 inch line that traverses northwest from well GW17 (see attached map). Installed 6-inch valve and 8-inch valve near T. Backfilled to 560 feet. Placed 6-inch line (400 feet) at T junction and along run to GW 18 and past. Pipe grades on 8-inch shown on drawing attached.

Photos:

080	Shot of 4-inch line installed 28 June
081	Additional equipment on site this week
082	Begin trenching for 8-inch, 2 and 3-inch lines
083	8-inch trench near main haul road
084	8-inch trench near main haul road
085	Trench for 8-inch pipe looking NE from haul rd
086	Trench for 8-inch pipe looking NE from haul rd
087	Laser site for grade calculations
088	Looking NW at trench for 8-inch pipe
089	Trench for 8-inch pipe looking SW from LF
090	Trench for 8-inch pipe looking SW from LF
091	Trench for 8-inch pipe looking SW from LF
092	Trench for 8-inch pipe looking NE from haul rd
093	View of trench for 8-inch pipe from South LF
094	Backfill trench with caution tape (metalic)
095	8-inch x 6-inch T-junction
096	8-inch x 6-inch T-junction
097	8-inch x 6-inch T-junction
098	Valves for 8 x 6 inch T
099	Valves for 8 x 6 inch T

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-016

Inspection Date: June 29, 2010

Report of Field Inspection - Daily Log

Materials Inventory: No new materials. Rolloff containers removed from site (due to change in scope of work with waste hauling).

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

6/29/2010 p. 3 of 3

Applied Testing & Geosciences, LLC **Report No.** 10838-017

When Quality Counts **Inspection Date:** June 30, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike Bunch, Scotty Morgan, Edwin Dye till 11:30 am)

Engineer: Carlson

Owner: Methane Power

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck (delivered today). New rolloff dumpster delivered for drilling

Activity: See attached map for more details. Excavate, installed, backfilled (caution tape and grass mat) approximately 100 LF 8-inch, 3-inch, and 2-inch, NE of 8x6 T along northwest boundary of North landfill. Excavate, install, backfill (with caution tape and grass mat) approximately 640 LF of 6-inch pipe from 8x6T to GW17, GW21, and GW20. Installed, backfilled (caution tape and grass mat) approximately 120 LF of 4-inch lateral from GW22 toward 8-inch line.

Photos: 100 Grass mat over 8-inch pipe along NW boundary looking SW

101 Grass mat over 8-inch pipe along NW boundary looking SW

102 Cleaning out water near 8x6 T looking North

103 Preparing trench for 6-inch line from T toward GW17

104 Water Truck delivered on site

105 Preparing trench for 6-inch line from T toward GW17

106 Preparing trench for 6-inch line from GW17 to GW21 Looking E

107 8x6T and trench for 6 inch line toward GW17 looking E

108 Preparing trench for 6-inch line from GW17 to GW21 Looking E

109 Preparing trench for 6-inch line from GW17 to GW21 Looking E

110 Preparing trench for 6-inch line from GW21 to GW20 Looking E

111 Preparing trench for 6-inch line from GW21 to GW20 Looking E

112 Installing 6 inch pipe in trench from 8x 6 T toward GW17

113 Installing 6 inch pipe in trench at gravel road near GW17

114 Adding additional 240LF of 6-inch to line at GW21

115 Installing 6 inch pipe in trench at gravel road near GW17

116 Caution tape installed in 6-in pipe trench from GW21 toward GW17

117 Caution tape installed in 6-in pipe trench from GW21 toward GW17

118 6 inch pipe to be installed from GW21 to GW20 lookng NE

119 Grass mat cover over 6-inch pipe from GW17 toward 8x6T

120 Grass mat cover over 6-inch pipe from GW17 toward GW21

121 Grass mat cover over 6-inch pipe from GW17 toward GW21

122 Grass mat cover over 6-inch pipe from GW21 toward GW20

123 Grass mat cover over 6-inch pipe from GW20 toward GW21

Report of Field Inspection - Daily Log

Photos continued

124 Grass mat along 8 inch line and 6 inch line looking SW

125 Grass mat along 8 inch line and 6 inch line looking W from GW17

126 Grass mat along 8-inch pipe north of 8x6 T

127 Prep trench for 4-inch lateral from GW22 toward 8-inch line

128 Trench for 4-inch lateral from GW22 toward 8-inch line

129 Trench and 4-inch lateral from GW22 toward 8-inch line

130 Caution tape along 4-inch lateral from GW22 to 8-inch line

131 Install stickup for 4-inch (90 and 4x2 used)

132 temporary terminus of 4-inch lateral near 8-inch line (for GW22)

Materials Inventory: No new materials.

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

6/30/2010 p. 3 of 3

Applied Testing & Geosciences, LLC **Report No.** 10838-018

When Quality Counts **Inspection Date:** July 01, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike Bunch, Scotty Morgan), Kelletts (Jason, Khalid)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck. New rolloff dumpster delivered for drilling

Activity: See attached map for more details. Excavate, installed, backfilled (caution tape and grass mat) approximately 650 LF 8-inch, 3-inch, and 2-inch, NE of 4-inch lateral from GW22 toward GW24 along northwest boundary of North landfill. Kelletts on site at 11:30 AM. Prep rig.Drill and install Gas Wells GW22 and GW23

Photos:

133 Grass mat over 4-inch lateral from GW22 toward 8-inch line

134 Excavate trench along NW boundary toward GW24

135 Branch Saddle from 8-inch line to 4-inch lateral for GW22

136 Branch Saddle from 8-inch line to 4-inch lateral for GW22

137 Indtall 8-inch line in trench looking SW toward 8x6 T

138 Indtall 8-inch line in trench looking NE. Curve is to hold grade

139 Branch Saddle from 8-inch line to 4-inch lateral for GW23

140 Branch Saddle from 8-inch line to 4-inch lateral for GW23

141 Install 2 and 3 inch lines along side 8-inch

142 Trench toward GW24

143 Box for Butterfly valves

144 Grass mat on 4-inch lateral from GW22, ecavating trench

145 Backfill trench

146 Backfill trench

147 Place 8-inch line in trench

148 Trench for 8-inch line toward GW24

149 Caution tape on 8-inch line looking SW

150 Fusion weld a 650 foot run of 8-inch line near GW24

151 Drill rig over GW22

152 Drill rig over GW22

153 Waste from 5-feet bgs at GW22

154 Waste from 10 feet bgs at GW22 - note intermediate cover

Report of Field Inspection - Daily Log

155 Install well at GW22

156 Install well at GW22

157 Install well at GW22

158 Install well at GW22

159 Install well at GW22

160 Waste from 20 feet bgs at GW23

161 Prep to lay grass mat over 8/3/2 inch lines installed today

162 Drill rig over GW23

Materials Inventory: No new materials.

On Site: 0700 - 1800

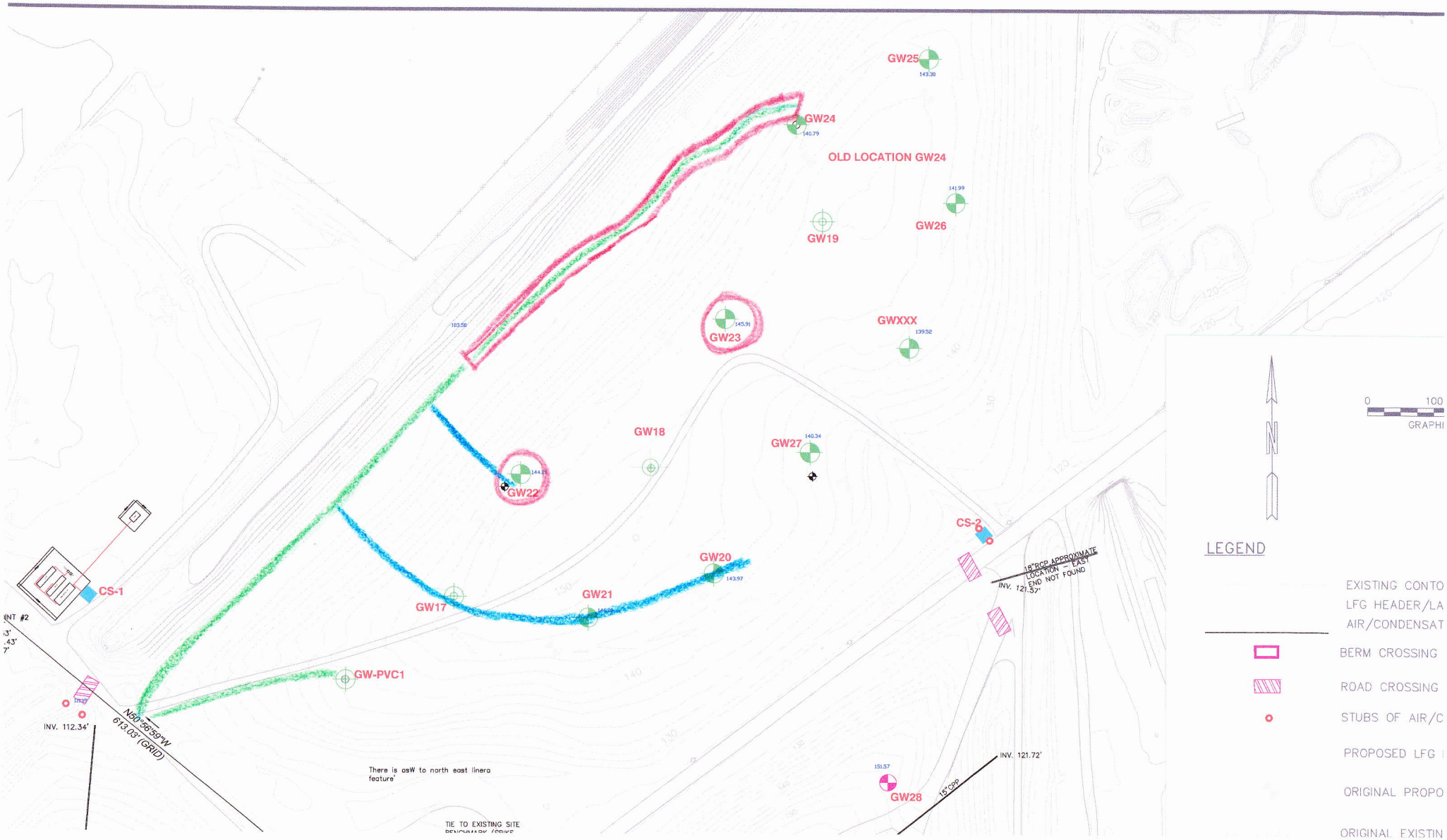
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/1/2010


GW25
143.30
GW24
140.79
OLD LOCATION GW24
141.99
GW26
GW19
GW23
145.91
GWXXX
139.52
GW18
GW27
140.34
GW22
144.21
CS-2
GW20
143.97
GW21
GW17
CS-1
GW-PVC1
INV. 112.34'
N50°56'59"W
613.03' (GRID)
There is asW to north east linera feature'
TIE TO EXISTING SITE
151.57
GW28
15"CPP
INV. 121.72'
18"RCP APPROXIMATE LOCATION - EAST END NOT FOUND
INV. 121.57'
0
100
GRAPHI
N
LEGEND
EXISTING CONTO
LFG HEADER/LA
AIR/CONDENSAT
BERM CROSSING
ROAD CROSSING
STUBS OF AIR/C
PROPOSED LFG
ORIGINAL PROPO
ORIGINAL EXISTIN

Applied Testing & Geosciences, LLC **Report No.** 10838-019

When Quality Counts **Inspection Date:** July 02, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Eric), Kelletts (Jason, Khalid)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck. New rolloff dumpsters (5) delivered for drilling

Activity: See attached map for more details. Excavate, installed, backfilled (caution tape and grass mat) 8-inch, 3-inch, and 2-inch, from GW24 toward GW26 along north boundary of North landfill. Install 6-inch line from GW20 to CS-2; install 4-inch lateral from GW20 to GW18. Drill and install Gas Wells GW26 and GWXXX. Start well GW25. (Roll off containers did not arrive until 2:00 PM).

Photos:

163 Add 6-inch run (320 feet) from GW20 toward CS2

164 Trench lateral from GW20 to GW18

165 Trench for 8/3/2 inch pipe from GW24 area

166 Trench for lateral from GW20 to GW18 looking tward GW20

167 Trench for 6-inch pipe looking from CS2 area toward GW20

168 Add branch saddle at GW20 to 6-inch pipe (for lateral to GW18

169 Prep for berm crossing for 8/3/2 line near GW24

170 Grass mat along 8/3/2 line (note 4-inch laterals) looking SW

171 Lateral riser for GW20

172 Branch saddles for GW19 and GW25

173 8/3/2 pipe along north boundary of north landfill

174 Backfill 6-inch pipe from GW20 to CS2

175 Waste from GW26 at 10 feet bgs

176 Drill rig at GW26

177 Backfill 8/3/2 line looking from GW26 toward GW24

178 Branch saddles for GW19 and GW25 with laterals (40 feet)

179 Area of 8/3/2 left open for GW24 tie-in

180 Waste from GWXXX from 10 feet bgs

181 Waste from GW25 from 20 feet bgs

182 Lateral riser for GW18

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-019

Inspection Date: July 02, 2010

Report of Field Inspection - Daily Log

Materials Inventory: 5 roll off containers for drill waste.

On Site: 0700 - 1900

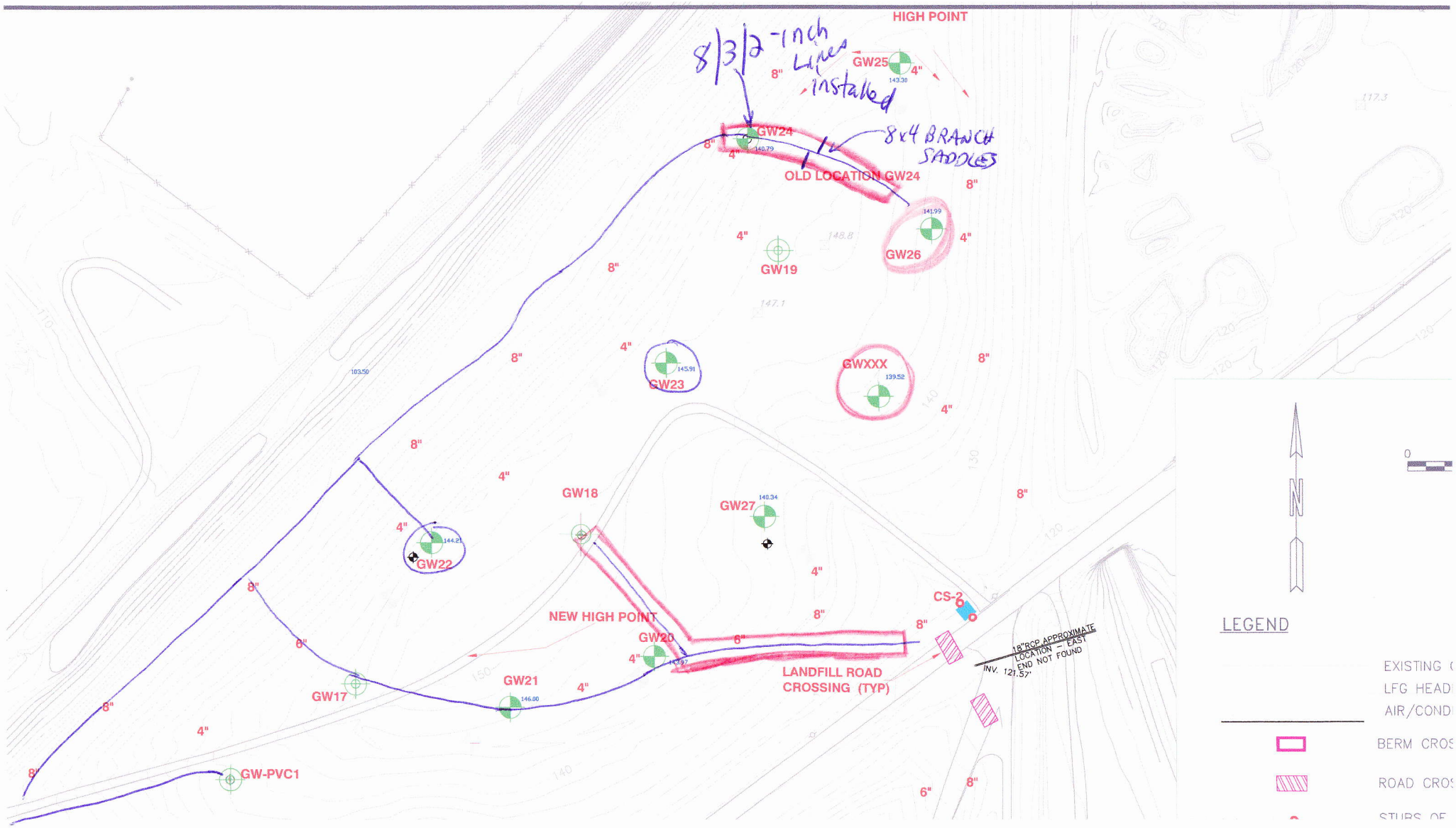
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/2/2010


HIGH POINT
8/3/2-inch Lines installed
GW25
143.30
GW24
140.79
8x4 BRANCH SADDLES
OLD LOCATION GW24
141.99
GW26
GW19
148.8
147.1
GW23
145.91
GWXXX
139.52
GW18
GW27
140.34
GW22
144.21
NEW HIGH POINT
GW20
143.97
GW21
146.00
GW17
GW-PVC1
CS-2
LANDFILL ROAD CROSSING (TYP)
18"RCP APPROXIMATE LOCATION - EAST END NOT FOUND
INV. 121.5'
103.50
117.3
N
0
LEGEND
EXISTING
LFG HEAD
AIR/COND
BERM CROS
ROAD CROS
STUBS OF

Applied Testing & Geosciences, LLC **Report No.** 10838-020

When Quality Counts **Inspection Date:** July 03, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Eric, Edwin), Kelletts (Jason, Khalid)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck. New rolloff dumpsters (5) delivered for drilling (emptied from Friday).

Activity: See attached map for more details. Excavate, installed, backfilled (caution tape and grass mat) 8-inch, 3-inch, and 2-inch, from GW26 toward CS2 along north boundary of North landfill. Install 4-inch lateral for GW25, GWXXX and GW19. Drill and install Gas Wells GW25, GW24, GW20, GW21, GW28. Attempted GW27 but hit water at 4 feet (saturated). Did not install well here. Will try other location later. Ran low on 2 inch stone.

Photos:

183 Lateral trench for GW19

184 GW25 Construction

185 Trench GW26 to CS2

186 Trench GW26 to CS2

187 Trench GW26 to CS2

188 Fluid in GW27 at 4 feet bgs

189 Waste from GW20

190 Roped off area fro GW27 for backfill

191 Branch saddle at GW26

192 Lateral for GW25

193 Prep pipe for GW25

194 Panorama of North LF

195 Panorama of North LF

196 Panorama of North LF

197 8/3/2 pipe install from GW26 toward CS2

198 C&D Waste from GW28

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-020

Inspection Date: July 03, 2010

Report of Field Inspection - Daily Log

Materials Inventory: 5 roll off containers for drill waste.

On Site: 0700 - 1830

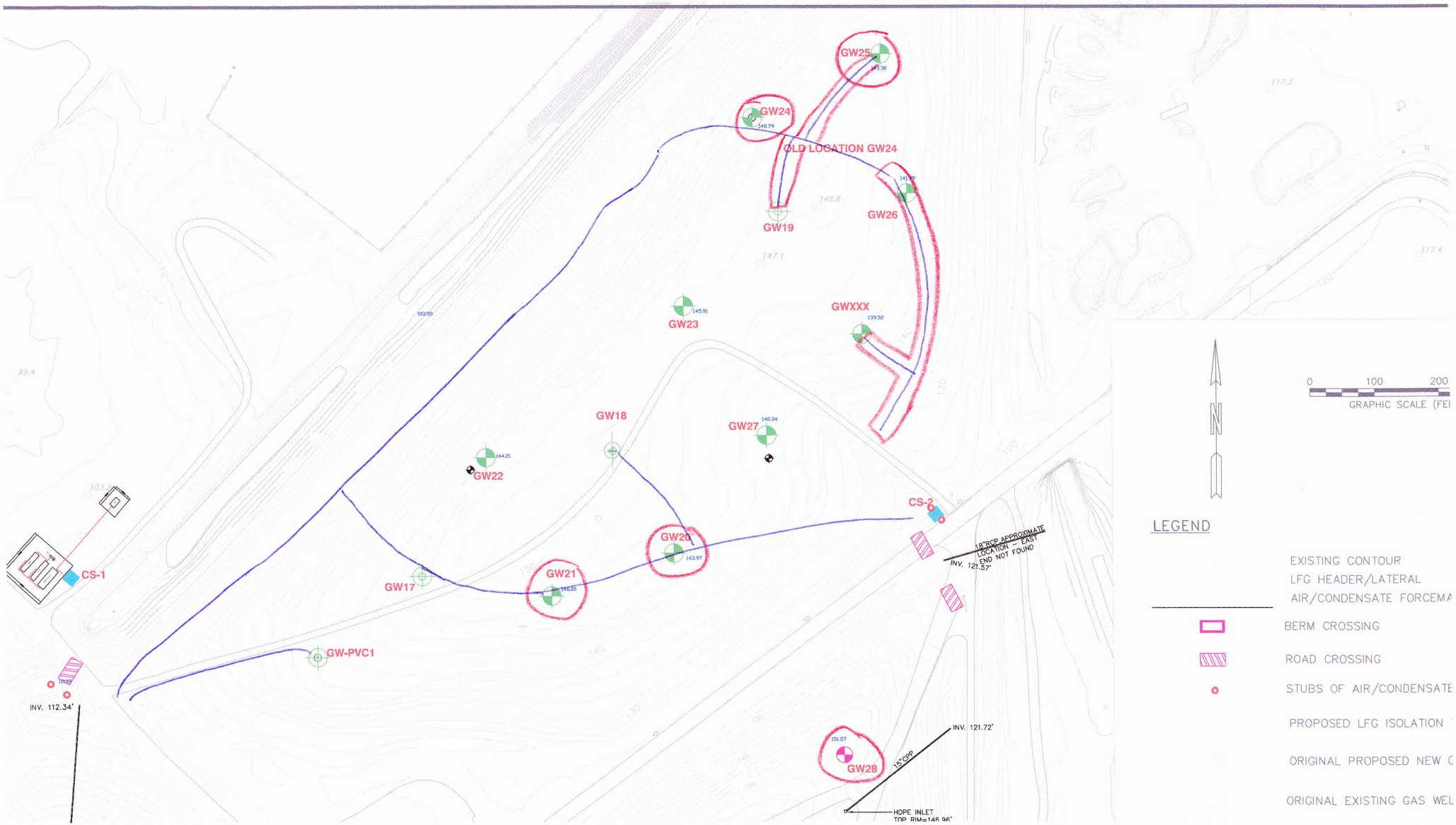
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/3/2010


GW25
GW24
OLD LOCATION GW24
GW19
GW26
GW23
GWXXX
GW18
GW27
GW22
CS-2
GW20
GW21
GW17
CS-1
GW-PVC1
18"RCP APPROXIMATE LOCATION - EAST END NOT FOUND
INV. 121.57'
INV. 112.34'
INV. 121.72'
15"CRP
GW28
HDPE INLET
TOP RIM=146.96'
N
0 100 200
GRAPHIC SCALE (FEI
LEGEND
EXISTING CONTOUR
LFG HEADER/LATERAL
AIR/CONDENSATE FORCEMA
BERM CROSSING
ROAD CROSSING
STUBS OF AIR/CONDENSATE
PROPOSED LFG ISOLATION
ORIGINAL PROPOSED NEW C
ORIGINAL EXISTING GAS WEL

Applied Testing & Geosciences, LLC **Report No.** 10838-021

When Quality Counts **Inspection Date:** July 04, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Eric, Edwin)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity: See attached map for more details. Excavate, installed, backfilled 10-inch and 8-inch line for road crossing near CS-1.

Photos:

199 10 inch line and culvert pre install. Looking NW

200 Info on culvert (16 inch diameter)

201 Excavate parallel to main haul road for 10-inch pipe

202 Excavation of road crossing

203 10-inch line with 10x8 reducer parallel to main haul road

204 weld 10 inch pipe to existing T coming from CS1

205 8 inch pipe from T (left) meeting 8 inch line previousl installed

206 10 inch to 8 inch transition from T

207 T from CS1 with 10 inch being welded parallel to haul road

208 Culvert with pipe installed pre placement

209 at intersection of 8-inch lines on road from north landfilll

210 10 inch line on south side of road toward south landfill

211 road cross installation from South landfill

212 Weld 8-inch line from north landfill

213 Weld 8-inch line from north landfill

214 T near CS1

215 Install culvert at road crossing

216 Install culvert at road crossing

217 Install culvert at road crossing

218 Install culvert at road crossing

219 weld 3 and 2 inch lines from culvert

220 weld 3 and 2 inch lines from culvert

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-021

Inspection Date: July 04, 2010

Report of Field Inspection - Daily Log

221 Backfill road crossing

222 Backfill road crossing

223 Caution tape applied across road excavation

224 South side of road crossing (not backfilled yet)

Materials Inventory: No new materials delivered today.

On Site: 0700 - 1830

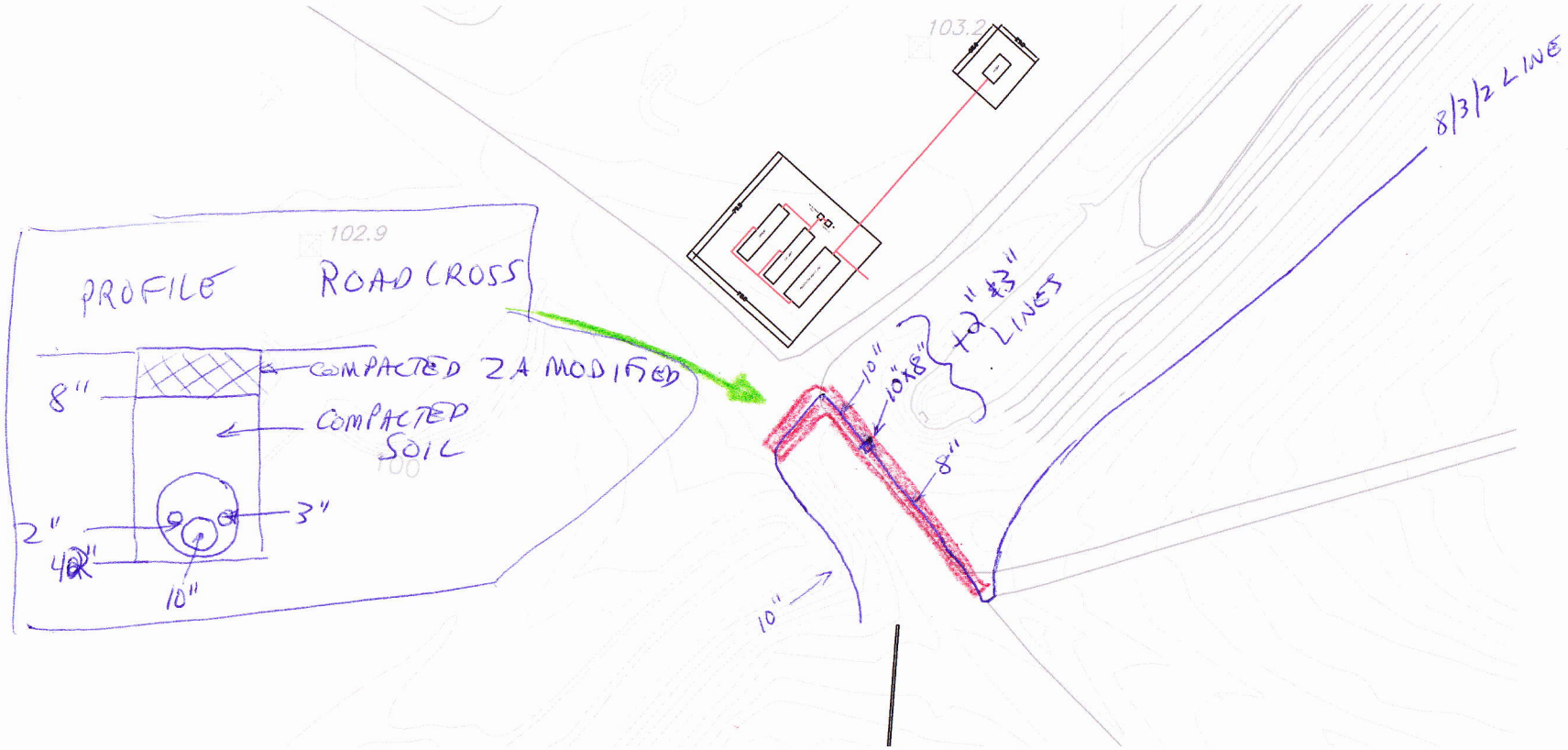
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/4/2010 p. 3 of 3



Applied Testing & Geosciences, LLC **Report No.** 10838-022

When Quality Counts **Inspection Date:** July 05, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Eric)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity See attached map. Finish backfilling 10-inch and 8-inch line for road crossing near CS-1. Excavate and install 12-inch diameter corrugated steel culvert at north road crossing near CS-2. Prep work for lateral at GW23. Measured pipe installed to date (less area around CS-1) – see attached sheet. Pipe measured 5 July 2010:

8 inch: 1940 LF, 3-inch 1940 LF, 2-inch 1940 LF. 4-inch laterals 1239.5 LF.

Photos:

225 Weld in 2-inch and 3-inch pipe at road instersections near CS1

226 Backfill 10-inch to 8-inch line along main haul road looking NW

227 6-inch and 8-inch butterfly valves at 8x6 T on NW boundary of N LF

228 North road crossing near CS2 (12-inch culvert only installed)

229 Copy of measurement papers given to Bob

230 Copy of measurement papers given to Bob

231 Backfill of 8, 3, 2-inch lines at road intersections looking NW

232 Backfill of 10 to 8 inch line

233 10, 3, 2 inch lines heading toward south landfill from CS1

234 10, 3, 2 inch lines heading toward south landfill from CS1

235 10, 3, 2 inch lines heading toward south landfill from CS1

Materials Inventory: No new materials delivered today.

On Site: 0700 - 1530

Respectfully Submitted,

Applied Testing & Geosciences, LLC

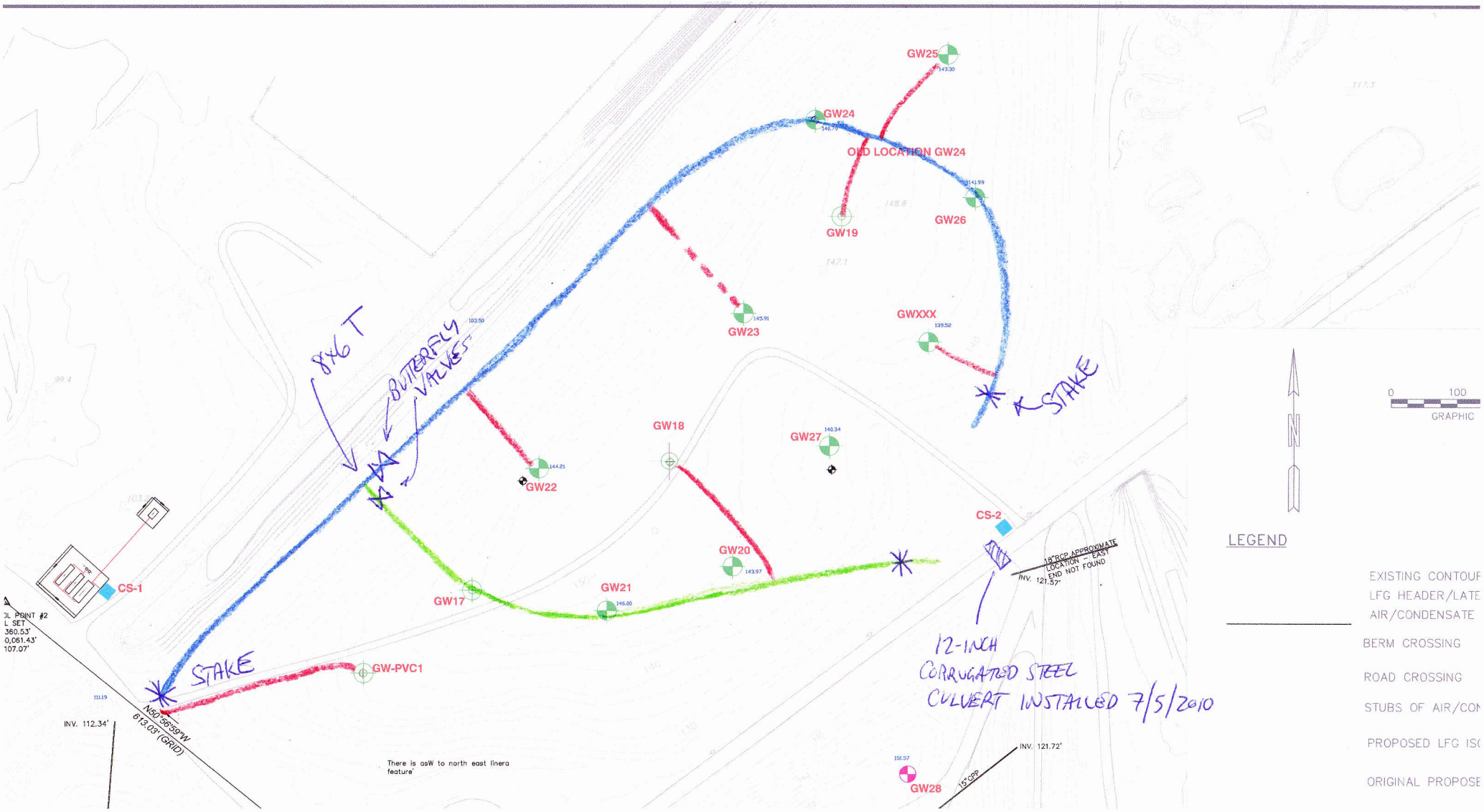
Richard C. King, P.G.

Environmental Manager

7/5/2010

Measure Installed Pipework

8-inch/3-inch/2-inch PIPE: 1940LF/ea
6-inch Pipe: 950LF
4-inch Pipe: 1239.5 LF TOTAL



Applied Testing & Geosciences, LLC **Report No.** 10838-023

When Quality Counts **Inspection Date:** July 06, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity See attached map. Graded and backfilled lateral to GW23, and GW24. Hay matt applied to all bare soil backfill areas. Measured remaining pipe areas:

7/5/2010 Pipe measured: 8 inch: 1940 LF, 3-inch 1940 LF, 2-inch 1940 LF. 4-inch laterals 1239.5 LF.

7/6/2010 Pipe measured: 10-inch: 300LF, 8-inch 160 LF; 3-inch: 482LF, 2-inch 482 LF

TOTAL PIPE INSTALLED TO DATE:

10-inch: 300 LF, 8-inch: 2100 LF, 4-inch: 1239.5 LF, 3-inch: 2422 LF, 2-inch: 2422

Photos:

236 GW23 area prior to regrading for lateral pipe

237 GW23 area prior to regrading for lateral pipe

238 GW23 area prior to regrading for lateral pipe

239 GW23 area prior to regrading for lateral pipe

240 GW23 area prior to regrading for lateral pipe

241 GW23 area prior to regrading for lateral pipe

242 GW23 area prior to regrading for lateral pipe

243 Road crossing from south landfill after regrading

244 Info given to Bob on pipe measurements

245 GW23 regrade for lateral

246 GW19 abandoned lateral capped

247 Install lateral for GW24

248 GW23 regrade for lateral

249 GW23 regrade for lateral

250 GW19 abandoned lateral trench backfilled

251 GW19 abandoned lateral trench backfilled

252 Restore and regrade berm near GW24 post lateral install

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-023

Inspection Date: July 06, 2010

Report of Field Inspection - Daily Log

253 GW24 Lateral

254 GW23 Lateral

255 GW23 Lateral

256 GW23 Lateral

257 Restore and regrade berm near GW24 post lateral install

Materials Inventory: 16 rolls of hay mat (8'x120'). 2 loads rip-rap, gravel.

On Site: 0700 - 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-024

When Quality Counts **Inspection Date:** July 07, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Jack Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Move pipe around to south landfill. Shoot elevations near CS2. Secure site for the 4-day off period.

Photos:

258 Hauling 8-inch pipe to south landfill, west side

259 Matting added to south road crossing

260 Matting added to south road crossing

261 Matting added to south road crossing

262 Matting added to south road crossing

263 Hauling 8-inch pipe to south landfill, west side

264 Hauling 8-inch pipe to south landfill, west side

265 Hauling 8-inch pipe to south landfill, west side

266 GW23 regrade finished and covered with mat

267 GW23 regrade finished and covered with mat

268 GW23 regrade finished and covered with mat

269 GW23 regrade finished and covered with mat

270 Berm regraded and covered with mat at GW24

271 Berm regraded and covered with mat at GW24

272 Mat covering remaining areas near GW25 and GW19

273 Mat covering remaining areas near GW25 and GW19

274 Mat covering remaining areas near GW25 and GW19

275 Mat covering remaining areas near GW25 and GW19

276 Mat covering remaining areas near GW26

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-024

Inspection Date: July 07, 2010

Report of Field Inspection - Daily Log

Materials Inventory: No materials

On Site: 0700 – 1200; travel 1200 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-025

When Quality Counts **Inspection Date:** July 12, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Drilling of gas wells GW29 and GW30 and

Photos:

277 Clay material found at bottom of GW29 boring

278 Completed gas well GW29

279 Tailings for GW29

280 Tailings and Completed GW29

281 Completed gas well GW30

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

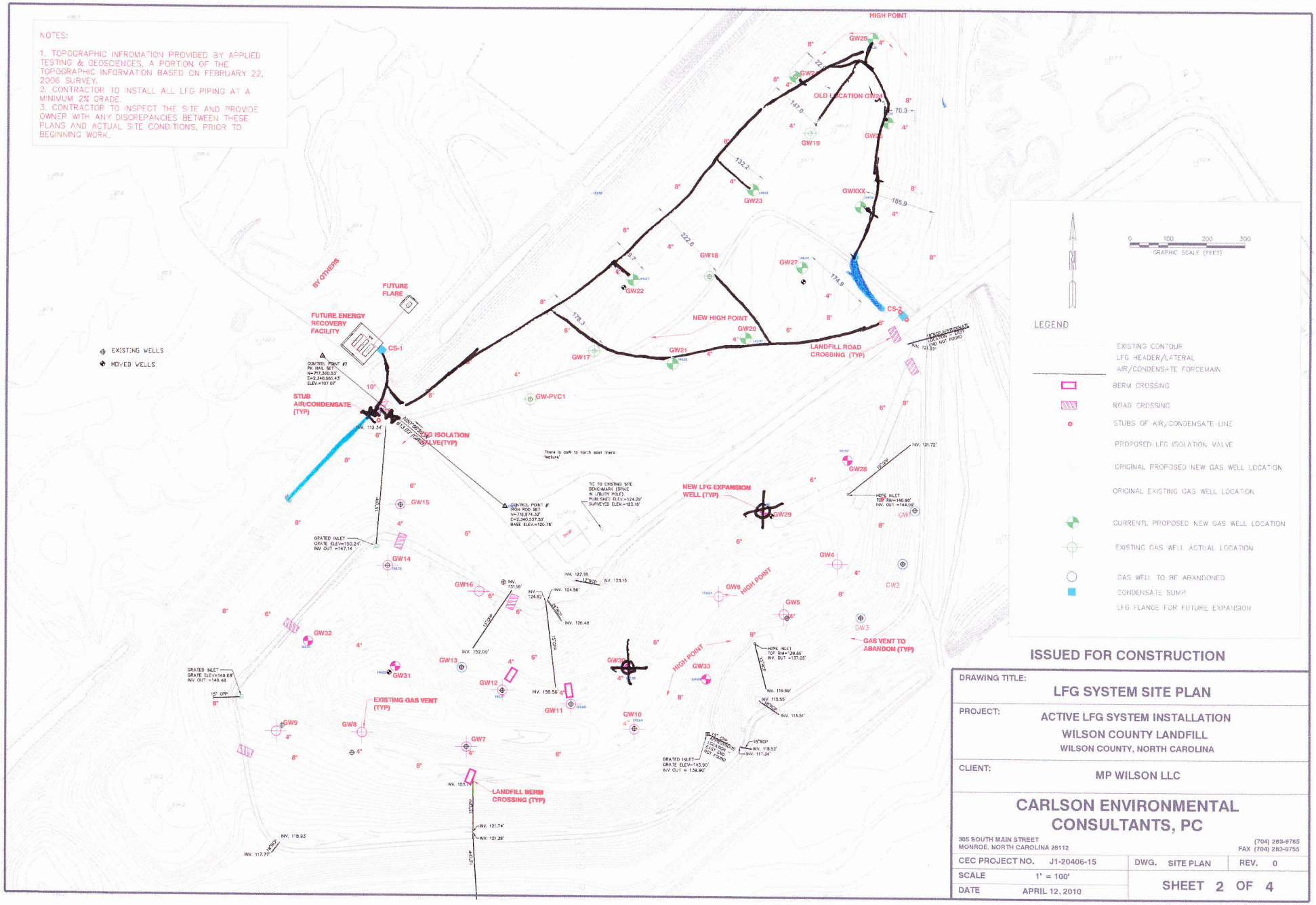
7/12

X - WELL INSTALLATION 8' PIPE RUN

8', 3', 2' PIPE RUN

NOTES:

1. TOPOGRAPHIC INFROMATION PROVIDED BY APPLIED TESTING & GEOSCIENCES, A PORTION OF THE TOPOGRAPHIC INFORMATION BASED ON FEBRUARY 22, 2006 SURVEY.
2. CONTRACTOR TO INSTALL ALL LFG PIPING AT A MINIMUM 2% GRADE.
3. CONTRACTOR TO INSPECT THE SITE AND PROVIDE OWNER WITH ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL SITE CONDITIONS, PRIOR TO BEGINNING WORK.



ISSUED FOR CONSTRUCTION

DRAWING TITLE:	LFG SYSTEM SITE PLAN
PROJECT:	ACTIVE LFG SYSTEM INSTALLATION WILSON COUNTY LANDFILL WILSON COUNTY, NORTH CAROLINA
CLIENT:	MP WILSON LLC

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112

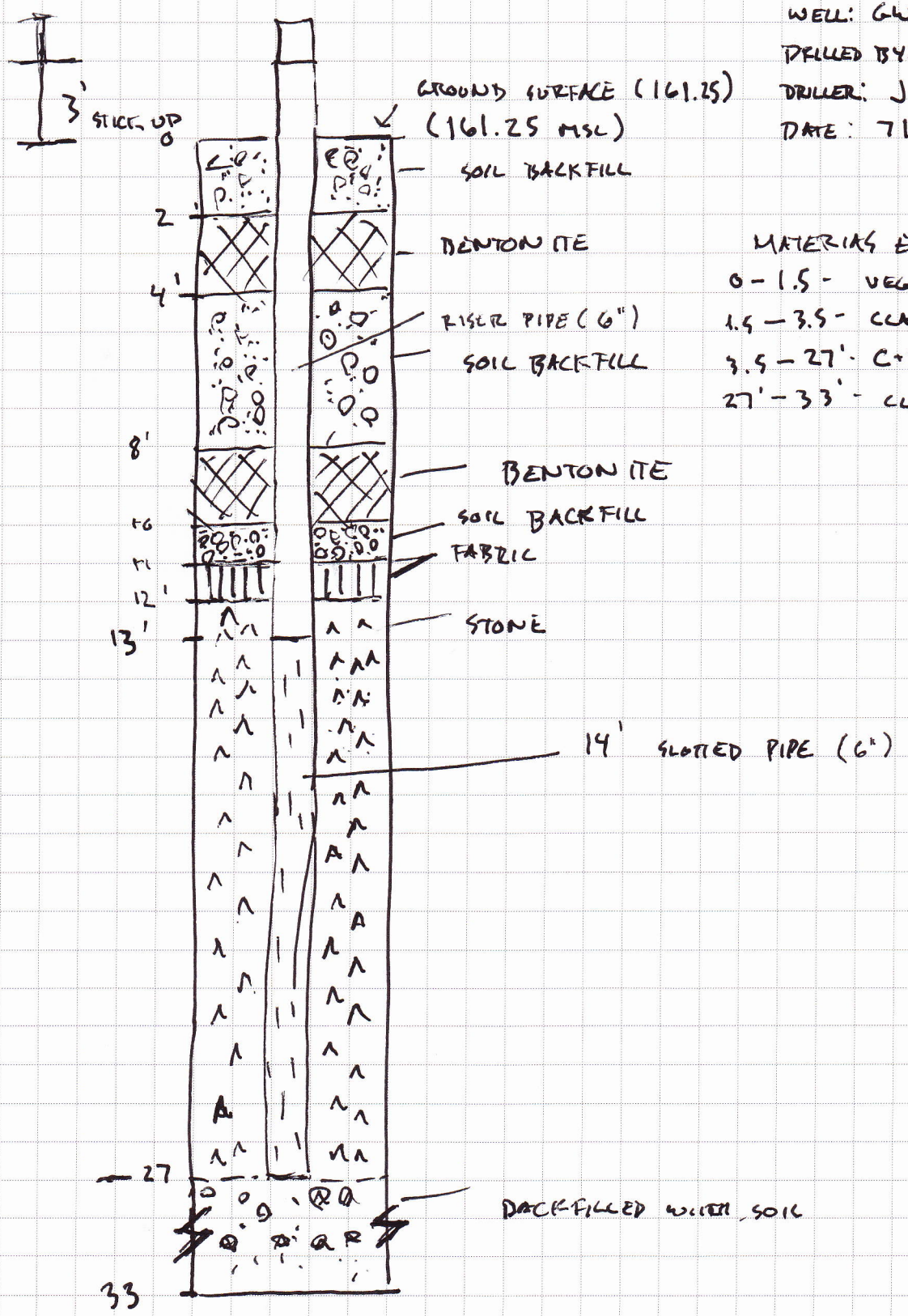
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-20406-15	DWG. SITE PLAN	REV. 0
SCALE	1" = 100'	SHEET 2 OF 4	
DATE	APRIL 12, 2010		

Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB Wilson 10838
SHEET NO. ____ OF ____
CALCULATED BY M. FLANAGAN DATE 7/12/2010
CHECKED BY ____ DATE ____
SCALE ____

WELL: GW 29
DRILLED BY: KELLETT'S
DRILLER: J. CHILDRESS
DATE: 7/12/2010



MATERIALS ENCOUNTERED
0 – 1.5 - VEG. COVER
1.5 – 3.5 - CLAY CAP
3.5 – 27' - C+D 15–20% SOIL
27' – 33' - CLAY

Applied Testing & Geosciences, LLC
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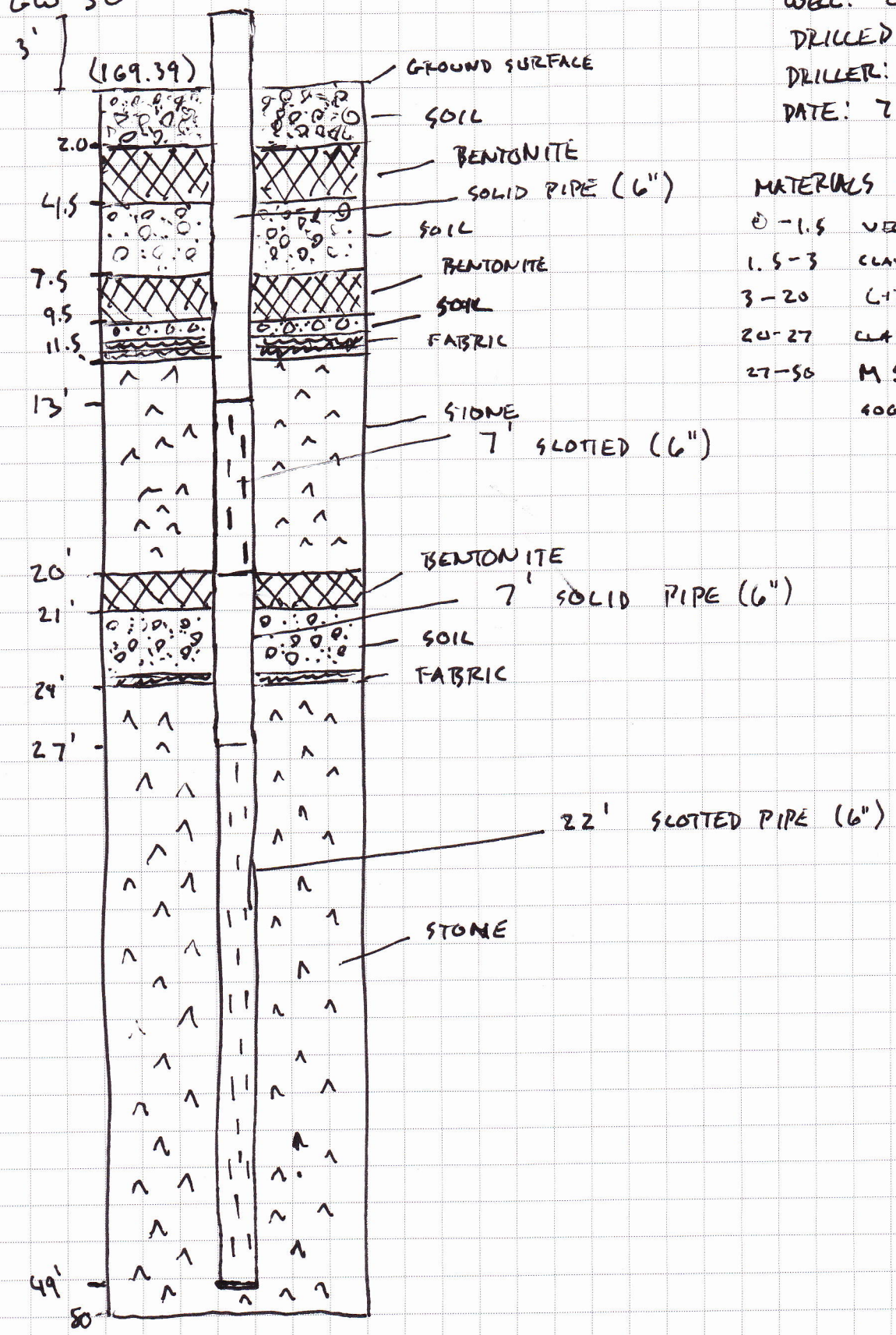
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB 10838 - WILSON CO. LANDFILL
SHEET NO. _____ OF _____
CALCULATED BY MIKE FLANAGAN DATE 7/12/2010
CHECKED BY _____ DATE _____
SCALE _____

GW 30



WELL: GW30
DRILLED BY: KELLET'S
DRILLER: J. CHILDRESS
DATE: 7/12/2010

MATERIALS ENCOUNTERED

0 - 1.5	VEG COVER
1.5 - 3	CLAY CAP
3 - 20	GTD 15-20% SOIL
20 - 27	CLAY
27 - 50	MSW SLIGHTLY GOOGY @ 50'

Applied Testing & Geosciences, LLC **Report No.** 10838-026

When Quality Counts **Inspection Date:** July 13, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Drilling of gas wells GW31, GW32 and GW33, Header line installation

Photos:

282 Completed gas well GW33

283 Buried 8” Header line on west edge of southern landfill

284 Buried 8” Header line on west edge of southern landfill continued

285 8” Header line installation on southern side of landfill

286 8” Header line installation continued

287 8” Header line continued

288 6” header line across road on southern landfill

289 6” header line along central road

290 6” header line to junction with 8” line on south landfill

291 Completed gas well GW31

292 Completed gas well GW32

293 8” Header line across berm installation

294 8”’ Header line installation north of berm crossing

295 Berm crossing installation continued

296 Berm crossing continued

297 buried 8” pipeline leading to berm crossing (southern edge of landfill

298 straw covering of buried pipeline (8” line)

299 Scope of 6” installation on 7/13/2010

Materials Inventory: No materials

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-026

Inspection Date: July 13, 2010

Report of Field Inspection - Daily Log

On Site: 0700 – 1800

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

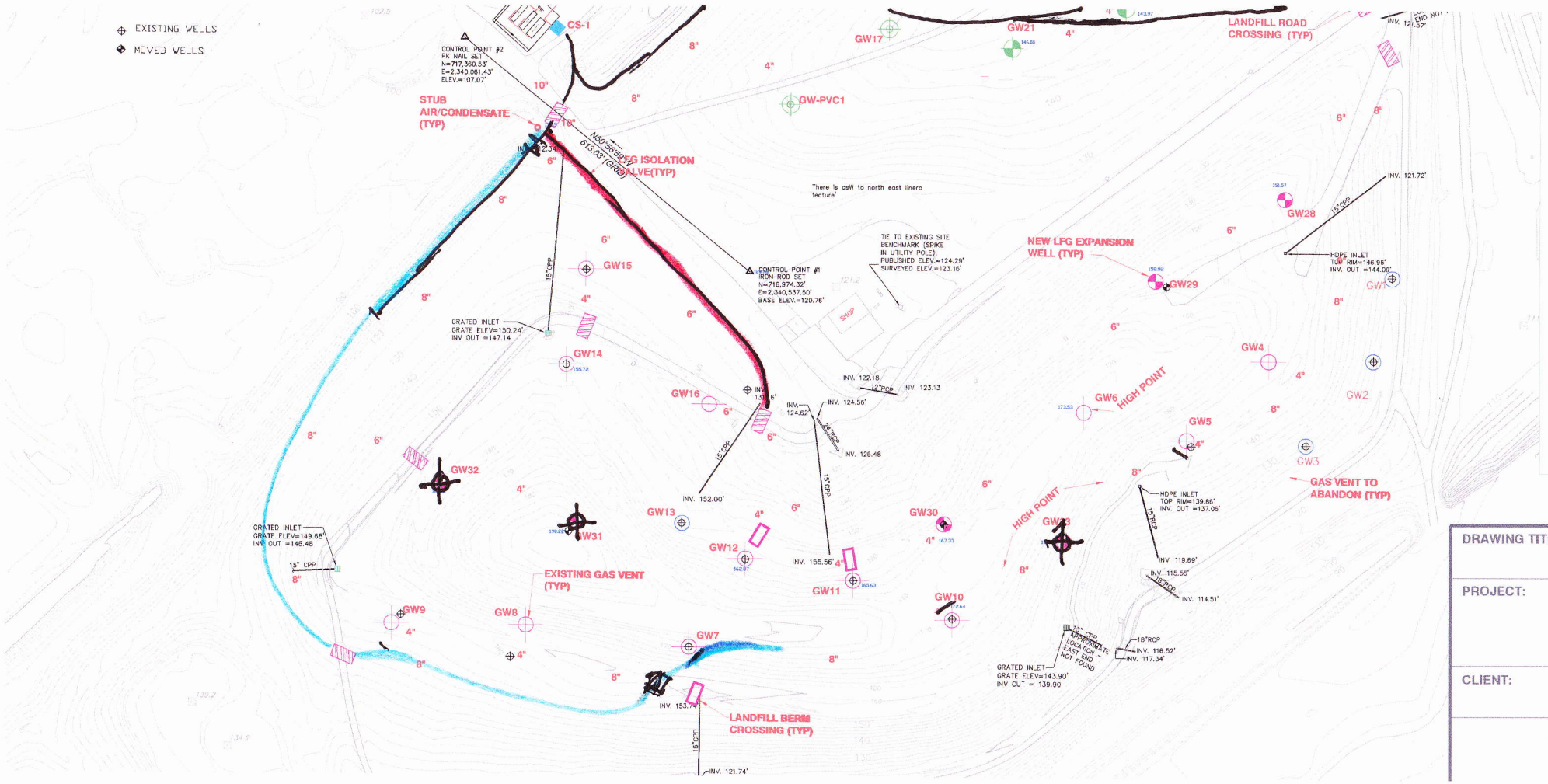
Environmental Manager

7/13/2010

⊗ - COMPLETED GAS WELL

8" LINE

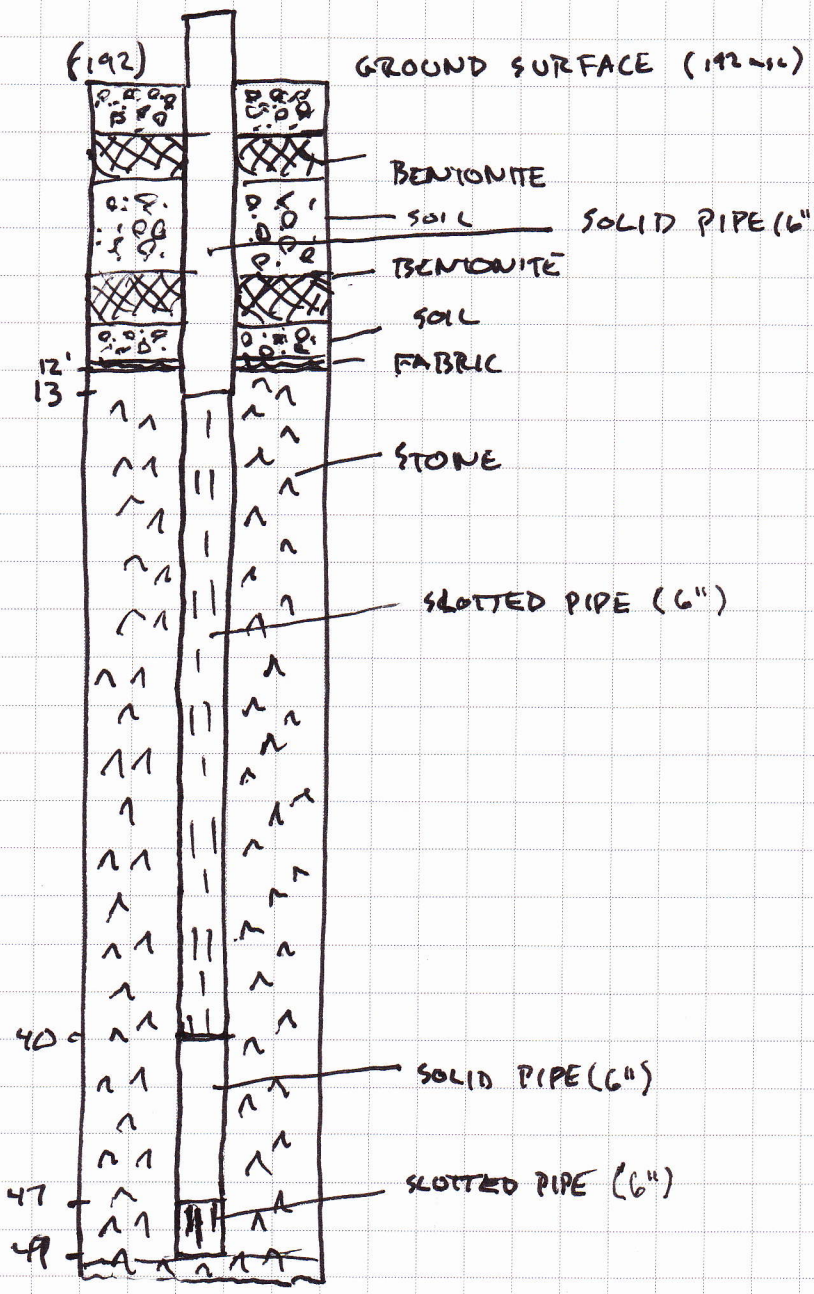
6" LINE



Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB 10838 · WILSON CO. LAND FILL
SHEET NO. _____ OF _____
CALCULATED BY MIKE FLANAGAN DATE 7/13/2010
CHECKED BY _____ DATE _____
SCALE _____

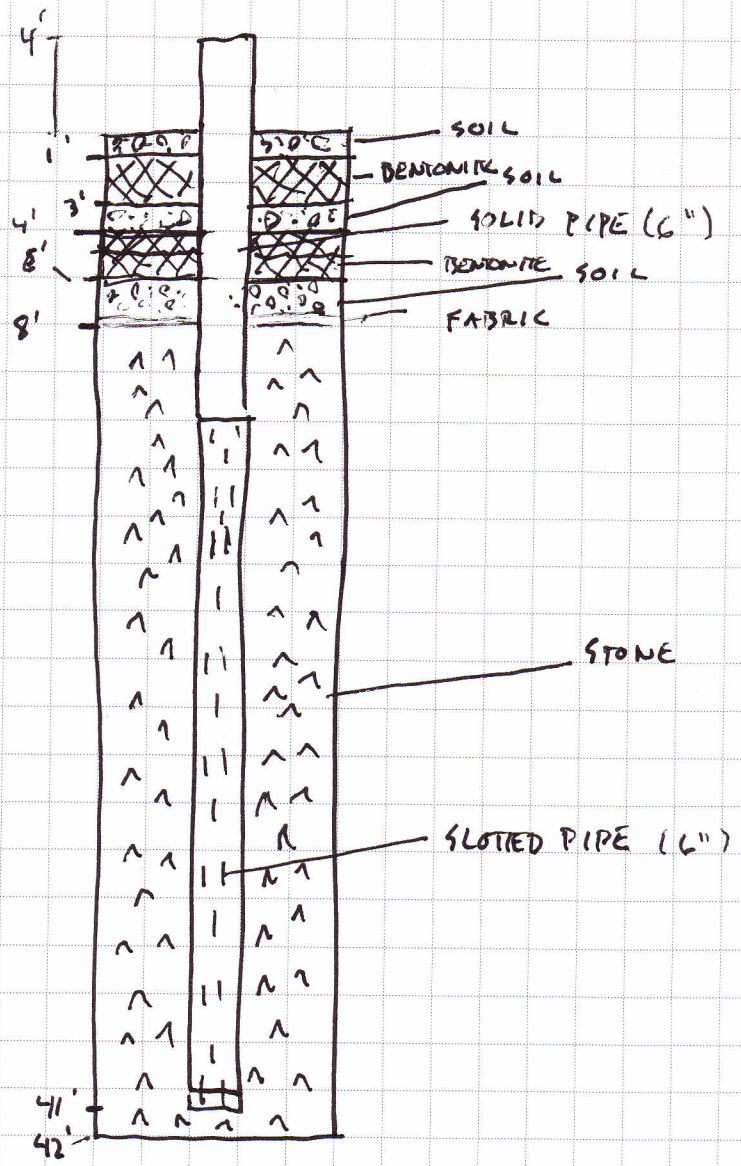
WELL: GW31
DRILLED BY: KELLETT'S
DRILLER: J. CHILDRESS
DATE: 7/13/2010



MATERIALS ENCOUNTERED
0-1.5 - VEG. COVER
1.5-3.5 - CLAY COVER
3.5-40 - C+D 15%-20% SOIL
40-47 - CLAY COVER
47-49 - MSW - SATURATED

Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

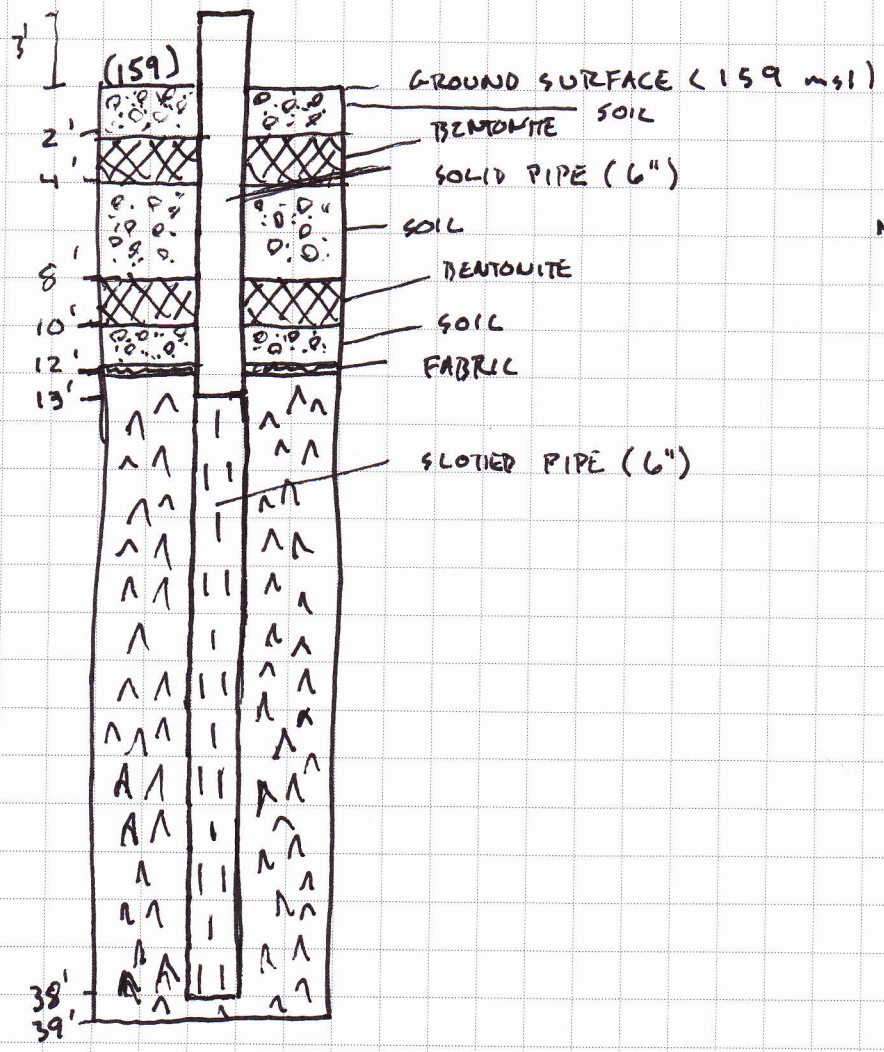
JOB 10838 WILSON CO. LANDFILL
SHEET NO. _____ OF _____
CALCULATED BY MIKE FLANAGAN DATE 7/13/2010
CHECKED BY _____ DATE _____
SCALE _____



WELL: GW 32
DRILLED BY: KELLETT'S
DRILLER: J. CHILDRESS
DATE: 7/13/2010
MATERIALS ENCOUNTERED
0-1.5 VEG. COVER
1.5-7 CLAY CAP
7-42' MSW 15% SOIL

Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB 10838 WILSON CO. LANDFILL
SHEET NO. _____ OF _____
CALCULATED BY M. FLANAGAN DATE 7/13/2010
CHECKED BY _____ DATE _____
SCALE _____



WELL: GW 33
DRILLED BY: KELLETT'S
DRILLER: J. CHILDRESS
DATE: 7/13/2010
MATERIALS ENCOUNTERED
0 – 1.5 - VEG. COVER
1.5 - 3 - CLAY CAP
3 - 39 - C+D 15-20% SOIL

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-027

Inspection Date: July 14, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Drilling of gas wells GW27, 8" and 6" Header line installation

Photos:

300 completed gas well GW27

301 Tie in for GW12 on 6" header installation

302 Tie in for GW12 continued

303 6" Header line installation from GW12 towards GW13

304 6" Header line installation form GW12 towards GW11

305 GW11 and 6" Header line

306 GW11 and 6" Header line with tie in

307 GW11 Tie in connection

308 GW 30 Tie in connection

309 Pipe trench to GW5 (8" Header line)

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

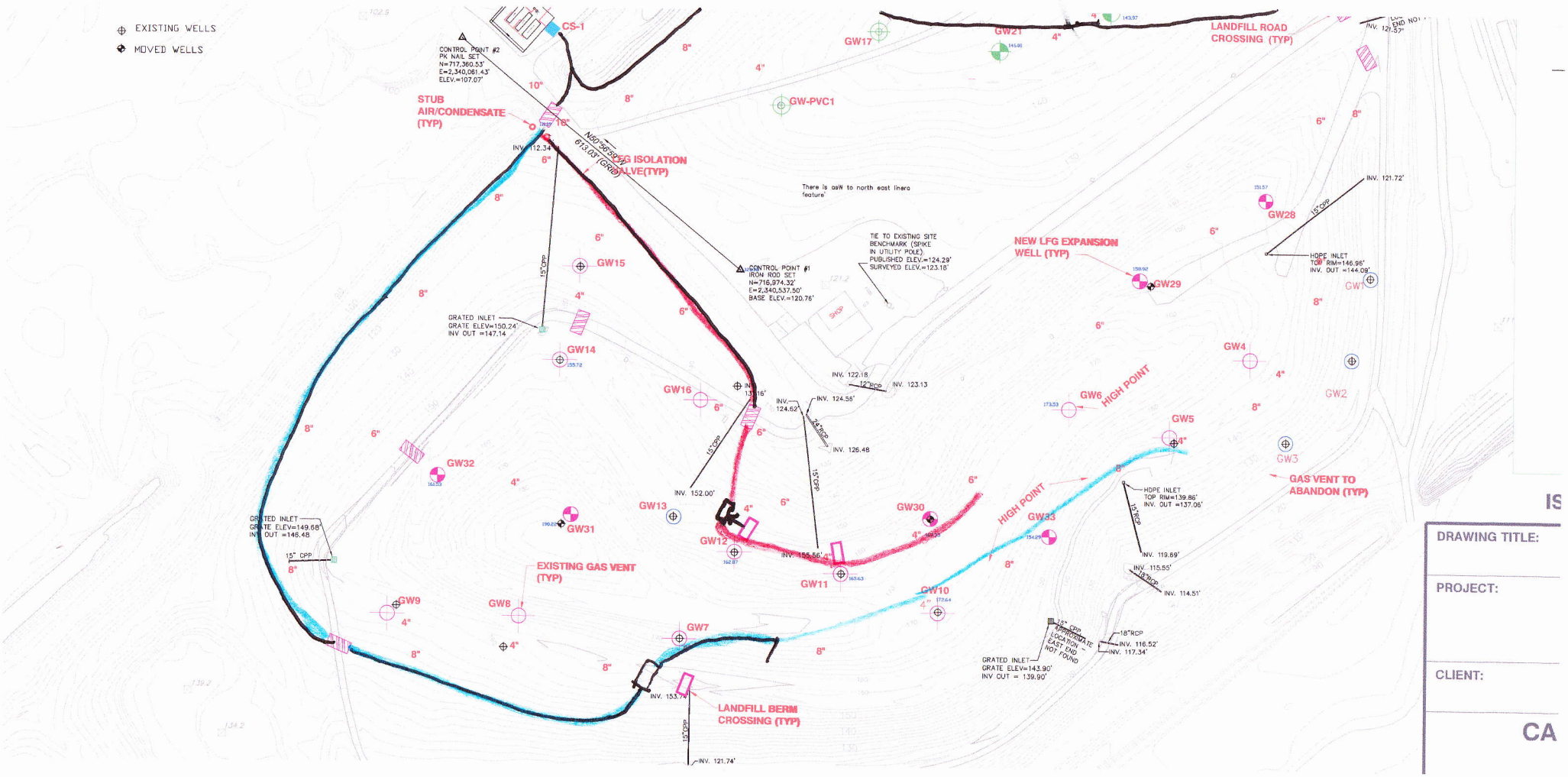
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/14/2010

- ⊗ - COMPLETED GAS WELL
- 6" HEADER LINE
- 8" HEADER LINE
- 6" PRIOR INSTALLATION
- 8" PRIOR INSTALLATION ⊗ - GW27

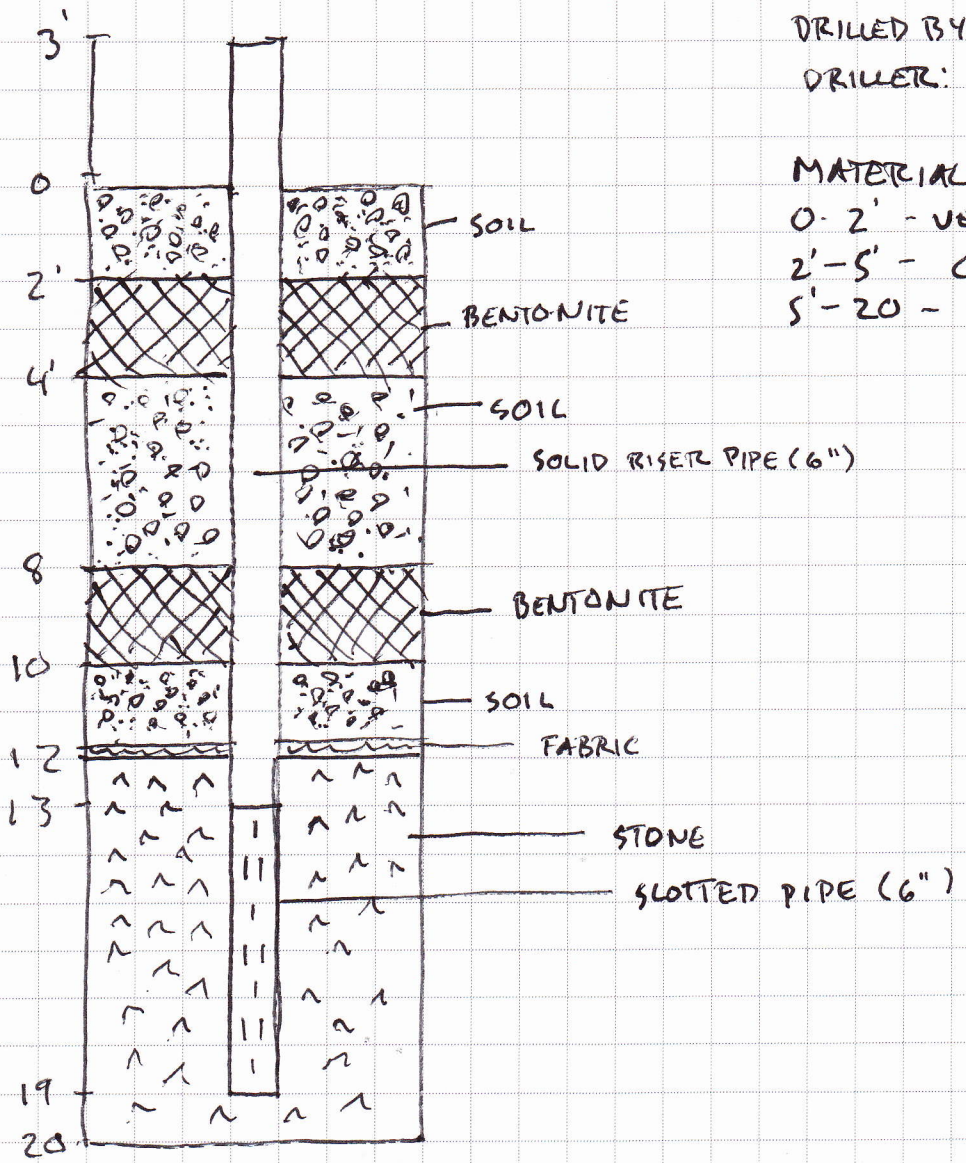


Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB 10838
SHEET NO. ____ OF ____
CALCULATED BY MIKE FLANAGAN DATE 7/14/2010
CHECKED BY ____ DATE ____
SCALE ____

WELL: GW27
DRILLED BY: KELLETT'S
DRILLER: J. CHILDRESS

MATERIALS ENCOUNTERED:
0-2' - VEG COVER
2'-5' - CLAY CAP
5'-20 - MSW 15-20% SOIL



Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-028

Inspection Date: July 15, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Installation of 6” and 8” lines, pad construction, lateral installation

Photos:

310 Drainage pipe in path of 8” line

311 Drainage pipe to be fixed

312 8” line at drainage pipe

313 8” line towards drainage pipe

314 4” lateral from 6” header to GW6

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

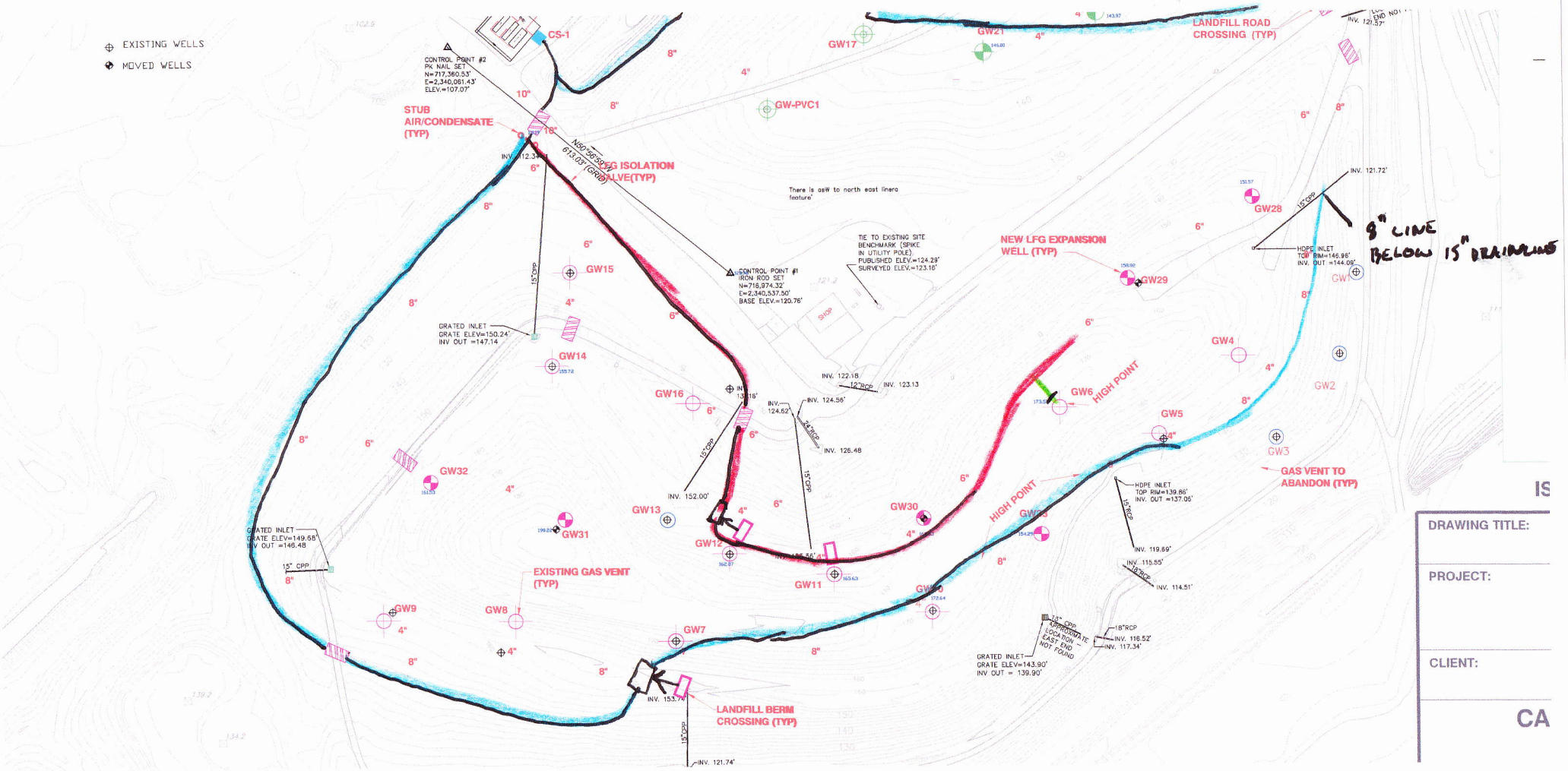
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/15/2010

6" LINE ALREADY INSTALLED
8" LINE ALREADY INSTALLED
6" LINE INSTALLED TODAY
8" LINE INSTALLED TODAY
4" LATERAL



Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-029

Inspection Date: July 16, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Installation of 8" line and 8" and 6" valves on southern landfill

Photos:

315- Trench for 8" line crossing road on east side of landfill

316- Conduit for 8" line corssing road on east side of landfill

317- 8" line on south landfill and 6" tie in and valves

318- 8" line on south landfill and 6" tie in and valves

319- 8" pipeline towards south landfill

320- Stone backfill to replace brick debris

321- Excavation of brick debris

322- Brick rubble

323- Brick rubble

324- 8" and 6" valves

325- 8" and 6" valves

326- Backfilling of 8" line on south landfill

327- 8" line on south landfill

328-333 8" line (buried on south landfill crossing road

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

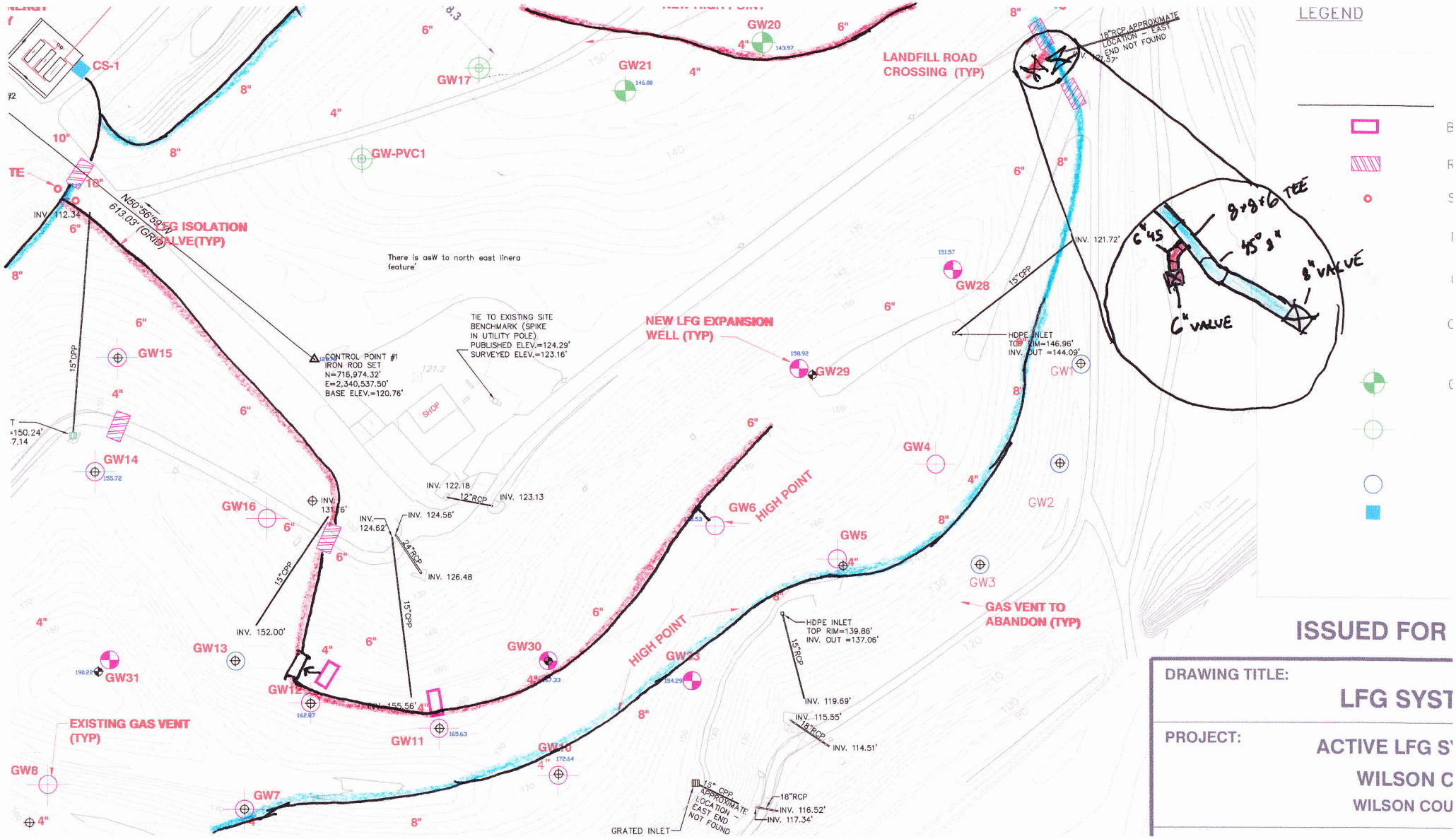
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/16/2010

- VALVE INSTALLATION
- 6" LINE ALREADY INSTALLED
- 8" LINE ALREADY INSTALLED
- 6" LINE INSTALLED TODAY
- 8" LINE INSTALLED TODAY



Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-030

Inspection Date: July 17, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Installation and tie in of condensate sump

Photos:

334- Excavation for condensate sump

335-344- Condensate sump

345-346- Connection to south landfill to condensate sump

347-348- completed installation of condensate sump

Materials Inventory: No materials

On Site: 0700 – 1800

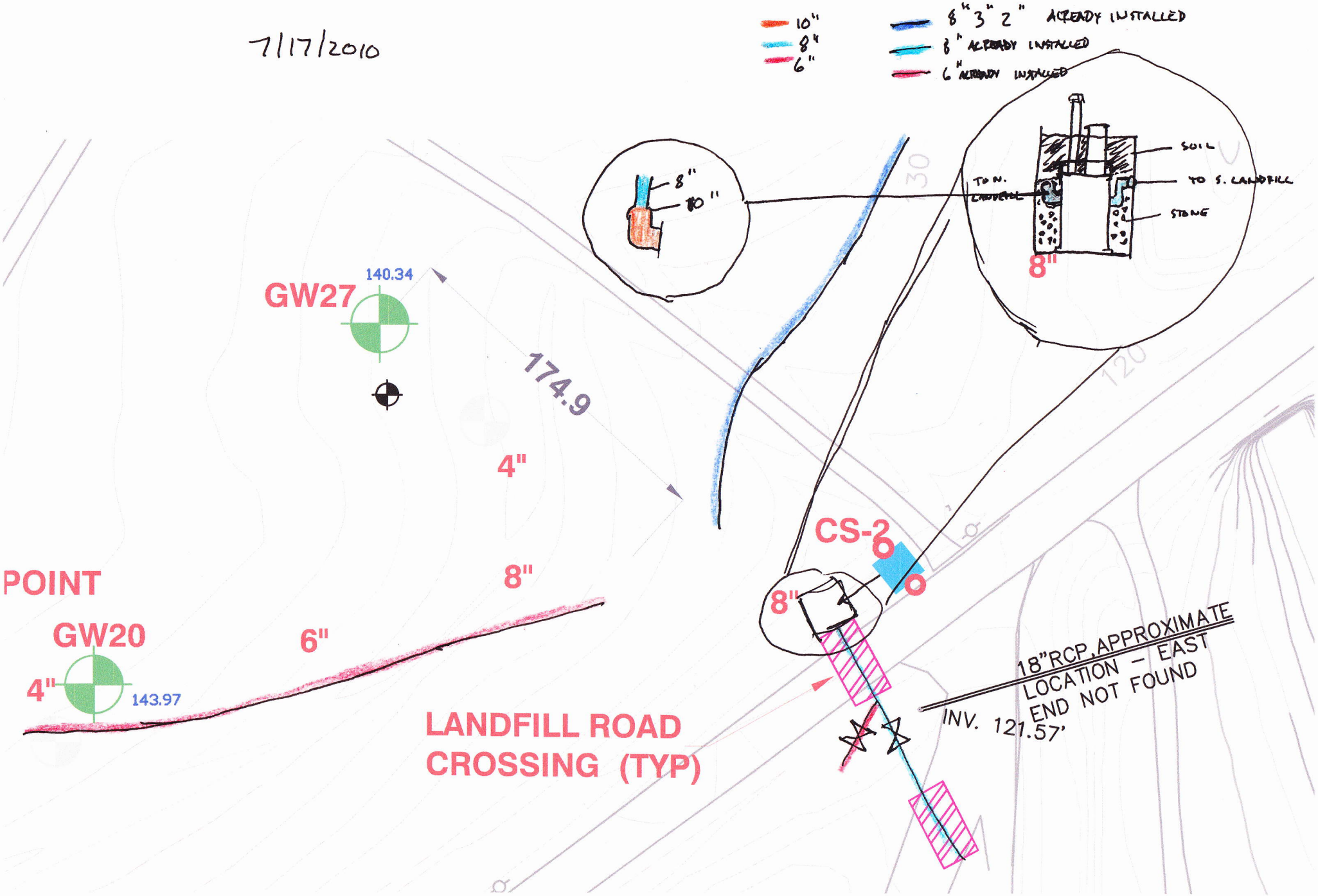
Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/17/2010


10"
8"
6"
8" 3" 2" ALREADY INSTALLED
8" ALREADY INSTALLED
6" ALREADY INSTALLED
8"
10"
SOIL
TO N. CULVERT
TO S. LANDFILL
STONE
8"
GW27
140.34
174.9
4"
POINT
8"
GW20
6"
4"
143.97
CS-2
8"
LANDFILL ROAD
CROSSING (TYP)
18"RCP,APPROXIMATE
LOCATION – EAST
END NOT FOUND
INV. 121.57'

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-031

Inspection Date: July 18, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity :Fabrication of remaining 6" pipeline and cleanup

Photos: None taken

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-032

Inspection Date: July 19, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity :Installation fo 6" pipeline, sample ports at 8" and 6" valve at east end of southern landfill, tie ins for wells GW28 and 29 and repair of 1" water line to maintenance shed

Photos:

349- 6" Valve and line leading to GW28

350- GW29 and tie in

351- GW28 and tie in

352- Completed 6" line towards GW28

353- 8 and 6" valves and sample ports on east end of southern landfill

354- 6" valve and sample ports

355- 8" valve and sample port

356- 8 and 6" valves

Materials Inventory: No materials

On Site: 0700 – 1800

Respectfully Submitted,

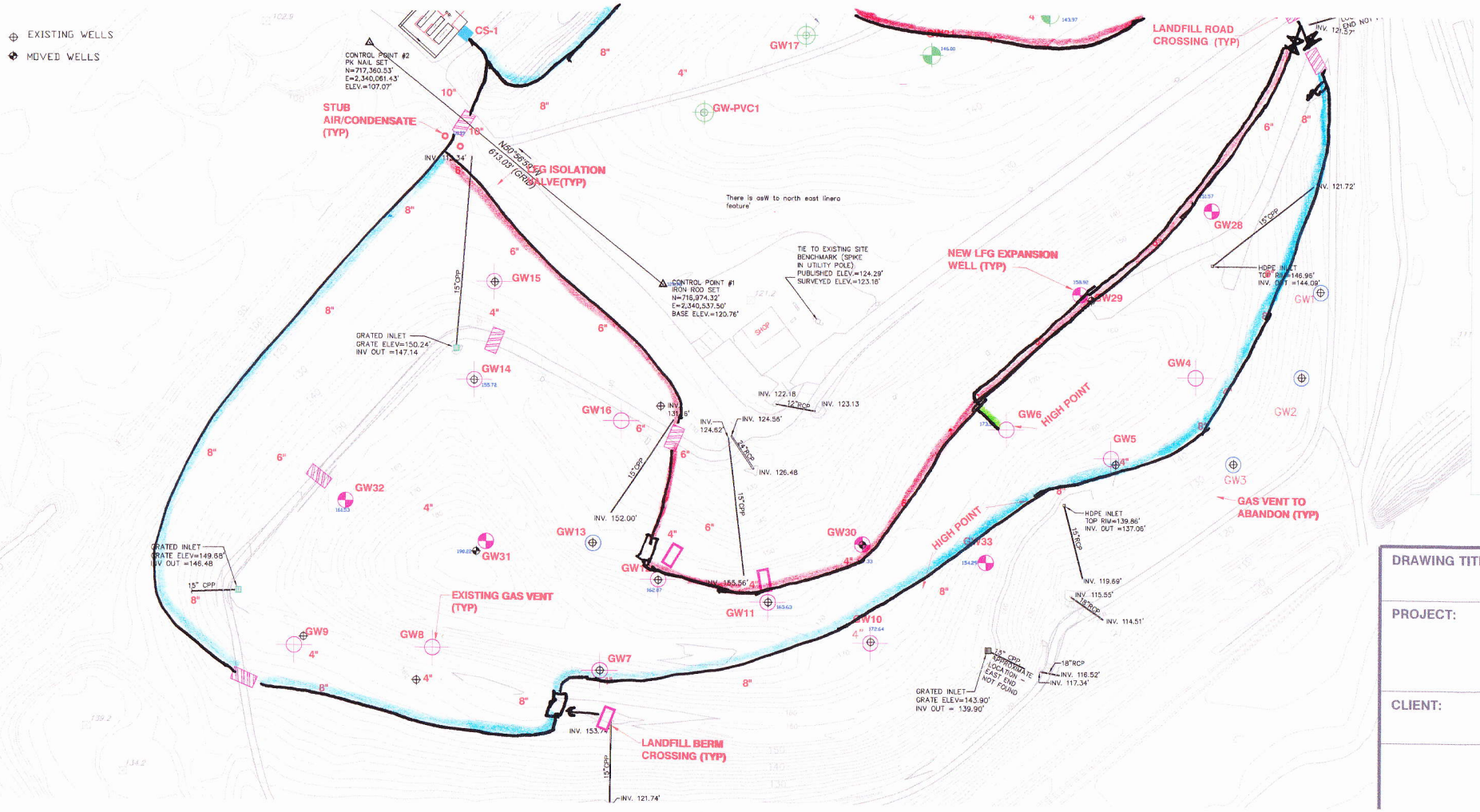
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/19/2010

- 6" LINE INSTALLED TODAY
- 6" LINE ALREADY INSTALLED
- 8" LINE ALREADY INSTALLED
- 4" LINE ALREADY INSTALLED



Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-033

Inspection Date: July 20, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity :Flare pad construction

Photos:

357- Flare pad construction prior to stone surface layer

358- Flare pad construction

359- Flare pad construction continued

Materials Inventory: Stone delivery for flare pad construction

On Site: 0700 – 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-034

When Quality Counts **Inspection Date:** July 21, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: Mike Flanagan (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity :Flare pad construction tie in of 6" line to condensate sump

Photos:

360- Installation of tee and tie in to 6" line at east end of north landfill

361- Installation of tee and tie in to 6" line at east end of north landfill continued

362- Installation of tee and tie in to 6" line at east end of north landfill continued

363- Flare pad

364- Flare pad completed

Materials Inventory: Stone delivery for flare pad construction

On Site: 0700 – 1300

Respectfully Submitted,

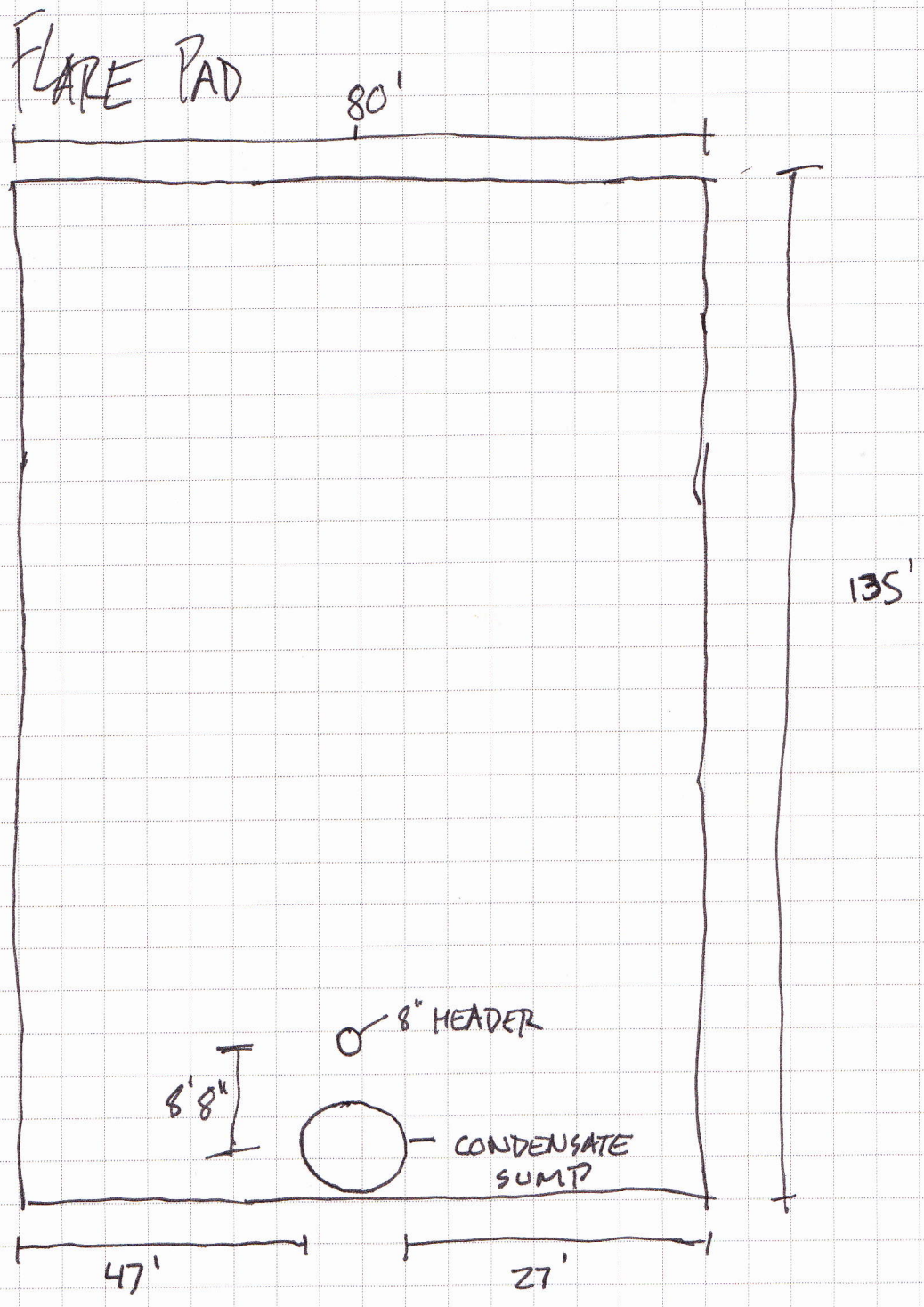
Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

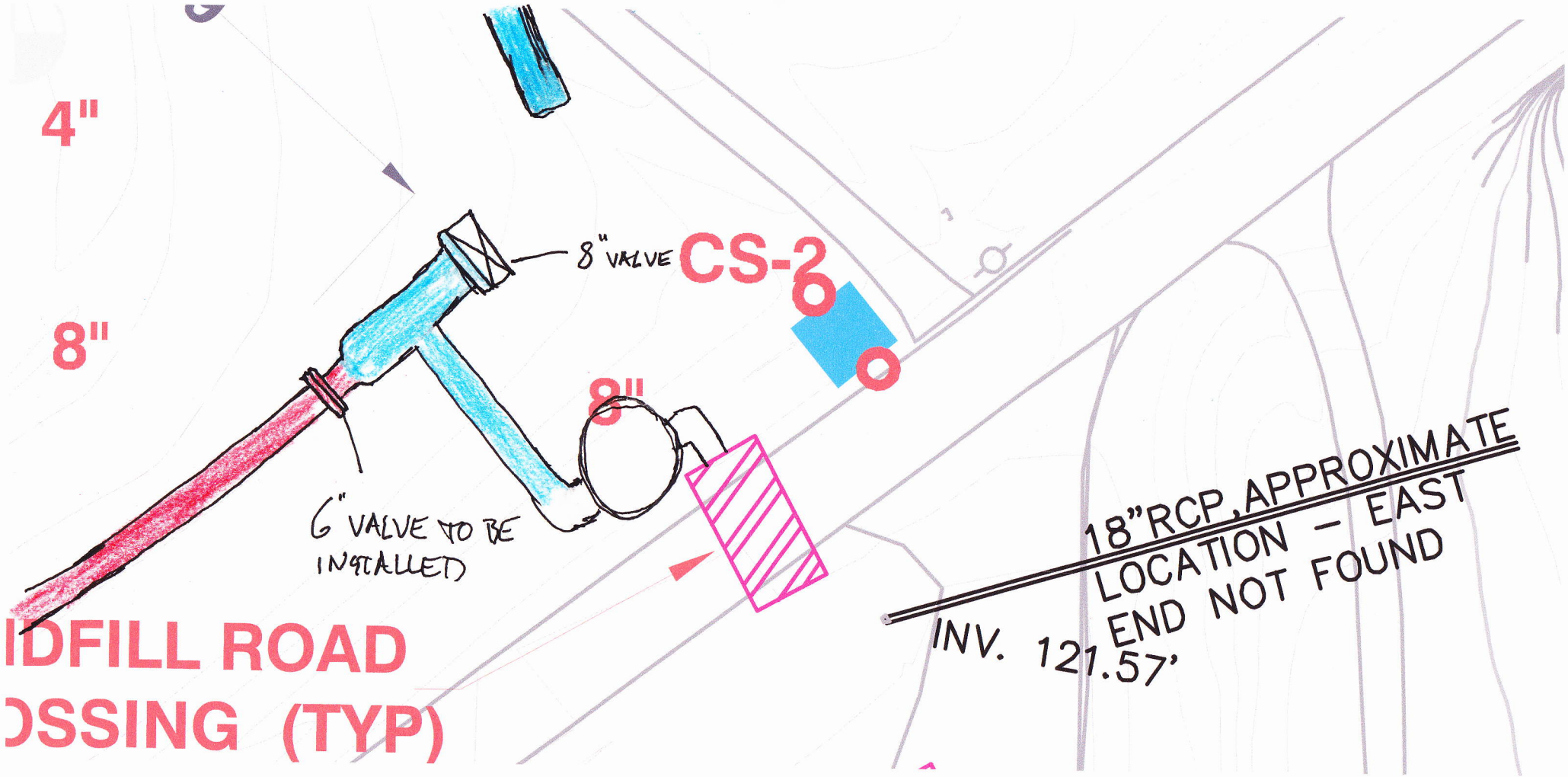
Applied Testing & Geosciences, LLC
When Quality Counts
401 E. Fourth Street, Bldg. 12B
Bridgeport, PA 19405
610-313-3227 / info@appliedtesting.com

JOB 10838 - WILSON CO.
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE 7/21/2010
CHECKED BY _____ DATE _____
SCALE _____



7/21/2010

- 6" LINE
- 8" LINE



Applied Testing & Geosciences, LLC **Report No.** 10838-035

When Quality Counts **Inspection Date:** July 26, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer, water truck.

Activity : Install 8 inch line to tie in at T from CS-2. Install 4-inch lateral from 8 inch line to GW27. Install flanges to 2 inch and 3 inch lines at CS2, CS1 and across the road from CS1.

Photos:

365 Preparing trench near CS2 to tie in 8-inch line

366 View of CS2 from South Landfill

367 T junction from CS-2. 6 inch line to left, 8 inch line to right, valves

368 T junction looking south

369 Preparing 8 inch line at CS2

370 Branch saddle from 8 inch line to GW27

371 8 inch line elbow to T at CS2

372 8 inch line elbow to T at CS2

373 2 and 3 inch lines at CS2

374 8 inch line elbow to T at CS2

375 4-inch lateral from 8 inch line to GW27

376 Trench for lateral line from GW27 to 8 inch line at CS2

377 Branch saddles at T near CS2 for sample ports

378 Branch saddles at T near CS2 for sample ports

379 Backfill lateral line to GW27

380 Backfill lateral line to GW27

381 View of work area near CS2 from south landfill

382 Sample ports on T junction near CS2

383 Weld elbow and stickups for 2 inch and 3 inch lines at CS2

384 Weld elbow and stickups for 2 inch and 3 inch lines at CS2

385 Grading complete at CS2 area

386 Weld flanges to 2 and 3 inch lines across from CS1

Report of Field Inspection - Daily Log

387 Flare pad

388 Flare pad

389 Install flanges at CS1

Materials Inventory: No new materials

On Site: 0700 – 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

7/26/2010

8" LINE INSTALLED
2"/3" LINE INSTALLED
4" LINE INSTALLED

Applied Testing & Geosciences, LLC **Report No.** 10838-036

When Quality Counts **Inspection Date:** July 27, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E Sheepsfoot roller, John Deere 450J Dozer,.

Activity : Install 6 inch line and T from existing 6-inch line to GW15. Pressure test 2 inch line (all, passed test 100 psi), 3 inch line (all – passed test 50 psi), 6 inch line in north landfill (passed test 5 psi), and 8 inch line in north landfill (passed test 5 psi). See attached map for testing locations.

Photos:

390 Test apparatus at 2 inch line and 3 inch line at CS-1

391 Labels on 2-inch and 3-inch lines at CS1

392 Preparing to install 6-inch line to GW-15 off existing 6-inch line

393 Test apparatus at 3 inch line at CS-1 (at 50 psi)

394 Preparing to install 6-inch line to GW-15 off existing 6-inch line

395 Preparing to install 6-inch line to GW-15 off existing 6-inch line

396 Labels on 2-inch and 3-inch lines and valves across road from CS1

397 Preparing to install 6-inch line to GW-15 off existing 6-inch line

398 Testing 6-inch header line from lateral at GW17

399 Testing 8-inch header line from lateral at GW23

Materials Inventory: No new materials

On Site: 0700 – 1730

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

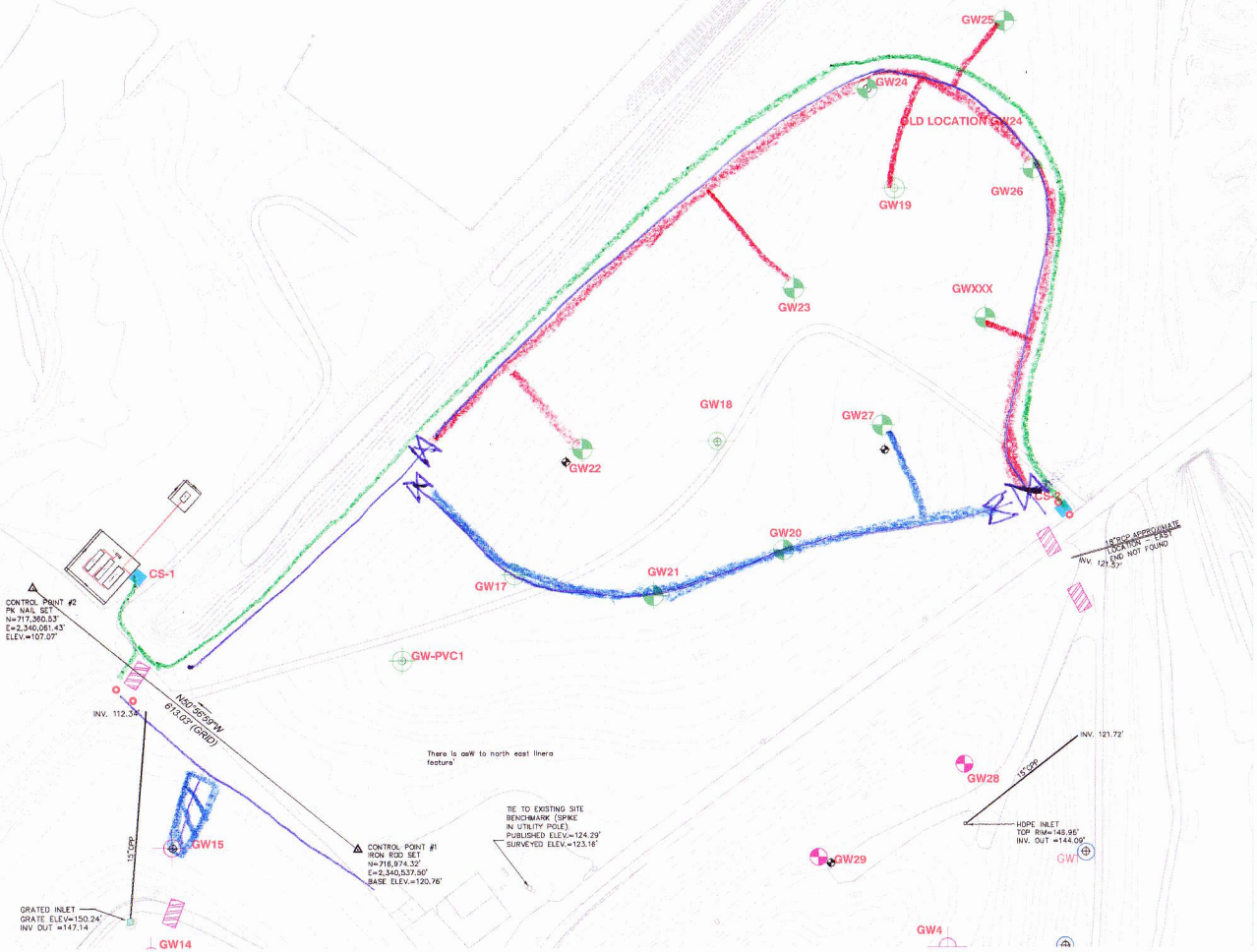
Environmental Manager

7/27/10

— 2"/3" LINE TESTED
— 8" LINE TESTED
— 6" LINE TESTED
— 6" LINE INSTALLED

APHIC INFROMATION PROVIDED BY APPLIED
GEOSCIENCES, A PORTION OF THE
HIC INFORMATION BASED ON FEBRUARY 22,
VEY.
CTOR TO INSTALL ALL LFG PIPING AT A
% GRADE.
CTOR TO INSPECT THE SITE AND PROVIDE
TH ANY DISCREPANCIES BETWEEN THESE
D ACTUAL SITE CONDITIONS, PRIOR TO
WORK.

EXISTING WELLS
MOVED WELLS



N

0 100 200
GRAPHIC SCALE (FEET)

LEGEND

EXISTING CONTOUR
LFG HEADER/LATERAL
AIR/CONDENSATE FORCEMAIN
BERM CROSSING
ROAD CROSSING
STUBS OF AIR/CONDENSATE L
PROPOSED LFG ISOLATION VA
ORIGINAL PROPOSED NEW GA
ORIGINAL EXISTING GAS WELL
CURRENTL PROPOSED NEW GA
EXISTING GAS WELL ACTUAL

Applied Testing & Geosciences, LLC **Report No.** 10838-037

When Quality Counts **Inspection Date:** July 28, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E

Activity : Install 6 inch line and T from existing 8-inch line to GW32. Install lateral at GW16. Install 4 inch lateral from GW15 to GW14. Pressure test 6 inch line from valve near CS1 to valve near CS2 (passed test 5 psi). See attached map for testing locations.

Photos:

400 Install lateral at GW16

401 Install Lateral to GW14

402 Install Lateral to GW14

403 Prepare to install 6 inch header from GW32 to 8 inch line

404 Prepare to install 6 inch header from GW32 to 8 inch line

405 Prepare to install 6 inch header from GW32 to 8 inch line

406 Prepare to install 6 inch header from GW32 to 8 inch line

407 Prepare to install 6 inch header from GW32 to 8 inch line

408 Warped flange cover at CS2 under 5 PSI

Materials Inventory: No new materials

On Site: 0700 – 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

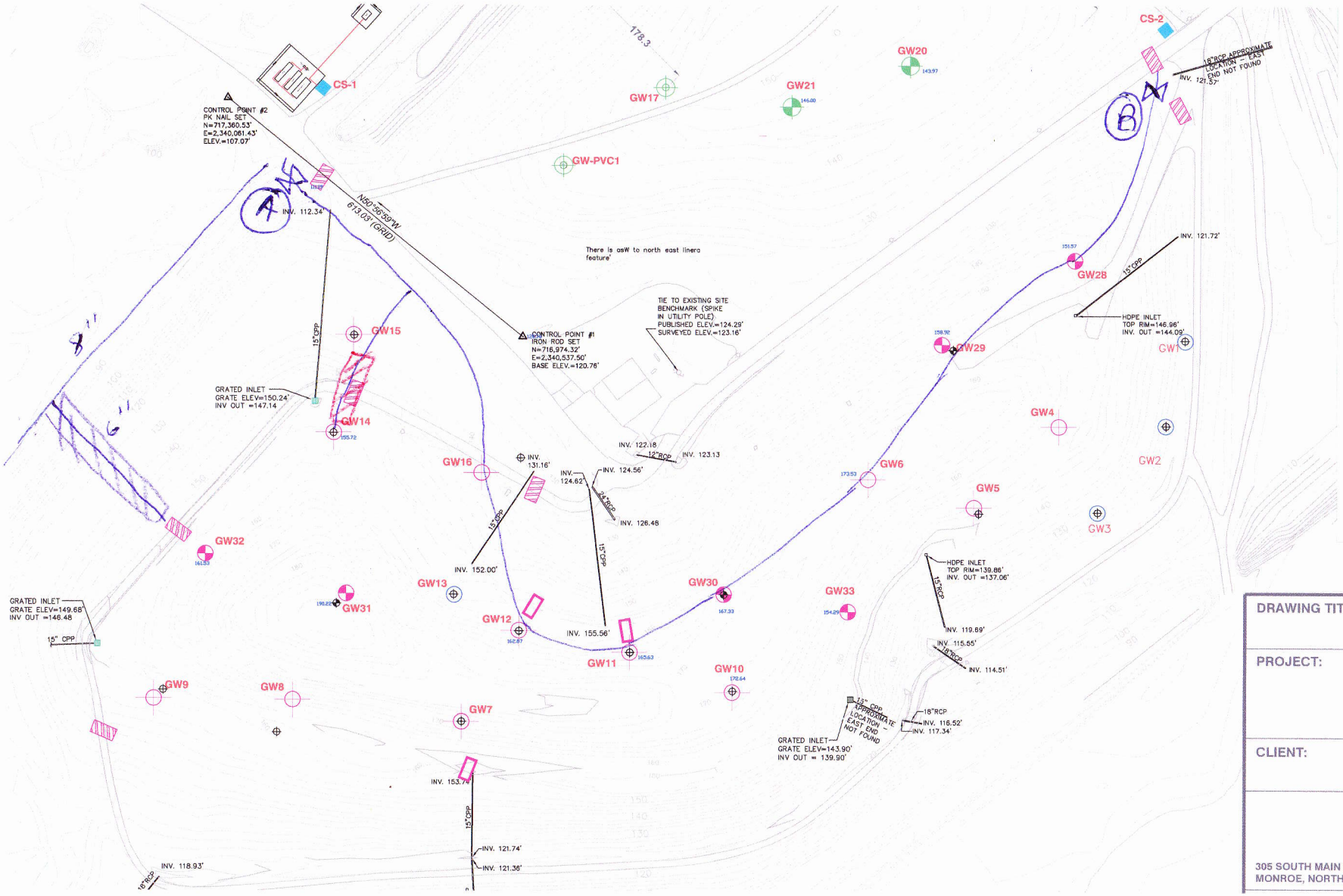
Richard C. King, P.G.

Environmental Manager

7/28/2010

6" LINE INSTALLED
4" LINE INSTALLED
6" LINE
Pressure tested

A – B



LEGEND

EXISTING (
LFG HEADE
AIR/CONDE
BERM CROS
ROAD CROS
STUBS OF
PROPOSED
ORIGINAL F
ORIGINAL E
CURRENTL
EXISTING (
GAS WELL
CONDENSA
LFG FLAN

ISSUED FOR CONS

DRAWING TITLE: LFG SYSTEM S

PROJECT: ACTIVE LFG SYSTEM
WILSON COUNTY
WILSON COUNTY, NO

CLIENT: MP WILSO

CARLSON ENVIR
CONSULTAN

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-038

Inspection Date: July 29, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E

Activity : Finish off last laterals on 8-inch line south landfill. J. Heely drove to Durham at 12:00 pm to obtain gas analyzer for Orange County, NY Landfill.

Photos:

No Photos

Materials Inventory: No new materials

On Site: 0700 – 1200

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-039

Inspection Date: July 30, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E

Activity : J. Heely drove gas analyzer for Orange County, NY Landfill from Wilson, NC to Philadelphia, PA (ATG Office).

Photos:

No Photos

Materials Inventory: No new materials

On Site: Not on site

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-040

Inspection Date: August 1, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (2), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, drill stem, bucket augers, Drill Rig. Cat CP-433E

Activity : J. Heely drove from Philadelphia to Wilson, NC (after delivering gas analyzer)

Photos:

No Photos

Materials Inventory: No new materials

On Site: Not on site

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-041

When Quality Counts **Inspection Date:** August 2, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity : Remove drill rig. Apply labels to all wells and valves. Add final valve extension at CS-2. Fix stick-ups at existing wells GW-8 and GW-9 (prior PVC couplings removed, new ones installed to prevent gas leakage).

Photos:

409 Flare pad - repairs post-storm erosion

410 Flare pad - repairs post-storm erosion

411 Flare pad - repairs post-storm erosion

412 Flare pad - repairs post-storm erosion

Materials Inventory: No new materials

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-042

Inspection Date: August 3, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity: Prepare site for de-mob. Site walkthrough. At 2:00 PM, spoke with Bob from Chandler, based on as-builts, need to re-grade 8-inch pipe runs on south landfill. To commence 4 August.

Photos: No Photos

Materials Inventory: No new materials

On Site: 0700 - 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-043

When Quality Counts **Inspection Date:** August 4, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity: Re-route 8-inch pipe from GW7 to GW10 to attain minimum grade (and fix low points identified during survey for as-built drawings). Begin re-route of 8-inch pipe from GW9 to GW7

Photos:

413 Re-route of 8-inch from GW10 to GW07

414 Re-route of 8-inch from GW10 to GW07

415 Re-route of 8-inch from GW10 to GW07

416 Re-route of 8-inch from GW10 to GW07

417 Re-route of 8-inch from GW10 to GW07

418 Re-route of 8-inch from GW10 to GW07

419 Re-route of 8-inch from GW10 to GW07

420 Re-route of 8-inch from GW 9 to GW07

421 Flare pad

422 Flare pad

423 Flare pad

424 Flare pad

425 Flare pad

426 Re-route of 8-inch from GW 9 to GW07

427 Re-route of 8-inch from GW 9 to GW07

428 Re-route of 8-inch from GW 9 to GW07

429 Re-route of 8-inch from GW 9 to GW07

430 Re-route of 8-inch from GW 9 to GW07

431 Re-route of 8-inch from GW 9 to GW07

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-043

Inspection Date: August 4, 2010

Report of Field Inspection - Daily Log

Materials Inventory: No new materials

On Site: 0700 - 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-044

When Quality Counts **Inspection Date:** August 5, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity: Re-route 8-inch pipe from GW9 to GW7 to attain minimum grade (and fix low points identified during survey for as-built drawings).

Photos:

432 Re-route of 8-inch from GW 9 to GW07

433 Re-route of 8-inch from GW 9 to GW07

434 Re-route of 8-inch from GW 9 to GW07

435 Re-route of 8-inch from GW 9 to GW07

436 Re-route of 8-inch from GW 9 to GW07

437 Re-route of 8-inch from GW 9 to GW07

438 Re-route of 8-inch from GW 9 to GW07

439 Re-route of 8-inch from GW 9 to GW07

440 Re-route of 8-inch from GW 9 to GW07

441 Re-route of 8-inch from GW 9 to GW07

442 Re-route of 8-inch from GW 9 to GW07

443 Re-route of 8-inch from GW 9 to GW07

444 Re-route of 8-inch from GW 9 to GW07

445 Re-route of 8-inch from GW 9 to GW07

446 Re-route of 8-inch from GW 9 to GW07

447 Re-route of 8-inch from GW 9 to GW07

448 Re-route of 8-inch from GW 9 to GW07

449 Re-route of 8-inch from GW 9 to GW07

450 Re-route of 8-inch from GW 9 to GW07

451 Re-route of 8-inch from GW10 to GW07

452 Re-route of 8-inch from GW10 to GW07

453 Re-route of 8-inch from GW10 to GW07

454 Re-route of 8-inch from GW10 to GW07

Materials Inventory: No new materials

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-044

Inspection Date: August 5, 2010

Report of Field Inspection - Daily Log

On Site: 0700 - 1600

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-045

When Quality Counts **Inspection Date:** August 6, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity: Re-route 8-inch pipe from near valves at CS1 to past 8x6 T for GW32.

Photos:

455 Re-route of 8-inch from valves at CS1 to past T for GW32

456 Re-route of 8-inch from valves at CS1 to past T for GW32

457 Re-route of 8-inch from valves at CS1 to past T for GW32

458 Re-route of 8-inch from valves at CS1 to past T for GW32

459 Re-route of 8-inch from valves at CS1 to past T for GW32

460 Re-route of 8-inch from valves at CS1 to past T for GW32

461 Re-route of 8-inch from valves at CS1 to past T for GW32

462 Re-route of 8-inch from valves at CS1 to past T for GW32

463 Re-route of 8-inch from valves at CS1 to past T for GW32

464 Re-route of 8-inch from valves at CS1 to past T for GW32

465 Re-route of 8-inch from valves at CS1 to past T for GW32

466 Apply hay matting

467 Apply hay matting

468 Re-route of 8-inch from valves at CS1 to past T for GW32

469 Re-route of 8-inch from valves at CS1 to past T for GW32

470 Re-route of 8-inch from valves at CS1 to past T for GW32

471 Re-route of 8-inch from valves at CS1 to past T for GW32

472 Re-route of 8-inch from valves at CS1 to past T for GW32

473 Re-route of 8-inch from valves at CS1 to past T for GW32

474 Re-route of 8-inch from valves at CS1 to past T for GW32

475 Re-route of 8-inch from valves at CS1 to past T for GW32

476 Re-route of 8-inch from valves at CS1 to past T for GW32

Materials Inventory: No new materials

Applied Testing & Geosciences, LLC

When Quality Counts

Report No. 10838-045

Inspection Date: August 6, 2010

Report of Field Inspection - Daily Log

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Applied Testing & Geosciences, LLC **Report No.** 10838-046

When Quality Counts **Inspection Date:** August 7, 2010

Report of Field Inspection - Daily Log

Name of Project: Wilson Gas System Installation, ATG Project 10838

Address of Project: 4537 Landfill Road Wilson, NC

Contractor: Chandler Construction (Bob Gettys, Mike, Scotty, Edwin, Matthew)

Engineer: Carlson

Owner: MP Wilson, LLC

Inspector: J Heely (ATG)

Equipment on Site: Bobcat E80 Excavator (2), Cat 930G loader (1), Butt Fusion Welders (4), 4x4 utility, vehicle, Wacker compacter, Cat CP-433E

Activity: Re-route 8-inch pipe from GW33 to GW4.

Photos:

477 Hay mat applied at valves near CS1

478 Hay mat applied at valves near CS1

479 Re-route of 8-inch pipe from GW33 to GW4

480 Re-route of 8-inch pipe from GW33 to GW4

481 Re-route of 8-inch pipe from GW33 to GW4

482 Re-route of 8-inch pipe from GW33 to GW4

483 Re-route of 8-inch pipe from GW33 to GW4

484 Re-route of 8-inch pipe from GW33 to GW4

485 Re-route of 8-inch pipe from GW33 to GW4

486 Re-route of 8-inch pipe from GW33 to GW4

487 Re-route of 8-inch pipe from GW33 to GW4

488 Hay mat near GW32

Materials Inventory: No new materials

On Site: 0700 - 1700

Respectfully Submitted,

Applied Testing & Geosciences, LLC

Richard C. King, P.G.

Environmental Manager

Section 3: Well Construction Logs

Construction logs were completed for each of the newly installed wells at the site. The new wells are designated as:

GW-20	GW-21	GW-22	GW-23
GW-24	GW-25	GW-26	GW-27
GW-28	GW-29	GW-30	GW-31
GW-32	GW-33	GW-XXX (to be re-designated GW34)	

The construction logs for these wells are attached to this section. The logs include a description of materials encountered during drilling. These newly installed wells supplement the existing wells at the site, which are designated:

GW-1	GW-2	GW-3	GW-4
GW-5	GW-6	GW-7	GW-8
GW-9	GW-10	GW-11	GW-12
GW-13	GW-14	GW-15	GW-16
GW-17	GW-18	GW-19	GW-PVC1

Of the existing wells, GW-1, GW-2, GW-3 and GW-13 were not included in the LFGCCS. These wells will remain capped.

Installation of the new wells was conducted by Kellett's Well Boring of Simpsonville, South Carolina. Drilling was conducted using a track-mounted rig:

Materials encountered during drilling were logged as they were extracted, and then placed in roll-off containers for proper disposal. The municipal solid waste (MSW) encountered ranged in age from approximately 1985 through 1997 based on dated material found in the waste. The MSW consisted primarily of:

Paper, plastic, wood fragments, tires, cloth, and wire with approximately 15 percent to 20 percent soil (daily cover), with occasional intermediate cover intervals interpreted as shown on the logs. The materials were moderately compacted (easily removed from the bucket auger upon extraction).

Where encountered the construction and demolition (C&D) debris consisted of:

bricks, wood, stone, tires, and paper.

Typical MSW encountered during drilling:

Typical C&D encountered:

WELL CONSTRUCTION

The new gas wells were constructed of 6-inch diameter Schedule 80 PVC riser and slotted screen.

The screened portion of the well was backfilled with two (2)-inch clean stone to a minimum depth of one (1) foot above the top of screen. To prevent clogging of the screened portion, a fabric barrier (geo-fabric) was placed over the stone prior to the placement of one (1) foot of clean backfill soil (obtained from on-site stock). A two (2)-foot bentonite seal was placed and hydrated above the soil, and additional soil was placed in the annular space to a depth of 4 feet below grade. A second bentonite seal was installed and hydrated from four (4) feet below grade to two (2) feet below grade, and the remaining annular space was backfilled with clean fill soil. This upper bentonite seal was emplaced to repair the clay cap penetrated by the bucket auger boring.

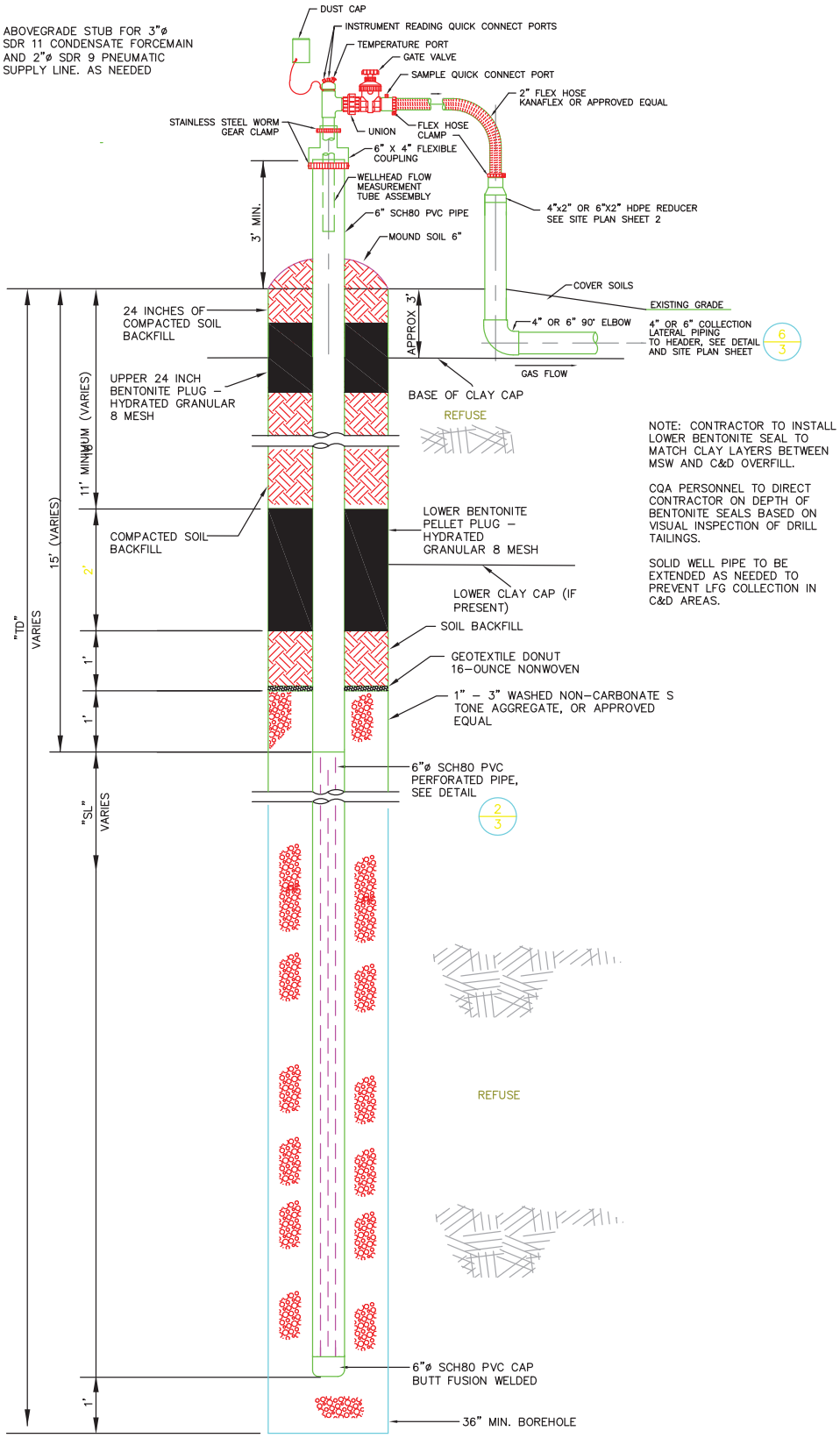
Two of the wells (GW30, and GW31) were completed with two screened intervals. Construction of these wells was similar to the single-screened wells with the addition of a third bentonite seal between the screened intervals for well GW30. For GW31 stone and soil were place between the two screened intervals.

Each well was completed at the surface with an approximately three (3)-foot stickup, and a Lan-Tech manifold to connect to the lateral pipe and to allow sampling of the well.

The typical well construction plan for single and double screened wells is attached to this section.

All waste material arisings from the new gas wells were stored in roll-off containers, covered with tarpaulins to prevent rain ingress and transported to a North Carolina approved municipal waste landfill by Waste Industries of Wilson NC who were subcontracted by Chandler Construction.

WELL CONSTRUCTION FOR ONE
AND TWO CAP SITUATION



NOTE: CONTRACTOR TO INSTALL LOWER BENTONITE SEAL TO MATCH CLAY LAYERS BETWEEN MSW AND C&D OVERFILL.

CQA PERSONNEL TO DIRECT CONTRACTOR ON DEPTH OF BENTONITE SEALS BASED ON VISUAL INSPECTION OF DRILL TAILINGS.

SOLID WELL PIPE TO BE EXTENDED AS NEEDED TO PREVENT LFG COLLECTION IN C&D AREAS.

Section 3

Attachment 3-1

Well Construction Logs

Applied Testing & Geosciences
401 E. Fourth Street, Building 12B
Bridgeport PA 19405
Telephone: 610-313-3227

WELL NUMBER GW 20

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/03/10 **COMPLETED** 07/03/10
GROUND ELEVATION 144 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Vegetative cover		Soil backfill
			1.5	142.5	
			Clay cap		Bentonite seal
			3.5	140.5	
5			Municipal solid waste: cloth, plastic, paper, 10 - 15% soil Waste materials Damp to Moist throughout		Soil backfill
10					Bentonite seal Soil backfill Fabric
15					
20					2-inch stone Screen length 12'
25			25.0	119.0	End cap

Bottom of hole at 25.0 feet.

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WELL NUMBER GW 21

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/03/10 **COMPLETED** 07/03/10
GROUND ELEVATION 145 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Soil and vegetative cover	1.5 / 143.5	Soil backfill
			Clay cap	3.5 / 141.5	Bentonite seal
5			Municipal solid waste: paper, plastic, cardboard, wood, 15 - 20% soil Waste materials Damp to Moist throughout		Soil backfill
10					Bentonite seal Soil backfill Fabric
15					
20					2-inch stone Screen length 12'
25				25.0 / 120.0	End cap

Bottom of hole at 25.0 feet.

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WELL NUMBER GW 22

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/01/10 **COMPLETED** 07/01/10
GROUND ELEVATION 144.65 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Cover soil		Soil backfill
		1.5		143.2	
			Clay cap		Bentonite seal
		3.5		141.2	
5			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		Soil backfill
10		10.0		134.7	Bentonite seal
			Intermediate cover soils		
		11.0		133.7	
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Moist throughout		Soil backfill Fabric
15					
20					2-inch stone Screen length 11'
		24.0		120.7	End cap

Bottom of hole at 24.0 feet.

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WELL NUMBER GW 23

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/01/10 **COMPLETED** 07/01/10
GROUND ELEVATION 146.9 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Cover soil		Soil backfill
			1.5	145.4	
			Clay cap		Bentonite seal
			3.5	143.4	
5			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		Soil backfill
10					Bentonite seal
			12.0	134.9	Soil backfill Fabric
			Intermediate cover soils		
			13.0	133.9	
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		
15					
20					2-inch stone Screen length 12'
25					End cap
			26.0	120.9	

Bottom of hole at 26.0 feet.

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WELL NUMBER GW 24

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/03/10 **COMPLETED** 07/03/10
GROUND ELEVATION 141 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	
0			Soil and vegetative cover	1.5 / 139.5
			Clay cap	3.5 / 137.5
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout	
5				
10				
15				
20				21.0 / 120.0

Bottom of hole at 21.0 feet.

WELL DIAGRAM

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WELL NUMBER GW 25

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/03/10 **COMPLETED** 07/03/10
GROUND ELEVATION 145 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Vegetative cover	1.5 / 143.5	Soil backfill
			Clay cap	3.5 / 141.5	Bentonite seal
5			Municipal solid waste: newspaper, cans, plastic, tires, 20% soil Waste materials Damp to Moist throughout		Soil backfill
10					Bentonite seal Soil backfill Fabric
15					
20					2-inch stone Screen length 11'
25				25.0 / 120.0	End cap

Bottom of hole at 25.0 feet.

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WELL NUMBER GW 26

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/02/10 **COMPLETED** 07/02/10
GROUND ELEVATION 144 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					4 feet stick up
			Soil and vegetative cover		Soil backfill
			1.5	142.5	
			Clay cap		Bentonite seal
			3.5	140.5	
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		Soil backfill
5					
10			10.0	134.0	Bentonite seal
			Intermediate cover soils		Soil backfill Fabric
			11.0	133.0	
			Municipal solid waste: newspaper, cans, plastic, masonry, 20% soil Waste materials Damp to Moist throughout		
15					
					2-inch stone Screen length 11'
20					
					End cap
			22.0	122.0	

Bottom of hole at 22.0 feet.

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WELL NUMBER GW 27

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/14/10 **COMPLETED** 07/14/10
GROUND ELEVATION 141 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				3 feet stick up
			Vegetation cover (2.0)	Soil backfill (139.0)
			Clay cap (5.0)	Bentonite seal (136.0)
5			Municipal solid waste: newspaper, cans, plastic, wood, 15 - 20% soil Waste materials Damp to Moist throughout	Soil backfill
10				Bentonite seal Soil backfill
15				Fabric 2-inch stone Screen length 6'
20			(20.0)	End cap (121.0)

Bottom of hole at 20.0 feet.

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WELL NUMBER GW 28

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/03/10 **COMPLETED** 07/03/10
GROUND ELEVATION 151 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				3 feet stick up
			Clay cap	Soil backfill; Bentonite seal
5.0				146.0
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout	Soil backfill; Bentonite seal; Soil backfill; Fabric; Screen length 8'; 2-inch stone
21.0				130.0
			Clay cap	End cap
24.0				127.0

Bottom of hole at 24.0 feet.

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WELL NUMBER GW 29

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/12/10 **COMPLETED** 07/12/10
GROUND ELEVATION 161.25 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
0					3 feet stick up
			Vegetative cover		Soil backfill
			1.5	159.8	
			Clay cap		Bentonite seal
			3.5	157.8	
			Construction and demolition waste, 20% soil Waste materials Damp to Moist throughout		Soil backfill
5					
					Bentonite seal
10					Soil backfill Fabric
15					
					2-inch stone
20					Screen length 14'
25					
			27.0	134.3	End cap
			Clay		
30					Soil backfill
			33.0	128.3	
			Bottom of hole at 33.0 feet.		

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WELL NUMBER GW 30

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/12/10 **COMPLETED** 07/12/10
GROUND ELEVATION 169.39 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				3 feet stick up
			Vegetative cover (1.5) — 167.9	Soil backfill
			Clay cap (3.0) — 166.4	Bentonite seal
			Construction and demolition waste, 15 - 20% soil Waste materials Damp to Moist throughout	
5				Soil backfill
				Bentonite seal
10				Soil backfill Fabric
15				2-inch stone Screen length 7'
20			(20.0) — 149.4	
			Clay cap	Bentonite seal Soil backfill Fabric
25			(27.0) — 142.4	
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Moist throughout	
30				
35				

GENERAL BH / TP / WELL 10838 WILSON COUNTY NC.GPJ MERGEDPADEP.GDT 08/16/10

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WELL NUMBER GW 30

CLIENT MP Wilson, LLC **PROJECT NAME** Wilson County Landfill Gas to Energy

PROJECT NUMBER 10838 **PROJECT LOCATION** Wilson County, North Carolina

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
35			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Moist throughout *(continued)*	2-inch stone Screen length 22'
40				
45			Bottom 4 feet - Waste materials 70 to 80 percent saturated	
50			50.0 119.4	End cap

Bottom of hole at 50.0 feet.

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WELL NUMBER GW 31

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/13/10 **COMPLETED** 07/13/10
GROUND ELEVATION 192 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				3 feet stick up
			Vegetative cover (1.5) — 190.5	Soil backfill
			Clay cap (3.5) — 188.5	Bentonite seal
5			Construction and demolition waste, 15 - 20% soil Waste materials Damp to Moist throughout	Soil backfill
10				Bentonite seal Soil backfill Fabric
15				
20				
25				Screen length 27'
30				2-inch stone
35				

(Continued Next Page)

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WELL NUMBER GW 31

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
35				
			Construction and demolition waste, 15 - 20% soil Waste materials Damp to Moist throughout *(continued)*	
40			40.0 — 152.0	
			Clay	
45			47.0 — 145.0	
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials saturated	Screen length 2' End cap
			49.0 — 143.0	

Bottom of hole at 49.0 feet.

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WELL NUMBER GW 32

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/13/10 **COMPLETED** 07/13/10
GROUND ELEVATION 162 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				4 feet stick up
			Vegetative cover (1.5)	Soil backfill
			Clay cap (7.0)	Bentonite seal; Soil backfill; Bentonite seal; Soil backfill
			Municipal solid waste: newspaper, cans, plastic, wood, 15% soil Waste materials Damp to Moist throughout	Fabric; 2-inch stone; Screen length 29'
5				
10				
15				
20				
25				
30				
35				

160.5

155.0

(Continued Next Page)

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WELL NUMBER GW 32

CLIENT MP Wilson, LLC **PROJECT NAME** Wilson County Landfill Gas to Energy

PROJECT NUMBER 10838 **PROJECT LOCATION** Wilson County, North Carolina

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
35				
			Municipal solid waste: newspaper, cans, plastic, wood, 15% soil Waste materials Damp to Moist throughout *(continued)*	
40				
			42.0 120.0	End cap
			Bottom of hole at 42.0 feet.	

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WELL NUMBER GW 33

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/13/10 **COMPLETED** 07/13/10
GROUND ELEVATION 159 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY M. Flanagan **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				3 feet stick up
			Vegetative cover (1.5) — 157.5	Soil backfill
			Clay cap (3.0) — 156.0	Bentonite seal
			Construction and demolition waste, wood, 15 - 20% soil Waste materials Damp to Moist throughout	
5				Soil backfill
10				Bentonite seal Soil backfill Fabric
15				
20				
25				2-inch stone Screen length 25'
30				
35				

(Continued Next Page)

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WELL NUMBER GW 33

CLIENT MP Wilson, LLC **PROJECT NAME** Wilson County Landfill Gas to Energy

PROJECT NUMBER 10838 **PROJECT LOCATION** Wilson County, North Carolina

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
35			Construction and demolition waste, wood, 15 - 20% soil Waste materials Damp to Moist throughout *(continued)* 39.0 120.0	End cap
			Bottom of hole at 39.0 feet.	

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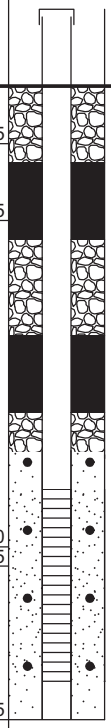
WELL NUMBER GW XXX

CLIENT MP Wilson, LLC
PROJECT NAME Wilson County Landfill Gas to Energy
PROJECT NUMBER 10838
PROJECT LOCATION Wilson County, North Carolina
DATE STARTED 07/02/10 **COMPLETED** 07/02/10
GROUND ELEVATION 142 ft **HOLE SIZE** 36"
DRILLING CONTRACTOR Kellett's
GROUND WATER LEVELS:
DRILLING METHOD Bucket Auger
AT TIME OF DRILLING ---
LOGGED BY J. Heely **CHECKED BY** J. Heely
AT END OF DRILLING ---
NOTES Well constructed with 6" sch 80 pipe and 6" sch 80 perforated pipe.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		
0			Soil and vegetative cover	1.5	140.5
			Clay cap	3.5	138.5
5			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		
10				12.0	130.0
			Possible intermediate cover soils	12.5	129.5
			Municipal solid waste: newspaper, cans, plastic, wood, 20% soil Waste materials Damp to Moist throughout		
15				16.5	125.5

Bottom of hole at 16.5 feet.

WELL DIAGRAM



Section 4: Leak Test Forms

Upon installation of the header pipe, laterals, valves, and condensate sumps, pressure testing was conducted for all sections of pipework.

Individual reports for each pressure test are attached to this section. Each test was conducted for a minimum of one (1) hour. The pressures used for each diameter of pipe was as follows:

2-inch diameter pipe (air line): 100 PSI

3-inch diameter pipe (condensate forcemain): 50 PSI

Lateral/header/sump: 5 PSI

An air compressor connected to the Chandler service vehicle was used to pressure the lines. A valve assembly attached to lateral lines (or tapped into a blind flange) was used to seal the air in the line (see photo below).

A pressure test was considered 'pass' if there was less than one (1) percent pressure loss over one hour.

Leak Test Apparatus:

The completed pressure testing forms for the site are attached to this section. All test s passed.

Chandler Construction Services Inc.

1511 Ninety Six Hwy
Ninety Six, S.C.

GAS COLLECTION SYSTEM PRESSURE TEST

Project: Wilson County Landfill

Location: From the South Side of the North landfill starting at the 6" & 8" valves incorporating all valves, sample ports, well risers, 2", 3", 4", 6" , 8", 10" and CS-1, Stopping at the 8" valve on the North side of the South landfill.

Job # : 1047 Pipe Material: HDPE Type of joints: Fused

Test Time Duration: All test were 60 minutes Test Type Air Test Supervisor: Robert H. Gettys Jr.

North Side Test Results

	Test Temperture	Line Size	Total Length	Test Pressure	Start Time	End Time	Pressure Loss	TEST RESULTS:
Date: 7/26/2010	78	2 inch	2650	100 PSI	9 am	10 am	0	PASSED [X] FAILED [ ]
Date: 7/26/2010	78	3 inch	2650	50 PSI	9:30 am	10:30 am	0	PASSED [X] FAILED [ ]
Date: 7/29/2010	94	4 inch	1380	5 PSI	2:30 pm	3:30 pm	0	PASSED [X] FAILED [ ]
Date: 7/26/2010	88	6 inch	973	5 PSI	2:30 pm	3:30 pm	0	PASSED [X] FAILED [ ]
Date: 7/27/2010	83	8 inch	2274	5 PSI	10 am	11 am	0	PASSED [X] FAILED [ ]
Date: 7/29/2010	94	10 inch	300	5 PSI	2:30 pm	3:30 pm	0	PASSED [X] FAILED [ ]
Date: 7/29/2010	94	48" CS-1 Sump, 16 feet deep		5 PSI	2:30 pm	3:30 pm	0	PASSED [X] FAILED [ ]

Remarks:

Approved by: _____ Inspector _____ Engineer

Chandler Construction Services Inc.
1511 Ninety Six Hwy
Ninety Six, S.C.

GAS COLLECTION SYSTEM PRESSURE TEST

Project: Wilson County Landfill

Location: From the North Side of the South landfill starting at the 6" & 8" valves incorporating all valves, sample ports, well risers, 4", 6" , 8" pipe and CS-2, Stopping at the 8" valve on the South side of the North landfill.

Job # : 1047 Pipe Material: HDPE Type of joints: Fused

Test Time Duration: All test were 60 minutes Test Type Air Test Supervisor: Robert H. Gettys Jr.

South Side Test Results

	Test Temperature	Line Size	Total Length	Test Pressure	Start Time	End Time	Pressure Loss	TEST RESULTS:
Date: 8/1/2010	91	8 inch	3706	5 PSI	11:30 am	12:30 pm	0	PASSED [X] FAILED [ ]
Date: 7/30/2010	89	6 inch	2807	5 PSI	10 am	11 am	0	PASSED [X] FAILED [ ]
Date: 7/30/2010	89	4 inch	648	5 PSI	10 am	11 am	0	PASSED [X] FAILED [ ]
Date:								PASSED [ ] FAILED [ ]
Date:								PASSED [ ] FAILED [ ]
Date:								PASSED [ ] FAILED [ ]
Date: 8/1/2010	93	48" CS-2 Sump, 16 feet deep		5 PSI	1:30 pm	2:30 pm	0	PASSED [X] FAILED [ ]

Remarks:

Approved by: _____ Inspector _____ Engineer

MP Wilson, LLC
13801 Reese Blvd. W, Suite 110
Huntersville, NC 28078
(phone) 704 659 2580
(fax) 704 659 2585

August 27, 2010

To Whom It May Concern:

This letter is to serve as confirmation that Chandler Construction Services Inc. had the approval of MP Wilson, LLC to do air pressure tests of LFG header and lateral piping in excess of 500 feet in length.
If you have any questions, please contact me at 704-659-2580.

Regards,

James Voss
President
MP Wilson, LLC

Section 5: Construction Photographs

Photographs were collected throughout the construction process for the LFGCCS. The attached Table 5-1 provides a log of all photographs collected. These photographs are also cross-referenced on each Daily Field Log (presented in Section 2).

All drilling activity depicted in the photographs was conducted by Kellett's Well Boring of Simpsonville, South Carolina. All other construction work for the LFGCCS was completed by Chandler Construction of Ninety-Six, South Carolina.

Select photographs have been used thoroughout this document to illustrate construction methods. The entire collection of photographs is presented on the DVD attached to this section.

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
001	1-Jun-10	6" pipe inventory
002	1-Jun-10	8" pipe inventory
003	1-Jun-10	Machinery on site
004	1-Jun-10	Storage box
005	1-Jun-10	Pipe fusers
006	1-Jun-10	Lantec box
007	1-Jun-10	Caniflex tube
008	1-Jun-10	Misc parts
009	1-Jun-10	Pre-fab part
010	1-Jun-10	Pre-fab part
011	2-Jun-10	8' diam HDPE pipe (650') fusion welded 1 June
012	2-Jun-10	2" diam pipe inventory
013	2-Jun-10	2" diam pipe inventory
014	2-Jun-10	2" diam pipe inventory
015	2-Jun-10	10" diam pipe inventory
016	2-Jun-10	10" diam pipe inventory
017	2-Jun-10	3" and 4" diam pipe inventory
018	2-Jun-10	3" and 4" diam pipe inventory
019	2-Jun-10	Butt fusion welding 8" diam pipe
020	2-Jun-10	Misc parts
021	2-Jun-10	Bentonite (12 palates, 60 bags per, 50# bags)
022	3-Jun-10	Rented 4x4 delivered today
023	5-Jun-10	Excavation for Sump CS-1
024	5-Jun-10	Excavation for Sump CS-1
025	5-Jun-10	Excavation for Sump CS-1
026	5-Jun-10	Place Sump CS-1
027	5-Jun-10	Place Sump CS-1
028	5-Jun-10	Backfill Sump CS-1
029	5-Jun-10	Backfill Sump CS-1
030	6-Jun-10	Staging area (small landifll)
031	6-Jun-10	Staging area (large landfill)
032	7-Jun-10	Large Pipe Welder (McElroy)
033	7-Jun-10	Medium Pipe Welder (McElroy)
034	8-Jun-10	Wacker compacter (delivered 7 June)
035	8-Jun-10	Bob's notes on 10" pipe re-route at CS-1
036	8-Jun-10	Gravel delivered 8 June
037	8-Jun-10	welding 10" pipe and "T" at CS-1 area
038	8-Jun-10	Soil and gravel stocked at Stage 1 (small LF)
039	8-Jun-10	Preparing string of 10" pipe with T and flange
040	8-Jun-10	Preparing string of 10" pipe with T and flange
041	9-Jun-10	Drill equipment delivered 8-June
042	9-Jun-10	Excavate at Sump CS-1 for 10" line install
043	9-Jun-10	Excavate at Sump CS-1 looking East
044	9-Jun-10	Excavate at Sump CS-1 looking northwest
045	9-Jun-10	Preparing to install 10" pipe at CS-1
046	9-Jun-10	Preparing to install 10" pipe at CS-1, T Joint
047	9-Jun-10	Flange connection at CS-1 (10" pipe)
048	9-Jun-10	Finished connection at CS-1
049	9-Jun-10	Wrapping connection in 8 mil plastic
050	9-Jun-10	Wrapped connection
051	9-Jun-10	Backfilled connection with stone
052	9-Jun-10	compact soil backfill over 10" pipe at CS-1
053	9-Jun-10	Add 2" and 3" Air/Condensate lines over 10"
054	9-Jun-10	Add 2" and 3" Air/Condensate lines over 10"

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
055	9-Jun-10	Add 2" and 3" Air/Condensate lines over 10"
056	9-Jun-10	Seal open ends of 10" pipe off T
057	9-Jun-10	Seal open ends of 10" pipe off T
058	9-Jun-10	Warning tape installed over 10", 2" and 3" pipe
059	14-Jun-10	Pipe installation at CS-1
060	14-Jun-10	Small pipe welder used for 2" and 3" pipe
061	14-Jun-10	Prep 2" pipe for CS-1
062	14-Jun-10	Excavate T area in 10" line (but no installs)
063	14-Jun-10	CS-1 with 10", 2" and 3" pipe
064	15-Jun-10	Kellett's Drill Rig
065	15-Jun-10	6-inch Sch 80 Slotted pipe and riser pipe
066	15-Jun-10	Section of 10-inch pipe 37' x 107' with 90 Elbow
067	15-Jun-10	Backfill around CS-1 looking southwest
068	16-Jun-10	Grading at Flare Pad (New camera)
069	17-Jun-10	Erosion Permit on front gate of site
070	17-Jun-10	Grading at Flare Pad
071	17-Jun-10	Mowing landfill with bush hog
072	18-Jun-10	8" line looking NE from near CS-1 pre-install
073	18-Jun-10	6" line looking West near CS-1 area pre install
074	18-Jun-10	Shooting 8" line NW boundary of North LF
075	18-Jun-10	8" line NW boundary of North LF
076	18-Jun-10	Flare Pad NW corner
077	18-Jun-10	Past Flare pad (stake on container = 50' NW)
078	18-Jun-10	Past Flare pad (past container)
079	18-Jun-10	Panorama of flare pad
080	29-Jun-10	Shot of 4-inch line installed 28 June
081	29-Jun-10	Additional equipment on site this week
082	29-Jun-10	Begin trenching for 8-inch, 2 and 3-inch lines
083	29-Jun-10	8-inch trench near main haul road
084	29-Jun-10	8-inch trench near main haul road
085	29-Jun-10	Trench for 8-inch pipe looking NE from haul rd
086	29-Jun-10	Trench for 8-inch pipe looking NE from haul rd
087	29-Jun-10	Laser site for grade calculations
088	29-Jun-10	Looking NW at trench for 8-inch pipe
089	29-Jun-10	Trench for 8-inch pipe looking SW from LF
090	29-Jun-10	Trench for 8-inch pipe looking SW from LF
091	29-Jun-10	Trench for 8-inch pipe looking SW from LF
092	29-Jun-10	Trench for 8-inch pipe looking NE from haul rd
093	29-Jun-10	View of trench for 8-inch pipe from South LF
094	29-Jun-10	Backfill trench with caution tape (metalic)
095	29-Jun-10	8-inch x 6-inch T-junction
096	29-Jun-10	8-inch x 6-inch T-junction
097	29-Jun-10	8-inch x 6-inch T-junction
098	29-Jun-10	Valves for 8 x 6 inch T
099	29-Jun-10	Valves for 8 x 6 inch T
100	30-Jun-10	Grass mat over 8-inch pipe along NW boundary looking SW
101	30-Jun-10	Grass mat over 8-inch pipe along NW boundary looking SW
102	30-Jun-10	Cleaning out water near 8x6 T looking North
103	30-Jun-10	Preparing trench for 6-inch line from T toward GW17
104	30-Jun-10	Water Truck delivered on site
105	30-Jun-10	Preparing trench for 6-inch line from T toward GW17
106	30-Jun-10	Preparing trench for 6-inch line from GW17 to GW21 Looking E
107	30-Jun-10	8x6T and trench for 6 inch line toward GW17 looking E
108	30-Jun-10	Preparing trench for 6-inch line from GW17 to GW21 Looking E

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
109	30-Jun-10	Preparing trench for 6-inch line from GW17 to GW21 Looking E
110	30-Jun-10	Preparing trench for 6-inch line from GW21 to GW20 Looking E
111	30-Jun-10	Preparing trench for 6-inch line from GW21 to GW20 Looking E
112	30-Jun-10	Installing 6 inch pipe in trench from 8x 6 T toward GW17
113	30-Jun-10	Installing 6 inch pipe in trench at gravel road near GW17
114	30-Jun-10	Adding additional 240LF of 6-inch to line at GW21
115	30-Jun-10	Installing 6 inch pipe in trench at gravel road near GW17
116	30-Jun-10	Caution tape installed in 6-in pipe trench from GW21 toward GW17
117	30-Jun-10	Caution tape installed in 6-in pipe trench from GW21 toward GW17
118	30-Jun-10	6 inch pipe to be installed from GW21 to GW20 lookng NE
119	30-Jun-10	Grass mat cover over 6-inch pipe from GW17 toward 8x6T
120	30-Jun-10	Grass mat cover over 6-inch pipe from GW17 toward GW21
121	30-Jun-10	Grass mat cover over 6-inch pipe from GW17 toward GW21
122	30-Jun-10	Grass mat cover over 6-inch pipe from GW21 toward GW20
123	30-Jun-10	Grass mat cover over 6-inch pipe from GW20 toward GW21
124	30-Jun-10	Grass mat along 8 inch line and 6 inch line looking SW
125	30-Jun-10	Grass mat along 8 inch line and 6 inch line looking W from GW17
126	30-Jun-10	Grass mat along 8-inch pipe north of 8x6 T
127	30-Jun-10	Prep trench for 4-inch lateral from GW22 toward 8-inch line
128	30-Jun-10	Trench for 4-inch lateral from GW22 toward 8-inch line
129	30-Jun-10	Trench and 4-inch lateral from GW22 toward 8-inch line
130	30-Jun-10	Caution tape along 4-inch lateral from GW22 to 8-inch line
131	30-Jun-10	Install stickup for 4-inch (90 and 4x2 used)
132	30-Jun-10	temporary terminus of 4-inch lateral near 8-inch line (for GW22)
133	1-Jul-10	Grass mat over 4-inch lateral from GW22 toward 8-inch line
134	1-Jul-10	Excavate trench along NW boundary toward GW24
135	1-Jul-10	Branch Saddle from 8-inch line to 4-inch lateral for GW22
136	1-Jul-10	Branch Saddle from 8-inch line to 4-inch lateral for GW22
137	1-Jul-10	Indtall 8-inch line in trench looking SW toward 8x6 T
138	1-Jul-10	Indtall 8-inch line in trench looking NE. Curve is to hold grade
139	1-Jul-10	Branch Saddle from 8-inch line to 4-inch lateral for GW23
140	1-Jul-10	Branch Saddle from 8-inch line to 4-inch lateral for GW23
141	1-Jul-10	Install 2 and 3 inch lines along side 8-inch
142	1-Jul-10	Trench toward GW24
143	1-Jul-10	Box for Butterfly valves
144	1-Jul-10	Grass mat on 4-inch lateral from GW22, ecavating trench
145	1-Jul-10	Backfill trench
146	1-Jul-10	Backfill trench
147	1-Jul-10	Place 8-inch line in trench
148	1-Jul-10	Trench for 8-inch line toward GW24
149	1-Jul-10	Caution tape on 8-inch line looking SW
150	1-Jul-10	Fusion weld a 650 foot run of 8-inch line near GW24
151	1-Jul-10	Drill rig over GW22
152	1-Jul-10	Drill rig over GW22
153	1-Jul-10	Waste from 5-feet bgs at GW22
154	1-Jul-10	Waste from 10 feet bgs at GW22 - note intermediate cover
155	1-Jul-10	Install well at GW22
156	1-Jul-10	Install well at GW22
157	1-Jul-10	Install well at GW22
158	1-Jul-10	Install well at GW22
159	1-Jul-10	Install well at GW22
160	1-Jul-10	Waste from 20 feet bgs at GW23
161	1-Jul-10	Prep to lay grass mat over 8/3/2 inch lines installed today
162	1-Jul-10	Drill rig over GW23

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
163	2-Jun-10	Add 6-inch run (320 feet) from GW20 toward CS2
164	2-Jun-10	Trench lateral from GW20 to GW18
165	2-Jun-10	Trench for 8/3/2 inch pipe from GW24 area
166	2-Jun-10	Trench for lateral from GW20 to GW18 looking tward GW20
167	2-Jun-10	Trench for 6-inch pipe looking from CS2 area toward GW20
168	2-Jun-10	Add branch saddle at GW20 to 6-inch pipe (for lateral to GW18
169	2-Jun-10	Prep for berm crossing for 8/3/2 line near GW24
170	2-Jun-10	Grass mat along 8/3/2 line (note 4-inch laterals) looking SW
171	2-Jun-10	Lateral riser for GW20
172	2-Jun-10	Branch saddles for GW19 and GW25
173	2-Jun-10	8/3/2 pipe along north boundary of north landfill
174	2-Jun-10	Backfill 6-inch pipe from GW20 to CS2
175	2-Jun-10	Waste from GW26 at 10 feet bgs
176	2-Jun-10	Drill rig at GW26
177	2-Jun-10	Backfill 8/3/2 line looking from GW26 toward GW24
178	2-Jun-10	Branch saddles for GW19 and GW25 with laterals (40 feet)
179	2-Jun-10	Area of 8/3/2 left open for GW24 tie-in
180	2-Jun-10	Waste from GWXXX from 10 feet bgs
181	2-Jun-10	Waste from GW25 from 20 feet bgs
182	2-Jun-10	Lateral riser for GW18
183	3-Jul-10	Lateral trench for GW19
184	3-Jul-10	GW25 Construction
185	3-Jul-10	Trench GW26 to CS2
186	3-Jul-10	Trench GW26 to CS2
187	3-Jul-10	Trench GW26 to CS2
188	3-Jul-10	Fluid in GW27 at 4 feet bgs
189	3-Jul-10	Waste from GW20
190	3-Jul-10	Roped off area fro GW27 for backfill
191	3-Jul-10	Branch saddle at GW26
192	3-Jul-10	Lateral for GW25
193	3-Jul-10	Prep pipe for GW25
194	3-Jul-10	Panorama of North LF
195	3-Jul-10	Panorama of North LF
196	3-Jul-10	Panorama of North LF
197	3-Jul-10	8/3/2 pipe install from GW26 toward CS2
198	3-Jul-10	C&D Waste from GW28
199	4-Jul-10	10 inch line and culvert pre install. Looking NW
200	4-Jul-10	Info on culvert (16 inch diameter)
201	4-Jul-10	Excavate parallel to main haul road for 10-inch pipe
202	4-Jul-10	Excavation of road crossing
203	4-Jul-10	10-inch line with 10x8 reducer parallel to main haul road
204	4-Jul-10	weld 10 inch pipe to existing T coming from CS1
205	4-Jul-10	8 inch pipe from T (left) meeting 8 inch line previousl installed
206	4-Jul-10	10 inch to 8 inch transition from T
207	4-Jul-10	T from CS1 with 10 inch being welded parallel to haul road
208	4-Jul-10	Culvert with pipe installed pre placement
209	4-Jul-10	at intersection of 8-inch lines on road from north landfilll
210	4-Jul-10	10 inch line on south side of road toward south landfill
211	4-Jul-10	road cross installation from South landfill
212	4-Jul-10	Weld 8-inch line from north landfill
213	4-Jul-10	Weld 8-inch line from north landfill
214	4-Jul-10	T near CS1
215	4-Jul-10	Install culvert at road crossing
216	4-Jul-10	Install culvert at road crossing

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
217	4-Jul-10	Install culvert at road crossing
218	4-Jul-10	Install culvert at road crossing
219	4-Jul-10	weld 3 and 2 inch lines from culvert
220	4-Jul-10	weld 3 and 2 inch lines from culvert
221	4-Jul-10	Backfill road crossing
222	4-Jul-10	Backfill road crossing
223	4-Jul-10	Caution tape applied across road excavation
224	4-Jul-10	South side of road crossing (not backfilled yet)
225	5-Jul-10	Weld in 2-inch and 3-inch pipe at road instersections near CS1
226	5-Jul-10	Backfill 10-inch to 8-inch line along main haul road looking NW
227	5-Jul-10	6-inch and 8-inch butterfly valves at 8x6 T on NW boundary of N LF
228	5-Jul-10	North road crossing near CS2 (12-inch culvert only installed)
229	5-Jul-10	Copy of measurement papers given to Bob
230	5-Jul-10	Copy of measurement papers given to Bob
231	5-Jul-10	Backfill of 8, 3, 2-inch lines at road intersections looking NW
232	5-Jul-10	Backfill of 10 to 8 inch line
233	5-Jul-10	10, 3, 2 inch lines heading toward south landfill from CS1
234	5-Jul-10	10, 3, 2 inch lines heading toward south landfill from CS1
235	5-Jul-10	10, 3, 2 inch lines heading toward south landfill from CS1
236	6-Jul-10	GW23 area prior to regrading for lateral pipe
237	6-Jul-10	GW23 area prior to regrading for lateral pipe
238	6-Jul-10	GW23 area prior to regrading for lateral pipe
239	6-Jul-10	GW23 area prior to regrading for lateral pipe
240	6-Jul-10	GW23 area prior to regrading for lateral pipe
241	6-Jul-10	GW23 area prior to regrading for lateral pipe
242	6-Jul-10	GW23 area prior to regrading for lateral pipe
243	6-Jul-10	Road crossing from south landfill after regrading
244	6-Jul-10	Info given to Bob on pipe measurements
245	6-Jul-10	GW23 regrade for lateral
246	6-Jul-10	GW19 abandoned lateral capped
247	6-Jul-10	Install lateral for GW24
248	6-Jul-10	GW23 regrade for lateral
249	6-Jul-10	GW23 regrade for lateral
250	6-Jul-10	GW19 abandoned lateral trench backfilled
251	6-Jul-10	GW19 abandoned lateral trench backfilled
252	6-Jul-10	Restore and regrade berm near GW24 post lateral install
253	6-Jul-10	GW24 Lateral
254	6-Jul-10	GW23 Lateral
255	6-Jul-10	GW23 Lateral
256	6-Jul-10	GW23 Lateral
257	6-Jul-10	Restore and regrade berm near GW24 post lateral install
258	7-Jul-10	Hauling 8-inch pipe to south landfill, west side
259	7-Jul-10	Matting added to south road crossing
260	7-Jul-10	Matting added to south road crossing
261	7-Jul-10	Matting added to south road crossing
262	7-Jul-10	Matting added to south road crossing
263	7-Jul-10	Hauling 8-inch pipe to south landfill, west side
264	7-Jul-10	Hauling 8-inch pipe to south landfill, west side
265	7-Jul-10	Hauling 8-inch pipe to south landfill, west side
266	7-Jul-10	GW23 regrade finished and covered with mat
267	7-Jul-10	GW23 regrade finished and covered with mat
268	7-Jul-10	GW23 regrade finished and covered with mat
269	7-Jul-10	GW23 regrade finished and covered with mat
270	7-Jul-10	Berm regraded and covered with mat at GW24

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
271	7-Jul-10	Berm regraded and covered with mat at GW24
272	7-Jul-10	Mat covering remaining areas near GW25 and GW19
273	7-Jul-10	Mat covering remaining areas near GW25 and GW19
274	7-Jul-10	Mat covering remaining areas near GW25 and GW19
275	7-Jul-10	Mat covering remaining areas near GW25 and GW19
276	7-Jul-10	Mat covering remaining areas near GW26
277	12-Jul-10	Clay material at bottom of GW29 boring
278	12-Jul-10	Completed gas well GW29
279	12-Jul-10	Tailings for gasw well GW29
280	12-Jul-10	Tailings and completed gas well GW29
281	12-Jul-10	Completed gas well GW30
282	13-Jul-10	Completed gas well GW33
283	13-Jul-10	Buried 8" header on west edge of southern landfill
284	13-Jul-10	Buried 8" header on west edge of southern landfill continued
285	13-Jul-10	8" header on southern side of landfill
286	13-Jul-10	8" header on southern side of landfill continued
287	13-Jul-10	8" header continued
288	13-Jul-10	6" header line across road on southern landfill
289	13-Jul-10	6" header line along central road
290	13-Jul-10	6" head to juction with 8" line on south landfill
291	13-Jul-10	Completed gas well GW31
292	13-Jul-10	Completed gas well GW32
293	13-Jul-10	8" header line across berm installation
294	13-Jul-10	8" Headerline installation north of berm crossing
295	13-Jul-10	Berm crossing installation continiued
296	13-Jul-10	Berm crossing continued
297	13-Jul-10	buried 8" pipline leading to berm crossing on souther end of landfill
298	13-Jul-10	straw covering of buried pipeline (8" line)
299	13-Jul-10	scope of 6" pipeline installation 7/13/2010
300	14-Jul-10	Completed gas well GW27
301	14-Jul-10	Tie in for GW12 on 6" header
302	14-Jul-10	Tie in for GW12 continued
303	14-Jul-10	6" header line installation from GW12 towards GW13
304	14-Jul-10	6" header line installation from GW12 towards GW11
305	14-Jul-10	GW11 and 6" header line
306	14-Jul-10	GW11 and 6" header line with tie in
307	14-Jul-10	GW11 tie in connection
308	14-Jul-10	GW30 tie in connection
309	14-Jul-10	pipe trench to GW5 (8" header line)
310	15-Jul-10	Drainage pipe in path of 8” line
311	15-Jul-10	Drainage pipe to be fixed
312	15-Jul-10	8” line at drainage pipe
313	15-Jul-10	8” line towards drainage pipe
314	15-Jul-10	4” lateral from 6” header to GW6
315	16-Jul-10	Trench for 8” line crossing road on east side of landfill
316	16-Jul-10	Conduit for 8” line corssing road on east side of landfill
317	16-Jul-10	8” line on south landfill and 6” tie in and valves
318	16-Jul-10	8” line on south landfill and 6” tie in and valves
319	16-Jul-10	8” pipeline towards south landfill
320	16-Jul-10	Stone backfill to replace brick debris
321	16-Jul-10	Excavation of brick debris
322	16-Jul-10	Brick rubble
323	16-Jul-10	Brick rubble
324	16-Jul-10	8” and 6” valves

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
325	16-Jul-10	8” and 6” valves
326	16-Jul-10	Backfilling of 8” line on south landfill
327	16-Jul-10	8” line on south landfill
328	16-Jul-10	8” line (buried on south landfill crossing road)
329	16-Jul-10	8” line (buried on south landfill crossing road)
330	16-Jul-10	8” line (buried on south landfill crossing road)
331	16-Jul-10	8” line (buried on south landfill crossing road)
332	16-Jul-10	8” line (buried on south landfill crossing road)
333	16-Jul-10	8” line (buried on south landfill crossing road)
334	17-Jul-10	Excavation for condensate sump CS2
335	17-Jul-10	Condensate sump CS2
336	17-Jul-10	Condensate sump CS2
337	17-Jul-10	Condensate sump CS2
338	17-Jul-10	Condensate sump CS2
339	17-Jul-10	Condensate sump CS2
340	17-Jul-10	Condensate sump CS2
341	17-Jul-10	Condensate sump CS2
342	17-Jul-10	Condensate sump CS2
343	17-Jul-10	Condensate sump CS2
344	17-Jul-10	Condensate sump CS2
345	17-Jul-10	Connection to south landfill to condensate sump
346	17-Jul-10	Connection to south landfill to condensate sump
347	17-Jul-10	completed installation of condensate sump
348	17-Jul-10	completed installation of condensate sump
349	19-Jul-10	6” Valve and line leading to GW28
350	19-Jul-10	GW29 and tie in
351	19-Jul-10	GW28 and tie in
352	19-Jul-10	Completed 6” line towards GW28
353	19-Jul-10	8 and 6” valves and sample ports on east end of southern landfill
354	19-Jul-10	6” valve and sample ports
355	19-Jul-10	8” valve and sample port
356	19-Jul-10	8 and 6” valves
357	20-Jul-10	Flare pad construction prior to stone surface layer
358	20-Jul-10	Flare pad construction
359	20-Jul-10	Flare pad construction continued
360	21-Jul-10	Installation of tee and tie in to 6” line at east end of north landfill
361	21-Jul-10	Installation of tee and tie in to 6” line at east end of north landfill continued
362	21-Jul-10	Installation of tee and tie in to 6” line at east end of north landfill continued
363	21-Jul-10	Flare pad
364	21-Jul-10	Flare pad completed
365	26-Jul-10	Preparing trench near CS2 to tie in 8-inch line
366	26-Jul-10	View of CS2 from South Landfill
367	26-Jul-10	T junction from CS-2. 6 inch line to left, 8 inch line to right, valves
368	26-Jul-10	T junction looking south
369	26-Jul-10	Preparing 8 inch line at CS2
370	26-Jul-10	Branch saddle from 8 inch line to GW27
371	26-Jul-10	8 inch line elbow to T at CS2
372	26-Jul-10	8 inch line elbow to T at CS2
373	26-Jul-10	2 and 3 inch lines at CS2
374	26-Jul-10	8 inch line elbow to T at CS2
375	26-Jul-10	4-inch lateral from 8 inch line to GW27
376	26-Jul-10	Trench for lateral line from GW27 to 8 inch line at CS2
377	26-Jul-10	Branch saddles at T near CS2 for sample ports
378	26-Jul-10	Branch saddles at T near CS2 for sample ports

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
379	26-Jul-10	Backfill lateral line to GW27
380	26-Jul-10	Backfill lateral line to GW27
381	26-Jul-10	View of work area near CS2 from south landfill
382	26-Jul-10	Sample ports on T junction near CS2
383	26-Jul-10	Weld elbow and stickups for 2 inch and 3 inch lines at CS2
384	26-Jul-10	Weld elbow and stickups for 2 inch and 3 inch lines at CS2
385	26-Jul-10	Grading complete at CS2 area
386	26-Jul-10	Weld flanges to 2 and 3 inch lines across from CS1
387	26-Jul-10	Flare pad
388	26-Jul-10	Flare pad
389	26-Jul-10	Install flanges at CS1
390	27-Jul-10	Test apparatus at 2 inch line and 3 inch line at CS-1
391	27-Jul-10	Labels on 2-inch and 3-inch lines at CS1
392	27-Jul-10	Preparing to install 6-inch line to GW-15 off existing 6-inch line
393	27-Jul-10	Test apparatus at 3 inch line at CS-1 (at 50 psi)
394	27-Jul-10	Preparing to install 6-inch line to GW-15 off existing 6-inch line
395	27-Jul-10	Preparing to install 6-inch line to GW-15 off existing 6-inch line
396	27-Jul-10	Labels on 2-inch and 3-inch lines and valves across road from CS1
397	27-Jul-10	Preparing to install 6-inch line to GW-15 off existing 6-inch line
398	27-Jul-10	Testing 6-inch header line from lateral at GW17
399	27-Jul-10	Testing 8-inch header line from lateral at GW23
400	28-Jul-10	Install lateral at GW16
401	28-Jul-10	Install Lateral to GW14
402	28-Jul-10	Install Lateral to GW14
403	28-Jul-10	Prepare to install 6 inch header from GW32 to 8 inch line
404	28-Jul-10	Prepare to install 6 inch header from GW32 to 8 inch line
405	28-Jul-10	Prepare to install 6 inch header from GW32 to 8 inch line
406	28-Jul-10	Prepare to install 6 inch header from GW32 to 8 inch line
407	28-Jul-10	Prepare to install 6 inch header from GW32 to 8 inch line
408	28-Jul-10	Warped flange cover at CS2 under 5 PSI
409	2-Aug-10	Flare pad - repairs post-storm erosion
410	2-Aug-10	Flare pad - repairs post-storm erosion
411	2-Aug-10	Flare pad - repairs post-storm erosion
412	2-Aug-10	Flare pad - repairs post-storm erosion
413	4-Aug-10	Re-route of 8-inch from GW10 to GW07
414	4-Aug-10	Re-route of 8-inch from GW10 to GW07
415	4-Aug-10	Re-route of 8-inch from GW10 to GW07
416	4-Aug-10	Re-route of 8-inch from GW10 to GW07
417	4-Aug-10	Re-route of 8-inch from GW10 to GW07
418	4-Aug-10	Re-route of 8-inch from GW10 to GW07
419	4-Aug-10	Re-route of 8-inch from GW10 to GW07
420	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
421	4-Aug-10	Flare pad
422	4-Aug-10	Flare pad
423	4-Aug-10	Flare pad
424	4-Aug-10	Flare pad
425	4-Aug-10	Flare pad
426	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
427	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
428	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
429	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
430	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
431	4-Aug-10	Re-route of 8-inch from GW 9 to GW07
432	5-Aug-10	Re-route of 8-inch from GW 9 to GW07

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
433	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
434	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
435	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
436	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
437	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
438	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
439	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
440	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
441	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
442	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
443	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
444	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
445	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
446	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
447	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
448	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
449	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
450	5-Aug-10	Re-route of 8-inch from GW 9 to GW07
451	5-Aug-10	Re-route of 8-inch from GW10 to GW07
452	5-Aug-10	Re-route of 8-inch from GW10 to GW07
453	5-Aug-10	Re-route of 8-inch from GW10 to GW07
454	5-Aug-10	Re-route of 8-inch from GW10 to GW07
455	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
456	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
457	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
458	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
459	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
460	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
461	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
462	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
463	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
464	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
465	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
466	6-Aug-10	Apply hay matting
467	6-Aug-10	Apply hay matting
468	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
469	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
470	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
471	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
472	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
473	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
474	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
475	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
476	6-Aug-10	Re-route of 8-inch from valves at CS1 to past T for GW32
477	7-Aug-20	Hay mat applied at valves near CS1
478	7-Aug-20	Hay mat applied at valves near CS1
479	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
480	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
481	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
482	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
483	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
484	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
485	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
486	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4

Wilson County Landfill
Table 5-1 Log Of Field Photographs During Construction

Number	Date	Description
487	7-Aug-20	Re-route of 8-inch pipe from GW33 to GW4
488	7-Aug-20	Hay mat near GW32

Section 6: Clay Cap Repairs

The installation of the header pipe and lateral pipe was conducted within the upper 18-inches of vegetative soil, and did not breach the clay cap in any area. The condensate sumps were installed in areas off the landfill footprints and as such, the clay cap was not disturbed.

The only disturbance of the clay cap occurred during drilling and installation of the gas wells as described in Section 3. As mentioned in Section 3 and shown on the gas well construction logs, the annular space between the borehole wall and the well riser was backfilled with granular bentonite and hydrated across the clay cap. The upper vegetative soil interval (top 1.5 feet) was replaced with soil and re-vegetated.

Section 7: Well Abandonment

No gas wells were abandoned as part of this project. Previously installed gas wells GW-1, GW-2, GW-3, and GW-13 were not incorporated into the LFGCCS. These wells were not disturbed and were left in place as-is (with their PVC caps on to prevent gas escape or air intake).

It should be noted that the initial attempt to drill and install new gas well GW27 resulted in a 'wet' borehole (water encountered in the boring). The drill location was moved approximately 50 feet to the east and re-drilled successfully. The original borehole was backfilled with soil and stone to the depth of the clay cap and sealed with bentonite across the cap area.

Section 8: As-Built Drawings

This section presents the As-Built drawings for the project.

Sheet 1- Title sheet

Sheet 2- Site Plan

Sheet 3- Site Data Sheet

Sheet 4-Details

Sheet 5-Modified CS-2 Details

Sheet 6 – Details

All surveying was completed by

Crescent Moon Surveying

3607 Main Street

Loris, South Carolina 29569

Randy Ward

A Licensed Surveyor in North Carolina

CONSTRUCTION DRAWINGS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM INSTALLATION - 2010
WILSON COUNTY LANDFILL

OWNER:

WILSON COUNTY, NORTH CAROLINA
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893
(252) 399-2823

IN PARTNERSHIP WITH:

MP WILSON, LLC
P.O. BOX 65837
TUSCON, ARIZONA 85728
(520) 615-8995

ENGINEER:

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765

CEC JOB NO. J1-209205-00

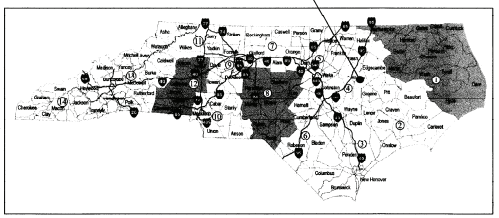
AUGUST 2010

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN
3	SITE DATA SHEET
4	DETAILS
5	DETAILS
6	DETAILS

AS-BUILTS

SITE



AREA MAP
SCALE: AS SHOWN

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER JENNIFER L. CARLSON
8-23-10

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, P.L.L.C dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

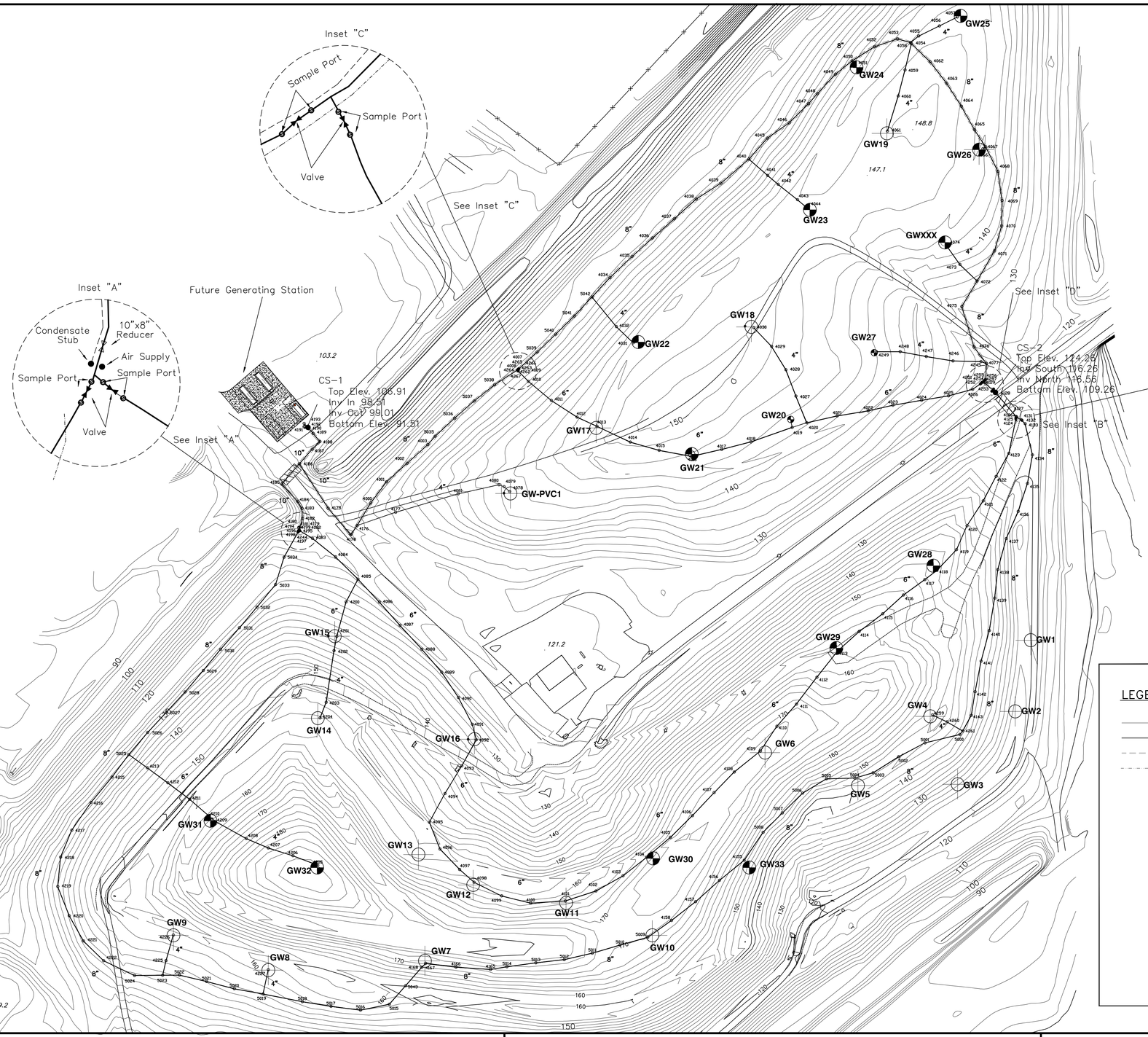
DRAWING TITLE:	TITLE SHEET
PROJECT:	LFG COLLECTION SYSTEM DESIGN WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA
CLIENT:	MP WILSON, LLC

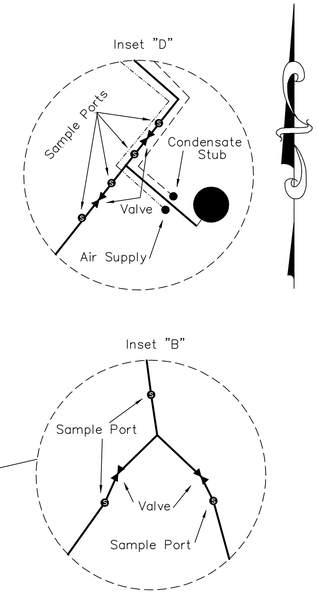
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-209205-00	DWG. WILSON.LFG.TITLE	REV. 0
SCALE	NO SCALE	SHEET 1 OF 6	
DATE	AUGUST 2010		

DETAILS INDEX

VERTICAL EXTRACTION WELL DETAILS	1/4
SLOTTED PIPE FOR VERTICAL WELL DETAILS	2/4
ROAD CROSSING DETAIL	3/4
HEADER PIPE FLANGE DETAIL	4/4
COLLECTION SYSTEM BUTTERFLY DETAIL	5/4
HEADER/LATERAL TRENCH DETAILS	6/4
CONDENSATE SUMP DETAILS	7/4
WELL HEAD DETAILS	1/6
SAMPLE PORT DETAILS	2/6
CS-1 STUB UP DETAILS	3/6





Chandler Construction Representative

Signature Date

GRAPHIC SCALE

0' 100' 200' 300'

1" = 100"

LEGEND

- EXISTING CONTOUR
- LFG HEADER/LATERAL
- CONDENSATE FORCEMAIN
- AIR SUPPLY
- ROAD CROSSING
- STUBS OF AIR/CONDENSATE LINE
- LFG ISOLATION VALVE
- NEW GAS WELL
- EXISTING GAS WELL
- SUMP
- SAMPLE PORT

AS-BUILT SHEET 2 OF 6

Randy D. Ward
Professional Land Surveyor
9696 Ralph Ward Trail
Ash, NC 28420
910-287-6556

DRAWN BY: JB		REVISIONS:
APRROVED BY: RDW	DATE OF SURVEY: 8/18/2010	
SURVEYED BY: JB & GR3		

Asbuilt Survey

For

WILSON COUNTY, NORTH CAROLINA

WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893

THE PURPOSE OF THIS MAP IS FOR LOCATION ONLY AND DOES NOT REPRESENT A BOUNDARY SURVEY BY ME.

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by RandyD. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

I, Randy D. Ward, a Professional Land Surveyor, certify that the Ratio of Precision is 1: 10,000+ and that this map meets the Minimum Standards of Practice for Land Surveying in North Carolina.

Witness my hand and seal this 18th day of August, 2010

Randy D. Ward L-3494

NORTH CAROLINA PROFESSIONAL SEAL L-3494 LAND SURVEYOR RANDY D. WARD

DESCRIPTION	NORTHING	EASTING
GW9	716401.881	2339957.127
GW8	716333.151	2340140.580
GW32	716530.636	2340231.151
GW31	716620.752	2340025.717
GW7	716350.868	2340438.799
GW12	716497.338	2340531.618
GW13	716556.113	2340426.676
GW11	716462.853	2340711.095
GW10	716400.155	2340877.039
GW30	716548.274	2340878.467
GW6	716752.262	2341094.361
GW5	716689.079	2341273.599
GW4	716822.120	2341413.300
GW29	716953.533	2341232.481
GW28	717112.384	2341418.876
GW27	717522.929	2341304.936
GW20	717394.386	2341143.911
GW18	717572.667	2341068.160
GW21	717327.327	2340953.197
GW22	717377.899	2340768.549
GW17	717251.830	2340603.559
GW16	716778.087	2340534.462
GW14	716818.482	2340232.399
GW15	716976.494	2340265.100
GW13	717543.355	2340850.219
GW23	717798.298	2341180.735
GW19	717945.653	2341329.331
GW24	718072.548	2341270.723
GW25	718171.855	2341471.510
GW26	717914.220	2341506.889
GWXXX	717735.326	2341441.309

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4000	top of pipe	717232.935	2340334.086	115.80
4001	top of pipe	717273.971	2340364.830	117.87
4002	top of pipe	717309.670	2340404.548	118.70
4003	top of pipe	717345.729	2340444.470	119.39
4007	top of pipe	717489.649	2340617.168	120.65
4008	valve	717490.902	2340618.880	121.16
4009	valve	717489.036	2340617.785	120.67
4010	top of pipe	717467.769	2340638.336	125.28
4011	top of pipe	717430.886	2340682.590	134.68
4012	top of pipe	717398.792	2340732.020	141.66
4013	top of pipe/intake	717381.154	2340770.513	144.93
4014	top of pipe	717350.591	2340834.751	147.77
4015	top of pipe	717334.689	2340890.230	146.36
4016	top of pipe/intake	717323.101	2340952.464	145.39
4017	top of pipe	717336.525	2341010.778	144.37
4018	top of pipe	717351.198	2341067.337	143.21
4019	top of pipe/intake	717378.990	2341146.703	142.46
4020	top of pipe/tee	717387.971	2341174.775	142.37
4021	top of pipe	717401.172	2341233.495	140.68
4022	top of pipe	717410.991	2341293.189	137.78
4023	top of pipe	717421.616	2341340.889	135.88
4024	top of pipe	717431.135	2341396.248	132.49
4025	top of pipe	717439.697	2341448.036	129.37
4026	top of pipe	717452.291	2341494.485	126.16
4027	top of pipe	717439.201	2341153.924	144.71
4028	top of pipe	717489.915	2341134.650	145.60
4029	top of pipe	717535.233	2341106.969	147.90
4030	top of pipe/intake	717571.206	2341072.623	149.15
4031	top of pipe/intake	717542.061	2340840.376	142.10
4032	top of pipe	717573.171	2340807.866	133.97
4034	top of pipe	717667.702	2340795.631	122.77
4035	top of pipe	717708.288	2340838.085	123.17
4036	top of pipe	717743.880	2340877.278	123.31
4037	top of pipe	717780.775	2340919.317	123.68
4038	top of pipe	717819.154	2340961.986	124.38
4039	top of pipe	717849.473	2341009.318	125.42
4040	top of pipe/tee	717896.014	2341063.386	125.90
4041	top of pipe	717864.541	2341099.402	134.02
4042	top of pipe	717847.333	2341119.769	140.07
4043	top of pipe	717817.755	2341157.073	145.51
4044	top of pipe/intake	717801.877	2341175.755	148.51
4045	top of pipe	717936.388	2341098.836	127.72
4046	top of pipe	717965.872	2341140.909	129.50
4047	top of pipe	718002.608	2341178.143	131.63
4048	top of pipe	718022.257	2341195.312	132.65
4049	top of pipe	718059.621	2341230.270	134.78
4050	top of pipe/tee	718085.326	2341262.144	136.33
4051	top of pipe/intake	718077.357	2341268.315	137.92
4052	top of pipe	718112.746	2341305.596	138.98
4053	top of pipe	718127.802	2341350.011	140.09
4054	top of pipe/tee	718118.623	2341376.555	141.72
4055	top of pipe	718133.162	2341390.505	141.83
4056	top of pipe	718152.705	2341430.662	142.86
4057	top of pipe/intake	718169.835	2341465.269	143.97
4058	top of pipe/tee	718120.630	2341374.807	141.22
4059	top of pipe	718067.819	2341364.136	143.29
4060	top of pipe	718017.715	2341351.140	145.09
4061	top of pipe/intake	717950.026	2341330.389	147.09
4062	top of pipe	718083.448	2341412.747	145.20
4063	top of pipe	718042.183	2341444.420	146.41
4064	top of pipe	717997.965	2341472.921	144.76
4065	top of pipe	717952.522	2341498.283	143.24
4066	top of pipe/intake	717915.919	2341514.467	142.67
4067	top of pipe/tee	717919.893	2341519.635	142.40
4068	top of pipe	717872.417	2341543.416	141.47
4069	top of pipe	717816.194	2341551.392	139.54
4070	top of pipe	717767.120	2341550.638	137.81
4071	top of pipe	717719.016	2341536.776	135.78
4072	top of pipe/tee	717661.071	2341503.216	132.29
4073	top of pipe	717693.118	2341469.941	136.46
4074	top of pipe/intake	717730.109	2341443.789	141.00
4075	top of pipe	717611.937	2341473.727	129.08
4076	top of pipe	717533.865	2341497.228	126.81
4077	top of pipe	717502.040	2341521.424	126.19
4078	top of pipe/intake	717255.450	2340602.094	138.06
4079	top of pipe	717264.624	2340591.441	137.86
4080	top of pipe	717268.521	2340581.705	137.12
4081	top of pipe	717250.949	2340502.697	130.91
4082	valve	717180.947	2340196.854	114.63
4083	top of pipe	717164.980	2340222.173	113.22
4084	top of pipe	717129.483	2340266.608	114.96
4085	top of pipe	717086.517	2340309.939	118.52
4086	top of pipe	717042.450	2340350.950	120.40
4087	top of pipe	716997.386	2340390.907	122.56
4088	top of pipe	716951.498	2340432.964	124.92
4089	top of pipe	716907.190	2340471.218	126.83
4090	top of pipe	716858.246	2340503.575	128.25
4091	top of pipe	716806.831	2340530.278	130.16
4092	top of pipe	716776.996	2340538.016	131.01
4093	top of pipe	716726.561	2340509.908	135.45
4094	top of pipe	716673.550	2340477.508	142.40
4095	top of pipe	716618.234	2340447.443	148.44
4096	top of pipe	716566.528	2340467.910	152.01
4097	top of pipe	716527.095	2340505.797	156.68
4098	top of pipe/intake	716502.467	2340533.636	161.19
4099	top of pipe	716476.134	2340586.535	162.34

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4100	top of pipe	716462.151	2340642.634	163.32
4101	top of pipe/intake	716466.492	2340709.364	164.44
4102	top of pipe	716485.601	2340768.536	165.54
4103	top of pipe	716514.866	2340820.626	167.12
4104	top of pipe/intake	716550.542	2340866.470	168.08
4105	top of pipe	716588.987	2340911.976	170.94
4106	top of pipe	716630.783	2340954.468	173.18
4107	top of pipe	716675.163	2340996.306	173.78
4108	top of pipe	716714.892	2341035.160	173.25
4109	top of pipe/intake	716755.325	2341085.610	172.65
4110	top of pipe	716803.038	2341117.302	171.80
4111	top of pipe	716845.819	2341154.957	169.82
4112	top of pipe	716897.546	2341194.354	161.98
4113	top of pipe/intake	716948.398	2341234.627	159.90
4114	top of pipe	716985.515	2341275.941	158.64
4115	top of pipe	717019.800	2341321.278	156.74
4116	top of pipe	717055.973	2341361.270	154.85
4117	top of pipe	717085.697	2341402.497	152.49
4118	top of pipe/intake	717103.450	2341425.867	151.15
4119	top of pipe	717143.288	2341463.491	146.48
4120	top of pipe	717189.457	2341483.714	142.24
4121	top of pipe	717237.306	2341514.946	136.28
4122	top of pipe	717284.468	2341539.705	130.54
4123	top of pipe	717328.999	2341564.469	126.16
4124	top of pipe/sample port	717395.312	2341577.964	121.12
4125	valve	717397.579	2341578.076	121.83
4126	top pipe/tee	717398.760	2341579.360	121.29
4127	top of pipe/sample port	717399.812	2341578.618	120.68
4128	top condensate pump	717446.495	2341538.688	124.26
4129	top of pipe	717465.180	2341517.472	125.09
4131	valve	717393.741	2341588.258	123.85
4132	top of pipe/sample port	717392.496	2341589.739	124.05
4133	top of pipe	717385.907	2341595.752	124.59
4134	top of pipe	717325.940	2341609.855	124.22
4135	top of pipe	717271.069	2341600.370	125.21
4136	top of pipe	717217.209	2341582.417	126.44
4137	top of pipe	717164.778	2341559.376	131.00
4138	top of pipe	717105.059	2341543.009	134.30
4139	top of pipe	717050.025	2341536.958	136.62
4140	top of pipe	716987.454	2341526.785	138.35
4141	top of pipe	716928.624	2341510.905	139.39
4142	top of pipe	716869.583	2341499.346	139.97
4143	top of pipe	716824.170	2341491.988	141.26
4155	top of pipe	716544.699	2341054.188	160.86
4156	top of pipe	716506.098	2341006.604	166.46
4157	top of pipe	716464.853	2340960.496	170.27
4158	top of pipe	716428.857	2340914.238	171.60
4165	top of pipe	716334.443	2340565.310	171.86
4166	top of pipe	716338.907	2340498.727	170.81
4167	top of pipe	716346.035	2340440.177	170.08
4168	top of pipe	716338.704	2340433.036	168.52
4175	10"x8" reducer	717223.218	2340252.391	110.59
4176	8"x4" reducer/tie	717189.966	2340308.250	114.42
4178	8" 90	717171.891	2340296.011	112.45
4179	10"x8" reducer	717186.846	2340197.715	114.49
4180	air supply	717185.958	2340195.795	114.59
4181	condensate forcemain	717186.142	2340195.603	114.48
4182	top of pipe	717203.056	2340202.888	112.30
4183	top of pipe	717222.825	2340201.753	111.26
4184	top of pipe	717236.001	2340193.877	110.47
4185	top of pipe	717269.844	2340162.661	108.10
4186	top of pipe/tee	717308.925	2340196.856	107.09
4187	top of pipe	717336.885	2340221.651	103.64
4188	top of pipe	717351.798	2340236.405	106.11
4189	top of pipe	717367.378	2340223.450	100.55
4190	cs-1	717379.195	2340213.440	106.91
4191	condensate forcemain	717380.136	2340205.880	106.97
4192	air supply	717381.305	2340207.489	106.85
4193	stubout	717386.543	2340206.219	106.70
4194	sample port	717180.900	2340196.183	114.42
4195	sample port	717179.917	2340197.768	114.69
4196	sample port	717179.860	2340195.010	114.54
4197	sample port	717177.676	2340194.140	114.79
4198	valve	717178.859	2340194.711	114.60
4199	valve	717180.303	2340196.857	114.64
4200	top of pipe	717042.735	2340286.984	125.70
4201	top of pipe/intake	716975.985	2340268.875	136.35
4202	top pipe/red.	716948.670	2340263.676	140.13
4203	top of pipe	716849.245	2340248.530	150.84
4204	top of pipe/intake	716818.991	2340236.751	153.76
4205	top of pipe/intake	716535.209	2340232.330	190.68
4206	top of pipe	716553.508	2340184.486	188.30
4207	top of pipe	716568.342	2340137.153	182.09
4208	top of pipe	716586.801	2340094.255	172.67
4209	4"x6" reducer	716620.010	2340034.248	161.78
4210	top of pipe/intake	716624.083	2340028.442	161.08
4211	top of pipe	716662.266	2339985.661	151.93
4212	top of pipe	716694.029	2339943.308	146.96
4213	top of pipe	716722.813	2339904.034	139.14
4214	top of pipe/tee	716748.570	2339868.235	126.57
4215	top of pipe	716705.150	2339835.832	127.91
4216	top of pipe	716656.088	2339795.167	126.95
4217	top of pipe	716602.916	2339758.209	128.42
4218	top of pipe	716550.954	2339736.793	130.15
4219	top of pipe	716494.260	2339731.207	131.88
4220	top of pipe	716437.769	2339753.356	133.38

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4221	top of pipe	716389.222	2339780.701	134.65
4222	top of pipe	716351.249	2339819.534	138.44
4225	top of pipe	716351.299	2339939.873	144.32
4226	top of pipe/intake	716400.719	2339953.895	150.12
4227	top of pipe/intake	716333.725	2340136.938	151.18
4244	top of pipe	717176.983	2340194.263	112.89
4245	top of pipe/tee	717505.867	2341510.618	127.18
4246	top of pipe	717507.133	2341456.568	131.28
4247	top of pipe	717515.684	2341405.066	134.00
4248	top of pipe	717524.918	2341355.007	136.74
4249	top of pipe/intake	717524.948	2341308.886	140.21
4251	top of pipe	717462.705	2341509.510	125.64
4252	sample port	717464.132	2341511.245	127.07
4253	valve	717465.184	2341512.032	126.69
4254	sample port	717466.416	2341513.655	126.87
4255	sample port	717468.965	2341516.876	126.59
4256	sample port	717471.144	2341519.572	126.81
4257	valve	717470.065	2341518.368	126.49
4259	top of pipe/intake	716824.853	2341417.128	151.90
4260	top of pipe	716811.491	2341445.412	148.82
4261	top of pipe/tee	716793.955	2341475.458	141.70
4262	sample port	717487.396	2340618.864	122.35
4263	sample port	717488.991	2340617.849	121.71
4264	sample port	717490.208	2340618.026	121.45
4265	sample port	717491.955	2340619.845	121.94
4266	valve	717491.144	2340619.017	121.82
4267	valve	717488.650	2340618.387	122.05
5000	top of pipe	716787.246	2341469.934	141.96
5001	top of pipe	716770.980	2341402.605	146.74
5002	top of pipe	716744.294	2341351.837	148.13
5003	top of pipe	716713.321	2341302.749	149.09
5004	top of pipe/tee	716703.187	2341267.421	150.11
5005	top of pipe	716701.900	2341212.830	154.12
5006	top of pipe	716674.093	2341166.855	156.50
5007	top of pipe	716635.875	2341127.883	157.62
5008	top of pipe	716598.549	2341090.631	159.21
5009	top of pipe	716396.298	2340868.524	172.06
5010	top of pipe	716381.208	2340814.805	173.94
5011	top of pipe	716365.793	2340761.541	177.09
5012	top of pipe	716353.528	2340707.494	178.13
5013	top of pipe	716347.148	2340652.739	177.03
5014	top of pipe	716339.556	2340597.032	174.64
5015	top of pipe	716267.347	2340370.158	151.85
5016	top of pipe	716255.987	2340314.684	150.43
5017	top of pipe	716263.151	2340257.789	149.54
5018	top of pipe	716272.290	2340202.641	148.59
5019	top of pipe/tee	716287.185	2340126.885	145.35
5020	top of pipe	716297.088	2340071.460	144.76
5021	top of pipe	716311.320	2340017.932	143.94
5022	top of pipe	716323.550	2339965.695	141.81
5023	top of pipe/tee	716323.330	2339933.406	140.44
5024	top of pipe	716322.874	2339879.061	139.57
5025	top of pipe/tee	716748.484	2339867.885	126.44
5026	top of pipe	716791.034	2339904.483	126.44
5027	top of pipe	716830.505	2339940.980	126.08
5028	top of pipe	716869.116	2339976.620	125.59
5029	top of pipe	716910.467	2340011.667	124.71
5030	top of pipe	716951.256	2340045.099	123.95
5031	top of pipe	716992.865	2340081.322	123.44
5032	top of pipe	717032.649	2340115.193	122.68
5033	top of pipe	717076.093	2340150.962	121.33
5034	top of pipe	717128.934	2340167.518	118.42
5035	top of pipe	717361.783	2340458.520	119.42
5036	top of pipe	717396.825	2340496.192	119.50
5037	top of pipe	717429.995	2340533.904	119.71
5038	top of pipe	717461.250	2340573.378	120.06
5039	top of pipe	717524.109	2340655.294	121.18
5040	top of pipe	717558.464	2340690.892	121.39
5041	top of pipe	717593.581	2340726.677	122.12
5042	top of pipe	717630.318	2340760.973	122.44
5043	top of pipe	716303.025	2340401.597	159.75

NOTE: STATE PLANE COORDINATE SYSTEM (SPCS)

Randy D. Ward
Professional Land Surveyor
9696 Ralph Ward Trail
Ash, NC 28420
910-287-6556

DRAWN BY: JB		REVISIONS:
APRROVED BY: RDW	DATE OF SURVEY: 8/18/2010	
SURVEYED BY: JB & GR3		

Asbuilt Survey
For

WILSON COUNTY, NORTH CAROLINA

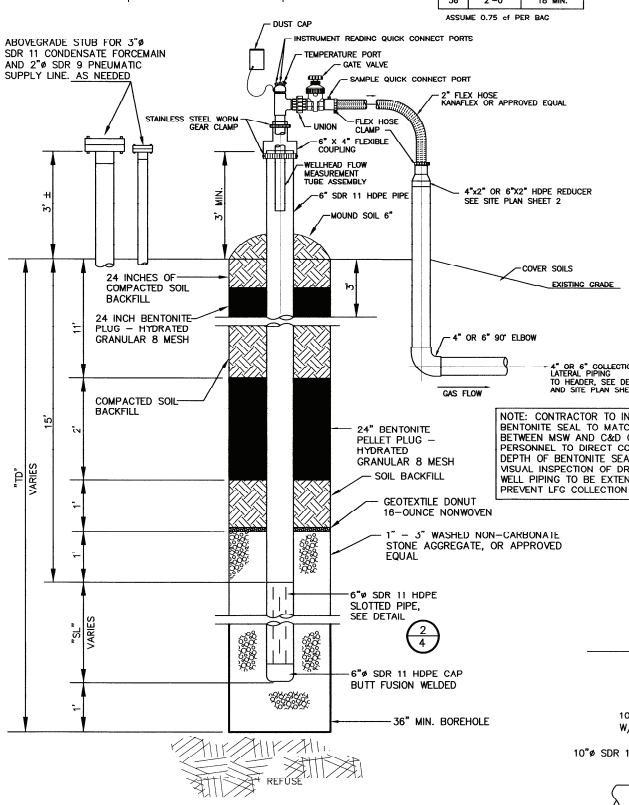
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

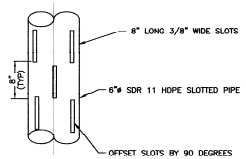
BENTONITE SCHEDULE		
DIA.	THICKNESS	NO. OF BAGS
36"	2'-0"	18 MIN.

ASSUME 0.75 cf PER BAG

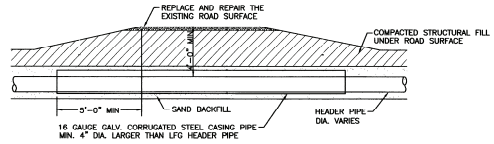


VERTICAL EXTRACTION WELL DETAIL 1/4
NOT TO SCALE

NOTES:
1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL AF-2V WELLHEAD ASSEMBLY, TEL. 1-800-LANDTEC, FAX 213-895-5866.

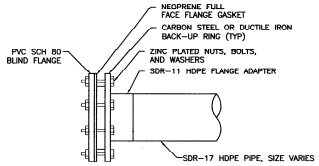


SLOTTED PIPE FOR VERTICAL WELLS DETAIL 2/4
NO SCALE



ROAD CROSSING DETAIL 3/4
NOT TO SCALE

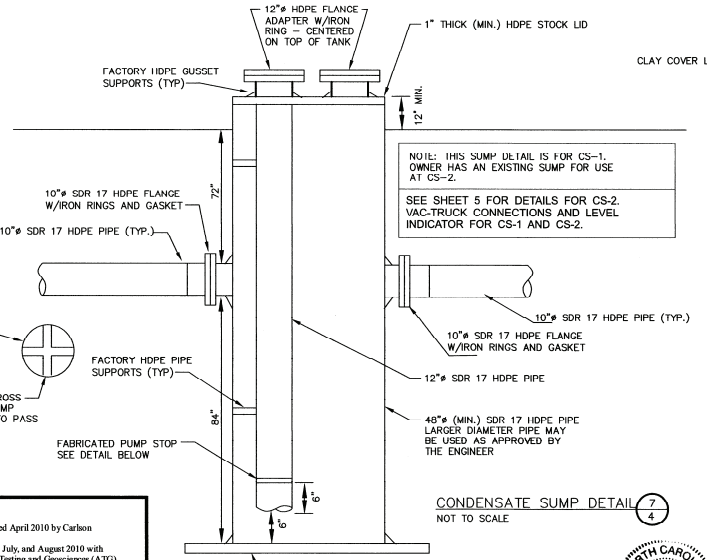
NOTE: ROAD CROSSINGS TO BE INSTALLED TO MAXIMIZE LFG PIPING SLOPE TO ACCOMODATE DIFFERENTIAL SETTLEMENT BELOW ROADWAYS. CONTRACTOR AND CQA PERSONNEL TO REVIEW ROAD CROSSING SLOPES BEFORE INSTALLATION TO MAXIMIZE BASED ON AVAILABLE GRADES.



HEADER PIPE BLIND FLANGE 4/4
NOT TO SCALE

NOTE: CONTRACTOR TO INSTALL LOWER BENTONITE SEAL TO MATCH CLAY LAYERS BETWEEN MSW AND C&D OVERFILL. CQA PERSONNEL TO DIRECT CONTRACTOR ON DEPTH OF BENTONITE SEALS BASED ON VISUAL INSPECTION OF DRILL TAILINGS. SOLID WELL PIPING TO BE EXTENDED AS NEEDED TO PREVENT LFG COLLECTION IN C&D AREAS.

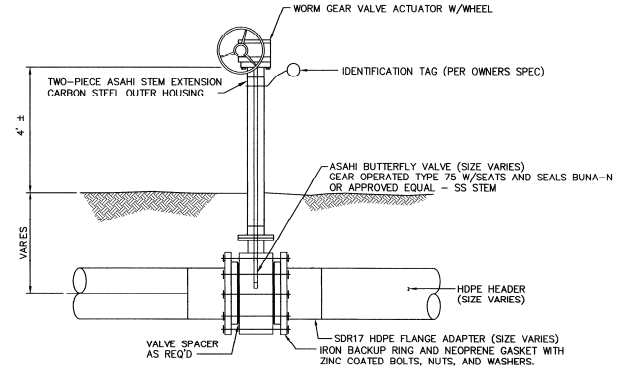
NOTE: ALL LFG PIPING TO BE INSTALLED AT A MINIMUM 2.5% GRADE FOR ALL COUNTER-CURRENT FLOW SECTIONS AND 2% GRADE FOR ALL CONCURRENT FLOW SECTIONS.



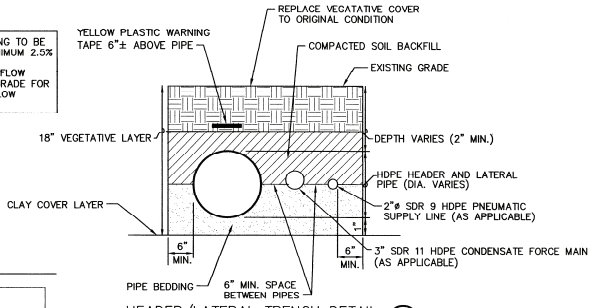
NOTE: THIS SUMP DETAIL IS FOR CS-1. OWNER HAS AN EXISTING SUMP FOR USE AT CS-2.

SEE SHEET 5 FOR DETAILS FOR CS-2. VAC-TRUCK CONNECTIONS AND LEVEL INDICATOR FOR CS-1 AND CS-2.

CONDENSATE SUMP DETAIL 7/4
NOT TO SCALE



LFG COLLECTION SYSTEM BUTTERFLY VALVE DETAIL 5/4
NOT TO SCALE



HEADER/LATERAL TRENCH DETAIL 6/4
NO SCALE

NOTE: EXISTING LANDFILL FINAL COVER SYSTEM CONSISTS OF APPROXIMATELY 18 INCHES OF COVER SOILS, 24 INCHES OF CLAY, AND 12 INCHES OF INTERIM SOILS OVER THE WASTE. ALL LFG PIPING TO BE INSTALLED IN THE UPPER 18 INCHES, UNLESS MAINTAINING PIPE SLOPE REQUIRES INSTALLATION OF LFG PIPING IN THE CLAY OR INTERIM LAYERS. SHOULD LFG PIPING BE INSTALLED IN OR THROUGH THE CLAY CAP, BENTONITE CLAY SHALL BE ADDED TO THE AREAS OF PENETRATION TO REPLACE THE DISTURBED CAP. CQA PERSONNEL TO DOCUMENT ANY DISTURBANCE OF THE CLAY LANDFILL CAP AND ALL REPAIRS.

Notes:
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3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

AS-BUILTS

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER MATTHEW R. CARLSON 8-27-10

DRAWING TITLE: **DETAILS**

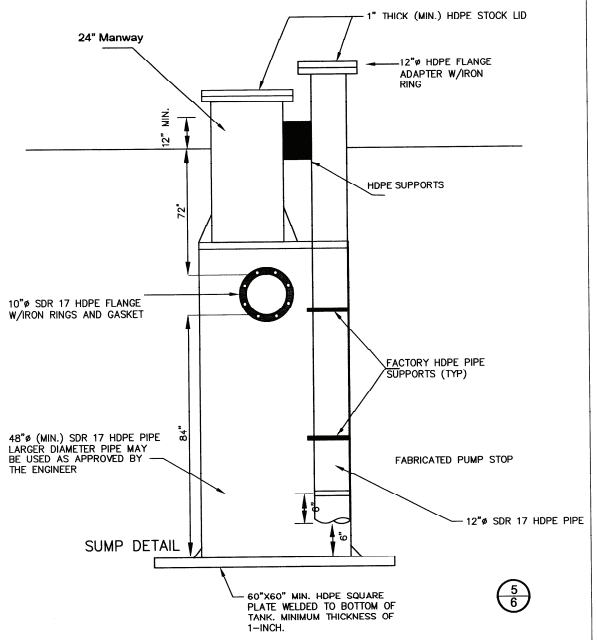
PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

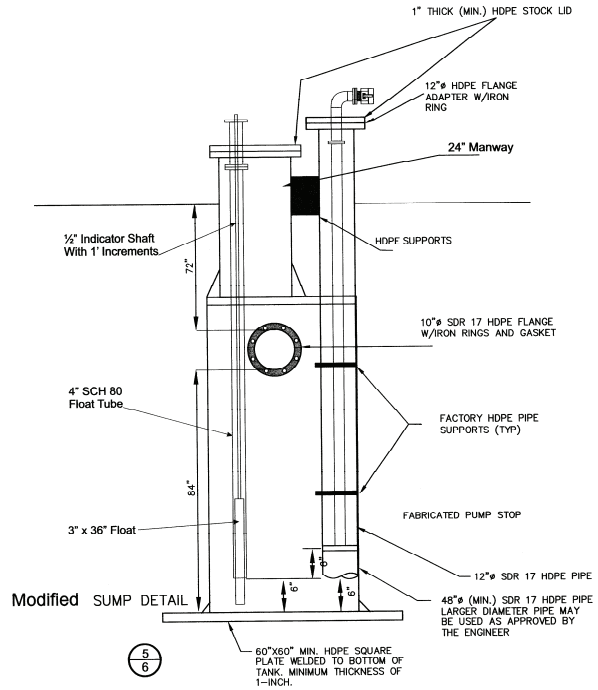
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.LFG	REV. 0	
SCALE NO SCALE	SHEET 4 OF 6		
DATE AUGUST 2010			

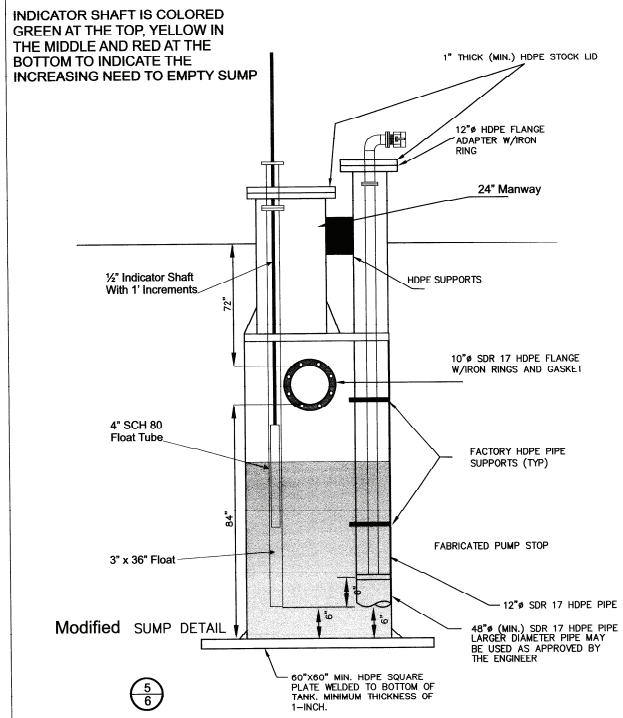
CS-2 Details

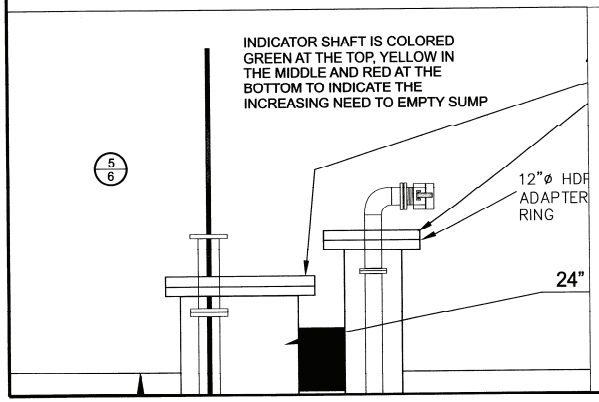


Level Indicator Vac-truck Connection For CS-1, CS-2,



Level Indicator For CS-1, CS-2, Approaching Danger Level





AS-BUILTS

Notes:

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4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
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NORTH CAROLINA PROFESSIONAL SEAL 029334 ENGINEER KINDSER L. CARLSON
8-23-10

DRAWING TITLE:	DETAILS
PROJECT:	LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010 PERMIT DRAWINGS
SITE:	MP WILSON, LLC WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.DETAILS	REV. 0	
SCALE NO SCALE	SHEET 5 OF 6		
DATE AUGUST 2010			

NOTES:

1. UNLESS OTHERWISE AGREED TO BY OWNER, CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS TO PERFORM THE WORK DESCRIBED HEREIN.

2. PRIOR TO DRILLING, CONTRACTOR TO VERIFY WELL LOCATIONS, LANDFILL SURFACE GRADES, AND TOTAL WELL DEPTHS WITH OWNER. ALL WELL DRILLING MUST REMAIN A MINIMUM OF 15 FEET ABOVE THE LANDFILL LINER SYSTEM.

3. CONTRACTOR SHALL HAUL AND DISPOSE OF ALL WASTE MATERIALS TO AN APPROVED WASTE DISPOSAL LOCATION INCLUDING MUNICIPAL SOLID WASTE EXCAVATED DURING THE INSTALLATION OF THE VERTICAL WELLS AND LFG HEADER PIPE.

4. ALL BOLTS, NUTS AND WASHERS SHALL BE ZINC COATED STEEL. IF A FLANGE OR A VALVE IS USED AND IT IS BURIED, THE FLANGE AND/OR VALVE MUST BE WRAPPED WITH A 5-MIL PLASTIC SHEETING.

5. UNLESS OTHERWISE DIRECTED BY OWNER, CONTRACTOR SHALL PROVIDE TO OWNER AS-BUILT DRAWINGS INCLUDING DETAILED SURVEY OF THE NEW VERTICAL WELLS, NEW LFG HEADER PIPING, NEW VALVES, NEW SUMPS, AND NEW CONDENSATE AND PNEUMATIC PIPING. SURVEY TO INCLUDE NORTHING, EASTING, AND GROUND SURFACE ELEVATION OF ALL VERTICAL WELLS, VALVES, AND NORTHING, EASTING, AND TOP OF PIPE ELEVATION OF ALL BURIED HEADER AND LATERAL LFG PIPING AND CONDENSATE AND PNEUMATIC PIPING AT MINIMUM DISTANCES BETWEEN POINTS OF 50 LINEAR FEET AND AT ALL TEES, FLANGES, VALVES, AND RISERS.

6. CONTRACTOR SHALL USE FACTORY MOLDED OR FACTORY FABRICATED TEE AND REDUCERS FOR CONNECTIONS. FIELD MADE BRANCH SADDLE CONNECTIONS ARE NOT TO BE USED, UNLESS OTHERWISE APPROVED BY OWNER. IF BRANCH SADDLE CONNECTIONS ARE APPROVED BY OWNER, CONTRACTOR PERSONNEL PERFORMING BRANCH SADDLE CONNECTIONS MUST BE A CERTIFIED HDPE FUSION TECHNICIAN, AS TRAINED BY MCELROY FUSION (OR EQUAL). TRAINING CERTIFICATES MUST BE PROVIDED TO CQA PERSONNEL OR OWNER PRIOR TO BEGINNING WORK.

7. CONTRACTOR TO USE FACTORY PERFORATED PIPE FOR VERTICAL WELLS, UNLESS OTHERWISE APPROVED BY OWNER.

8. CONTRACTOR RESPONSIBLE FOR DAMAGES INCURRED TO LANDFILL COVER SYSTEM DURING HIS CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL RETURN LANDFILL COVER SYSTEM TO ORGINIAL CONDITION AND/OR TO THE SATISFACTION OF OWNER. CONTRACTOR TO SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS TO THE SATISFACTION OF OWNER.

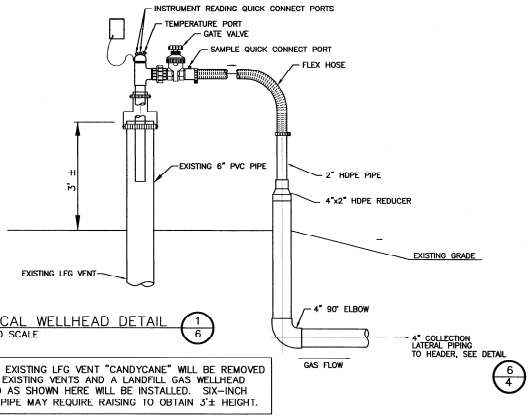
9. OWNER MAY CONTRACT WITH A THRID PARTY FOR CONSTRUCTION QUALITY ASSURANCE (CQA) SERVICES. CONTRACTOR SHALL ALLOW (AND PROVIDE ADVANCE NOTIFICATION) FOR CQA PERSONNEL TO OBSERVE (AND TEST IF NECESSARY) ALL WORK PRIOR TO BURIAL.

10. CONTRACTOR TO AIR PRESSURE TEST ALL SOLID-WALL LFG HEADER AND LATERAL PIPING PRIOR TO BURIAL. LENGTHS OF PRESSURE TESTING NOT TO EXCEED 500 LINEAR FEET WITHOUT OWNER'S APPROVAL. CONTRACTOR TO SEAL ALL PIPE ENDS AND RISERS WITH FUSED CAPS OR FLANGES. PRESSURE TEST ON LFG HEADER/LATERAL PIPING TO BE PERFORMED AT 5 PSIG, ON CONDENSATE FORCEMAIN PIPING TO BE 50 PSI, AND ON AIR SUPPLY PIPING TO BE 100 PSI AND PRESSURE DROP SHALL NOT EXCEED ONE PERCENT OVER A ONE HOUR PERIOD CORRECTED FOR TEMPERATURE. CONTRACTOR TO SUPPLY TESTING FLANGE WITH TEMPERATURE GAUGE AND DIGITAL MANOMETER. CONTRACTOR TO SUPPLY AIR COMPRESSOR AND TO COORDINATE PRESSURE TEST WITH CQA PERSONNEL OR OWNER. ANY AIR LEAKS TO BE REPAIRED BY CONTRACTOR AND A RE-TEST OF THE PRESSURE TESTING MUST BE COMPLETED.

11. ALL LFG HEADER AND LATERAL PIPING TO BE INSTALLED AT A MINIMUM SLOPE OF 2 PERCENT (CONCURRENT FLOW) AND 2.5 PERCENT (COUNTERCURRENT FLOW) TO DRAIN CONDENSATE LIQUIDS TO CONDENSATE SUMPS LOCATED THROUGH OUT THE LFG SYSTEM. LFG HEADER AND LATERAL PIPING THROUGH ROAD CROSSINGS TO BE INSTALLED AT A MINIMUM SLOPE OF 3 PERCENT. PIPING WAS INSTALLED AS DIRECTED BY THE QUALITY ASSURANCE MANAGER WHEN THE ABOVE GRADES COULD NOT BE ACHIEVED.

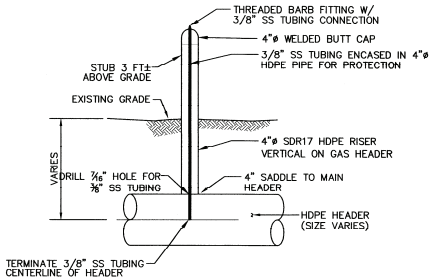
12. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE HEALTH AND SAFETY OF HIS EMPLOYEES AND SUBCONTRACTORS. CONTRACTOR TO PROVIDE SERVICES IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL HEALTH AND SAFETY REGULATIONS. CONTRACTOR IS ASSUMED TO BE EXPERIENCED IN WORKING WITH LANDFILL GAS AND IN A POTENTIALLY HAZARDOUS LANDFILL ENVIRONMENT. CONTRACTOR TO PROVIDE FOUR (4) COPIES OF A SITE-SPECIFC HEALTH AND SAFETY PLAN TO OWNER PRIOR TO BEGINNING WORK. CONTRACTOR TO NOTIFY OWNER OF ANY UNSAFE CONDITIONS DURING CONSTRUCTION. CONTRACTOR IS MADE AWARE THAT HYDROGEN SULFIDE GAS MAY BE PRESENT IN THE LANDFILL GAS. CONTRACTOR TO HAVE A PORTIBLE HYDROGEN SULFIDE METER PRESENT DURING ALL WELL DRILLING AND IN-TRENCH WORK.

13. CONTRACTOR TO REPLACE ALL LANDFILL BERMS TO PRE-CONSTRUCTION OR BETTER CONDITIONS. BASED ON SOLID WASTE PLANS, ALL BERMS ARE "TACK-ON" SOIL BERMS WITH EROSION CONTROL BLANKETS. CONTRACTOR TO BE AWARE THAT WILSON COUNTY WILL HAVE THE FINAL APPROVAL FOR ALL REVEGETATION, LANDFILL CAP REPAIRS, AND BERM REPAIRS AND REPLACEMENTS MADE AS PART OF THE LFG PROJECT.

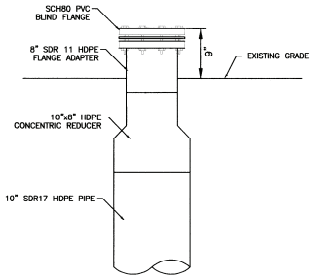


TYPICAL WELLHEAD DETAIL 1/6
NOT TO SCALE

NOTE: THE EXISTING LFG VENT "CANDYCANE" WILL BE REMOVED FROM THE EXISTING VENTS AND A LANDFILL GAS WELLHEAD SIMILAR TO AS SHOWN HERE WILL BE INSTALLED. SIX-INCH PVC WELL PIPE MAY REQUIRE RAISING TO OBTAIN 3'± HEIGHT.



LFG HEADER SAMPLE PORTS 2/6
NOT TO SCALE



CS-1 OUTLET STUB UP 3/6
NOT TO SCALE

AS-BUILTS

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER RATLIFF ENGINEERING & CONSULTING, PLLC 8-23-10

DRAWING TITLE: **DETAILS**

PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.DETAILS	REV. 0	
SCALE NO SCALE	SHEET 6 OF 6		
DATE AUGUST 2010			

Section 9: North Carolina Professional Engineer Certification

Certification by a North Carolina licensed Professional Engineer for this submittal is attached to this section.

Certification is being provided by:

Ratliff Engineering & Consulting, PLLC

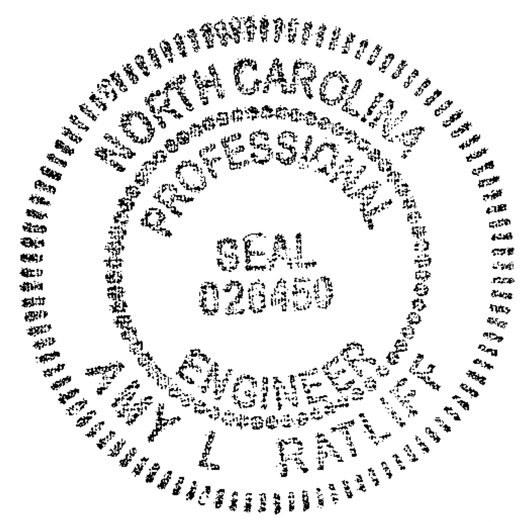
(License No. P-0835)

4224 Lazyriver Drive

Durham, NC 27712

919-294-4770

I, Amy Ratliff, PE, certify the project was built in accordance with the design plans submitted by Carlson Environmental Consultants, PC (CEC). This certification is based upon review of the Daily Logs, photographic records, gas well logs as submitted and certified by ATG and my site inspection / final walk through. The design of the plans is solely the responsibility of CEC. The survey for the As-Built drawings is solely the responsibility of Randy Ward, NC PLS – Crescent Moon Surveying. I also certify that the Record Document Report for the Wilson County LFGCCS meets North Carolina Department of Environment and Natural Resources Solid Waste Section's requirements.



Amy Ratliff 8/23/10

Amy L. Ratliff, P.E.

NC PE #026450

Ratliff Engineering & Consulting, PLLC

License No. P- 0835

Applied Testing & Geosciences, LLC

When Quality Counts

Attention: Ms. Amy Ratliff PE.
Ratliff Engineering & Consulting, PLLC
4224 Lazyriver Drive
Durham, NC 27712

Date: August 18, 2010

Re: Wilson County Landfill – Landfill Gas Collection and Control System Inspection and Observation Certification

Dear Amy;

As requested Applied Testing & Geosciences, LLC hearby certifies our inspections and observations of the gas wells, headers, laterals, valves and appurtenances for the MP Wilson Landfill Gas Collection and Control System installed during June, July, and August 2010. This work is documented in the gas well installation logs, daily logs of work completed, and the photographic record submitted to Ratliff Engineering & Consulting.

AT&G enjoyed working with you on this project for MP Wilson LLC and thanks you for this opportunity to be of service. If you have any questions or require additional information please call Richard King at 610-313-9200 or 856-782-1945.

Yours Truly

Richard King P.G.
Principal
For Applied Testing & Geosciences, LLC

401 E. Fourth Street, Bldg 12B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: info@appliedtesting.com Web: www.appliedtesting.com

Section 10: Survey Data

This section documents and presents the surveyed coordinates and elevations of the final locations of the gas wells, valves, and condensate sumps. The survey data is included in Section 8 As Built drawings.

Surveying for this project was provided by Crescent Moon Surveying of Loris, South Carolina.

Section 11: Operations Monitoring and Maintenance Plan (Attachment for the Post Closure Plan)

The MP Wilson LLC Operation Maintenance and Monitoring Plan (OMM Plan) will be an attachment to the Post Closure Plan for the Wilson County Landfill. and is included as Volume 2 of 2 of this submittal. The OMM Plan incorporates the information to operate the landfill gas collection and control system. The OMM Plan will be updated and revised as necessary to accommodate changes in the system and as such can be used as a stand-alone document.

OPERATION, MONITORING & MAINTENANCE PLAN

for

Wilson County Landfill Gas Collection and Control System

Wilson County Sanitary Landfill
4537 Landfill Road,
Wilson, NC
August, 2010
Rev. 0.0

Prepared for:
MP Wilson, LLC
13801 Reese Blvd. West, Suite 110
Huntersville, NC 28078

Prepared by:
Ratliff Engineering & Consulting, PLLC
4224 Lazyriver Drive
Durham, NC 27712

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Document Control and Assurance

Project Wilson Company Name: MP Wilson, LLC Company Address: 13801 Reese Blvd. West, Suite 110 Huntersville, NC 28078	**Project Developer Contact Information** Name: James Voss Tel: +1 704 659 2580 Email: jamesvoss@methanepower.net
Project Title Operation, Monitoring and Maintenance Plan for Wilson County Landfill Gas to Energy Project	**Version Number** Version 0.0
Report Prepared by Amy Ratliff, Ratliff Engineering & Consulting, PLLC Project Engineer Applied Testing & Geosciences, LLC; and James Voss, CEO MP Wilson, LLC	**Report Date** 08/16/2010
Report Reviewed by James Voss, MP Wilson, LLC.	**Report Approved by** James Voss, President MP Wilson, LLC.

1. Document Introduction, Description and Purpose

This Operation, Monitoring and Maintenance (OM&M) Plan will guide operations and data collection relating to the quantification of operational emissions in compliance with Project permit requirements and of greenhouse gas emission reduction for the MP Wilson, LLC Landfill Gas Collection and Control System(LFGCCS) Project (the "Project").

The Project has been developed and is being operated at the Wilson County Sanitary Landfill (WCSL) in the Town of Wilson, North Carolina by MP Wilson, LLC of Huntersville, NC. The Wilson County Landfill Project was developed by MP Developer LLC for MP Wilson, LLC.

Proper maintenance and operation of Project methane collection and destruction equipment is essential to complying with Project Permit requirements and to providing methane destruction data to compute marketable greenhouse reduction credits. The purpose of the plan is to ensure that project personnel and contractors:

- Operate and maintain the LFGCCS during a startup, shutdown, and malfunction events in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;
- Are prepared to correct malfunctions as soon as practicable after their occurrence to minimize emissions; and,
- Maintain simple, clear records of periods of startup, shutdown, maintenance, malfunction and the corrective actions taken to restore the equipment to its normal or usual manner of operation.

To meet these objectives, this document describes operation, maintenance and monitoring (data collection) at the Project. These procedures follow Climate Action Reserve (CAR) protocol, version 3.0.

The data collection is necessary for compliance with Project environmental permits and quantification of greenhouse gas emissions reductions resulting from the flaring of Landfill Gas (LFG) at the landfill.

The Project reduces the WCSL greenhouse gas emissions (GHG) by destroying the methane – a process by which MP Wilson LLC. is able to produce verifiable and ultimately marketable and serialized, Carbon Reduction Tons (CRTs) in accordance with the Climate Action Reserve's ("Reserve") Landfill Project Reporting Protocol (LPRP) V3.0.

2. Project Location and Description

The Project is located at the Wilson County Sanity Landfill (WCSL), 4537 Landfill Road, Wilson, NC (see Figures 1-1 and 1-2 for location of the project). The WCSL is closed and is in the in Post Closure period. As such it longer accepts any waste streams. The WGSL LFGD Project captures and combusts landfill gas (LFG) collected from the (WCSL) utilizing a high efficiency Flare.

2.1 Site Description

The LFGCCS comprises gas wells, conveyance piping (headers and laterals), a landfill gas Flare and a condensate handling system (see As-Built Sheets 1 through 6). The LFGCCS includes 31 vertical gas extraction wells spaced throughout the landfill. The wells are connected to a series of gas conveyance piping systems, and the gas is carried to the blower/Flare station located at the northwest end of the site, outside the limits of waste, along the main site access road. The blower/Flare system induces a vacuum within the waste mass to extract the LFG and to direct it

to the Flare for combustion. Condensate is collected throughout the collection system and is directed to the condensate sumps for ultimate disposal at the City of Wilson Water Reclamation Facility (POTW).

The landfill gas generation has been estimated to be 600 to 1000 scfm. The volume of LFG extracted will vary based on site conditions, including the state of the collection system, the current and future maintenance performed, the operating and balancing efforts, and the characteristics and age of the deposited waste.

2.2 Project Components

The Project consists of the following components:

- Gas collection system piping including 31 vertical gas extraction wells spaced throughout the landfill;
- Conveyance piping systems;
- Blower/Flare station located at the northwest end of the site, outside the limits of the waste, along the main site access road;
- Condensate collection system (with disposal to the Wilson POTW);
- Monitoring equipment including gas temperature sensor, gas pressure sensor, mass flow meter, gas analyzer, thermocouple, multi-function data acquisition module, etc.;
- Foundations, buildings, storage unit fencing and other related structures associated with the Project.

2.3 Equipment Manuals

Manuals for LFG extraction and destruction equipment; and for meters and calibration equipment are contained in Appendix B.

3. Landfill Gas Collection System Operation

3.1 Landfill Gas Collection System - Start Up and Shut Down Overview

Because LFG is generated and flows continuously from the landfill, the LFG collection system is generally neither started up nor shut down. However, LFG flow from the landfill to the Flare system can be stopped by closing the 10 inch main valve located adjacent to the Flare (see As-Built Sheets) for locations of this valve). The LFG Technician will maintain records of main valve closures or openings on the Daily Log sheets (See Appendix C). Specific start up and shut down procedures for the LFG Flare are presented in Section 4.

Routine and systematic monitoring assesses the overall effectiveness of the gas collection system in controlling and/or recovering landfill gas. Monitoring detects problems which may affect the performance or continued operation of the collection system. The initial and long—term monitoring frequencies are established by using general guidelines that consider:

- The static field conditions prior to system operation;
- The dynamic changes during system operation due to both manual adjustments and the effects of meteorological conditions (barometric pressures and precipitation);

The collection system Landfill Gas Technician has a key role in establishing the monitoring frequency. The frequency should be constant (i.e., daily, weekly, or monthly), but may be supplemented dependent on meteorological changes. As conditions change within the landfill, the frequency may need to be modified for the entire system or portions of the system. The three features of a gas collection system that require routine monitoring are:

- Condensate collection tank
- Blower/Flare station
- Gas Extraction wells

The gas wells extract the LFG from the landfill and are closely monitored to maintain their effectiveness in controlling or recovering gas. If the wells are not operated properly, they will either be understressed or overstressed.

- Understressed: Full extraction capabilities will not be achieved and migration may not be controlled or the recovery potential may be lost;
- Overstressed: Air is entering the site which may cause a subsurface refuse oxidation process. High temperatures and rapid settlement within the waste may damage the system, and the gas generation in the area will be adversely affected.

The objective of adjusting the gas wells heads and system pressure is to maximize landfill gas removal and destruction without causing subsurface oxidation or overstressing the landfill gas production environment.

Following initial system balancing, the quality and pressure of the landfill gas at each gas well and at the header line sampling ports will be monitored by a GEM 2000 portable gas analyzer on a routine basis (typically weekly) or more frequently if required. The GEM 2000 readings will be downloaded on a per event basis to the on-site computer and up-loaded to the file storage archive.

PREVENTION OF SUB SURFACE OXIDATION

The first decompositional step of refuse is aerobic (free oxygen is available). It produces CO2 because of the air in the refuse voids, but free oxygen is soon depleted and the decomposition becomes anaerobic. CO2 production is limited by oxygen held by the complex molecules (typically carbohydrates) within the refuse. Other free carbon atoms combine with hydrogen and form CH4. The typical steady state concentrations of the gases are about 58% CH4 and 42% CO2. with trace amounts of hydrogen sulfide (H2S) and other gases. If free oxygen infiltrates this anaerobic environment:

- Anaerobic bacteria are killed;
- Aerobic bacteria are stimulated;
- Temperature increases due to the heat of the $CH_4 + O_2 \rightarrow CO_2$ reaction;
- CH_4 concentration decreases; and,
- CO_2 concentration increases.

This condition often produces a self-perpetuating reaction which can result in a subsurface fire. To avoid this risk, maintain gas wells at about 54% or greater CH_4, with an absolute minimum of 50% CH_4.

Symptoms of subsurface oxidation include:

- Low CH_4;
- High CO_2;
- Rapid temperature increase;
- Smokey odor or steam;
- Settlement of the refuse; and,
- Fissures in the cover

If subsurface oxidation is suspected:

- DO NOT pump or pour water down the gas well;
- DO NOT excavate the area or remove cover material;
- Follow the instructions in Section 12.

LANDFILL GAS EMERGENCY NOTIFICATION

An emergency landfill gas situation requires an immediate response, and the MP Wilson main office can provide assistance if a subsurface oxidation incident occurs (see Section 12).

SUBSURFACE REFUSE OXIDATION — RECOMMENDED CONTROL

A subsurface refuse oxidation process normally occurs when air is drawn into the refuse due to the vacuum created within the site by a gas collection system. The addition of oxygen into the refuse environment will cause both biological and chemical reactions that may be detected by any one or several of the following events:

- Dramatic settlement over a short period of time;
- Smoke or a smoky odor emanating from the landfill surface or risers;
- Increase in gas temperature (1.2 to 2 times the normal temperature of gas);
- Deformed riser pipes;

The recommended approach to controlling a subsurface oxidation process is as follows:

- Isolate the adjacent well(s) from the collection system to prevent any further stressing of the area
- Seal the leachate risers or probes that may have allowed the introduction of air
- Saturate the cover soils within and surrounding the area of subsidence, hot spots, or emanating smoke (or steam) to minimize any further air infiltration
- Supplement the cover soils in the area of subsidence or surface cracking to further minimize air infiltration

If the oxidation process continues or worsens, nitrogen or carbon dioxide (liquid or gas) can be pumped into the refuse through tubes driven into the landfill. These compounds will suffocate the oxidation process and force the oxygen from the waste environment. The nitrogen is inert and carbon dioxide is already a major component of landfill gas. The nitrogen or carbon dioxide can also be used to keep the PVC pipe cool if well temperatures are increasing. It should be noted that if the PVC pipe has been subjected to gas temperatures above 150°F for an extended period of time (over an hour), the well will probably need to be replaced.

Discharging large volumes of water into the extraction well is not recommended. Unless the oxidation process is occurring in the refuse surrounding the borehole, the discharge of water into the well will not smother the oxidation process. In some cases, the well will become watered out.

The excavation of waste to control oxidation is also not recommended since it will allow additional air to enter the waste environment, and the waste may auto-ignite due to the excess supply of air and start a fire.

Every well has a distinct "Radius of Influence" (ROI). The ROI determines the effective range the well influences without pulling excessive air through the cover. Collection systems are designed so that the expected ROTs of adjacent wells overlap. For instance: increasing the vacuum on a well will increase its ROI and could lead to infiltration in the ROT overlap area. Each header line section serves several wells; well adjustments can affect the amount of vacuum available to other wells. For instance: opening a valve and increasing the flow on one well could cause a reduction in the available vacuum on another well on that header line (and vice versa). Because of these interrelationships, well field adjustments must be performed methodically, allowing sufficient time for stabilization.

INTERPRETATION OF GAS CONCENTRATIONS

Landfill gas typically has steady state concentrations of 58% CH4, 42% CO2. and minute amounts of trace gases. However, if an active extraction system is vacuum—stressed, air can be pulled through the cover into the refuse. This can cause gas dilution; refuse oxidation; and, possibly, a subsurface fire. When air (79% N2, 21% oxygen is pulled through the cover, the oxygen kills the methanogens (methane producing bacteria) and stimulates the aerobic bacteria which consume oxygen. Thus, the 02 is converted to CO2 and may not be observed in representative concentrations at the wellhead. The nitrogen fraction of air is inert to this

process and will provide a representative indication of true air infiltration. The GEM 2000 will be used to measure N2 (Balance Gas) and CO2 at the wells heads. The California Analytical Instruments gas analyzer will measure the components of the LFG going to the Flare.

As an example, if the initial CH4 concentration was 58% and now reads 50%, it can be ascertained that there had been 8% air infiltration. If no 02 is measured, then most likely the air has interacted with the refuse on its path from the cover to the well and the 02 has been converted to CO2 through the aerobic decomposition process. If a high concentration of O2 is measured, there is quite likely a problem with the borehole seal allowing air into the well without the 02 interacting with the refuse. Additional bentonite applied in the borehole near the surface will usually remedy this problem.

Since air is only 21% oxygen (approximately one-fifth), the true amount of air in the system is at least five times the amount of oxygen measured at the wellhead. The 02/N2 relationship can be used to determine if the well is drawing raw air down the borehole or if the 02 is being converted to CO2 on its path through the refuse. The ratio of N2 to O2 is 4 to I in air. Similar ratios to this in landfill gas suggest a borehole problem, whereas much higher ratios suggest that the air has taken a path through the cover and refuse.

3.2 Landfill Gas Collection System - Maintenance Overview

Maintenance of the LFG collection system will include:

- Checking the condition of the Lantec well head equipment (sampling ports, valves, and associated equipment); and replacing sampling ports and O rings as necessary;
- Liquid levels will be taken in each well when the system is first started and monthly until the liquid build up rate is determined. Thereafter the liquid levels will be measured at a frequency commensurate with maintaining open gas well screens. Accumulated liquids

in the gas wells will be pumped out as required and disposed with the condensate. Records of Liquid Levels will be maintained on the Gas Well Liquid Level Form (see Appendic C);

- Checking clamp tightness on all well heads (as indicated by gas quality at each well and every 6 months if required);
- Completing visual observations of Canoflex pipe length and adjusting for landfill settlement, condensate pooling, deterioration etc;
- Determine if condensate pooling is impeding gas flow through headers or laterals and arranging for necessary repairs;
- Recording all of the above activities in the Daily Log sheets, including the date, actions taken, observations, and the LFG Technician's full name and signature.
- Well identification tags shall be inspected a minimum of every 6 months and shall be replaced if damaged or losing legibility.

3.3 Project Spare Parts

To avoid and reduce downtime, a spare parts inventory is kept on site. This inventory includes maintenance items for the following:

- Lantec well head units;
- Spare GEM 2000 sampling ports for the Lantec units;
- Canoflex gooseneck connections;
- Flare Maintenance items;
- Calibration items;
- Tools (drills Taps Dies and wrenches etc).

The Landfill Gas Technician is responsible for requesting spare parts in a timely manner and keeping the spare parts inventory complete.

4 Landfill Gas Destruction System Start Up, Shut Down, Troubleshooting & Maintenance

This section describes the LFG destruction system start up, shut down, troubleshooting and maintenance for all components expected to exist at MP LFGD Projects.

4.1 Flare

4.1.1 Flare Description

LFG is destroyed by combustion in the CEC candlestick open Flare rated for 1000 SCFM. Refer to Figure 3 for the location of the blower/Flare station and the LFGD system. The destruction efficiency of the open Flare is rated at 96 percent (see Appendix B).

The Flare is located on a gravel foundation pad with a geotextile underlay at the northwest corner of the landfill (see As-Built Sheet 2).

4.1.2 Flare Start Up, Shut Down, Troubleshooting and Maintenance Procedures

<u>Flare Start-up Procedure</u>

- Check that propane tank valve is in the open position to allow gas flow to the pilot light;
- Check that the nitrogen tank valve is open and line is pressurized to operation of the block valve actuator;

The CMI Energy, LLC FA1-1200 utility Flare system has been designed as a fully automated operational platform requiring minimal operator interface once initial settings are determined and set. The system is designed to allow for manual operation of equipment if required. However, manual operation of system components during periods when the equipment is unattended by responsible personnel should NEVER be allowed due to the possibility of allowing uncontrolled escape of LFG without destruction by combustion. Selection of

operational mode is performed by manual selection switch located on the face of the main control interface cabinet.

Safe and reliable performance of the utility Flare equipment can be accomplished with minimal required operator adjustments and/or set point changes. Standard operation requires the operator to simply select which blower to operate by switching the selector switch located on the front of the main control cabinet to “auto” and then switch the operating mode selector switch to “auto”.

The automatic logic sequence will activate the pilot flame sequence, activate the automatic fail close valve, and start up the selected blower. If after a user selected time delay interval (10 min typical) or IF during this time interval the main flame has exceeded the temperature controller setpoint temperature (350 0F typical), the system will then become fully operational in automatic operational mode. When operating within this mode, the Flare flame controls will continuously monitor the main flame temperature and U/V signature. If either the U/V flame detector OR the thermocouple sensor indicates the main flame is active, the Flare will continue to operate in automatic mode. If both the U/V flame detector AND the thermocouple sensor indicate main flame failure, the Flare control logic sequence will activate the pilot ignition sequence. This sequence restarts the 10 minute startup timer logic sequence where if the main flame exceeds the temperature controller setpoint value within the designated timed interval, the system logic sequence will switch back to automatic operational mode and the relight sequence will reset. If the main flame does not exceed the temperature controller setpoint temperature within the designated timed interval, the Flare sequence will revert to shutdown mode, close the fail close shutdown valve and de-energize the blower VFD controller. At which point the Flare sequence must be manually reset by depressing the reset push button on the front of the main control cabinet OR switching the control mode switch to the “OFF’ position and then switching back to the “AUTO” position.

The main control logic sequence is dependent on 2 interlock safety features that must be "closed" to allow control power to be provided for operation of the Flare operational mode controls. The first interlock safety is the "EMERGENCY STOP" switch located on the front of the control panel. The second interlock safety wired in series is the Flare stack temperature switch located at the inlet of the LFG at the base of the Flare stack assembly. Within the Flare pilot ignition transformer cabinet (ENC-5) on the Flare stack, a latching relay is integrated in the Flare stack flame temperature switch signal to shutdown the Flare if a high temperature condition exists indicating a flame back condition. This relay will lock out the operation of the Flare equipment until personnel have inspected the Flare equipment for damages AND the cause of the flame back condition can be determined and corrected. At which time the operator can manually reset the system to resume normal operation. It is imperative that responsible personnel understand the danger and potential equipment damage that may occur with a flame back condition and that corrective measures are taken prior to any attempt to restart the Flare equipment after such an occurrence.

The CMI Energy utility Flare system can be operated "on the fly" meaning that blower selection can be changed while still allowing operation of the system. Either blower number 1, number 2, or both can be selected while continuing to operate. Both blowers can also be switched off if needed and as long as main flame is maintained within the temperature controller setpoint temperature OR the U/V flame detector indicates an active flame, the system will continue to operate in "AUTO" mode.

Each blower is equipped with an isolated VFD A/C drive controller that operates the blower at any user selected speed by adjusting the output frequency of the drive using the operator interface keypad on the front of the drive. The VFD controller continuously monitors the blower motor for any fault condition and will shut down the output to the blower motor if a fault

condition exists. Fault indication will be listed on the LCD readout on the keypad display. Fault reset is accomplished by depressing the reset key on the VFD drive keypad and then resetting the main control system by depressing the reset push button on the front of the main control cabinet.

If Flare system control is inoperable and troubleshooting diagnostics do not allow for resumption of normal operation, CMI Energy personnel should be notified as soon as possible in order to minimize potential downtime of LFG collection and control measures for your facility. Please refer to the included "Contact List" for contact information at that time.

Flare Maintenance

Flare maintenance is completed on an as needed basis. Propane is used for Flare startup. Nitrogen is used to actuate the shut-off valve. When the gas tanks are empty the reserve tank is substituted and a replacement spare tank ordered from the propane supplier (AirGas).

Periods of down time, due to maintenance of the Flare of other causes, will be logged the Project Timeline file.

Flare Spare Parts

Spare parts are obtained as required from CEC or local suppliers.

4.2 Engine THIS SECTION INTENTIONALLY LEFT BLANK

4.3 Offsite Gas Transfer THIS SECTION INTENTIONALLY LEFT BLANK

5 Condensate System Start Up, Shut Down, Troubleshooting & Maintenance

5.1 Condensate Management System Description

LFG is typically saturated at the temperatures and pressures that occur within the landfill. As gas enters the gas extraction system it cools, and the moisture in the gas condenses and drops out of the gas. This condensate must be removed from the gas header piping system to prevent the liquids from impeding the flow of gas. The condensate in the gas collection system is removed from the gas header pipes by gravity drainage to either of two condensate sumps, one located at the Flare pad (CS1) and one located at the east end of the landfill (CS2) (see Sheet 2 of the Asbuilt drawings for locations).Condensate is removed from the Flare skid blower via a knock-out pot and directed to condensate sump CS1.

A float rod is installed in a 4-inch SCH 80 tube in the 24-inch manway of each of the sumps. There will be a visible indicator on the rod that will reflect the depth of liquid in the sump. The rod will rise as the level goes up and become more visible as the level of the liquid increases. There will be a "stop light" color scheme on the indicator which will show green for low-level, yellow for mid-level and red for high-level. Operating personnel monitoring the sump will contact the septic hauler, if the regularly scheduled removal needs to be increased or decreased.

The operation of the LFGCCS will terminate if such a condition develops and will not be restarted until the condition is corrected. Refer to Sheet 2 of the As-Built Drawings for the locations of the condensate sumps.

Condensate collected throughout the collection system and directed to the sump will be pumped and hauled for ultimate disposal at the neighbouring City of Wilson Water Reclamation Facility (POTW). The letter of acceptance for the condensate is attached in Appendix D. The letter does indicate a requirement to have a sample collected and analyzed to verify the absence of toxic pollutants after start up occurs. This task will take place as soon as the system is up and running.

The City does not require/provide a specific permit for liquid disposal, but does require notification of the hauler selected by MP Wilson. The selected hauler will be required by contract to be available in the event of an emergency or an unanticipated spike in the quantity of condensate.

5.2 Start Up, Shut Down and Maintenance

Start Up and Shut Down Procedure

Condensate that collects at the Flare (the end of the main header line) is periodically removed by the WSCL.

Condensate Management System Maintenance

Check equipment for leaks and damage. Record inspections and corrective actions on Daily Log sheets (see sample in Appendix C).

Condensate Management System Spare Parts

Replace components as required.

6 LFG Destruction System Data Collection and Monitoring

The purpose of monitoring is to ensure that the project is operating as expected and that GHG emissions are, in fact, being reduced as a result of the operation of the project and that the project is carried out in accordance with CAR ver. 3.0. Monitored data will be used to observe the operational status of the project and to calculate the performance of the collection and destruction system.

6.1 Monitoring Parameters

Most parameters at the site are measured automatically and collected and stored by the Data Acquisition system (see Section 7). Table 1 below lists the parameters that are monitored for the Project.

Table 1: Description of Parameter Monitoring Activities

Description	Data Unit	Frequency	Comment	Parameter (Section 4 equations)
Amount of LFG Flared	ft^3 SCFM	Continuously	Measured continuously by a flow meter and recorded at least once every 15 min	$LFG_{Flare,y}$ $TM_{RG,h}$
Methane fraction in the LFG	ft^3 CH_4/ ft^3 LFG % CH4 by volume	Continuous	Measured by continuous gas analyzer or a calibrated portable gas analyzer with data (recorded at least once every 15 min) to be averaged by time interval t for the reporting cycle.	w_{CH4}
Total amount of electricity required for project operation	MWh	Monthly	Obtained from either onsite metering or utility purchase records. Required to determine CO_2 emissions from use of electricity to operate the project activity	$PE_{EC,y}$
Carbon emission factor of electricity	kg CO_2/MWh	Annually	eGRID2007 state emission factor for New York (2005 data, most recent)	$EF_{EL,y}$
Total amount	Gallons or lbs	Bi-annually	Calculated from records of fossil	$PE_{FC,y}$

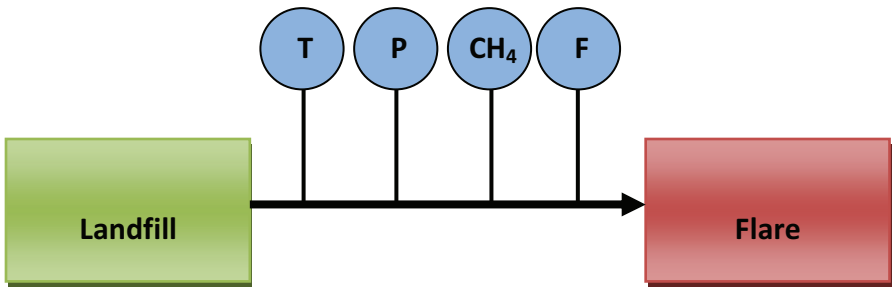
of fossil fuel required for project operation			fuel purchased and consumed. Required to determine CO_2 emissions from use of fossil fuels to operate the project activity.	
Carbon emission factor of fossil fuel	kg CO_2/mass or volume unit	Annually	Acquired for each fossil fuel combusted by the project, obtained from good practice guidance.	$COEF_{i,y}$
Operation of the Flare	hours	Hourly	This is monitored to ensure methane destruction is claimed for methane used in Flare only when it is operational.	-

Emission reductions from LFG capture and control systems must be monitored with measurement equipment that directly meters:

- The continuous rate of LFG flow, temperature and pressure prior to delivery to destruction device;
- The fraction of methane in the LFG measured with a continuous analyzer;
- The temperature of the Flare device;
- The amount of energy (electricity and fossil fuel) consumed for project operation.

The figure below indicates the key parameters monitored for the project and their physical location relative to one another.

Monitoring diagram of key parameters



6.2 Landfill Gas Flare

The blower/Flare system operation is controlled and interlocked by a programmable logic controller (PLC) on the Flare. The Flare is equipped with an Endress+Hauser T-mass 65 I thermal mass flow meter and operational thermocouples to detect that the Flare is burning. The thermal mass flow meter is located in the supply side gas delivery pipe between the blower and automatic Flare shutoff block valve. Signals from these instruments are directed to a data acquisition box located in the storage unit located near the Flare.

6.3 Flow Rate Meter

Gas flow to the Flare is measured continuously by an Endress+Hauser T-mass 65 I thermal mass flow meter (or equivalent) and recorded at least once every 15 min. All data parameters are monitored and recorded consistent with the CAR protocol, Ver. 3.0. Manufacturers specifications are provided in Appendix B. Flow rate data is collected and stored as discussed in Section 7. The Endress+Hauser T-mass 65 I thermal mass flow meter is cleaned and field calibrated on quarterly basis and is Factory calibrated between 1 and 3 years in accordance with the manufacturers recommendations.

6.4 Flare Temperature

Thermocouples located in the Flare stack and monitor the gas exit temperature to ensure that the Flare is operational. In the case that the recorded temperature is below the temperature at which thermocouple relay for propane igniter valve is set to shut – direct release of LFG is prevented by the Flare block valve closing.

<u>Flare Stack Thermocouple</u>
Measured parameters: Flare Temperature (^{o}F)
Delivered signal: 0 – 1.0V

Purpose: - real time Flare temperature measurement which indicates that the Flare is destroying LFG. This thermocouple also provides a Flare operation warning system (see below).
Operation time: 24/7
Make: Provided by CEC
Model: Type K

The ambient air temperature sensor is used for comparison with the Flare stack temperature. This instrument is not calibrated. Readings are compared to known weather conditions.

6.5 Gas Analyzer

LFG quality is measured continuously by a gas analyzer (CAI 600L) which is located in the storage trailer located adjacent to the Flare and provides a continuous reading of the gas quality parameters (CH4, CO2, and O2). The sampled gas fed to the gas analyzer is conditioned pressure wise (by a pressure regulator) and moisture wise. The gas analyzer is calibrated by the supplier prior to installation. The CAI Gas analyzer automatically recalibrates periodically (once every 24 hours) using calibration gases stored in cylinders adjacent to the instrument and if the gas analyzer is returned for repair. The gas analyzer can also be check calibrated using a calibrated GEM 2000. Specifications of the Gas Analyzer are provided in Appendix B. The unit does not require factory calibration (per manufacturer's statement).

Instrument malfunction is indicated by a decreasing CH4 content and/or a difference between readings of LFG quality at Gas Conditioning plant (using the GEM2000) and the gas analyzer. Data from the CAI Gas Analyzer is automatically collected every 10 minutes by the Data Acquisition Module.

<u>Gas Analyzer</u>
Measured parameters: (%)CH_4, (%)O_2, (%)CO_2
Range: CH_4 : 0-70%; O_2 0-25%; CO_2 : 0-70%

Delivered signal: CH_4 : 4-20mA O_2 : 4-20mA; CO_2 : 4-20mA
Purpose: instantaneous LFG composition measurement
Operation time: 24/7
Make: California Analytical Instruments (CAI)
Model: 600L

Data is collected by the Flare's data acquisition system that automatically collects this data at least once every 15 minutes. Instrument malfunction is indicated by a decreasing CH4 content and/or a difference between readings of LFG quality at the Flare (using the GEM2000) and the gas analyzer.

6.6 Gas Pressure and Temperature

LFG gas pressure in the discharge line from the blower to the Flare, and gas temperature, are measured by separate instruments (see below).

Gas pressure and gas temperature are measured to determine the operational status of the Blower and the Flare block valve. Both of these instruments are factory calibrated prior to shipment to the Project. These parameters are not required by the Endress+Hauser meter as that instrument automatically compensates for gas temperature and gas pressure. The data from these instruments can be used to corroborate the operational time of the Flare/ Blower unit. Data is acquired at least once ate every 15 min by the Flare's data acquisition system.

<u>Gas Temperature Sensor</u>
Location: Blower discharge pipe
Range: 0-200°F
Delivered signal: 4-20mA
Purpose: temperature measurement of the Flare supplying gas
Operation time: 24/7
Make: Endress+Hauser
Model: iTemp Hart TMT182

Gas Pressure Sensor
Location: Blower discharge pipe
Range: 0-2 gpsi
Delivered signal: 4-20mA
Local indicator: LCD
Purpose: pressure measurement of the Flare supplying gas
Operation time: 24/7
Make: Endress+Hauser
Model: Cerabar S

6.7 Landtec GEM 2000 Gas Analyzer and Pressure Monitor

A Landtec GEM 2000 LFG Analyzer is used to check gas quality at the LFG wells and to provide gas well operational data. This instrument is also separately calibrated and used to cross check the calibration of the gas analyzer (LFG20 or SB2000). When the gas analyzer is down for maintenance the GEM 2000 is used to check gas quality at the Flare.

The Landtec Gem 2000 is factory calibrated every 6 months or when it is sent for servicing following a malfunction such as battery failure. This instrument is typically calibrated according to the Manufacturers Manual using Certified Calibration gases each time it is used (typically weekly). The calibration records are stored in the instrument and can then be obtained from the GEM 2000 data files. Additionally written GEM 2000 calibration sheets are prepared.

6.8 Electricity Usage

Electricity usage is measured by the Project specific electricity meter. No calibration, other than factory calibration, is possible on this meter. The initial reading of the electricity meter was zero (new meter). Readings are taken each month to allow electrical usage to be quantified.

6.9 Propane Usage

Propane usage is measured by the cylinder. Invoice records for Propane purchases are retained by MP Wilson, LLC.

6.10 Monitoring Roles and Responsibilities

The LFG Technician/Plant Operator and Data Management Technician will take the weekly or biweekly data files for the aforementioned data, and these data files will be available to the LFG Technician who is designated by the Project management to oversee and be fully accountable for the CAR monitoring plan.

7 Data Acquisition Management and Storage

7.1 Data Acquisition Equipment

Data from the instruments described above is acquired by the Flare's multi-function PLC which will accessed by an OPC (OLE for process control) server located in the instrumentation enclosure attached to the Flare support structure.

Data measurements from the instruments are acquired by the Data Acquisition Modules as either 4-20Milli Amp or 0-1 volt signals. The Data Acquisition Module converts the signals from each channel as follows

Data Device	Channel	Instrument	Value	Signal Range	Output Range	Units
OPC server	1	Flow meter (Endress+ Hauser T-mass 65 I)	Gas flow rate	4-20mA	0-1,000	SCFM
OPC server	2	Temperature Transmitter (Endress+Hauser iTemp Hart TMT182)	Gas Temperature	4-20mA	0-200	oF
OPC server	3	Pressure Transmitter (Endress+Hauser Cerebar S)	Gas Pressure	4-20mA	0-2	gpsi
OPC server	4	Gas Analyzer (CAI 600L)	CH4	0-1V	0-100	%
OPC server	5	Gas Analyzer (CAI 600L)	CO2	0-1V	0-100	%
OPC server	6	Gas Analyzer (CAI 600L)	O2	0-1V	0-25	%
OPC server	7	Thermocouple type K	Flare Temperature	0-1V	32-2000	oF
OPC server	8	Thermocouple type T	Ambient Temperature	0-1V	-15-300	oF

7.2 Data Management and Storage

Data files are built up and stored on the OPC server as data is obtained at least once ate every 15 min from the instruments. These files are routinely downloaded (typically weekly or

biweekly) by accessing the OPC server over the broadband internet connection using an OPC client.

The data transfer and storage procedure is as follows:

- On a weekly or biweekly basis, the data stored onto the OPC server is retrieved for processing and archiving purposes.
- The OPC server is remotely accessed by an OPC client application in order to get downloaded onto the ATG's computer server (located at ATG office location).
- Transfer (download) the stored files from the OPC server to OPC client.
- Close the remote internet connection.

When the files have been downloaded to the server at AT&G , the data files are checked to make sure the file names have the standard nomenclature (Date(yymmdd), Site(WCSL), Instrument (i.e. LFG), Start date (yymmdd), End date (yymmdd) and original copies transferred to the **X-Cd.com** web site for data storage back-up. As each file is accepted by **X-Cd.com**, the file is given an acceptance date stamp by **X-Cd.com**. These files are used as a remote backup files for data security.

7.3 Calculate CO2 Equivalent Tons

Project emission reductions are GHG emission reductions that occur within the GHG assessment boundary as a result of the installation of the LFG control system. At a minimum, they must be calculated on an annual, ex-post basis. In general, the total Project emission reductions are calculated by:

GHG emission reductions accounted for in the Project:

- The total amount of uncontrolled methane collected from the landfill and destroyed by the Project activities

Minus

- The amount of methane that would have been oxidized by soil bacteria in the absence of the Project

Minus

GHG emissions that occur as a result of the Project activities:

- Total annual indirect carbon dioxide emissions resulting from the consumption of electricity.
- Total annual carbon dioxide emissions from the on-site destruction of fossil fuel.
- Discount factor to account for uncertainties associated with project monitoring equipment, if applicable.

The Project calculation methodology can be represented by the equation:

$$ER_Y = [(CH_4Dest_{PR})*21*(1-OX)*(1-DF)]-FFCO_2-ELCO_2$$

where,

ERy = total annual project GHG emission reductions (tCO_2e/yr)

CH_4 $Dest_{PR}$ = total annual methane emissions destroyed by the project LFG collection and destruction system (tCH_4/yr)

21 = Global Warming Potential factor of methane to carbon dioxide[1]

OX = factor for the oxidation of methane by soil bacteria. Equal to 0.10 for all landfills except those that are covered with a synthetic liner as part of the final cover systems where OX = 0.

DF = Discount factor to account for uncertainties associated with the monitoring equipment. Either 0, 0.10 or 0.20. Equal to zero if using continuous methane monitoring.

$FLCO_2$ = total annual indirect carbon dioxide emissions from the destruction of fossil fuel (tCO2e/yr)

$ELCO_2$ = total annual indirect carbon dioxide emissions from the consumption of electricity from the grid (tCO2e/yr)

PROJECT EMISSION REDUCTIONS

Emission reductions accounted for in the Project include the total amount of uncontrolled methane collected from the landfill and destroyed represented by the equations:

$$CH_4Dest_{PR} = CH_4Dest_{Flare} *(.0423*.000454)$$

Where,

CH_4Dest_{Flare} = the net quantity of methane destroyed by flaring (scf/yr)

.0423 = density of methane ($lbCH_4/ft^3CH_4$)

.000454 = $tCH_4/lbCH_4$

$$CH_4Dest_i = (Q_i * DE_i)$$

where,

CH_4Dest_i = the net quantity of methane destroyed by device i (scf/yr)

[1] IPCC Second Assessment Report: Climate Change 1996.

Q_i = total quantity of methane sent to destruction device i (scf/yr)

DE_i = default methane destruction efficiency for device i (scf/yr)

DE_{Flare} = 0.960 for open Flare

$$Q_i = \sum LFG_{i,t} * PR_{CH4,t}$$

where,

$LFG_{i,t}$ = total quantity of LFG fed to the destruction device i, in time interval t (scf/t)

t = time interval for which LFG flow and concentration measurements are aggregated. Equal to one day for continuously monitored methane concentration

$PR_{CH4,t}$ = the average methane fraction of the LFG in time interval t as measured (ft^3 CH_4/ft^3 LFG)

EMISSIONS FROM PROJECT ACTIVITIES

GHG emissions that occur as a result of the Project activities include the total annual emissions from the destruction of fossil fuel and the consumption of electricity from the grid represented by the equations:

$$FF_{CO2} = \sum i(FF_{PR,i}*EF_{FF,i})/1000$$

where,

FF_{CO2} = total annual carbon dioxide emissions from the destruction of fossil fuel (tCO2e/yr)

$FF_{PR,i}$ = total annual fossil fuel consumed by the project LFG collection and destruction system, by fuel type I (volume fossil fuel/yr)

EF_{EL} = fuel specific emission factor, California Registry General Reporting Protocol Appendix C.3 and C.5 (kg CO_2/volume fossil fuel)

1000 = kgCO2/tCO2

$$EL_{CO2} = (EL_{PR}*EF_{EL})/2204.62$$

where,

$ELCO_2$ = total annual indirect carbon dioxide emissions from the consumption of electricity from the grid (tCO2e/yr)

EL_{PR} = total annual electricity consumed by the project LFG collection and destruction system (MWh)

EF_{EL} = carbon emission factor for electricity used (lb CO2/MWh)

2204.62 = lbCO2/tCO2

The step by step procedure used to complete the monthly CO2 Equivalent Tons calculations is as follows:

- Copy the RAW Data file to a processing spreadsheet
- Select all data and prepare the pivot table / pivot chart to look for data outliers:
- Calculate CH4 volume (based on LFG volume and CH4 percentage;
- Check for "zero" values for the flow rate;
- Apply conditional statements to allow selection of CH4 percentages less than 70% and greater than 40% and any correction factors;
- Fill data gaps according to the missing data procedures (see Section 7.4);
- Calculate CO2 Equivalent Tons.
- Add CO2 Equivalent Tons to summary tables.

7.4 Data Quality Assurance

This section summarizes Quality Assurance (QA) measures for the GHG destruction devices at the Project; and Compliance QA. All monitoring equipment will be periodically calibrated in accordance to the manufacturer's recommendations and repaired or replaced when necessary. All monitoring activities, including the installation, use, maintenance, calibration of monitoring devices, as well as the management of data quality, are the responsibility of MP Wilson.

Data from the instruments described above is acquired by a multi-function data acquisition module which is accessed by a computer located in the instrumentation enclosure attached to the Flare support structure. As discussed above, in order to ensure data quality, the data files are checked for data outliers by using the pivot table chart function in Microsoft Excel to complete time series graphs of, CH_4, CO_2, O_2 and Flow Rate. These graphs are inspected for anomalous values.

GHG Destruction Device QA

The Flare data are reviewed monthly for content, general accuracy, and periods for which missing data procedures have to be implemented:

- The Flare temperature thermocouple data is reviewed to determine if values are outside the range indicating the Flare is burning (less than 290 degrees F);
- The monthly RAW Data File (ready to be sent to X-Cd.com) and the same data file to be used for Carbon Credit calculation on the ATG computer server are used to QA the data. The QA check consists of a comparison of the summated flows and summated CH4 percentage for a randomly chosen day in each file;
- Results of the QA checks are documented in the MP WCL Data Check File
- If the results of the QA check indicate a discrepancy in the reduced versus raw data then a note will be made in the MP WCL Data Check File (sample form in Appendix C) regarding the resolution of the discrepancy, but RAW DATA WILL NEVER BE CHANGED;
- Following transmitting the raw data files to X-cd.com, the data files are checked for data outliers by using the pivot table chart function in Microsoft Excel to complete time series graphs of, CH4, CO2, O2 and Flow Rate. These graphs are inspected for anomalous values. Raw data will not be changed, but calculations may be adjusted if the raw data can be demonstrated to have been in error by the investigation.

In the case that gas analyzer data is missing or has been deemed invalid, yet Flare operation can still be confirmed, the average volumetric flow rate of LFG will be used along with the an average of the successful methane concentrations recorded before and after the period of missing data to quantify the volume of methane sent to the Flare.

For time periods when data is missing because of equipment down time, servicing, etc. missing data periods are completed with the following procedure:

Data substitution

Data substitution will be applied only for flow rate and methane concentration data gaps that are discrete, limited, non-chronic, and due to unforeseen circumstances. Data substitution will be individually applied to only either flow rate readings or methane concentration, but not both simultaneously.

For time periods when the data integrity is compromised either due to missing data points or corrupt data, or it has been deemed invalid, yet Flare operation may still be confirmed, the following method for data substitution shall be used for LFG flow rate and %CH4:

Duration of Missing Data	Substitution Methodology
Less Than 6 hours	Use the average of the four hours immediately before and following the outage
Six to 24 Hours	Use the 90% lower confidence limit of the 24 hours prior to and after the outage.
One to Seven Days	Use the 95 % lower confidence limit of the 24 hours prior to and after the outage.
Greater than one Week	No data are substituted and no credits generated.

No data substitution will be applied if:

- Simultaneous missing date for flow rate and methane concentration;
- Flare operation cannot be proved (thermocouple failure), or
- For methane concentration substitution, flow rates during the data gap must be consistent with normal operation.
- For flow rate substitution, methane concentrations during the data gap must be consistent with normal operation.

Failed calibration

If the instrument calibration for landfill gas quality and flow rate falls in a range outside ±5%, the data, for the period between the last successful field check or calibration and the time when the instrument is properly calibrated, will be adjusted according to the following procedure:

- For calibrations that indicate under-reporting (lower flow rate or lower methane concentration), the metered values must be used without correction.
- For calibrations that indicate over-reporting (higher flow rate or lower methane concentration), the metered values must be adjusted based on the greatest calibration drift recorded at the time of calibration.

8 Equipment Calibration

8.1 Calibration Frequency and Procedures

Table 2 presents the equipment calibration frequency. Appendix C contains sample calibration forms and blank forms for the gas analyzer, and the GEM 2000.

Table 2

Process	Site	Wilson County	Calibrations	
	Instrument	Model	Field	Factory
Gas Wells	GEM 2000	Landtec GEM 2000 Serial	Per Use	6 mos.
Flare Skid	Flow-to-Flare Flow Meter	Endress+Hauser (t-mass 65 I)	3 mo.	Not required
	Gas Quality (CH4; CO2; & O2)	California Analytical Instruments 600 L	As required	1 to 3 years
	Thermocouple	Built in to Flare	Not Required	
	Flare Ignition Gas	Propane Cylinder.	Not Applicable	
	Electrical Usage	Electricity Meter	Not Applicable	

Landtec GEM 2000 Description and Operation

The Landtec GEM 2000 is factory calibrated every 6 months or when it is sent for servicing following a malfunction such as battery failure. This instrument is field calibrated according to the Manufacturers Manual using Certified Calibration gases each time it is used (typically weekly). The calibration records can be stored in the instrument and can then be obtained from the GEM 2000 data files. Additionally, written GEM 2000 calibration sheets will be prepared. GEM 2000 calibrations performed at the Project will be recorded on the Daily Report Form (Appendix C).

See Section 8.2 for Calibration details.

Operation Procedures

1. Turn Instrument On (By pressing on the Red Button); Important information you will find on the GEM™ start up screen
    - Version of software
    - Language
    - Date & Date format
    - Instrument Serial Number
    - Warning message (example) Service Due
    - Date Service was due
    - On the right side your battery & memory status (each square =20%)
    - After the instrument has finished its initial self test process and auto purge, it will open Main Reading Screen
    - If it doesn't, press any key and the Main Reading Screen will open
2. Insert Thermometer into the Well Head Temperature port if reading is being taken at a LFG gas well;
3. After the instrument has completed it's initial self test process and auto purge, it will open the Main Reading Screen. If Main Reading Screen isn't displayed, press any key and the Main Reading Screen will open;
4. Press 3 "Next ID" (the list of monitoring point ID's will appear on the screen;
5. To choose the ID for the Monitoring point (gas well head, header line sampling point and Flare monitoring port) at which a reading is required, use the Arrow keys Up (2) or Down (8) to reach the required monitoring point ID then press Enter (Key with just a Bent Arrow) NOTE: Pressing (1) Exit will return you to the main readings screen.
6. Pressing that Enter key will take you to the clean air purge screen. Press "Start purge" - this will take you to the main readings screen;

7. After the Purge is completed, make sure proper hoses are connected and sealed. The Static pressure hose is the one with water trap and carbon filter attached to it and connects to upper port on the right hand side of the GEM 2000. The Impact pressure hose is the other one and connects to the lower port;
8. Press the Pump/Backspace Key which is the green key with an arrow and fan blade at the bottom of the Key Pad;
9. Wait for the gas readings to stabilize (30 to 60 Seconds);
10. Press 5 Measure Flow. With both hoses connected you will see the static pressure and the differential pressure. If differential pressure is negative, unplug the hose and try again as its it's theoretically impossible to have negative differential pressure. To ensure correct pressure readings you should zero Transducers; Press Enter to Zero Transducers (Remember to disconnect all hoses and keep the ends of the hoses blocked from wind, then reconnect hoses to see the current pressure readings.
11. Be sure pressure is stabilized before you Press One (1) to continue. Note: When pressing One (1) to continue, the current ST and DP will be stored;
12. You will be asked to enter Temperature. Read the Thermometer and remove it from the Port;
13. Enter the Temperature in Degrees Fahrenheit. Press Enter;
14. The final screen will give you the summary of your reading showing current and adjusted readings. Make adjustments to well if necessary;
15. Press Enter to Store Reading;
16. Enter the Temperature recorded from before when prompted;
17. The screen will prompt you for a system pressure, at this point remove the static pressure tube from the well head and insert into the port downstream of the well valve and allow reading to stabilize before hitting continue;
18. You will be prompted with up to three Screens of comments, select any appropriate comments. If a wrong entry is made you can remove it by using the Pump/Backspace

Key (The green key with arrow at the bottom of the Key Pad). After questions are completed or comments are chosen you will receive the message Reading Stored. To double check that the reading is stored by pressing 5, this will take you back to the main reading screen at the top of the screen it should tell when the last reading was taken/stored.

19. Now Press (3) to continue to next ID.

Move to next ID or monitoring point a use the GEM 2000 in the above sequence from point 2 on, to take the next set of readings.

8.2 GEM 2000 Procedure

Field Calibration Procedures for the LANDTEC GEM 2000:

1) Power on the GEM 2000 by pressing the Red Power Button and after the instrument has finished its initial Start-up and self-test process; it will enter the Main Screen.
2) If you are using the standard (red) Landtec 17 liter gas canisters, one should be marked GAS COMPOSITION: OXYGEN 4.0%, (NITROGEN BALANCE) & the other marked FLAMMABLE GAS: METHANE 50.0%, CARBON DIOXIDE 35.0%, (NITROGEN BALANCE).
3) Check that the brass calibration valve is COMPLETELY CLOSED and then connect/screw the brass calibration valve on to the GAS COMPOSITION: OXYGEN 4.0% tank (check that there is a pressure reading that is not 'close to ZERO' on the brass calibration valve gauge; if it is near zero, change the tank. Another indication of a low/empty tank is a very low O2 reading, i.e. under 3.5%) in the tank and then connect the calibration tubing by inserting the quick connect to the Gas Intake (top) connection port on the right side of the GEM2000 and open the tank valve ALL THE WAY.
4) Take a set of readings from the Calibration Gas Bottles using the ID 'Pre Calibration' and Record results on the Calibration Form in the 'Value Before Calibration (%)' column. See

Instructions for Taking a Reading with the GEM2000. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).

5) Press the (1) Button to bring up the Main Menu, then select/highlight 'Field Calibration' by using the (8)/Down Arrow Button, and then press ENTER.
6) First press 3 to 'Edit Target Concentrations' and type '500', then '350', then '040' then press ENTER. (note: the leading zero in the '040' is REQUIRED!)
7) Then press the ENTER key to select the Calibration Menu and then press enter a second time to select ZERO CHANNELS.
8) Wait for the CH4 & CO2 readings to stabilize (near or) at ZERO & the O2 reading to stabilize (near or) at 4.0, (usually 30-60 seconds), then (check to make sure that ZERO CH4 is selected and) press the ENTER KEY. If Calibration was successful you should see the following message "User Zero Complete".
9) Close the tank valve and disconnect the tank and switch to the FLAMMABLE GAS: METHANE 50.0%, CARBON DIOXIDE 35.0% tank following the same procedures in Step 6, above, for tank connection. (Note that a low/empty tank reading would be <48% CH4 or <33% CO2).
10) Wait for the CH4 reading to stabilize (near or) at 50.0%, C02 is (near or) at 35.0% & the O2 reading to stabilize (near or) at 0.0%, (usually 30-60 seconds), then select ZERO O2 is selected and press the ENTER KEY. If Calibration was successful you should see the following message "User Zero Complete".
11) Press ENTER and select SPAN CHANNELS from the Menu, and Press ENTER again to select SPAN CH4 @ 50.0%. The following message should appear "Calibration Complete".
12) Press ENTER and select SPAN CHANNELS from the Menu, and Press ENTER again to select SPAN CO2 @ 35.0%. The following message should appear "Calibration Complete".

13) Close the tank valve and disconnect the tank and switch back to the GAS COMPOSITION: OXYGEN 4.0% tank following the same procedures in Step 6, above, for tank connection.
14) Again, wait for the CH4 reading to stabilize (near or) at ZERO) & the O2 reading to stabilize (near or) at 4.0, then PRESS ENTER and select SPAN CHANNELS from the Menu, select SPAN O2 @ 04.0% and Press ENTER. The following message should appear "Calibration Complete".
15) Take a set of readings from the Calibration Gas Bottles using the ID 'Post Calibration' and Record results on the Calibration Form in the 'Value Before Calibration (%)' column. See Instructions for Taking a Reading with the GEM2000. This reading should be **±2.0%** of the stated percentages on the Landtec Canisters (see Step 3).
16) After all testing is completed for the day, take another reading from the Calibration Gas Bottles. Record results on the Calibration Form in the 'Value After Calibration (%)' column. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).
17) Anytime results are suspect, we suggest taking a reading from CAL GAS Bottles to verify calibration is still within the required ranges. Always record these results in the Remarks box on the Calibration Form. Theses readings should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).
18) When done, close the tank valve and disconnect the tank, then remove the Quick Connect hose from the Gas Intake Port on the right side of the GEM2000 unit.
19) After all testing is completed for the day, take another reading from the Calibration Gas Bottles. Record results on the Calibration Form in the 'Value at End of Day (%)' column. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).

8.3 Landfill Gas Analyzer Procedure for CAI Gas Analyzer

Field Calibration and Automatic Calibration Procedures for the CAI Gas Analyzer:

The CAI Gas Analyzer self-calibrates using certified span gas. Detailed descriptions for setting up automatic calibration and manual calibration of the CAI Gas Analyzer are provided in the equipment's Operation Manual (See Appendix B). CAI Gas Analyzer calibration is filed checked using a calibrated GEM 2000. Forms for recording the Field Calibration Detailed procedures are provided in Appendix C.

8.4 Gas Flow Meter Procedure

Endress+Hauser recommends their flow meters are Factory calibrated at intervals between one and three years.

Quarterly field calibration of the Endress Hauser Mass Flow meter is completed using a Pitot tube and ASTM D3154-00 (reapproved 2006) procedure "Standard Test Method for Average Velocity in a Duct (Pitot Tube Method)"(see Appendix C) by an ISO 17025 Accredited Calibration Laboratory. Following calibration of the GEM 2000 gas analyzer, the gas flow rate from the landfill is checked using the procedure described below:

Wilson County Landfill flow meter flow meter adjustment

- The location of the flow measurement station relative to the upstream and downstream disturbances (as elbows, valves, and any similar fittings), are checked to determine that the upstream and downstream pipe alignments comply with Pitot tube test requirements;
- The geometrical properties of the LFG delivery pipe are measured (internal and external vertical and horizontal diameters at the flow measurement station);

- Determine that the relative position of the Pitot tube ports is 90^0 around the circumference of the gas delivery pipe;
- Measure the gas quality using the GEM 2000 gas analyzer. Parameters measured are: CH4%, CO2%, O2%, Balance gas%, barometric pressure and static pressure. The LFG is sampled on the GCP inlet pipe, upstream of the Pitot tube flow measurement station;
- Measure the gas temperature in one of the Pitot tube flow measurement station ports, using an insertion type temperature meter;
- Program the automatic data acquisition systems to record gas flow readings at one (1) minute intervals;
- Take readings using the Pitot tube at the horizontal port, noting the time, minimum differential pressure and maximum differential pressure at each traverse point;
- Take readings using the Pitot tube at the vertical port, noting the time, minimum differential pressure and maximum differential pressure at each traverse point;
- Stop the automatic data acquisition system and download the one (1) min interval data, and retain values which have the same time as the Pitot tube measurements.
-

The collected data is input into spreadsheets, which follow the ASTM D3154-00 calculation procedures, to determine flow rates of LFG to the Flare. The gas flow rate is the geometric mean velocity for maximum and minimum differential pressures multiplied by the cross sectional area of the pipe at the flow measurement station.

The flow meter correction factor is the ratio between the Pitot tube measured flow rate and the Endress+Hauser flow meter measured flow rate. Following determination of the correction factor, the meter is adjusted in accordance with Endress+Hauser procedures to provide the calibrated flow rate.

9 REPORTING REQUIREMENTS

This section describes the general requirement that LFG and Data Technicians maintain records of all gas flow, maintenance and monitoring at the Project.

Proper maintenance and operation of Project methane collection and destruction equipment is essential to Project success. To demonstrate that all maintenance and monitoring is performed, the LFG Technician will maintain simple, clear records of periods of startup, shutdown, maintenance, malfunction and the corrective actions taken to restore the malfunctioning equipment to its normal or usual manner of operation. This record will be kept on the Project Timeline file, Daily Log Forms and calibration forms as applicable.

The primary parameters to be monitored at the Project are gas flow and gas quality. The Monitoring Parameters are listed Table 1 which integrates the monitoring requirements for GHG emission reduction quantification, equipment operation and maintenance, and environmental permit compliance requirements of the Project, to ensure that adequate records are produced.

This section presents the reporting requirements for the project.

- Records of Air Emissions;
- Records of Condensate Production;
- Records of System Malfunction;
- Signed Certification of Regulatory Compliance

The MP Wilson LLC Project will keep all information described below for a period of 10 years after the information is generated or 7 years after the last verification. These records will be used for independent verification and historical documentation of the Project.

System information of the Project will retain includes:

- All data inputs for the calculation of the project emissions;
- Collection and control device information (installation dates, equipment list, etc.);
- LFG flow meter information (model number, serial number, manufacturer's calibration);
- Gas quality information (model number, serial number, calibration procedures);
- Destruction device monitor information (model number, serial number);
- Methane monitoring data; and,
- Gas analyzer calibration data.

All maintenance records relevant to the LFGCCS, monitoring equipment, and destruction devices are maintained by MP Wilson. Paper field records are kept onsite in the OMM Plan and copies kept at Applied Testing & Geosciences, LLC, Bridgeport PA, 610-313-9200.

10 RESPONSIBILITIES

10.1 Director of Compliance

The MP Wilson Compliance Director oversees GHG emission reduction calculations and documentation preparations to verify that these are performed in accordance with current CAR V 3.0 requirements.

10.2 Landfill Gas and Data Technician

The landfill gas extraction and piping network and Flare is operated, monitored and maintained by the LFG Technician. The LFG Technician is responsible for performing the following tasks in accordance with the methods set forth in this OMM Plan and documenting any deviations from such methods:

- Checking the gas quality, pressure and flow rates at each gas well as required by Flare operational needs such as Flare shut down and start up, notification by email (using MAIL NOTIFIER software), and daily checks on internet connection to the on-site computer using an OPC client;
- Adjusting the gas well head valves to maintain gas quality, extract the optimum gas quantity measured by O2 (typically less than 2%) and balance gas percentages (typically less than 10%)
- Checking the system for leaks;
- Downloading GEM 2000 data files to the data storage computer;
- Completing Daily Logs, updating the Project time line files;
- Completing GEM 2000 calibration and other calibration reports;
- Updating the landfill gas quality database;
- Updating the landfill gas GIS gas quality tracking system;
- Maintaining the spare parts inventory;

- Recording all system operational data in log books or forms;

Downloading data files from the OPC server via internet connection is the responsibility of the Data Technician who is also responsible for uploading RAW data files to X-Cd.com and processing the data files for CO2 equivalent tones. The Data Technician is also responsible for completing QA checks on the data files, and keeping the data upload log file up to date.

The LFG Technician will be on site during the initial startup and testing as needed to monitor the landfill gas extraction and piping network and Flare. After initial startup is complete the LFG Technician will monitor the site every 2-3 days until it is determined that the LFGCCS is consistently operating within normal parameters. At that time, the on-site visits will drop to a minimum of once a week with additional visits to the site as deemed necessary.

The LFG Technician will be in constant contact with the site via notification by email (using MAIL NOTIFIER software), and daily checks on internet connection to the on-site computer using an OPC client. This will allow the technician to monitor the site remotely and if necessary schedule additional visits to the site.

The Wilson County landfill will also have personnel on site during all business hours. The landfill operates from 8:00 AM to 5:00 PM Monday through Friday and Saturday from 8:00 AM to 12:00 PM, except on holidays. The landfill personnel will notify the LFG Technician if any anomalies are noted with the system during the course of their normal work activities.

11 SITE SECURITY AND MEASURES/ACTIONS AGAINST VANDALISM

The Wilson County Landfill is a closed municipal solid waste (MSW) landfill that also accepted yard waste and construction and demolition (C&D) material. It is located east of the City of Wilson in Wilson County. The facility is owned and operated by Wilson County, North Carolina. The County continued to operate the facility as an onsite C&D disposal area after the MSW landfill was closed in 1997.

The landfill is a fenced facility with personnel onsite during operating hours. While the facility is open to the public during operating hours, the County monitors the public's access to the entire facility and, hence, the landfill gas collection and control system (LFGCCS). Access to the Flare and monitoring system is controlled by a six (6') foot chain link fence and gate that is kept locked at all times when LFGCCS personnel are not present.

The LFGCC facility is centrally located within the landfill which reduces the risk of vandalism or safety concerns during or after operating hours of the landfill. Onsite landfill and LFGCCS personnel have been instructed not to allow the general public access to the Flare and Warning/No Trespassing signs are posted on the fence surrounding the Flare.

In the event of a security breach or an act of vandalism, onsite personnel are instructed to contact the police or 911 as deemed necessary.

12 CONTINGENCY AND EMERGENCY RESPONSE PLAN

12.1 Scope and Intent

This Contingency and Emergency Response Plan (CERP) provides procedures and methods for the emergency response related to M.P. Wilson, LLC LFGCCs (MP Wilson) located in Wilson, North Carolina. The manual has been prepared in accordance with Title 49, Code of Federal Regulations, Part 191 – Transportation of Natural and Other Gas by Pipeline: Annual Reports, Incident Reports and Safety Related Condition Reports and Part 192 – Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards.

The intent of this CERP is to provide procedures for the efficient and safe operation of the LFGCC, with utmost regard for the public and the MP Wilson's employees and/or contractor employees, and to adhere to the Code requirements as stated below.

This manual is written to specifically include various topics of major significance to a gas collection and control system operator with regard to contingency and emergency response. All code and standards incorporated by reference are to be considered as part of the manual to the extent they are applicable. No written manual is fully inclusive of all details pertinent to contingency and emergency response. Therefore accepted methods shall apply to those areas not specifically addressed in this manual/section.

Landfill Fires

Due to the clay landfill cover system, ambient air infiltration into the waste mass due to the active gas system will be minimized thus reducing the potential for a landfill fire. However, the LFGCCS will be routinely monitored for temperature and oxygen content at each wellhead, and the wells will be adjusted accordingly if conditions for a landfill fire become favourable, such as

high well temperatures (in excess of 140 degrees F) and high oxygen content (in excess of 7.5 percent).

Should a landfill fire be suspected, MP Wilson will follow the existing procedures in the Post Closure Plan, which include notifying NCDENR and the local fire department. MP Wilson will turn off all nearby active gas wells to prevent additional air infiltration and monitor the carbon monoxide levels in the nearby wells to determine the extent of the fire. County and MP Wilson personnel who work on the LFG system will be trained on the proper response to a suspected landfill fire.

12.2 Code Requirements - §192.615 Emergency Plans.

(a) Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:

(1) Receiving, identifying, and classifying notices of events which require

(2) Establishing and maintaining adequate means of communication with appropriate fire, police, and other public officials.

(3) Prompt and effective response to a notice of each type of emergency, including the following:

i. Gas detected inside or near a building.

ii. Fire located near or directly involving a pipeline facility.

iii. Explosion occurring near or directly involving a pipeline facility.

iv. Natural disaster.

(4) The availability of personnel, equipment, tools, and materials, as needed at the scene of an emergency.

(5) Actions directed toward protecting people first and then property.

(6) Emergency shutdown and pressure reduction in any section of the operator's pipeline system necessary to minimize hazards to life or property.

(7) Making safe any actual or potential hazard to life or property.

(8) Notifying appropriate fire, police, and other public officials of gas pipeline emergencies and coordinating with them both planned responses and actual responses during an emergency.

(9) Safely restoring any service outage.

(10) Beginning action under 192.617, if applicable, as soon after the end of the emergency as possible.

(b) Each operator shall:

(1) Furnish its supervisors who are responsible for emergency action a copy of that portion of the latest edition of the emergency procedures established under paragraph (a) of this section as necessary for compliance with those procedures.

(2) Train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

(3) Review employee activities to determine whether the procedures were effectively followed in each emergency.

(c) Each operator shall establish and maintain liaison with appropriate fire, police, and other public officials to:

(1) Learn the responsibility and resources of each government organization that may respond to a gas pipeline emergency;

(2) Acquaint the officials with the operator's ability in responding to a gas pipeline emergency;

(3) Identify the types of gas pipeline emergencies of which the operator notifies the officials; and

(4) Plan how the operator and officials can engage in mutual assistance to minimize hazards to life or property.

12.3 Abnormal Operations

a. General – An abnormal operating condition will have occurred if there is a deviation from normal operation or a personnel error, which could have resulted in a hazard to persons or property. Abnormal operating conditions will include but are not limited to the following:

- Unintended shutdowns
- Unintended closure of valve(s)
- Operation of a relief valve
- Malfunction or failure of a system component such as a regulator
- Increase or decrease of pressures outside normal operating limits
- Increase or decrease of gas flow rate outside normal operating limits

b. Response – The response to an occurrence of an abnormal operating condition will include:

- Immediately notify the MP Wilson Supervisor/Manager as to the operating condition of the facility. If required, the MP Wilson Flare should be shut down.
- If the integrity of the system is in question, shut down the Flare.
- Immediately notify the MP Wilson Supervisor/Manger that an abnormal operating condition has occurred and provide details.
- Thoroughly investigate the abnormal operating condition until a cause is determined.
- Correct the cause of the abnormal operating condition.
- Obtain approval from MP Wilson Supervisor/Manager to resume operations.
- In a report, document the details of the abnormal operating condition including the time and date of occurrence, nature of the occurrence, immediate action taken, cause of occurrence, corrective measures taken and approval of MP Wilson Supervisor/Manager to resume operations.

- After the system is returned to operation, the system operation must be monitored at sufficient locations to verify continued integrity and safe operation.

c. Response Review – The response of the operator personnel to abnormal operating conditions and the corrective action taken will be formally reviewed annually by MP Wilson. More frequent reviews may be needed if the cause of an abnormal operating condition is identified as repetitive.

12.4 Emergencies Plan

This Section presents procedures for the M.P. Wilson Gas Collection and Control System for prompt and effective response to conditions which could result in property damage or injury if not promptly corrected. It is virtually impossible to establish a precise plan for each situation which could occur and appropriate actions will be dictated by the conditions at the place and time of the incident. The procedures are intended to provide guidelines for responses common to most emergency situations and are to be used in combination with personal judgment and common sense.

Emergency situations which could occur on a natural gas system include, but are not limited to, the following:

- Gas detected inside or near a building
- Fire located near or directly involving the landfill or Flare
- Explosion occurring near or directly involving the MP Wilson gas collection system or Flare
- Natural disasters such as an earthquake, flood, tornado, etc.
- Injuries or property damage
- Civil disturbances
- Hazardous leaks

- Any other condition that jeopardizes the safe operation of the system

Responses to emergencies should be predicated on the following priories:

(1) Safety for the public and MP Wilson and Wilson County operating employees

(2) Protection of public property and Wilson County property

(3) Restoration of gas service to the Flare

12.5 Responsibilities

Responsibility for implementing the emergencies procedures will ultimately be with all gas system operations personnel. In emergency situations, the direction and coordination of the overall emergency response will be the responsibility of the Manager/Supervisor. The success of an emergency operation is often largely dependent on the initial actions of the first gas system operations personnel at the scene of an incident. Regardless of the chain of command, the first gas system operation personnel at the scene will take command and initiate appropriate response actions immediately. As more gas system operations personnel arrive at the scene, command duties can be shifted up the chain of command.

The Manager/Supervisor will be responsible for maintaining the Emergencies Plan and for supervising the training, public education, and other provisions of the plan.

The Manager/Supervisor also has the responsibility of insuring that this Emergency plan is available to all MP Wilson personnel who might have to respond to an emergency.

12.6 Emergency Response Numbers

Pursuant to NC Solid Waste Management Rule 15A NCAC 13B.1626(5)(d) proper notification must be made to the following:

Emergency Response Number – (704) 659-2580 (MP Wilson LLC) and 911

Law Enforcement/Fire/Rescue/Ambulance – 911

NC Division of Waste Management - Solid Waste Section (919) 508-8400

NC DWM Raleigh Central Office – (919) 621-3680 (Ben Barnes)

NCDENR Land Quality Section – (910) 433-3349 (Dennis Shackleford)

MP Wilson Landfill Gas Technician (Cell) – (704) 340-8037 (Ryan Hennessy)

Wilson County Landfill Manager (252) 399-2808 (Andy Davis)

The emergency contact info must be posted in the landfill office, scale house and on the fencing enclosing the flare station.

12.7 Receiving Emergency Notifications

Notice of an occurrence that is suspected to be an emergency or is indeed an emergency will normally be received at the emergency telephone number (as posted on the marker posts, provided to the public, provided to excavators, and provided to entities in notices). The person receiving notice needs to obtain as much information as possible.

The person receiving notice will need to make a judgment if the notice indicates an actual emergency, including the potential for dispatching someone to the scene for an accurate determination. (Gas systems typically receive notice for a number of false indicators such as skunks, rotten food, etc.) Nevertheless, the person receiving notice should have the philosophy of erring on the side of safety.

12.8 Initial Response to Emergency Notification

The person receiving the emergency notification will obviously be in a position to make the first response to an emergency situation. Appropriate response includes:

- If appropriate, tell person reporting emergency to keep the scene area clear of people and to keep ignition sources from area.
- Contact Emergency Standby personnel advising them of the report and dispatch them to the scene to determine its severity and the actions required to protect life and property if necessary.
- Contact Manager/Supervisor to report findings thus far and await further instruction.
- Keep communication lines open pending a notification from the first responder who may need further assistance.
- If appropriate, contact emergency response agencies and request that ambulance, fire department or police respond to the emergency scene or request that they stand by to respond as needed.
- Dispatch personnel to system origin anticipating a system shut down.

12.9 Action by Gas System Operations Personnel

As soon as possible the Manager/Supervisor will assume the responsibility for directing and coordinating the emergency response. Appropriate response will depend on the situation but consideration should be given to the following:

- Assess the situation and the scope of the emergency.
- Dispatch MP Wilson or their designated operating personnel to the scene.
- Establish communications as needed.
- Request emergency response agencies (fire department, police, and ambulance) to respond at the scene as needed.
- Notify LOCAL GAS SYSTEM if they have any gas lines in the vicinity of the emergency.
- Close hand valve at Flare (HV-100) to isolate the pipeline.
- Go to the Flare station Landfill and close main 10 inch valve which will stop the flow of gas into the system.

- If needed, close additional valves in the system to isolate sections of the gas collection system.
- Continue to monitor the situation and make safe any actual or potential hazard.

12.10 On the Scene Response

MP Wilson or their designated operating personnel at the scene of an emergency shall take action to first protect people and then property. On the scene responses include:

- Stay as calm as possible.
- Assess situation.
- If necessary, evacuate and/or assist all people to safety.
- Assess what can be done to reduce the risk to people and property.
- Take steps to block off the hazardous area to traffic and people.
- If necessary, notify emergency response agencies (fire, police, and ambulance) or if they are at the scene, coordinate with and assist the emergency response personnel.
- Establish communication with the Manger/Supervisor if they are not at the scene. Report on the scene needs and receive instructions as appropriate.
- Monitor the situation on the scene until any actual or potential hazard is made safe or until the Manager/Supervisor issues instructions to leave the scene.

12.11 News Media Interface

During an emergency, inquiries from the news media should be referred to the Manager/Supervisor. Verbal or written releases to the news media should use the following guidelines:

- Make factual statements.
- Allay unfounded fears.

- Do not jump to conclusions, make reckless comments, or speculate.
- Precisely explain what the public can do to help.
- Explain specifically what MP Wilson is doing in response to the emergency.
- Present most encouraging viewpoint of situation that facts will allow.

12.12 Post Emergency Activities

This section explains reporting requirements related to Incidents and Safety Related Conditions.

Emergency Report – A comprehensive report of each emergency will be prepared. The report shall contain a complete log of events including:

- Initial Notification of Emergency Form
- Details of injuries and property damage
- Responses and actions taken
- Any other significant known facts regarding the emergency
- Results of any investigations of failures (refer to paragraph below)
- Actions taken to restore gas system to operation

Drug And Alcohol Testing –After an accident, MP Wilson may drug and alcohol test each employee whose performance either contributed to an accident or cannot be completely discounted as a factor the accident. These drug tests shall be administered as soon as possible, but no later than 32 hours after an accident.

MP Wilson may decide not to test, but such a decision must be based on the best information available after the accident. This information must indicate the employee's performance could not have contributed to the accident or, because of the time between that performance and the accident, a drug test would not be effective in determining whether that performance was affected by drug use.

Emergency Response Critique – After each emergency, the Manager/Supervisor will conduct a post-emergency review of employee activities to determine whether the emergency response procedures were effective. If deficiencies are found in the emergency response plan or in the actions taken by employees, or the designated operating personnel, MP Wilson will take appropriate corrective action. Actions taken by other response groups should be included in this critique. Critique results should be discussed with these groups so they will be aware of any deficiencies in their responses. The results of the emergency response critique will be documented in a report.

Restoration To Service – The Manager/Supervisor will prepare a written outline of the corrective measures to be taken and the steps necessary to return the system to service. The outline will be followed in the work done under the direction of the Manager/Supervisor.

12.13 Investigations of Failures

General – If the emergency is the result of a failure then a formal investigation must be conducted for the purpose of determining the cause of the failure and minimizing the possibility of a reoccurrence.

b. Response – Rapid response is necessary to preserve the integrity of specimens and gathering information.

Data Collection – When a detailed analysis is to be made, a person at the scene of the incident will be designated to coordinate the investigation. That person's responsibilities will include the following:

- Acting as a coordinator for all field investigative personnel.
- Maintaining a log of the personnel, equipment and witnesses.

- Recording in chronological order the events as they take place.
- Ensuring that photographs are taken of the incident and surrounding areas. These photographs may be of great value in the investigation.
- Ensuring the notification of all appropriate governmental authorities.
- Ensuring the preservation of evidence.

Investigation Team – When a detailed analysis is to be made, a fully qualified investigation team will be designated. The investigation team will be qualified either by training or experience in the proper procedures for investigation of an incident. The investigation will include the following:

- Determination of the probable cause of the incident.
- Evaluation of the initial response to the incident.
- The need for system improvements if necessary.
- The need for improvements in response, management and investigation of incidents.

Specimens – As required or appropriate the investigation team will specify how specimens are to be selected, collected, preserved, labeled and handled. The collection of metallurgical specimens should take precautions against changing the granular structure on the area of interest. When corrosion may be involved, the Corrosion Technician for the system will direct sampling of soil, ground water specimens or other items of interest.

The number of specimens collected at the failure site may vary depending on the type and number of tests anticipated. A series of independent or destructive tests may require multiple specimens. If there is a need to confirm the pipe materials specifications, then additional pipe specimens should be obtained near the failure, but in an area of the piping where the physical properties and characteristics are unaffected by the failure itself.

Testing & Analysis – Recognized testing laboratories and recognized standard destructive or nondestructive techniques will be utilized to examine the test specimens. The testing methods used should be suited to the particular material being tested, and be pertinent to the failure investigation.

Compilation & Review – Analysis and data on a failure will be compiled and reviewed. Corrective measures or the need for continuing surveillance will be determined and implemented. A summary report will be prepared.

12.14 Emergency Equipment & Tools

The Manager/Supervisor will compile a list of equipment and tools needed at the emergency response center and in gas system operation vehicles to effectively and promptly respond to an emergency situation. The minimum requirements may be as outlined below:

- Wrench to operate valves, flashlights, communication means, first aid kit and miscellaneous hand tools, portable gas detector, ropes, signs, etc., hand tools as required.

Emergency Contact Information for LFGCCS

Emergency Response Number – (704) 659-2580 (MP Wilson LLC) and 911

Law Enforcement/Fire/Rescue/Ambulance – 911

NC Division of Waste Management - Solid Waste Section (919) 508-8400

NC DWM Raleigh Central Office – (919) 621-3680 (Ben Barnes)

NCDENR Land Quality Section – (910) 433-3349 (Dennis Shackleford)

MP Wilson Landfill Gas Technician (Cell) – (704) 340-8037

Wilson County Landfill Manager (252) 399-2808

13 METHANE GAS MONITORING PLAN

MP Wilson's Methane Gas monitoring Plan will comply with the requirements of the Post Closure Plan for the Wilson County Landfill and augment those requirements as appropriate for the operation of the LFGCCS. The existing system activities will continue to be followed to the extent applicable. The existing Post Closure documents do not include sections regarding a Landfill Gas Collection and Control System (LGCCS); therefore, this section provides information for the additional efforts that will be necessary for the LGCCS.

Periodically, the entire existing landfill gas collection system will be monitored and balanced to maximize proper operation. Only trained personnel, with the proper experience and equipment, will perform system monitoring and balancing. These efforts will be critical to supplying suitable landfill gas to the Flare system while balancing migration control efforts. The closed landfill and its systems will continue to be operated to meet the landfill migration requirements of 15A NCAC 13B.1626(4).

The gas collection system will be routinely inspected by monitoring personnel, at a minimum frequency based on the component's monitoring schedule, to verify proper operation. System components will typically be inspected at the time monitoring or maintenance takes place. Inspections and maintenance of the system will be required to keep it operating properly and efficiently.

The frequency of monitoring will vary depending on the consistency of landfill gas generation. The data collection system will continuously monitor and report specified operating data. The data collection system will be accessible via the Internet. Operating personnel will be able to evaluate operating parameters on an as-needed basis, and the system will automatically notify operating personnel when specified alarm conditions occur. The data collection system will provide the current values of key parameters and will log specific key parameter data and record it a specified frequencies. The key parameters are as follows and are recorded every 10 minutes:

- The Flare combustion temperature;
- The total landfill gas flow rate;
- The total vacuum pressure being applied to the landfill;
- The overall methane content of the landfill gas;
- Gas temperature on the inlet side of the Blower.

Gas quality (CH4, CO2, O2, Balance gas, Temperature, Gas well pressure and System pressure etc) at each gas well head and at the gas header line sampling ports (see Gas Collection System Plan for locations) will be monitored using the GEM 2000 gas analyzer typically on a weekly basis or as required to maintain system efficiency and to prevent ingress of atmospheric air to the landfilled materials. All data will be recorded on the GEM 2000 and downloaded to the Project files for reference.

14 SPILL PREVENTION AND RESPONSE PLAN

This LFGTE project claims exemption from the spill prevention, control, and countermeasures requirements of Chapter 40, Code of Federal Regulations, Section 112 (40 CFR 112) for the following reasons because there are no buried or above ground oil storage tanks associated with the LFGCCS. This project also claims exemption from the National Pollutant Discharge Elimination System (NPDES) requirements of the State of North Carolina because the project footprint is less than 1 acre. The flare installation has disturbed less than 1/4 acre of land off the landfill footprint.

The only liquids associated with the operation of the LFGCCS are small quantities of lubricants (grease) for the Flare electrical motor and the Flare Blower and condensate which gravity drains to the two pressure tested condensate sumps. Condensate from the sumps will be removed by vacuum truck and transported to the City of Wilson POTW.

The landfill gas blower/ Flare skid will generate small amounts of condensate which will gravity drain back to the Condensate sump.

Site-specific Best Management Practices (BMPs) will be utilized to reduce or prevent pollutants, resulting from site activities, from impacting storm water and authorized non-stormwater discharges; and identify the recommended countermeasures (cleanup materials) to be maintained on-site for use in addressing spills and other identified exposed materials.

An inspection and preventive maintenance program will be implemented for the LFGCCS facility. The program will include recommended manufacturer's maintenance schedules and practices, together with additional site-specific activities. At a minimum the following items will be complied with:

- Inspection schedules and procedures;
- Routine system checks for integrity, leaks and spills;
- Proper storage requirements for new and waste materials;
- Proper procedures that require the performance of O&M work over suitable surfaces and the utilization of spill prevention materials;
- Maintenance requirements for project records including O&M and inspection activities; and,
- Proper collection, storage, and disposal procedures for waste materials

Spill Cleanup Materials

Suitable cleanup materials will be maintained on-site to address needs during O&M activities. Materials will be available for routine O&M activities and for unanticipated leaks and spills to reduce or prevent storm water contamination. The site cleanup kit will be maintained within the Flare station storage and monitoring unit and will include at a minimum the following:

- Safety goggles
- Gloves
- Oil dry
- Absorbent pillows and pads
- Shovel, broom, and waste pan
- Various waste disposal containers
- Labelling materials for new and used spill materials.

Spill Response Procedures

The spill response procedures are as follows:

1. **Notify the Emergency Response Coordinator.** The O&M person discovering a leak or spill will immediately notify the project's Project Emergency Response Coordinator (PERC). The PERC, or designee, will be on-call and available to on-site staff. The PERC will contact the Facility Manager, or designee, based on the severity of the leak or spill. Spill notification and project contact information is provided for in Section 12.6. Contact information will also be kept at the Wilson County Landfill Office.

2. **Stay clear of the spill.** Personnel who are not directly involved with the spill shall stay away from the leak or spill.

3. **Assess the spill.** The PERC, or designee, will first assess the nature and extent of the spill and the potential threat to human life or the environment, and make a determination regarding the steps required to safeguard personnel (e.g., evacuation, personal protective equipment, etc.).

    a. As necessary, the PERC will evacuate personnel, notify local authorities, advise if area control or evacuation is recommended, activate emergency response personnel and equipment, and enlist outside emergency services as necessary.

    b. The PERC will determine the exact source and the amount of the release, and determine the need for notification of authorities and regulatory agencies.

4. **Stop the spill.** After implementing the required safety-related measures, the PERC will authorize immediate action to prevent further releases to the extent possible by cutting off the flow at the source.

5. **Contain the spill.** Immediately after determining what safety precautions and containment equipment are appropriate, the PERC will authorize immediate containment procedures to stop or reduce migration of the spill. Efforts will include the management of containments that may have migrated beyond the LFGCCS boundary.

6. **Clean up spill.** To the extent practicable, spilled material will be retrieved and stored in leak-proof containers until the materials can be disposed of properly. A spill kit will be

available on-site. If a large spill occurs (more than what can be cleaned up with the typical spill kit materials), additional materials will be procured and utilized and/or a clean-up contractor will be contacted to provide additional equipment as deemed necessary.

7. **Dispose of contaminated material.** The PERC will direct the collection of the contaminated material (including both spilled material and cleanup media) and have the material disposed of in accordance with applicable regulations. The exact means of disposal will depend upon the nature and volume of the contaminated material.

8. **Record the spill event information.** The PERC will record leak and spill details as applicable. Completed spill event forms will be maintained by the System Operator Manager and stored in the on-site storage unit.

9. **Update the Spill Prevention and Response Plan.** The Facility Manager and other employees involved with the project will periodically review leak and spill records and will implement measures to prevent repeat occurrences and improve response measures.

10. **Replace used countermeasures.** Following a leak or spill cleanup, the Facility Manager, or designee, will assess the inventory of response equipment and restock the spill kit as necessary.

11. **Submit required reports.** The Facility Manager will prepare required follow-up written reports to the appropriate regulatory agencies, in accordance with applicable reporting requirements. Copies of site report will be maintained at the on-site storage unit.

15 PERSONNEL TRAINING AND SAFETY

All staff and subcontractors working on the MP Wilson LLC LFGCCS will be trained at a minimum to the standards described in "Compilation of Landfill Gas Field Practises and Procedures" March 1992 Landfill Gas Division of the Solid Waste association of North America (SWANA). All work will be completed in accordance with “Methane Power, Inc. Health and Safety Plan for Landfill Gas Projects”, February 23, 2010 Rev. 1.0. Copies of both documents will be kept on site.

16 SYSTEM DECOMMISSIONING

When the quantity or quality of the LFG produced by the Wilson County landfill falls below economically viable values the following Decommissioning Plan will be applied in order to secure the site. The main goal of the Decommissioning Plan is to remove all the above grade facilities, main and ancillary equipment and to seal off all the gas header lines and laterals that will no longer be used. The final result after the completion of the Decommissioning Plan will be a proper and a safe site with a passive gas venting system.

The steps required to decommission the components of the LFGCCs are:

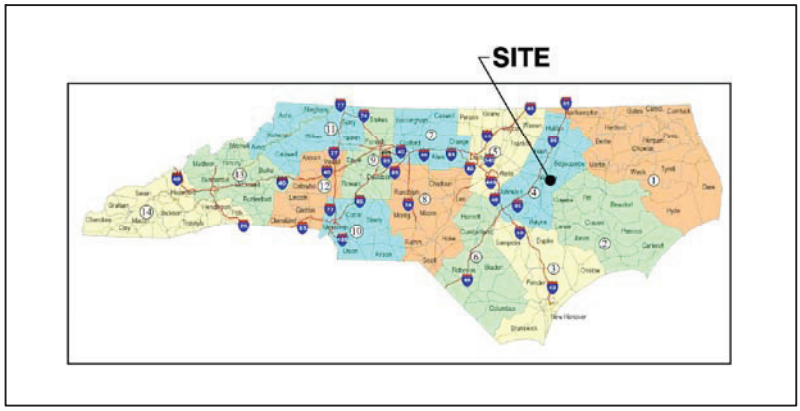
1. In advance of any decommissioning works, the site shall be inspected for adequate and safe operation conditions;
2. Remove all gas well heads and flex-pipes;
3. Cut all horizontal header pipe protrusions 12 inches below grade;
4. Install concrete plugs in abandoned header pipe ends;
5. Fill hole to grade and re-vegetate the disturbed areas;
6. Remove above grade operators handles from buried valves;
7. Cut all sampling port vertical pipes 12 inches below grade plug pipes and backfill and re-vegetate area;
8. Remove the blower Flare skid and any other mechanical and/or electrical equipment.
9. Remove Flare station fencing;
10. Remove any condensate from the condensate sumps and dispose at City of Wilson POTW;
11. Remove electro-mechanical equipment from condensate sumps, cut tops 12 inches below grade and back fill with suitable earth fill;
12. Remove all Generator sets (if installed) and their mechanical and/or electrical equipment;
13. Remove Generator set foundations till 12 inches below grade, back fill with suitable earth fill and re-vegetate;
14. Re-vegetate all disturbed areas; and,
15. Submit notification letter to the NCDENR Division of Waste Management when decommissioning is complete.

TABLE 1 DRAFT
MP WILSON LLC
GAS COLLECTION SYSTEM DECOMMISSIONING COSTS

Decommissioning Procedures	Quantity	Unit Rate	Cost	Comment
1. In advance of any decommissioning works, the site shall be inspected for adequate and safe operation conditions;	1	$ 1,000.00	$ 1,000.00	
Mobilisation	1	$ 5,000.00	$ 5,000.00	
2. Remove all gas well heads and flex-pipes;	31	$ 50.00	$ 1,550.00	
3. Cut all horizontal header pipe protrusions 12 inches below grade;	39	$ 100.00	$ 3,900.00	
4. Install concrete plugs in abandoned header pipe ends;	39	$ 50.00	$ 1,950.00	
5. Fill hole to grade;	39	$ 25.00	$ 975.00	
6. Remove above grade operators handles from buried valves;	8	$ 100.00	$ 800.00	
7. Cut all sampling port vertical pipes 12 inches below grade plug pipes and backfill;	15	$ 100.00	$ 1,500.00	
8. Remove the blower Flare skid and any other mechanical and/or electrical equipment.	1	$ -	$ -	Removed for Salvage value
9. Remove Flare station fencing;	1	$ -	$ -	Removed for Salvage value
10. Remove any condensate from the condensate sumps	1	$ -	$ -	Sumps will be drained as part of operation
11. Remove electro-mechanical equipment from condensate sumps, cut tops 12 inches below grade and back fill with suitable earth fill;	2	$ 1,000.00	$ 2,000.00	
12. Remove all Generator sets (if installed) and their mechanical and/or electrical equipment	0		$ -	Not installed at this stage
13. Remove Generator set foundations till 12 inches below grade, back fill with suitable earth fill and re-vegetate	0		$ -	Not installed at this stage
14. Re-vegetate all disturbed areas; and,	64	$ 1.50	$ 96.00	Based on $ 0.05/sf cost
Monitoring of Decommissioning work	1	$ 1,000.00	$ 1,000.00	
15. Submit notification letter to the NCDENR Division of Waste Management when decommissioning is complete.	1	$ 1,000.00	$ 1,000.00	
		Total	$ 20,771.00	

FIGURES

N



MP WILSON, LLC SITE ADDRESS:
4537 Landfill Road
Wilson, North Carolina 27893

APPLIED TESTING & GEOSCIENCES Inc.	CH4POWER smart energy	TITLE: SITE LOCATION MAP	
	CLIENT: MP WILSON, LLC	DATE: 8/11/2010 SCALE: NTS	FIGURE 1-1

NORTHERN LANDFILL

SOUTHERN LANDFILL

LANDFILL ROAD

EXISTING WELLS

MOVED WELLS

CONTROL POINT #2
PK NAIL SET
N=777,390.53'
E=2,349,081.43'
ELEV=107.07'

NAD 83/SPCS
ELEVATIONS

There is sag in north east liners berm

TIE TO EXISTING SITE
BENCHMARK (SPIKE
IN UTILITY POLE)
PUBLISHED ELEV=124.25'
SURVEYED ELEV=123.16'

CONTROL POINT #1
IRON ROD SET
N=716,974.31'
E=2,349,537.05'
BASE ELEV.=120.76'

LEGEND

LANDFIL CONTOUR

0 100 200 300
GRAPHIC SCALE (FEET)

	NAME	SIGN.	DATE
DESIGNED by:	SI		08/11/2010
DRAWN by:	SI		08/11/2010
CHECKED by:	RCTK		08/12/2010
APPROVED by:	CJJ		08/12/2010

BY:	DATE:	REVISION:

SIGNATURE:

DATE:

PREPARED FOR:
MP WILSON, LLC

PREPARED BY:
Applied Testing and Geosciences LLC
401 E. Fourth Street, Bldg 12B, Bridgeport, PA 19405
Phone: 610-313-9200
Fax: 610-313-9667
E-Mail: info@appliedtesting.com
Web: www.appliedtesting.com

PROJECT NAME:
WILSON CO. LANDFILL
GAS TO ENERGY
PROJECT

DRAWING TITLE:
SITE LAYOUT

PROJECT No.: 10829
DATE: 8/11/2010
FIGURE No.: 1-2
SHEET No.: 1-1
SCALE: AS SHOWN

APPENDIX A

AS-BUILT DRAWINGS

CONSTRUCTION DRAWINGS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM INSTALLATION - 2010
WILSON COUNTY LANDFILL

OWNER:

WILSON COUNTY, NORTH CAROLINA
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893
(252) 399-2823

IN PARTNERSHIP WITH:

MP WILSON, LLC
P.O. BOX 65837
TUSCON, ARIZONA 85728
(520) 615-8995

ENGINEER:

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765

CEC JOB NO. J1-209205-00

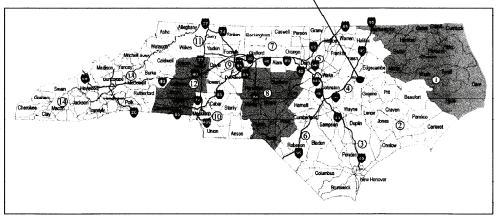
AUGUST 2010

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN
3	SITE DATA SHEET
4	DETAILS
5	DETAILS
6	DETAILS

AS-BUILTS

SITE



AREA MAP
SCALE: AS SHOWN

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER JENNIFER L. CARLSON
8-23-10

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, P.L.L.C dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

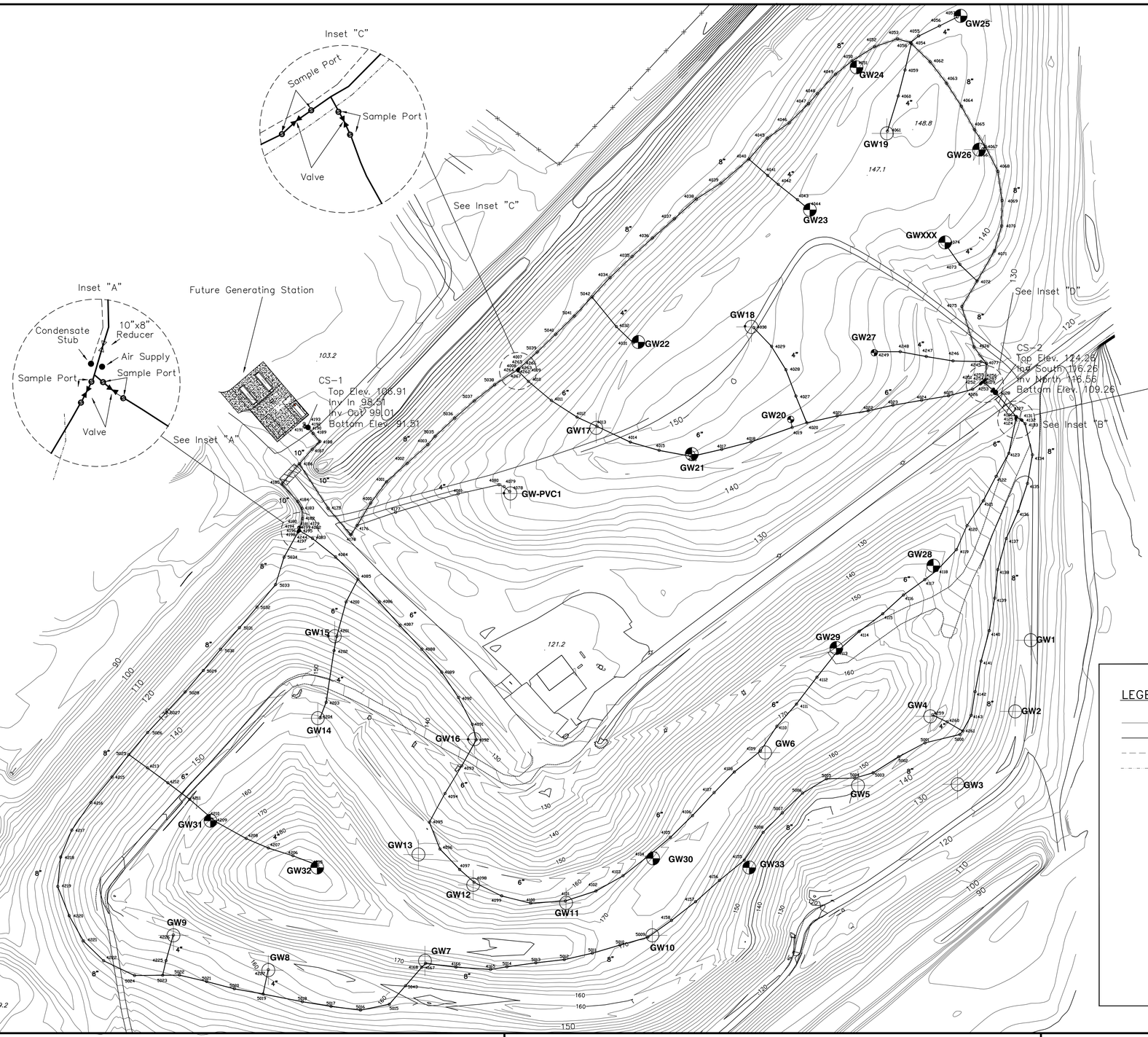
DRAWING TITLE:	TITLE SHEET
PROJECT:	LFG COLLECTION SYSTEM DESIGN WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA
CLIENT:	MP WILSON, LLC

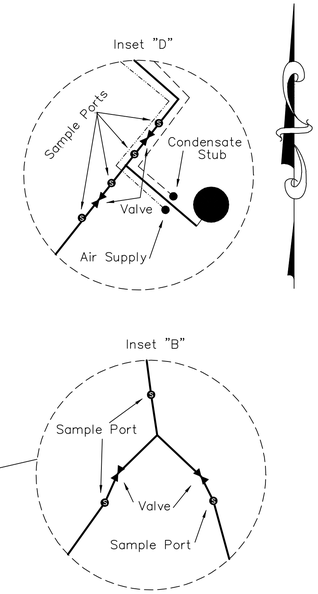
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-209205-00	DWG. WILSON.LFG.TITLE	REV. 0
SCALE	NO SCALE	SHEET 1 OF 6	
DATE	AUGUST 2010		

DETAILS INDEX

VERTICAL EXTRACTION WELL DETAILS	1/4
SLOTTED PIPE FOR VERTICAL WELL DETAILS	2/4
ROAD CROSSING DETAIL	3/4
HEADER PIPE FLANGE DETAIL	4/4
COLLECTION SYSTEM BUTTERFLY DETAIL	5/4
HEADER/LATERAL TRENCH DETAILS	6/4
CONDENSATE SUMP DETAILS	7/4
WELL HEAD DETAILS	1/6
SAMPLE PORT DETAILS	2/6
CS-1 STUB UP DETAILS	3/6





Chandler Construction Representative

Signature Date

GRAPHIC SCALE

0' 100' 200' 300'

1" = 100"

LEGEND

- EXISTING CONTOUR
- LFG HEADER/LATERAL
- CONDENSATE FORCEMAIN
- AIR SUPPLY
- ROAD CROSSING
- STUBS OF AIR/CONDENSATE LINE
- LFG ISOLATION VALVE
- NEW GAS WELL
- EXISTING GAS WELL
- SUMP
- SAMPLE PORT

AS-BUILT SHEET 2 OF 6

Randy D. Ward
Professional Land Surveyor
9696 Ralph Ward Trail
Ash, NC 28420
910-287-6556

DRAWN BY: JB		REVISIONS:
APRROVED BY: RDW	DATE OF SURVEY: 8/18/2010	
SURVEYED BY: JB & GR3		

Asbuilt Survey

For

WILSON COUNTY, NORTH CAROLINA

WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893

THE PURPOSE OF THIS MAP IS FOR LOCATION ONLY AND DOES NOT REPRESENT A BOUNDARY SURVEY BY ME.

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by RandyD. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

I, Randy D. Ward, a Professional Land Surveyor, certify that the Ratio of Precision is 1: 10,000+ and that this map meets the Minimum Standards of Practice for Land Surveying in North Carolina.

Witness my hand and seal this 18th day of August, 2010

Randy D. Ward L-3494

NORTH CAROLINA PROFESSIONAL SEAL L-3494 LAND SURVEYOR RANDY D. WARD

DESCRIPTION	NORTHING	EASTING
GW9	716401.881	2339957.127
GW8	716333.151	2340140.580
GW32	716530.636	2340231.151
GW31	716620.752	2340025.717
GW7	716350.868	2340438.799
GW12	716497.338	2340531.618
GW13	716556.113	2340426.676
GW11	716462.853	2340711.095
GW10	716400.155	2340877.039
GW30	716548.274	2340878.467
GW6	716752.262	2341094.361
GW5	716689.079	2341273.599
GW4	716822.120	2341413.300
GW29	716953.533	2341232.481
GW28	717112.384	2341418.876
GW27	717522.929	2341304.936
GW20	717394.386	2341143.911
GW18	717572.667	2341068.160
GW21	717327.327	2340953.197
GW22	717377.899	2340768.549
GW17	717251.830	2340603.559
GW16	716778.087	2340534.462
GW14	716818.482	2340232.399
GW15	716976.494	2340265.100
GW13	717543.355	2340850.219
GW23	717798.298	2341180.735
GW19	717945.653	2341329.331
GW24	718072.548	2341270.723
GW25	718171.855	2341471.510
GW26	717914.220	2341506.889
GWXXX	717735.326	2341441.309

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4000	top of pipe	717232.935	2340334.086	115.80
4001	top of pipe	717273.971	2340364.830	117.87
4002	top of pipe	717309.670	2340404.548	118.70
4003	top of pipe	717345.729	2340444.470	119.39
4007	top of pipe	717489.649	2340617.168	120.65
4008	valve	717490.902	2340618.880	121.16
4009	valve	717489.036	2340617.785	120.67
4010	top of pipe	717467.769	2340638.336	125.28
4011	top of pipe	717430.886	2340682.590	134.68
4012	top of pipe	717398.792	2340732.020	141.66
4013	top of pipe/intake	717381.154	2340770.513	144.93
4014	top of pipe	717350.591	2340834.751	147.77
4015	top of pipe	717334.689	2340890.230	146.36
4016	top of pipe/intake	717323.101	2340952.464	145.39
4017	top of pipe	717336.525	2341010.778	144.37
4018	top of pipe	717351.198	2341067.337	143.21
4019	top of pipe/intake	717378.990	2341146.703	142.46
4020	top of pipe/tee	717387.971	2341174.775	142.37
4021	top of pipe	717401.172	2341233.495	140.68
4022	top of pipe	717410.991	2341293.189	137.78
4023	top of pipe	717421.616	2341340.889	135.88
4024	top of pipe	717431.135	2341396.248	132.49
4025	top of pipe	717439.697	2341448.036	129.37
4026	top of pipe	717452.291	2341494.485	126.16
4027	top of pipe	717439.201	2341153.924	144.71
4028	top of pipe	717489.915	2341134.650	145.60
4029	top of pipe	717535.233	2341106.969	147.90
4030	top of pipe/intake	717571.206	2341072.623	149.15
4031	top of pipe/intake	717542.061	2340840.376	142.10
4032	top of pipe	717573.171	2340807.866	133.97
4034	top of pipe	717667.702	2340795.631	122.77
4035	top of pipe	717708.288	2340838.085	123.17
4036	top of pipe	717743.880	2340877.278	123.31
4037	top of pipe	717780.775	2340919.317	123.68
4038	top of pipe	717819.154	2340961.986	124.38
4039	top of pipe	717849.473	2341009.318	125.42
4040	top of pipe/tee	717896.014	2341063.386	125.90
4041	top of pipe	717864.541	2341099.402	134.02
4042	top of pipe	717847.333	2341119.769	140.07
4043	top of pipe	717817.755	2341157.073	145.51
4044	top of pipe/intake	717801.877	2341175.755	148.51
4045	top of pipe	717936.388	2341098.836	127.72
4046	top of pipe	717965.872	2341140.909	129.50
4047	top of pipe	718002.608	2341178.143	131.63
4048	top of pipe	718022.257	2341195.312	132.65
4049	top of pipe	718059.621	2341230.270	134.78
4050	top of pipe/tee	718085.326	2341262.144	136.33
4051	top of pipe/intake	718077.357	2341268.315	137.92
4052	top of pipe	718112.746	2341305.596	138.98
4053	top of pipe	718127.802	2341350.011	140.09
4054	top of pipe/tee	718118.623	2341376.555	141.72
4055	top of pipe	718133.162	2341390.505	141.83
4056	top of pipe	718152.705	2341430.662	142.86
4057	top of pipe/intake	718169.835	2341465.269	143.97
4058	top of pipe/tee	718120.630	2341374.807	141.22
4059	top of pipe	718067.819	2341364.136	143.29
4060	top of pipe	718017.715	2341351.140	145.09
4061	top of pipe/intake	717950.026	2341330.389	147.09
4062	top of pipe	718083.448	2341412.747	145.20
4063	top of pipe	718042.183	2341444.420	146.41
4064	top of pipe	717997.965	2341472.921	144.76
4065	top of pipe	717952.522	2341498.283	143.24
4066	top of pipe/intake	717915.919	2341514.467	142.67
4067	top of pipe/tee	717919.893	2341519.635	142.40
4068	top of pipe	717872.417	2341543.416	141.47
4069	top of pipe	717816.194	2341551.392	139.54
4070	top of pipe	717767.120	2341550.638	137.81
4071	top of pipe	717719.016	2341536.776	135.78
4072	top of pipe/tee	717661.071	2341503.216	132.29
4073	top of pipe	717693.118	2341469.941	136.46
4074	top of pipe/intake	717730.109	2341443.789	141.00
4075	top of pipe	717611.937	2341473.727	129.08
4076	top of pipe	717533.865	2341497.228	126.81
4077	top of pipe	717502.040	2341521.424	126.19
4078	top of pipe/intake	717255.450	2340602.094	138.06
4079	top of pipe	717264.624	2340591.441	137.86
4080	top of pipe	717268.521	2340581.705	137.12
4081	top of pipe	717250.949	2340502.697	130.91
4082	valve	717180.947	2340196.854	114.63
4083	top of pipe	717164.980	2340222.173	113.22
4084	top of pipe	717129.483	2340266.608	114.96
4085	top of pipe	717086.517	2340309.939	118.52
4086	top of pipe	717042.450	2340350.950	120.40
4087	top of pipe	716997.386	2340390.907	122.56
4088	top of pipe	716951.498	2340432.964	124.92
4089	top of pipe	716907.190	2340471.218	126.83
4090	top of pipe	716858.246	2340503.575	128.25
4091	top of pipe	716806.831	2340530.278	130.16
4092	top of pipe	716776.996	2340538.016	131.01
4093	top of pipe	716726.561	2340509.908	135.45
4094	top of pipe	716673.550	2340477.508	142.40
4095	top of pipe	716618.234	2340447.443	148.44
4096	top of pipe	716566.528	2340467.910	152.01
4097	top of pipe	716527.095	2340505.797	156.68
4098	top of pipe/intake	716502.467	2340533.636	161.19
4099	top of pipe	716476.134	2340586.535	162.34

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4100	top of pipe	716462.151	2340642.634	163.32
4101	top of pipe/intake	716466.492	2340709.364	164.44
4102	top of pipe	716485.601	2340768.536	165.54
4103	top of pipe	716514.866	2340820.626	167.12
4104	top of pipe/intake	716550.542	2340866.470	168.08
4105	top of pipe	716588.987	2340911.976	170.94
4106	top of pipe	716630.783	2340954.468	173.18
4107	top of pipe	716675.163	2340996.306	173.78
4108	top of pipe	716714.892	2341035.160	173.25
4109	top of pipe/intake	716755.325	2341085.610	172.65
4110	top of pipe	716803.038	2341117.302	171.80
4111	top of pipe	716845.819	2341154.957	169.82
4112	top of pipe	716897.546	2341194.354	161.98
4113	top of pipe/intake	716948.398	2341234.627	159.90
4114	top of pipe	716985.515	2341275.941	158.64
4115	top of pipe	717019.800	2341321.278	156.74
4116	top of pipe	717055.973	2341361.270	154.85
4117	top of pipe	717085.697	2341402.497	152.49
4118	top of pipe/intake	717103.450	2341425.867	151.15
4119	top of pipe	717143.288	2341463.491	146.48
4120	top of pipe	717189.457	2341483.714	142.24
4121	top of pipe	717237.306	2341514.946	136.28
4122	top of pipe	717284.468	2341539.705	130.54
4123	top of pipe	717328.999	2341564.469	126.16
4124	top of pipe/sample port	717395.312	2341577.964	121.12
4125	valve	717397.579	2341578.076	121.83
4126	top pipe/tee	717398.760	2341579.360	121.29
4127	top of pipe/sample port	717399.812	2341578.618	120.68
4128	top condensate pump	717446.495	2341538.688	124.26
4129	top of pipe	717465.180	2341517.472	125.09
4131	valve	717393.741	2341588.258	123.85
4132	top of pipe/sample port	717392.496	2341589.739	124.05
4133	top of pipe	717385.907	2341595.752	124.59
4134	top of pipe	717325.940	2341609.855	124.22
4135	top of pipe	717271.069	2341600.370	125.21
4136	top of pipe	717217.209	2341582.417	126.44
4137	top of pipe	717164.778	2341559.376	131.00
4138	top of pipe	717105.059	2341543.009	134.30
4139	top of pipe	717050.025	2341536.958	136.62
4140	top of pipe	716987.454	2341526.785	138.35
4141	top of pipe	716928.624	2341510.905	139.39
4142	top of pipe	716869.583	2341499.346	139.97
4143	top of pipe	716824.170	2341491.988	141.26
4155	top of pipe	716544.699	2341054.188	160.86
4156	top of pipe	716506.098	2341006.604	166.46
4157	top of pipe	716464.853	2340960.496	170.27
4158	top of pipe	716428.857	2340914.238	171.60
4165	top of pipe	716334.443	2340565.310	171.86
4166	top of pipe	716338.907	2340498.727	170.81
4167	top of pipe	716346.035	2340440.177	170.08
4168	top of pipe	716338.704	2340433.036	168.52
4175	10"x8" reducer	717223.218	2340252.391	110.59
4176	8"x4" reducer/tie	717189.966	2340308.250	114.42
4178	8" 90	717171.891	2340296.011	112.45
4179	10"x8" reducer	717186.846	2340197.715	114.49
4180	air supply	717185.958	2340195.795	114.59
4181	condensate forcemain	717186.142	2340195.603	114.48
4182	top of pipe	717203.056	2340202.888	112.30
4183	top of pipe	717222.825	2340201.753	111.26
4184	top of pipe	717236.001	2340193.877	110.47
4185	top of pipe	717269.844	2340162.661	108.10
4186	top of pipe/tee	717308.925	2340196.856	107.09
4187	top of pipe	717336.885	2340221.651	103.64
4188	top of pipe	717351.798	2340236.405	106.11
4189	top of pipe	717367.378	2340223.450	100.55
4190	cs-1	717379.195	2340213.440	106.91
4191	condensate forcemain	717380.136	2340205.880	106.97
4192	air supply	717381.305	2340207.489	106.85
4193	stubout	717386.543	2340206.219	106.70
4194	sample port	717180.900	2340196.183	114.42
4195	sample port	717179.917	2340197.768	114.69
4196	sample port	717179.860	2340195.010	114.54
4197	sample port	717177.676	2340194.140	114.79
4198	valve	717178.859	2340194.711	114.60
4199	valve	717180.303	2340196.857	114.64
4200	top of pipe	717042.735	2340286.984	125.70
4201	top of pipe/intake	716975.985	2340268.875	136.35
4202	top pipe/red.	716948.670	2340263.676	140.13
4203	top of pipe	716849.245	2340248.530	150.84
4204	top of pipe/intake	716818.991	2340236.751	153.76
4205	top of pipe/intake	716535.209	2340232.330	190.68
4206	top of pipe	716553.508	2340184.486	188.30
4207	top of pipe	716568.342	2340137.153	182.09
4208	top of pipe	716586.801	2340094.255	172.67
4209	4"x6" reducer	716620.010	2340034.248	161.78
4210	top of pipe/intake	716624.083	2340028.442	161.08
4211	top of pipe	716662.266	2339985.661	151.93
4212	top of pipe	716694.029	2339943.308	146.96
4213	top of pipe	716722.813	2339904.034	139.14
4214	top of pipe/tee	716748.570	2339868.235	126.57
4215	top of pipe	716705.150	2339835.832	127.91
4216	top of pipe	716656.088	2339795.167	126.95
4217	top of pipe	716602.916	2339758.209	128.42
4218	top of pipe	716550.954	2339736.793	130.15
4219	top of pipe	716494.260	2339731.207	131.88
4220	top of pipe	716437.769	2339753.356	133.38

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
4221	top of pipe	716389.222	2339780.701	134.65
4222	top of pipe	716351.249	2339819.534	138.44
4225	top of pipe	716351.299	2339939.873	144.32
4226	top of pipe/intake	716400.719	2339953.895	150.12
4227	top of pipe/intake	716333.725	2340136.938	151.18
4244	top of pipe	717176.983	2340194.263	112.89
4245	top of pipe/tee	717505.867	2341510.618	127.18
4246	top of pipe	717507.133	2341456.568	131.28
4247	top of pipe	717515.684	2341405.066	134.00
4248	top of pipe	717524.918	2341355.007	136.74
4249	top of pipe/intake	717524.948	2341308.886	140.21
4251	top of pipe	717462.705	2341509.510	125.64
4252	sample port	717464.132	2341511.245	127.07
4253	valve	717465.184	2341512.032	126.69
4254	sample port	717466.416	2341513.655	126.87
4255	sample port	717468.965	2341516.876	126.59
4256	sample port	717471.144	2341519.572	126.81
4257	valve	717470.065	2341518.368	126.49
4259	top of pipe/intake	716824.853	2341417.128	151.90
4260	top of pipe	716811.491	2341445.412	148.82
4261	top of pipe/tee	716793.955	2341475.458	141.70
4262	sample port	717487.396	2340618.864	122.35
4263	sample port	717488.991	2340617.849	121.71
4264	sample port	717490.208	2340618.026	121.45
4265	sample port	717491.955	2340619.845	121.94
4266	valve	717491.144	2340619.017	121.82
4267	valve	717488.650	2340618.387	122.05
5000	top of pipe	716787.246	2341469.934	141.96
5001	top of pipe	716770.980	2341402.605	146.74
5002	top of pipe	716744.294	2341351.837	148.13
5003	top of pipe	716713.321	2341302.749	149.09
5004	top of pipe/tee	716703.187	2341267.421	150.11
5005	top of pipe	716701.900	2341212.830	154.12
5006	top of pipe	716674.093	2341166.855	156.50
5007	top of pipe	716635.875	2341127.883	157.62
5008	top of pipe	716598.549	2341090.631	159.21
5009	top of pipe	716396.298	2340868.524	172.06
5010	top of pipe	716381.208	2340814.805	173.94
5011	top of pipe	716365.793	2340761.541	177.09
5012	top of pipe	716353.528	2340707.494	178.13
5013	top of pipe	716347.148	2340652.739	177.03
5014	top of pipe	716339.556	2340597.032	174.64
5015	top of pipe	716267.347	2340370.158	151.85
5016	top of pipe	716255.987	2340314.684	150.43
5017	top of pipe	716263.151	2340257.789	149.54
5018	top of pipe	716272.290	2340202.641	148.59
5019	top of pipe/tee	716287.185	2340126.885	145.35
5020	top of pipe	716297.088	2340071.460	144.76
5021	top of pipe	716311.320	2340017.932	143.94
5022	top of pipe	716323.550	2339965.695	141.81
5023	top of pipe/tee	716323.330	2339933.406	140.44
5024	top of pipe	716322.874	2339879.061	139.57
5025	top of pipe/tee	716748.484	2339867.885	126.44
5026	top of pipe	716791.034	2339904.483	126.44
5027	top of pipe	716830.505	2339940.980	126.08
5028	top of pipe	716869.116	2339976.620	125.59
5029	top of pipe	716910.467	2340011.667	124.71
5030	top of pipe	716951.256	2340045.099	123.95
5031	top of pipe	716992.865	2340081.322	123.44
5032	top of pipe	717032.649	2340115.193	122.68
5033	top of pipe	717076.093	2340150.962	121.33
5034	top of pipe	717128.934	2340167.518	118.42
5035	top of pipe	717361.783	2340458.520	119.42
5036	top of pipe	717396.825	2340496.192	119.50
5037	top of pipe	717429.995	2340533.904	119.71
5038	top of pipe	717461.250	2340573.378	120.06
5039	top of pipe	717524.109	2340655.294	121.18
5040	top of pipe	717558.464	2340690.892	121.39
5041	top of pipe	717593.581	2340726.677	122.12
5042	top of pipe	717630.318	2340760.973	122.44
5043	top of pipe	716303.025	2340401.597	159.75

NOTE: STATE PLANE COORDINATE SYSTEM (SPCS)

Randy D. Ward
Professional Land Surveyor
9696 Ralph Ward Trail
Ash, NC 28420
910-287-6556

DRAWN BY: JB		REVISIONS:
APRROVED BY: RDW	DATE OF SURVEY: 8/18/2010	
SURVEYED BY: JB & GR3		

Asbuilt Survey
For

WILSON COUNTY, NORTH CAROLINA

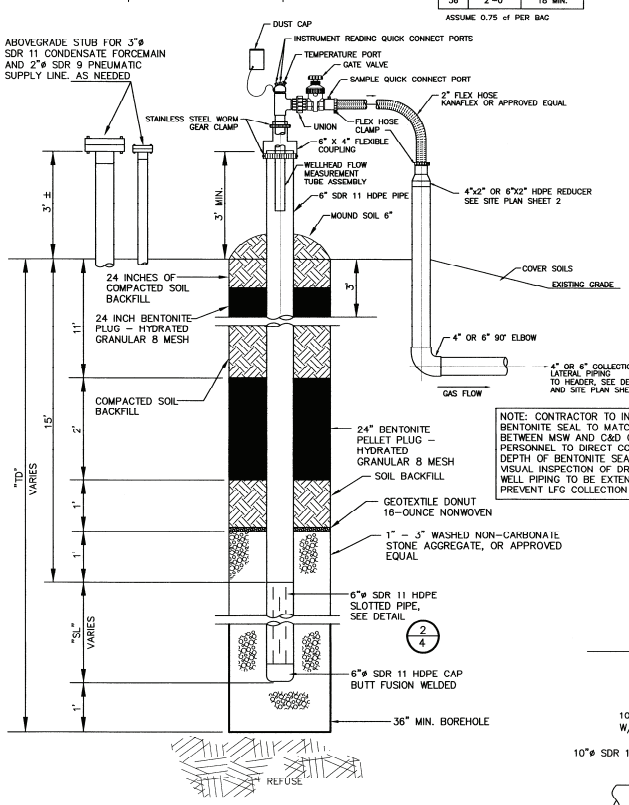
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

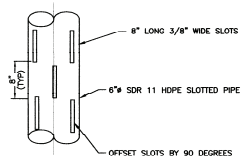
BENTONITE SCHEDULE		
DIA.	THICKNESS	NO. OF BAGS
36"	2'-0"	18 MIN.

ASSUME 0.75 cf PER BAG

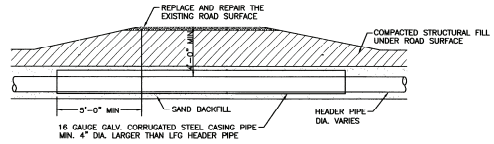


VERTICAL EXTRACTION WELL DETAIL 1/4
NOT TO SCALE

NOTES:
1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL AF-2V WELLHEAD ASSEMBLY, TEL. 1-800-LANDTEC, FAX 213-895-5866.

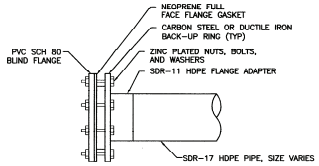


SLOTTED PIPE FOR VERTICAL WELLS DETAIL 2/4
NO SCALE



ROAD CROSSING DETAIL 3/4
NOT TO SCALE

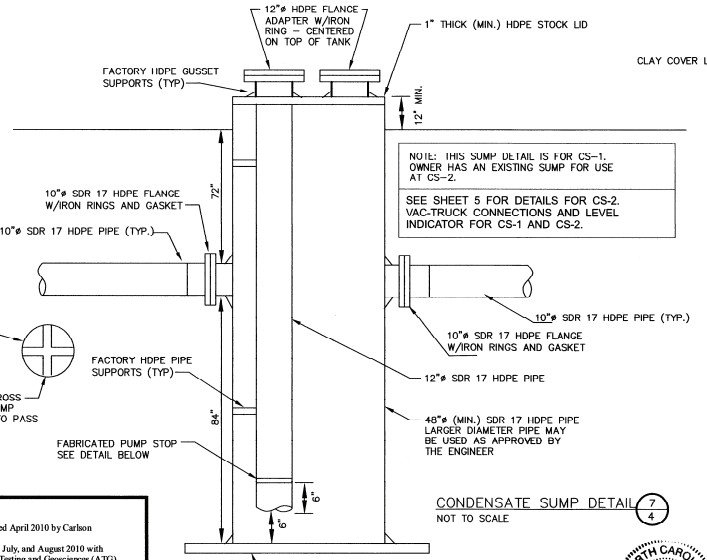
NOTE: ROAD CROSSINGS TO BE INSTALLED TO MAXIMIZE LFG PIPING SLOPE TO ACCOMODATE DIFFERENTIAL SETTLEMENT BELOW ROADWAYS. CONTRACTOR AND CQA PERSONNEL TO REVIEW ROAD CROSSING SLOPES BEFORE INSTALLATION TO MAXIMIZE BASED ON AVAILABLE GRADES.



HEADER PIPE BLIND FLANGE 4/4
NOT TO SCALE

NOTE: CONTRACTOR TO INSTALL LOWER BENTONITE SEAL TO MATCH CLAY LAYERS BETWEEN MSW AND C&D OVERFILL. CQA PERSONNEL TO DIRECT CONTRACTOR ON DEPTH OF BENTONITE SEALS BASED ON VISUAL INSPECTION OF DRILL TAILINGS. SOLID WELL PIPING TO BE EXTENDED AS NEEDED TO PREVENT LFG COLLECTION IN C&D AREAS.

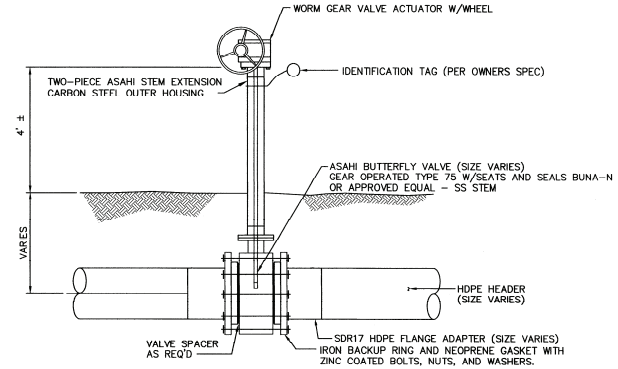
NOTE: ALL LFG PIPING TO BE INSTALLED AT A MINIMUM 2.5% GRADE FOR ALL COUNTER-CURRENT FLOW SECTIONS AND 2% GRADE FOR ALL CONCURRENT FLOW SECTIONS.



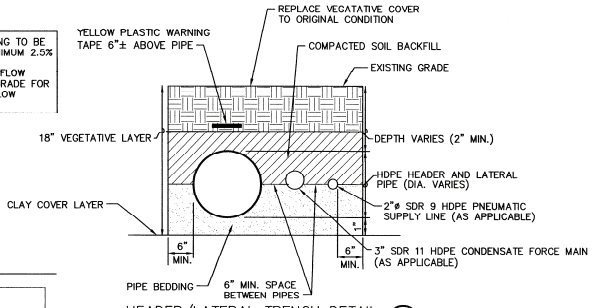
NOTE: THIS SUMP DETAIL IS FOR CS-1. OWNER HAS AN EXISTING SUMP FOR USE AT CS-2.

SEE SHEET 5 FOR DETAILS FOR CS-2. VAC-TRUCK CONNECTIONS AND LEVEL INDICATOR FOR CS-1 AND CS-2.

CONDENSATE SUMP DETAIL 7/4
NOT TO SCALE



LFG COLLECTION SYSTEM BUTTERFLY VALVE DETAIL 5/4
NOT TO SCALE



HEADER/LATERAL TRENCH DETAIL 6/4
NO SCALE

NOTE: EXISTING LANDFILL FINAL COVER SYSTEM CONSISTS OF APPROXIMATELY 18 INCHES OF COVER SOILS, 24 INCHES OF CLAY, AND 12 INCHES OF INTERIM SOILS OVER THE WASTE. ALL LFG PIPING TO BE INSTALLED IN THE UPPER 18 INCHES, UNLESS MAINTAINING PIPE SLOPE REQUIRES INSTALLATION OF LFG PIPING IN THE CLAY OR INTERIM LAYERS. SHOULD LFG PIPING BE INSTALLED IN OR THROUGH THE CLAY CAP, BENTONITE CLAY SHALL BE ADDED TO THE AREAS OF PENETRATION TO REPLACE THE DISTURBED CAP. CQA PERSONNEL TO DOCUMENT ANY DISTURBANCE OF THE CLAY LANDFILL CAP AND ALL REPAIRS.

Notes:
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3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

AS-BUILTS

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER MATTHEW R. CARLSON 8-27-10

DRAWING TITLE: **DETAILS**

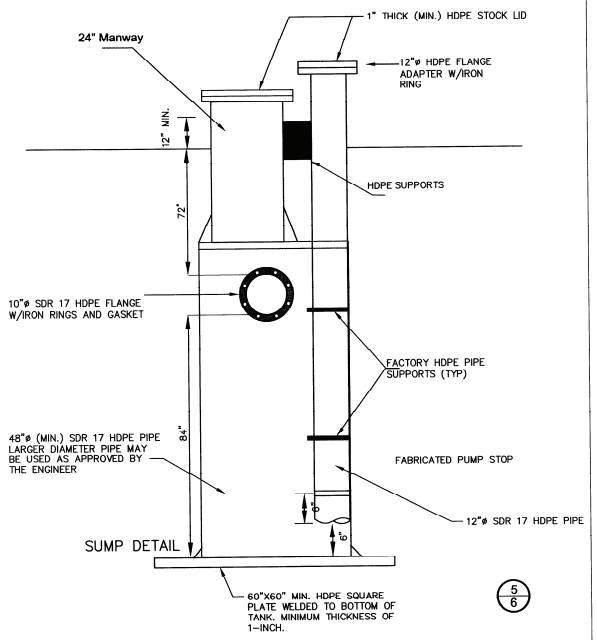
PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

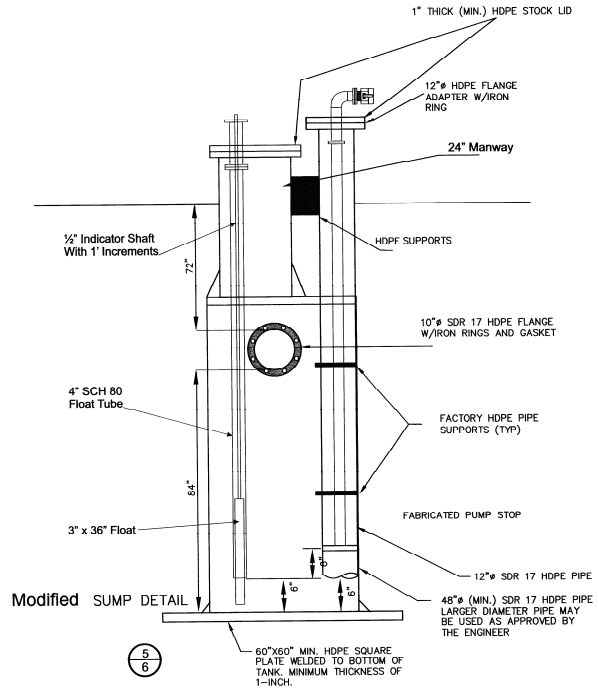
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.LFG	REV. 0	
SCALE NO SCALE	SHEET 4 OF 6		
DATE AUGUST 2010			

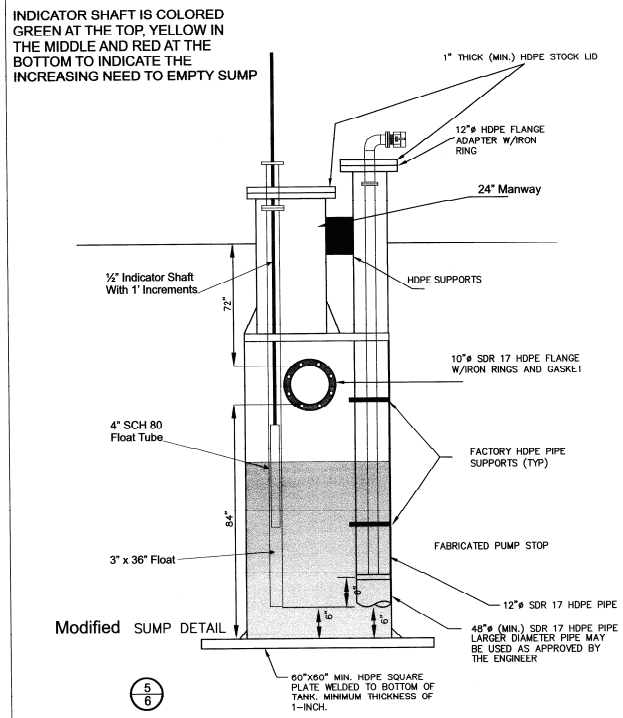
CS-2 Details

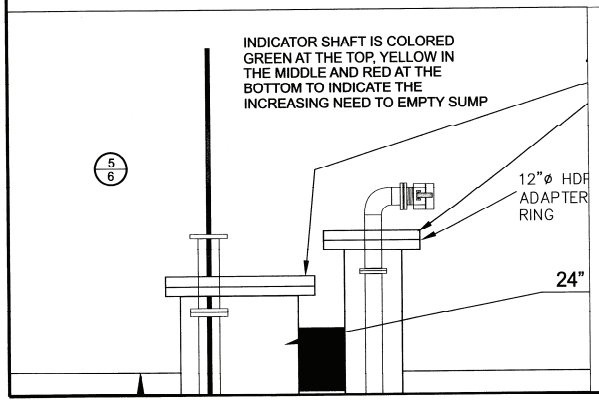


Level Indicator Vac-truck Connection For CS-1, CS-2,



Level Indicator For CS-1, CS-2, Approaching Danger Level





AS-BUILTS

Notes:

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4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
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NORTH CAROLINA PROFESSIONAL SEAL 029334 ENGINEER KINDSER L. CARLSON
8-23-10

DRAWING TITLE:	DETAILS
PROJECT:	LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010 PERMIT DRAWINGS
SITE:	MP WILSON, LLC WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.DETAILS	REV. 0	
SCALE NO SCALE	SHEET 5 OF 6		
DATE AUGUST 2010			

NOTES:

1. UNLESS OTHERWISE AGREED TO BY OWNER, CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS TO PERFORM THE WORK DESCRIBED HEREIN.

2. PRIOR TO DRILLING, CONTRACTOR TO VERIFY WELL LOCATIONS, LANDFILL SURFACE GRADES, AND TOTAL WELL DEPTHS WITH OWNER. ALL WELL DRILLING MUST REMAIN A MINIMUM OF 15 FEET ABOVE THE LANDFILL LINER SYSTEM.

3. CONTRACTOR SHALL HAUL AND DISPOSE OF ALL WASTE MATERIALS TO AN APPROVED WASTE DISPOSAL LOCATION INCLUDING MUNICIPAL SOLID WASTE EXCAVATED DURING THE INSTALLATION OF THE VERTICAL WELLS AND LFG HEADER PIPE.

4. ALL BOLTS, NUTS AND WASHERS SHALL BE ZINC COATED STEEL. IF A FLANGE OR A VALVE IS USED AND IT IS BURIED, THE FLANGE AND/OR VALVE MUST BE WRAPPED WITH A 5-MIL PLASTIC SHEETING.

5. UNLESS OTHERWISE DIRECTED BY OWNER, CONTRACTOR SHALL PROVIDE TO OWNER AS-BUILT DRAWINGS INCLUDING DETAILED SURVEY OF THE NEW VERTICAL WELLS, NEW LFG HEADER PIPING, NEW VALVES, NEW SUMPS, AND NEW CONDENSATE AND PNEUMATIC PIPING. SURVEY TO INCLUDE NORTHING, EASTING, AND GROUND SURFACE ELEVATION OF ALL VERTICAL WELLS, VALVES, AND NORTHING, EASTING, AND TOP OF PIPE ELEVATION OF ALL BURIED HEADER AND LATERAL LFG PIPING AND CONDENSATE AND PNEUMATIC PIPING AT MINIMUM DISTANCES BETWEEN POINTS OF 50 LINEAR FEET AND AT ALL TEES, FLANGES, VALVES, AND RISERS.

6. CONTRACTOR SHALL USE FACTORY MOLDED OR FACTORY FABRICATED TEE AND REDUCERS FOR CONNECTIONS. FIELD MADE BRANCH SADDLE CONNECTIONS ARE NOT TO BE USED, UNLESS OTHERWISE APPROVED BY OWNER. IF BRANCH SADDLE CONNECTIONS ARE APPROVED BY OWNER, CONTRACTOR PERSONNEL PERFORMING BRANCH SADDLE CONNECTIONS MUST BE A CERTIFIED HDPE FUSION TECHNICIAN, AS TRAINED BY MCELROY FUSION (OR EQUAL). TRAINING CERTIFICATES MUST BE PROVIDED TO CQA PERSONNEL OR OWNER PRIOR TO BEGINNING WORK.

7. CONTRACTOR TO USE FACTORY PERFORATED PIPE FOR VERTICAL WELLS, UNLESS OTHERWISE APPROVED BY OWNER.

8. CONTRACTOR RESPONSIBLE FOR DAMAGES INCURRED TO LANDFILL COVER SYSTEM DURING HIS CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL RETURN LANDFILL COVER SYSTEM TO ORGINIAL CONDITION AND/OR TO THE SATISFACTION OF OWNER. CONTRACTOR TO SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS TO THE SATISFACTION OF OWNER.

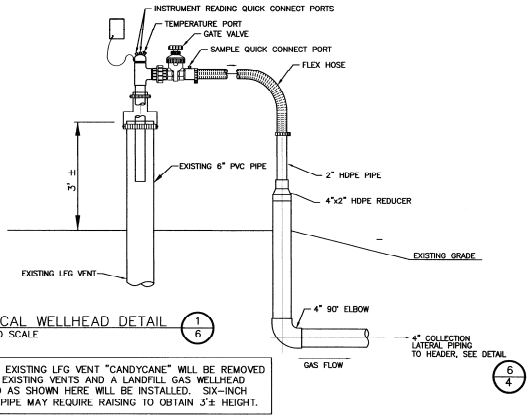
9. OWNER MAY CONTRACT WITH A THRID PARTY FOR CONSTRUCTION QUALITY ASSURANCE (CQA) SERVICES. CONTRACTOR SHALL ALLOW (AND PROVIDE ADVANCE NOTIFICATION) FOR CQA PERSONNEL TO OBSERVE (AND TEST IF NECESSARY) ALL WORK PRIOR TO BURIAL.

10. CONTRACTOR TO AIR PRESSURE TEST ALL SOLID-WALL LFG HEADER AND LATERAL PIPING PRIOR TO BURIAL. LENGTHS OF PRESSURE TESTING NOT TO EXCEED 500 LINEAR FEET WITHOUT OWNER'S APPROVAL. CONTRACTOR TO SEAL ALL PIPE ENDS AND RISERS WITH FUSED CAPS OR FLANGES. PRESSURE TEST ON LFG HEADER/LATERAL PIPING TO BE PERFORMED AT 5 PSIG, ON CONDENSATE FORCEMAIN PIPING TO BE 50 PSI, AND ON AIR SUPPLY PIPING TO BE 100 PSI AND PRESSURE DROP SHALL NOT EXCEED ONE PERCENT OVER A ONE HOUR PERIOD CORRECTED FOR TEMPERATURE. CONTRACTOR TO SUPPLY TESTING FLANGE WITH TEMPERATURE GAUGE AND DIGITAL MANOMETER. CONTRACTOR TO SUPPLY AIR COMPRESSOR AND TO COORDINATE PRESSURE TEST WITH CQA PERSONNEL OR OWNER. ANY AIR LEAKS TO BE REPAIRED BY CONTRACTOR AND A RE-TEST OF THE PRESSURE TESTING MUST BE COMPLETED.

11. ALL LFG HEADER AND LATERAL PIPING TO BE INSTALLED AT A MINIMUM SLOPE OF 2 PERCENT (CONCURRENT FLOW) AND 2.5 PERCENT (COUNTERCURRENT FLOW) TO DRAIN CONDENSATE LIQUIDS TO CONDENSATE SUMPS LOCATED THROUGH OUT THE LFG SYSTEM. LFG HEADER AND LATERAL PIPING THROUGH ROAD CROSSINGS TO BE INSTALLED AT A MINIMUM SLOPE OF 3 PERCENT. PIPING WAS INSTALLED AS DIRECTED BY THE QUALITY ASSURANCE MANAGER WHEN THE ABOVE GRADES COULD NOT BE ACHIEVED.

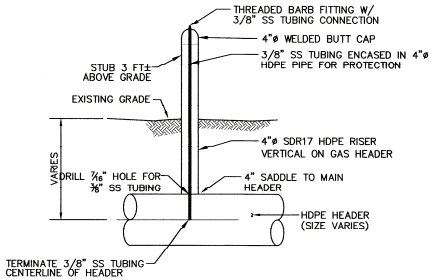
12. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE HEALTH AND SAFETY OF HIS EMPLOYEES AND SUBCONTRACTORS. CONTRACTOR TO PROVIDE SERVICES IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL HEALTH AND SAFETY REGULATIONS. CONTRACTOR IS ASSUMED TO BE EXPERIENCED IN WORKING WITH LANDFILL GAS AND IN A POTENTIALLY HAZARDOUS LANDFILL ENVIRONMENT. CONTRACTOR TO PROVIDE FOUR (4) COPIES OF A SITE-SPECIFC HEALTH AND SAFETY PLAN TO OWNER PRIOR TO BEGINNING WORK. CONTRACTOR TO NOTIFY OWNER OF ANY UNSAFE CONDITIONS DURING CONSTRUCTION. CONTRACTOR IS MADE AWARE THAT HYDROGEN SULFIDE GAS MAY BE PRESENT IN THE LANDFILL GAS. CONTRACTOR TO HAVE A PORTIBLE HYDROGEN SULFIDE METER PRESENT DURING ALL WELL DRILLING AND IN-TRENCH WORK.

13. CONTRACTOR TO REPLACE ALL LANDFILL BERMS TO PRE-CONSTRUCTION OR BETTER CONDITIONS. BASED ON SOLID WASTE PLANS, ALL BERMS ARE "TACK-ON" SOIL BERMS WITH EROSION CONTROL BLANKETS. CONTRACTOR TO BE AWARE THAT WILSON COUNTY WILL HAVE THE FINAL APPROVAL FOR ALL REVEGETATION, LANDFILL CAP REPAIRS, AND BERM REPAIRS AND REPLACEMENTS MADE AS PART OF THE LFG PROJECT.

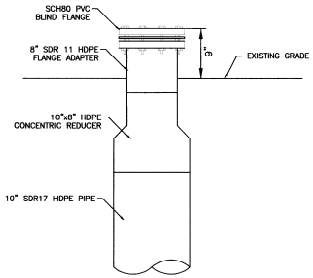


TYPICAL WELLHEAD DETAIL 1/6
NOT TO SCALE

NOTE: THE EXISTING LFG VENT "CANDYCANE" WILL BE REMOVED FROM THE EXISTING VENTS AND A LANDFILL GAS WELLHEAD SIMILAR TO AS SHOWN HERE WILL BE INSTALLED. SIX-INCH PVC WELL PIPE MAY REQUIRE RAISING TO OBTAIN 3'± HEIGHT.



LFG HEADER SAMPLE PORTS 2/6
NOT TO SCALE



CS-1 OUTLET STUB UP 3/6
NOT TO SCALE

AS-BUILTS

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER RATLIFF ENGINEERING & CONSULTING, PLLC 8-23-10

DRAWING TITLE: **DETAILS**

PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

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CEC PROJECT NO. J1-20905-00	DWG. WILSON.DETAILS	REV. 0	
SCALE NO SCALE	SHEET 6 OF 6		
DATE AUGUST 2010			

APPENDIX B

EQUIPMENT MANUALS

OPERATION, MONITORING & MAINTENANCE PLAN

for

Wilson County Landfill Gas Collection and Control System

Wilson County Sanitary Landfill
4537 Landfill Road,
Wilson, NC
August, 2010
Rev. 0.0

Prepared for:
MP Wilson, LLC
13801 Reese Blvd. West, Suite 110
Huntersville, NC 28078

Prepared by:
Ratliff Engineering & Consulting, PLLC
4224 Lazyriver Drive
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Document Control and Assurance

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Project Title Operation, Monitoring and Maintenance Plan for Wilson County Landfill Gas to Energy Project	**Version Number** Version 0.0
Report Prepared by Amy Ratliff, Ratliff Engineering & Consulting, PLLC Project Engineer Applied Testing & Geosciences, LLC; and James Voss, CEO MP Wilson, LLC	**Report Date** 08/16/2010
Report Reviewed by James Voss, MP Wilson, LLC.	**Report Approved by** James Voss, President MP Wilson, LLC.

1. Document Introduction, Description and Purpose

This Operation, Monitoring and Maintenance (OM&M) Plan will guide operations and data collection relating to the quantification of operational emissions in compliance with Project permit requirements and of greenhouse gas emission reduction for the MP Wilson, LLC Landfill Gas Collection and Control System(LFGCCS) Project (the "Project").

The Project has been developed and is being operated at the Wilson County Sanitary Landfill (WCSL) in the Town of Wilson, North Carolina by MP Wilson, LLC of Huntersville, NC. The Wilson County Landfill Project was developed by MP Developer LLC for MP Wilson, LLC.

Proper maintenance and operation of Project methane collection and destruction equipment is essential to complying with Project Permit requirements and to providing methane destruction data to compute marketable greenhouse reduction credits. The purpose of the plan is to ensure that project personnel and contractors:

- Operate and maintain the LFGCCS during a startup, shutdown, and malfunction events in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;
- Are prepared to correct malfunctions as soon as practicable after their occurrence to minimize emissions; and,
- Maintain simple, clear records of periods of startup, shutdown, maintenance, malfunction and the corrective actions taken to restore the equipment to its normal or usual manner of operation.

To meet these objectives, this document describes operation, maintenance and monitoring (data collection) at the Project. These procedures follow Climate Action Reserve (CAR) protocol, version 3.0.

The data collection is necessary for compliance with Project environmental permits and quantification of greenhouse gas emissions reductions resulting from the flaring of Landfill Gas (LFG) at the landfill.

The Project reduces the WCSL greenhouse gas emissions (GHG) by destroying the methane – a process by which MP Wilson LLC. is able to produce verifiable and ultimately marketable and serialized, Carbon Reduction Tons (CRTs) in accordance with the Climate Action Reserve's ("Reserve") Landfill Project Reporting Protocol (LPRP) V3.0.

2. Project Location and Description

The Project is located at the Wilson County Sanity Landfill (WCSL), 4537 Landfill Road, Wilson, NC (see Figures 1-1 and 1-2 for location of the project). The WCSL is closed and is in the in Post Closure period. As such it longer accepts any waste streams. The WGSL LFGD Project captures and combusts landfill gas (LFG) collected from the (WCSL) utilizing a high efficiency Flare.

2.1 Site Description

The LFGCCS comprises gas wells, conveyance piping (headers and laterals), a landfill gas Flare and a condensate handling system (see As-Built Sheets 1 through 6). The LFGCCS includes 33 vertical gas extraction wells spaced throughout the landfill. The wells are connected to a series of gas conveyance piping systems, and the gas is carried to the blower/Flare station located at the northwest end of the site, outside the limits of waste, along the main site access road. The blower/Flare system induces a vacuum within the waste mass to extract the LFG and to direct it

to the Flare for combustion. Condensate is collected throughout the collection system and is directed to the condensate sumps for ultimate disposal at the City of Wilson Water Reclamation Facility (POTW).

The landfill gas generation has been estimated to be 600 to 1000 scfm. The volume of LFG extracted will vary based on site conditions, including the state of the collection system, the current and future maintenance performed, the operating and balancing efforts, and the characteristics and age of the deposited waste.

2.2 Project Components

The Project consists of the following components:

- Gas collection system piping including approximately 33 vertical gas extraction wells spaced throughout the landfill;
- Conveyance piping systems;
- Blower/Flare station located at the northwest end of the site, outside the limits of the waste, along the main site access road;
- Condensate collection system (with disposal to the Wilson POTW);
- Monitoring equipment including gas temperature sensor, gas pressure sensor, mass flow meter, gas analyzer, thermocouple, multi-function data acquisition module, etc.;
- Foundations, buildings, storage unit fencing and other related structures associated with the Project.

2.3 Equipment Manuals

Manuals for LFG extraction and destruction equipment; and for meters and calibration equipment are contained in Appendix B.

3. Landfill Gas Collection System Operation

3.1 Landfill Gas Collection System - Start Up and Shut Down Overview

Because LFG is generated and flows continuously from the landfill, the LFG collection system is generally neither started up nor shut down. However, LFG flow from the landfill to the Flare system can be stopped by closing the 10 inch main valve located adjacent to the Flare (see As-Built Sheets) for locations of this valve). The LFG Technician will maintain records of main valve closures or openings on the Daily Log sheets (See Appendix C). Specific start up and shut down procedures for the LFG Flare are presented in Section 4.

Routine and systematic monitoring assesses the overall effectiveness of the gas collection system in controlling and/or recovering landfill gas. Monitoring detects problems which may affect the performance or continued operation of the collection system. The initial and long—term monitoring frequencies are established by using general guidelines that consider:

- The static field conditions prior to system operation;
- The dynamic changes during system operation due to both manual adjustments and the effects of meteorological conditions (barometric pressures and precipitation);

The collection system Landfill Gas Technician has a key role in establishing the monitoring frequency. The frequency should be constant (i.e., daily, weekly, or monthly), but may be supplemented dependent on meteorological changes. As conditions change within the landfill, the frequency may need to be modified for the entire system or portions of the system. The three features of a gas collection system that require routine monitoring are:

- Condensate collection tank, if applicable
- Blower/Flare station
- Gas Extraction wells

The gas wells extract the LFG from the landfill and are closely monitored to maintain their effectiveness in controlling or recovering gas. If the wells are not operated properly, they will either be understressed or overstressed.

- Understressed: Full extraction capabilities will not be achieved and migration may not be controlled or the recovery potential may be lost;
- Overstressed: Air is entering the site which may cause a subsurface refuse oxidation process. High temperatures and rapid settlement within the waste may damage the system, and the gas generation in the area will be adversely affected.

The objective of adjusting the gas wells heads and system pressure is to maximize landfill gas removal and destruction without causing subsurface oxidation or overstressing the landfill gas production environment.

Following initial system balancing, the quality and pressure of the landfill gas at each gas well and at the header line sampling ports will be monitored by a GEM 2000 portable gas analyzer on a routine basis (typically weekly) or more frequently if required. The GEM 2000 readings will be downloaded on a per event basis to the on-site computer and up-loaded to the file storage archive.

PREVENTION OF SUB SURFACE OXIDATION

The first decompositional step of refuse is aerobic (free oxygen is available). It produces CO2 because of the air in the refuse voids, but free oxygen is soon depleted and the decomposition becomes anaerobic. CO2 production is limited by oxygen held by the complex molecules (typically carbohydrates) within the refuse. Other free carbon atoms combine with hydrogen and form CH4. The typical steady state concentrations of the gases are about 58% CH4 and 42% CO2. with trace amounts of hydrogen sulfide (H2S) and other gases. If free oxygen infiltrates this anaerobic environment:

- Anaerobic bacteria are killed;
- Aerobic bacteria are stimulated;
- Temperature increases due to the heat of the $CH_4 + O_2 \rightarrow CO_2$ reaction;
- CH_4 concentration decreases; and,
- CO_2 concentration increases.

This condition often produces a self-perpetuating reaction which can result in a subsurface fire. To avoid this risk, maintain gas wells at about 54% or greater CH_4, with an absolute minimum of 50% CH_4.

Symptoms of subsurface oxidation include:

- Low CH_4;
- High CO_2;
- Rapid temperature increase;
- Smokey odor or steam;
- Settlement of the refuse; and,
- Fissures in the cover

If subsurface oxidation is suspected:

- DO NOT pump or pour water down the gas well;
- DO NOT excavate the area or remove cover material;
- Follow the instructions in Section 12.

LANDFILL GAS EMERGENCY NOTIFICATION

An emergency landfill gas situation requires an immediate response, and the MP Wilson main office can provide assistance if a subsurface oxidation incident occurs (see Section 12).

SUBSURFACE REFUSE OXIDATION — RECOMMENDED CONTROL

A subsurface refuse oxidation process normally occurs when air is drawn into the refuse due to the vacuum created within the site by a gas collection system. The addition of oxygen into the refuse environment will cause both biological and chemical reactions that may be detected by any one or several of the following events:

- Dramatic settlement over a short period of time;
- Smoke or a smoky odor emanating from the landfill surface or risers;
- Increase in gas temperature (1.2 to 2 times the normal temperature of gas);
- Deformed riser pipes;

The recommended approach to controlling a subsurface oxidation process is as follows:

- Isolate the adjacent well(s) from the collection system to prevent any further stressing of the area
- Seal the leachate risers or probes that may have allowed the introduction of air
- Saturate the cover soils within and surrounding the area of subsidence, hot spots, or emanating smoke (or steam) to minimize any further air infiltration
- Supplement the cover soils in the area of subsidence or surface cracking to further minimize air infiltration

If the oxidation process continues or worsens, nitrogen or carbon dioxide (liquid or gas) can be pumped into the refuse through tubes driven into the landfill. These compounds will suffocate the oxidation process and force the oxygen from the waste environment. The nitrogen is inert and carbon dioxide is already a major component of landfill gas. The nitrogen or carbon dioxide can also be used to keep the PVC pipe cool if well temperatures are increasing. It should be noted that if the PVC pipe has been subjected to gas temperatures above 150°F for an extended period of time (over an hour), the well will probably need to be replaced.

Discharging large volumes of water into the extraction well is not recommended. Unless the oxidation process is occurring in the refuse surrounding the borehole, the discharge of water into the well will not smother the oxidation process. In some cases, the well will become watered out.

The excavation of waste to control oxidation is also not recommended since it will allow additional air to enter the waste environment, and the waste may auto-ignite due to the excess supply of air and start a fire.

Every well has a distinct "Radius of Influence" (ROI). The ROI determines the effective range the well influences without pulling excessive air through the cover. Collection systems are designed so that the expected ROTs of adjacent wells overlap. For instance: increasing the vacuum on a well will increase its ROI and could lead to infiltration in the ROT overlap area. Each header line section serves several wells; well adjustments can affect the amount of vacuum available to other wells. For instance: opening a valve and increasing the flow on one well could cause a reduction in the available vacuum on another well on that header line (and vice versa). Because of these interrelationships, well field adjustments must be performed methodically, allowing sufficient time for stabilization.

INTERPRETATION OF GAS CONCENTRATIONS

Landfill gas typically has steady state concentrations of 58% CH4, 42% CO2. and minute amounts of trace gases. However, if an active extraction system is vacuum—stressed, air can be pulled through the cover into the refuse. This can cause gas dilution; refuse oxidation; and, possibly, a subsurface fire. When air (79% N2, 21% oxygen is pulled through the cover, the oxygen kills the methanogens (methane producing bacteria) and stimulates the aerobic bacteria which consume oxygen. Thus, the 02 is converted to CO2 and may not be observed in representative concentrations at the wellhead. The nitrogen fraction of air is inert to this

process and will provide a representative indication of true air infiltration. The GEM 2000 will be used to measure N2 (Balance Gas) and CO2 at the wells heads. The California Analytical Instruments gas analyzer will measure the components of the LFG going to the Flare.

As an example, if the initial CH4 concentration was 58% and now reads 50%, it can be ascertained that there had been 8% air infiltration. If no 02 is measured, then most likely the air has interacted with the refuse on its path from the cover to the well and the 02 has been converted to CO2 through the aerobic decomposition process. If a high concentration of O2 is measured, there is quite likely a problem with the borehole seal allowing air into the well without the 02 interacting with the refuse. Additional bentonite applied in the borehole near the surface will usually remedy this problem.

Since air is only 21% oxygen (approximately one-fifth), the true amount of air in the system is at least five times the amount of oxygen measured at the wellhead. The 02/N2 relationship can be used to determine if the well is drawing raw air down the borehole or if the 02 is being converted to CO2 on its path through the refuse. The ratio of N2 to O2 is 4 to I in air. Similar ratios to this in landfill gas suggest a borehole problem, whereas much higher ratios suggest that the air has taken a path through the cover and refuse.

3.2 Landfill Gas Collection System - Maintenance Overview

Maintenance of the LFG collection system will include:

- Checking the condition of the Lantec well head equipment (sampling ports, valves, and associated equipment); and replacing sampling ports and O rings as necessary;
- Liquid levels will be taken in each well when the system is first started and monthly until the liquid build up rate is determined. Thereafter the liquid levels will be measured at a frequency commensurate with maintaining open gas well screens. Accumulated liquids

in the gas wells will be pumped out as required and disposed with the condensate. Records of Liquid Levels will be maintained on the Gas Well Liquid Level Form (see Appendic C);

- Checking clamp tightness on all well heads (as indicated by gas quality at each well and every 6 months if required);
- Completing visual observations of Canoflex pipe length and adjusting for landfill settlement, condensate pooling, deterioration etc;
- Determine if condensate pooling is impeding gas flow through headers or laterals and arranging for necessary repairs;
- Recording all of the above activities in the Daily Log sheets, including the date, actions taken, observations, and the LFG Technician's full name and signature.

3.3 Project Spare Parts

To avoid and reduce downtime, a spare parts inventory is kept on site. This inventory includes maintenance items for the following:

- Lantec well head units;
- Spare GEM 2000 sampling ports for the Lantec units;
- Canoflex gooseneck connections;
- Flare Maintenance items;
- Calibration items;
- Tools (drills Taps Dies and wrenches etc).

The Landfill Gas Technician is responsible for requesting spare parts in a timely manner and keeping the spare parts inventory complete.

4 Landfill Gas Destruction System Start Up, Shut Down, Troubleshooting & Maintenance

This section describes the LFG destruction system start up, shut down, troubleshooting and maintenance for all components expected to exist at MP LFGD Projects.

4.1 Flare

4.1.1 Flare Description

LFG is destroyed by combustion in the CEC candlestick open Flare rated for 1000 SCFM. Refer to Figure 3 for the location of the blower/Flare station and the LFGD system. The destruction efficiency of the open Flare is rated at 96 percent (see Appendix B).

The Flare is located on a gravel foundation pad with a geotextile underlay at the northwest corner of the landfill (see As-Built Sheet 2).

4.1.2 Flare Start Up, Shut Down, Troubleshooting and Maintenance Procedures

<u>Flare Start-up Procedure</u>

- Check that propane tank valve is in the open position to allow gas flow to the pilot light;
- Check that the nitrogen tank valve is open and line is pressurized to operation of the block valve actuator;

The CMI Energy, LLC FA1-1200 utility Flare system has been designed as a fully automated operational platform requiring minimal operator interface once initial settings are determined and set. The system is designed to allow for manual operation of equipment if required. However, manual operation of system components during periods when the equipment is unattended by responsible personnel should NEVER be allowed due to the possibility of allowing uncontrolled escape of LFG without destruction by combustion. Selection of

operational mode is performed by manual selection switch located on the face of the main control interface cabinet.

Safe and reliable performance of the utility Flare equipment can be accomplished with minimal required operator adjustments and/or set point changes. Standard operation requires the operator to simply select which blower to operate by switching the selector switch located on the front of the main control cabinet to “auto” and then switch the operating mode selector switch to “auto”.

The automatic logic sequence will activate the pilot flame sequence, activate the automatic fail close valve, and start up the selected blower. If after a user selected time delay interval (10 min typical) or IF during this time interval the main flame has exceeded the temperature controller setpoint temperature (350 0F typical), the system will then become fully operational in automatic operational mode. When operating within this mode, the Flare flame controls will continuously monitor the main flame temperature and U/V signature. If either the U/V flame detector OR the thermocouple sensor indicates the main flame is active, the Flare will continue to operate in automatic mode. If both the U/V flame detector AND the thermocouple sensor indicate main flame failure, the Flare control logic sequence will activate the pilot ignition sequence. This sequence restarts the 10 minute startup timer logic sequence where if the main flame exceeds the temperature controller setpoint value within the designated timed interval, the system logic sequence will switch back to automatic operational mode and the relight sequence will reset. If the main flame does not exceed the temperature controller setpoint temperature within the designated timed interval, the Flare sequence will revert to shutdown mode, close the fail close shutdown valve and de-energize the blower VFD controller. At which point the Flare sequence must be manually reset by depressing the reset push button on the front of the main control cabinet OR switching the control mode switch to the “OFF’ position and then switching back to the “AUTO” position.

The main control logic sequence is dependent on 2 interlock safety features that must be "closed" to allow control power to be provided for operation of the Flare operational mode controls. The first interlock safety is the "EMERGENCY STOP" switch located on the front of the control panel. The second interlock safety wired in series is the Flare stack temperature switch located at the inlet of the LFG at the base of the Flare stack assembly. Within the Flare pilot ignition transformer cabinet (ENC-5) on the Flare stack, a latching relay is integrated in the Flare stack flame temperature switch signal to shutdown the Flare if a high temperature condition exists indicating a flame back condition. This relay will lock out the operation of the Flare equipment until personnel have inspected the Flare equipment for damages AND the cause of the flame back condition can be determined and corrected. At which time the operator can manually reset the system to resume normal operation. It is imperative that responsible personnel understand the danger and potential equipment damage that may occur with a flame back condition and that corrective measures are taken prior to any attempt to restart the Flare equipment after such an occurrence.

The CMI Energy utility Flare system can be operated "on the fly" meaning that blower selection can be changed while still allowing operation of the system. Either blower number 1, number 2, or both can be selected while continuing to operate. Both blowers can also be switched off if needed and as long as main flame is maintained within the temperature controller setpoint temperature OR the U/V flame detector indicates an active flame, the system will continue to operate in "AUTO" mode.

Each blower is equipped with an isolated VFD A/C drive controller that operates the blower at any user selected speed by adjusting the output frequency of the drive using the operator interface keypad on the front of the drive. The VFD controller continuously monitors the blower motor for any fault condition and will shut down the output to the blower motor if a fault

condition exists. Fault indication will be listed on the LCD readout on the keypad display. Fault reset is accomplished by depressing the reset key on the VFD drive keypad and then resetting the main control system by depressing the reset push button on the front of the main control cabinet.

If Flare system control is inoperable and troubleshooting diagnostics do not allow for resumption of normal operation, CMI Energy personnel should be notified as soon as possible in order to minimize potential downtime of LFG collection and control measures for your facility. Please refer to the included "Contact List" for contact information at that time.

Flare Maintenance

Flare maintenance is completed on an as needed basis. Propane is used for Flare startup. Nitrogen is used to actuate the shut-off valve. When the gas tanks are empty the reserve tank is substituted and a replacement spare tank ordered from the propane supplier (AirGas).

Periods of down time, due to maintenance of the Flare of other causes, will be logged the Project Timeline file.

Flare Spare Parts

Spare parts are obtained as required from CEC or local suppliers.

4.2 Engine THIS SECTION INTENTIONALLY LEFT BLANK

4.3 Offsite Gas Transfer THIS SECTION INTENTIONALLY LEFT BLANK

5 Condensate System Start Up, Shut Down, Troubleshooting & Maintenance

5.1 Condensate Management System Description

LFG is typically saturated at the temperatures and pressures that occur within the landfill. As gas enters the gas extraction system it cools, and the moisture in the gas condenses and drops out of the gas. This condensate must be removed from the gas header piping system to prevent the liquids from impeding the flow of gas. The condensate in the gas collection system is removed from the gas header pipes by gravity drainage to either of two condensate sumps, one located at the Flare pad (CS1) and one located at the east end of the landfill (CS2) (see Sheet 2 of the Asbuilt drawings for locations).Condensate is removed from the Flare skid blower via a knock-out pot and directed to condensate sump CS1.

A float rod is installed in a 4-inch SCH 80 tube in the 24-inch manway of each of the sumps. There will be a visible indicator on the rod that will reflect the depth of liquid in the sump. The rod will rise as the level goes up and become more visible as the level of the liquid increases. There will be a “stop light” color scheme on the indicator which will show green for low-level, yellow for mid-level and red for high-level. Operating personnel monitoring the sump will contact the septic hauler, if the regularly scheduled removal needs to be increased or decreased.

The operation of the LFGCCS will terminate if such a condition develops and will not be restarted until the condition is corrected. Refer to Sheet 2 of the As-Built Drawings for the locations of the condensate sumps.

Condensate collected throughout the collection system and directed to the sump will be pumped and hauled for ultimate disposal at the neighbouring City of Wilson Water Reclamation Facility (POTW). The letter of acceptance for the condensate is attached in Appendix D. The letter does indicate a requirement to have a sample collected and analyzed to verify the absence of toxic pollutants after start up occurs. This task will take place as soon as the system is up and running.

The City does not require/provide a specific permit for liquid disposal, but does require notification of the hauler selected by MP Wilson. The selected hauler will be required by contract to be available in the event of an emergency or an unanticipated spike in the quantity of condensate.

5.2 Start Up, Shut Down and Maintenance

Start Up and Shut Down Procedure

Condensate that collects at the Flare (the end of the main header line) is periodically removed by the WSCL.

Condensate Management System Maintenance

Check equipment for leaks and damage. Record inspections and corrective actions on Daily Log sheets (see sample in Appendix C).

Condensate Management System Spare Parts

Replace components as required.

6 LFG Destruction System Data Collection and Monitoring

The purpose of monitoring is to ensure that the project is operating as expected and that GHG emissions are, in fact, being reduced as a result of the operation of the project and that the project is carried out in accordance with CAR ver. 3.0. Monitored data will be used to observe the operational status of the project and to calculate the performance of the collection and destruction system.

6.1 Monitoring Parameters

Most parameters at the site are measured automatically and collected and stored by the Data Acquisition system (see Section 7). Table 1 below lists the parameters that are monitored for the Project.

Table 1: Description of Parameter Monitoring Activities

Description	Data Unit	Frequency	Comment	Parameter (Section 4 equations)
Amount of LFG Flared	ft^3 SCFM	Continuously	Measured continuously by a flow meter and recorded at least once every 15 min	$LFG_{Flare,y}$ $TM_{RG,h}$
Methane fraction in the LFG	ft^3 CH_4/ ft^3 LFG % CH4 by volume	Continuous	Measured by continuous gas analyzer or a calibrated portable gas analyzer with data (recorded at least once every 15 min) to be averaged by time interval t for the reporting cycle.	w_{CH4}
Total amount of electricity required for project operation	MWh	Monthly	Obtained from either onsite metering or utility purchase records. Required to determine CO_2 emissions from use of electricity to operate the project activity	$PE_{EC,y}$
Carbon emission factor of electricity	kg CO_2/MWh	Annually	eGRID2007 state emission factor for New York (2005 data, most recent)	$EF_{EL,y}$
Total amount	Gallons or lbs	Bi-annually	Calculated from records of fossil	$PE_{FC,y}$

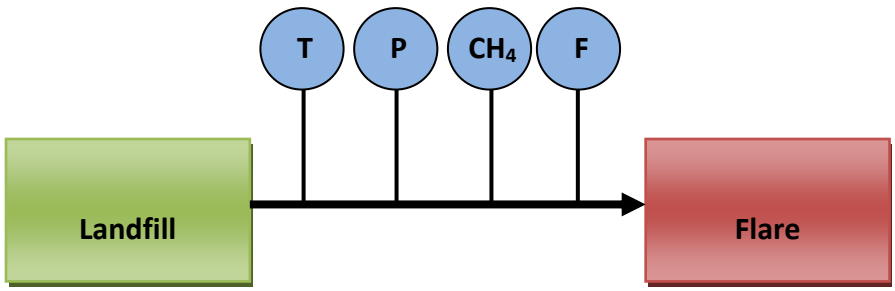
of fossil fuel required for project operation			fuel purchased and consumed. Required to determine CO_2 emissions from use of fossil fuels to operate the project activity.	
Carbon emission factor of fossil fuel	kg CO_2/mass or volume unit	Annually	Acquired for each fossil fuel combusted by the project, obtained from good practice guidance.	$COEF_{i,y}$
Operation of the Flare	hours	Hourly	This is monitored to ensure methane destruction is claimed for methane used in Flare only when it is operational.	-

Emission reductions from LFG capture and control systems must be monitored with measurement equipment that directly meters:

- The continuous rate of LFG flow, temperature and pressure prior to delivery to destruction device;
- The fraction of methane in the LFG measured with a continuous analyzer;
- The temperature of the Flare device;
- The amount of energy (electricity and fossil fuel) consumed for project operation.

The figure below indicates the key parameters monitored for the project and their physical location relative to one another.

Monitoring diagram of key parameters



6.2 Landfill Gas Flare

The blower/Flare system operation is controlled and interlocked by a programmable logic controller (PLC) on the Flare. The Flare is equipped with an Endress+Hauser T-mass 65 I thermal mass flow meter and operational thermocouples to detect that the Flare is burning. The thermal mass flow meter is located in the supply side gas delivery pipe between the blower and automatic Flare shutoff block valve. Signals from these instruments are directed to a data acquisition box located in the storage unit located near the Flare.

6.3 Flow Rate Meter

Gas flow to the Flare is measured continuously by an Endress+Hauser T-mass 65 I thermal mass flow meter (or equivalent) and recorded at least once every 15 min. All data parameters are monitored and recorded consistent with the CAR protocol, Ver. 3.0. Manufacturers specifications are provided in Appendix B. Flow rate data is collected and stored as discussed in Section 7. The Endress+Hauser T-mass 65 I thermal mass flow meter is cleaned and field calibrated on quarterly basis and is Factory calibrated between 1 and 3 years in accordance with the manufacturers recommendations.

6.4 Flare Temperature

Thermocouples located in the Flare stack and monitor the gas exit temperature to ensure that the Flare is operational. In the case that the recorded temperature is below the temperature at which thermocouple relay for propane igniter valve is set to shut – direct release of LFG is prevented by the Flare block valve closing.

<u>Flare Stack Thermocouple</u>
Measured parameters: Flare Temperature (^{o}F)
Delivered signal: 0 – 1.0V

Purpose: - real time Flare temperature measurement which indicates that the Flare is destroying LFG. This thermocouple also provides a Flare operation warning system (see below).
Operation time: 24/7
Make: Provided by CEC
Model: Type K

The ambient air temperature sensor is used for comparison with the Flare stack temperature. This instrument is not calibrated. Readings are compared to known weather conditions.

6.5 Gas Analyzer

LFG quality is measured continuously by a gas analyzer (CAI 600L) which is located in the storage trailer located adjacent to the Flare and provides a continuous reading of the gas quality parameters (CH4, CO2, and O2). The sampled gas fed to the gas analyzer is conditioned pressure wise (by a pressure regulator) and moisture wise. The gas analyzer is calibrated by the supplier prior to installation. The CAI Gas analyzer automatically recalibrates periodically (once every 24 hours) using calibration gases stored in cylinders adjacent to the instrument and if the gas analyzer is returned for repair. The gas analyzer can also be check calibrated using a calibrated GEM 2000. Specifications of the Gas Analyzer are provided in Appendix B. The unit does not require factory calibration (per manufacturer's statement).

Instrument malfunction is indicated by a decreasing CH4 content and/or a difference between readings of LFG quality at Gas Conditioning plant (using the GEM2000) and the gas analyzer. Data from the CAI Gas Analyzer is automatically collected every 10 minutes by the Data Acquisition Module.

<u>Gas Analyzer</u>
Measured parameters: (%)CH_4, (%)O_2, (%)CO_2
Range: CH_4 : 0-70%; O_2 0-25%; CO_2 : 0-70%

Delivered signal: CH_4 : 4-20mA O_2 : 4-20mA; CO_2 : 4-20mA
Purpose: instantaneous LFG composition measurement
Operation time: 24/7
Make: California Analytical Instruments (CAI)
Model: 600L

Data is collected by the Flare's data acquisition system that automatically collects this data at least once every 15 minutes. Instrument malfunction is indicated by a decreasing CH4 content and/or a difference between readings of LFG quality at the Flare (using the GEM2000) and the gas analyzer.

6.6 Gas Pressure and Temperature

LFG gas pressure in the discharge line from the blower to the Flare, and gas temperature, are measured by separate instruments (see below).

Gas pressure and gas temperature are measured to determine the operational status of the Blower and the Flare block valve. Both of these instruments are factory calibrated prior to shipment to the Project. These parameters are not required by the Endress+Hauser meter as that instrument automatically compensates for gas temperature and gas pressure. The data from these instruments can be used to corroborate the operational time of the Flare/ Blower unit. Data is acquired at least once ate every 15 min by the Flare's data acquisition system.

<u>Gas Temperature Sensor</u>
Location: Blower discharge pipe
Range: 0-200°F
Delivered signal: 4-20mA
Purpose: temperature measurement of the Flare supplying gas
Operation time: 24/7
Make: Endress+Hauser
Model: iTemp Hart TMT182

Gas Pressure Sensor
Location: Blower discharge pipe
Range: 0-2 gpsi
Delivered signal: 4-20mA
Local indicator: LCD
Purpose: pressure measurement of the Flare supplying gas
Operation time: 24/7
Make: Endress+Hauser
Model: Cerabar S

6.7 Landtec GEM 2000 Gas Analyzer and Pressure Monitor

A Landtec GEM 2000 LFG Analyzer is used to check gas quality at the LFG wells and to provide gas well operational data. This instrument is also separately calibrated and used to cross check the calibration of the gas analyzer (LFG20 or SB2000). When the gas analyzer is down for maintenance the GEM 2000 is used to check gas quality at the Flare.

The Landtec Gem 2000 is factory calibrated every 6 months or when it is sent for servicing following a malfunction such as battery failure. This instrument is typically calibrated according to the Manufacturers Manual using Certified Calibration gases each time it is used (typically weekly). The calibration records are stored in the instrument and can then be obtained from the GEM 2000 data files. Additionally written GEM 2000 calibration sheets are prepared.

6.8 Electricity Usage

Electricity usage is measured by the Project specific electricity meter. No calibration, other than factory calibration, is possible on this meter. The initial reading of the electricity meter was zero (new meter). Readings are taken each month to allow electrical usage to be quantified.

6.9 Propane Usage

Propane usage is measured by the cylinder. Invoice records for Propane purchases are retained by MP Wilson, LLC.

6.10 Monitoring Roles and Responsibilities

The LFG Technician/Plant Operator and Data Management Technician will take the weekly or biweekly data files for the aforementioned data, and these data files will be available to the LFG Technician who is designated by the Project management to oversee and be fully accountable for the CAR monitoring plan.

7 Data Acquisition Management and Storage

7.1 Data Acquisition Equipment

Data from the instruments described above is acquired by the Flare's multi-function PLC which will accessed by an OPC (OLE for process control) server located in the instrumentation enclosure attached to the Flare support structure.

Data measurements from the instruments are acquired by the Data Acquisition Modules as either 4-20Milli Amp or 0-1 volt signals. The Data Acquisition Module converts the signals from each channel as follows

Data Device	Channel	Instrument	Value	Signal Range	Output Range	Units
OPC server	1	Flow meter (Endress+ Hauser T-mass 65 I)	Gas flow rate	4-20mA	0-1,000	SCFM
OPC server	2	Temperature Transmitter (Endress+Hauser iTemp Hart TMT182)	Gas Temperature	4-20mA	0-200	oF
OPC server	3	Pressure Transmitter (Endress+Hauser Cerebar S)	Gas Pressure	4-20mA	0-2	gpsi
OPC server	4	Gas Analyzer (CAI 600L)	CH4	0-1V	0-100	%
OPC server	5	Gas Analyzer (CAI 600L)	CO2	0-1V	0-100	%
OPC server	6	Gas Analyzer (CAI 600L)	O2	0-1V	0-25	%
OPC server	7	Thermocouple type K	Flare Temperature	0-1V	32-2000	oF
OPC server	8	Thermocouple type T	Ambient Temperature	0-1V	-15-300	oF

7.2 Data Management and Storage

Data files are built up and stored on the OPC server as data is obtained at least once ate every 15 min from the instruments. These files are routinely downloaded (typically weekly or

biweekly) by accessing the OPC server over the broadband internet connection using an OPC client.

The data transfer and storage procedure is as follows:

- On a weekly or biweekly basis, the data stored onto the OPC server is retrieved for processing and archiving purposes.
- The OPC server is remotely accessed by an OPC client application in order to get downloaded onto the ATG's computer server (located at ATG office location).
- Transfer (download) the stored files from the OPC server to OPC client.
- Close the remote internet connection.

When the files have been downloaded to the server at AT&G , the data files are checked to make sure the file names have the standard nomenclature (Date(yymmdd), Site(WCSL), Instrument (i.e. LFG), Start date (yymmdd), End date (yymmdd) and original copies transferred to the **X-Cd.com** web site for data storage back-up. As each file is accepted by **X-Cd.com**, the file is given an acceptance date stamp by **X-Cd.com**. These files are used as a remote backup files for data security.

7.3 Calculate CO2 Equivalent Tons

Project emission reductions are GHG emission reductions that occur within the GHG assessment boundary as a result of the installation of the LFG control system. At a minimum, they must be calculated on an annual, ex-post basis. In general, the total Project emission reductions are calculated by:

GHG emission reductions accounted for in the Project:

- The total amount of uncontrolled methane collected from the landfill and destroyed by the Project activities

Minus

- The amount of methane that would have been oxidized by soil bacteria in the absence of the Project

Minus

GHG emissions that occur as a result of the Project activities:

- Total annual indirect carbon dioxide emissions resulting from the consumption of electricity.
- Total annual carbon dioxide emissions from the on-site destruction of fossil fuel.
- Discount factor to account for uncertainties associated with project monitoring equipment, if applicable.

The Project calculation methodology can be represented by the equation:

$$ER_Y = [(CH_4Dest_{PR})*21*(1-OX)*(1-DF)]-FFCO_2-ELCO_2$$

where,

ERy = total annual project GHG emission reductions (tCO_2e/yr)

CH_4 $Dest_{PR}$ = total annual methane emissions destroyed by the project LFG collection and destruction system (tCH_4/yr)

21 = Global Warming Potential factor of methane to carbon dioxide[1]

OX = factor for the oxidation of methane by soil bacteria. Equal to 0.10 for all landfills except those that are covered with a synthetic liner as part of the final cover systems where OX = 0.

DF = Discount factor to account for uncertainties associated with the monitoring equipment. Either 0, 0.10 or 0.20. Equal to zero if using continuous methane monitoring.

$FLCO_2$ = total annual indirect carbon dioxide emissions from the destruction of fossil fuel (tCO2e/yr)

$ELCO_2$ = total annual indirect carbon dioxide emissions from the consumption of electricity from the grid (tCO2e/yr)

PROJECT EMISSION REDUCTIONS

Emission reductions accounted for in the Project include the total amount of uncontrolled methane collected from the landfill and destroyed represented by the equations:

$$CH_4Dest_{PR} = CH_4Dest_{Flare} *(.0423*.000454)$$

Where,

CH_4Dest_{Flare} = the net quantity of methane destroyed by flaring (scf/yr)

.0423 = density of methane ($lbCH_4/ft^3CH_4$)

.000454 = $tCH_4/lbCH_4$

$$CH_4Dest_i = (Q_i * DE_i)$$

where,

CH_4Dest_i = the net quantity of methane destroyed by device i (scf/yr)

[1] IPCC Second Assessment Report: Climate Change 1996.

Q_i = total quantity of methane sent to destruction device i (scf/yr)

DE_i = default methane destruction efficiency for device i (scf/yr)

DE_{Flare} = 0.960 for open Flare

$$Q_i = \sum LFG_{i,t} * PR_{CH4,t}$$

where,

$LFG_{i,t}$ = total quantity of LFG fed to the destruction device i, in time interval t (scf/t)

t = time interval for which LFG flow and concentration measurements are aggregated. Equal to one day for continuously monitored methane concentration

$PR_{CH4,t}$ = the average methane fraction of the LFG in time interval t as measured (ft^3 CH_4/ft^3 LFG)

EMISSIONS FROM PROJECT ACTIVITIES

GHG emissions that occur as a result of the Project activities include the total annual emissions from the destruction of fossil fuel and the consumption of electricity from the grid represented by the equations:

$$FF_{CO2} = \sum i(FF_{PR,i}*EF_{FF,i})/1000$$

where,

FF_{CO2} = total annual carbon dioxide emissions from the destruction of fossil fuel (tCO2e/yr)

$FF_{PR,i}$ = total annual fossil fuel consumed by the project LFG collection and destruction system, by fuel type I (volume fossil fuel/yr)

EF_{EL} = fuel specific emission factor, California Registry General Reporting Protocol Appendix C.3 and C.5 (kg CO_2/volume fossil fuel)

1000 = kgCO2/tCO2

$$EL_{CO2} = (EL_{PR}*EF_{EL})/2204.62$$

where,

$ELCO_2$ = total annual indirect carbon dioxide emissions from the consumption of electricity from the grid (tCO2e/yr)

EL_{PR} = total annual electricity consumed by the project LFG collection and destruction system (MWh)

EF_{EL} = carbon emission factor for electricity used (lb CO2/MWh)

2204.62 = lbCO2/tCO2

The step by step procedure used to complete the monthly CO2 Equivalent Tons calculations is as follows:

- Copy the RAW Data file to a processing spreadsheet
- Select all data and prepare the pivot table / pivot chart to look for data outliers:
- Calculate CH4 volume (based on LFG volume and CH4 percentage;
- Check for "zero" values for the flow rate;
- Apply conditional statements to allow selection of CH4 percentages less than 70% and greater than 40% and any correction factors;
- Fill data gaps according to the missing data procedures (see Section 7.4);
- Calculate CO2 Equivalent Tons.
- Add CO2 Equivalent Tons to summary tables.

7.4 Data Quality Assurance

This section summarizes Quality Assurance (QA) measures for the GHG destruction devices at the Project; and Compliance QA. All monitoring equipment will be periodically calibrated in accordance to the manufacturer's recommendations and repaired or replaced when necessary. All monitoring activities, including the installation, use, maintenance, calibration of monitoring devices, as well as the management of data quality, are the responsibility of MP Wilson.

Data from the instruments described above is acquired by a multi-function data acquisition module which is accessed by a computer located in the instrumentation enclosure attached to the Flare support structure. As discussed above, in order to ensure data quality, the data files are checked for data outliers by using the pivot table chart function in Microsoft Excel to complete time series graphs of, CH_4, CO_2, O_2 and Flow Rate. These graphs are inspected for anomalous values.

GHG Destruction Device QA

The Flare data are reviewed monthly for content, general accuracy, and periods for which missing data procedures have to be implemented:

- The Flare temperature thermocouple data is reviewed to determine if values are outside the range indicating the Flare is burning (less than 290 degrees F);
- The monthly RAW Data File (ready to be sent to X-Cd.com) and the same data file to be used for Carbon Credit calculation on the ATG computer server are used to QA the data. The QA check consists of a comparison of the summated flows and summated CH4 percentage for a randomly chosen day in each file;
- Results of the QA checks are documented in the MP WCL Data Check File
- If the results of the QA check indicate a discrepancy in the reduced versus raw data then a note will be made in the MP WCL Data Check File (sample form in Appendix C) regarding the resolution of the discrepancy, but RAW DATA WILL NEVER BE CHANGED;
- Following transmitting the raw data files to X-cd.com, the data files are checked for data outliers by using the pivot table chart function in Microsoft Excel to complete time series graphs of, CH4, CO2, O2 and Flow Rate. These graphs are inspected for anomalous values. Raw data will not be changed, but calculations may be adjusted if the raw data can be demonstrated to have been in error by the investigation.

In the case that gas analyzer data is missing or has been deemed invalid, yet Flare operation can still be confirmed, the average volumetric flow rate of LFG will be used along with the an average of the successful methane concentrations recorded before and after the period of missing data to quantify the volume of methane sent to the Flare.

For time periods when data is missing because of equipment down time, servicing, etc. missing data periods are completed with the following procedure:

Data substitution

Data substitution will be applied only for flow rate and methane concentration data gaps that are discrete, limited, non-chronic, and due to unforeseen circumstances. Data substitution will be individually applied to only either flow rate readings or methane concentration, but not both simultaneously.

For time periods when the data integrity is compromised either due to missing data points or corrupt data, or it has been deemed invalid, yet Flare operation may still be confirmed, the following method for data substitution shall be used for LFG flow rate and %CH4:

Duration of Missing Data	Substitution Methodology
Less Than 6 hours	Use the average of the four hours immediately before and following the outage
Six to 24 Hours	Use the 90% lower confidence limit of the 24 hours prior to and after the outage.
One to Seven Days	Use the 95 % lower confidence limit of the 24 hours prior to and after the outage.
Greater than one Week	No data are substituted and no credits generated.

No data substitution will be applied if:

- Simultaneous missing date for flow rate and methane concentration;
- Flare operation cannot be proved (thermocouple failure), or
- For methane concentration substitution, flow rates during the data gap must be consistent with normal operation.
- For flow rate substitution, methane concentrations during the data gap must be consistent with normal operation.

Failed calibration

If the instrument calibration for landfill gas quality and flow rate falls in a range outside ±5%, the data, for the period between the last successful field check or calibration and the time when the instrument is properly calibrated, will be adjusted according to the following procedure:

- For calibrations that indicate under-reporting (lower flow rate or lower methane concentration), the metered values must be used without correction.
- For calibrations that indicate over-reporting (higher flow rate or lower methane concentration), the metered values must be adjusted based on the greatest calibration drift recorded at the time of calibration.

8 Equipment Calibration

8.1 Calibration Frequency and Procedures

Table 2 presents the equipment calibration frequency. Appendix C contains sample calibration forms and blank forms for the gas analyzer, and the GEM 2000.

Table 2

Process	Site	Wilson County	Calibrations	
	Instrument	Model	Field	Factory
Gas Wells	GEM 2000	Landtec GEM 2000 Serial	Per Use	6 mos.
Flare Skid	Flow-to-Flare Flow Meter	Endress+Hauser (t-mass 65 I)	3 mo.	Not required
	Gas Quality (CH4; CO2; & O2)	California Analytical Instruments 600 L	As required	1 to 3 years
	Thermocouple	Built in to Flare	Not Required	
	Flare Ignition Gas	Propane Cylinder.	Not Applicable	
	Electrical Usage	Electricity Meter	Not Applicable	

Landtec GEM 2000 Description and Operation

The Landtec GEM 2000 is factory calibrated every 6 months or when it is sent for servicing following a malfunction such as battery failure. This instrument is field calibrated according to the Manufacturers Manual using Certified Calibration gases each time it is used (typically weekly). The calibration records can be stored in the instrument and can then be obtained from the GEM 2000 data files. Additionally, written GEM 2000 calibration sheets will be prepared. GEM 2000 calibrations performed at the Project will be recorded on the Daily Report Form (Appendix C).

See Section 8.2 for Calibration details.

Operation Procedures

1. Turn Instrument On (By pressing on the Red Button); Important information you will find on the GEM™ start up screen
    - Version of software
    - Language
    - Date & Date format
    - Instrument Serial Number
    - Warning message (example) Service Due
    - Date Service was due
    - On the right side your battery & memory status (each square =20%)
    - After the instrument has finished its initial self test process and auto purge, it will open Main Reading Screen
    - If it doesn't, press any key and the Main Reading Screen will open
2. Insert Thermometer into the Well Head Temperature port if reading is being taken at a LFG gas well;
3. After the instrument has completed it's initial self test process and auto purge, it will open the Main Reading Screen. If Main Reading Screen isn't displayed, press any key and the Main Reading Screen will open;
4. Press 3 "Next ID" (the list of monitoring point ID's will appear on the screen;
5. To choose the ID for the Monitoring point (gas well head, header line sampling point and Flare monitoring port) at which a reading is required, use the Arrow keys Up (2) or Down (8) to reach the required monitoring point ID then press Enter (Key with just a Bent Arrow) NOTE: Pressing (1) Exit will return you to the main readings screen.
6. Pressing that Enter key will take you to the clean air purge screen. Press "Start purge" - this will take you to the main readings screen;

7. After the Purge is completed, make sure proper hoses are connected and sealed. The Static pressure hose is the one with water trap and carbon filter attached to it and connects to upper port on the right hand side of the GEM 2000. The Impact pressure hose is the other one and connects to the lower port;
8. Press the Pump/Backspace Key which is the green key with an arrow and fan blade at the bottom of the Key Pad;
9. Wait for the gas readings to stabilize (30 to 60 Seconds);
10. Press 5 Measure Flow. With both hoses connected you will see the static pressure and the differential pressure. If differential pressure is negative, unplug the hose and try again as its it's theoretically impossible to have negative differential pressure. To ensure correct pressure readings you should zero Transducers; Press Enter to Zero Transducers (Remember to disconnect all hoses and keep the ends of the hoses blocked from wind, then reconnect hoses to see the current pressure readings.
11. Be sure pressure is stabilized before you Press One (1) to continue. Note: When pressing One (1) to continue, the current ST and DP will be stored;
12. You will be asked to enter Temperature. Read the Thermometer and remove it from the Port;
13. Enter the Temperature in Degrees Fahrenheit. Press Enter;
14. The final screen will give you the summary of your reading showing current and adjusted readings. Make adjustments to well if necessary;
15. Press Enter to Store Reading;
16. Enter the Temperature recorded from before when prompted;
17. The screen will prompt you for a system pressure, at this point remove the static pressure tube from the well head and insert into the port downstream of the well valve and allow reading to stabilize before hitting continue;
18. You will be prompted with up to three Screens of comments, select any appropriate comments. If a wrong entry is made you can remove it by using the Pump/Backspace

Key (The green key with arrow at the bottom of the Key Pad). After questions are completed or comments are chosen you will receive the message Reading Stored. To double check that the reading is stored by pressing 5, this will take you back to the main reading screen at the top of the screen it should tell when the last reading was taken/stored.

19. Now Press (3) to continue to next ID.

Move to next ID or monitoring point a use the GEM 2000 in the above sequence from point 2 on, to take the next set of readings.

8.2 GEM 2000 Procedure

Field Calibration Procedures for the LANDTEC GEM 2000:

1) Power on the GEM 2000 by pressing the Red Power Button and after the instrument has finished its initial Start-up and self-test process; it will enter the Main Screen.
2) If you are using the standard (red) Landtec 17 liter gas canisters, one should be marked GAS COMPOSITION: OXYGEN 4.0%, (NITROGEN BALANCE) & the other marked FLAMMABLE GAS: METHANE 50.0%, CARBON DIOXIDE 35.0%, (NITROGEN BALANCE).
3) Check that the brass calibration valve is COMPLETELY CLOSED and then connect/screw the brass calibration valve on to the GAS COMPOSITION: OXYGEN 4.0% tank (check that there is a pressure reading that is not 'close to ZERO' on the brass calibration valve gauge; if it is near zero, change the tank. Another indication of a low/empty tank is a very low O2 reading, i.e. under 3.5%) in the tank and then connect the calibration tubing by inserting the quick connect to the Gas Intake (top) connection port on the right side of the GEM2000 and open the tank valve ALL THE WAY.
4) Take a set of readings from the Calibration Gas Bottles using the ID 'Pre Calibration' and Record results on the Calibration Form in the 'Value Before Calibration (%)' column. See

Instructions for Taking a Reading with the GEM2000. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).

5) Press the (1) Button to bring up the Main Menu, then select/highlight 'Field Calibration' by using the (8)/Down Arrow Button, and then press ENTER.
6) First press 3 to 'Edit Target Concentrations' and type '500', then '350', then '040' then press ENTER. (note: the leading zero in the '040' is REQUIRED!)
7) Then press the ENTER key to select the Calibration Menu and then press enter a second time to select ZERO CHANNELS.
8) Wait for the CH4 & CO2 readings to stabilize (near or) at ZERO & the O2 reading to stabilize (near or) at 4.0, (usually 30-60 seconds), then (check to make sure that ZERO CH4 is selected and) press the ENTER KEY. If Calibration was successful you should see the following message "User Zero Complete".
9) Close the tank valve and disconnect the tank and switch to the FLAMMABLE GAS: METHANE 50.0%, CARBON DIOXIDE 35.0% tank following the same procedures in Step 6, above, for tank connection. (Note that a low/empty tank reading would be <48% CH4 or <33% CO2).
10) Wait for the CH4 reading to stabilize (near or) at 50.0%, C02 is (near or) at 35.0% & the O2 reading to stabilize (near or) at 0.0%, (usually 30-60 seconds), then select ZERO O2 is selected and press the ENTER KEY. If Calibration was successful you should see the following message "User Zero Complete".
11) Press ENTER and select SPAN CHANNELS from the Menu, and Press ENTER again to select SPAN CH4 @ 50.0%. The following message should appear "Calibration Complete".
12) Press ENTER and select SPAN CHANNELS from the Menu, and Press ENTER again to select SPAN CO2 @ 35.0%. The following message should appear "Calibration Complete".

13) Close the tank valve and disconnect the tank and switch back to the GAS COMPOSITION: OXYGEN 4.0% tank following the same procedures in Step 6, above, for tank connection.
14) Again, wait for the CH4 reading to stabilize (near or) at ZERO) & the O2 reading to stabilize (near or) at 4.0, then PRESS ENTER and select SPAN CHANNELS from the Menu, select SPAN O2 @ 04.0% and Press ENTER. The following message should appear "Calibration Complete".
15) Take a set of readings from the Calibration Gas Bottles using the ID 'Post Calibration' and Record results on the Calibration Form in the 'Value Before Calibration (%)' column. See Instructions for Taking a Reading with the GEM2000. This reading should be **±2.0%** of the stated percentages on the Landtec Canisters (see Step 3).
16) After all testing is completed for the day, take another reading from the Calibration Gas Bottles. Record results on the Calibration Form in the 'Value After Calibration (%)' column. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).
17) Anytime results are suspect, we suggest taking a reading from CAL GAS Bottles to verify calibration is still within the required ranges. Always record these results in the Remarks box on the Calibration Form. Theses readings should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).
18) When done, close the tank valve and disconnect the tank, then remove the Quick Connect hose from the Gas Intake Port on the right side of the GEM2000 unit.
19) After all testing is completed for the day, take another reading from the Calibration Gas Bottles. Record results on the Calibration Form in the 'Value at End of Day (%)' column. This reading should be ±5.0% of the stated percentages on the Landtec Canisters (see Step 3).

8.3 Landfill Gas Analyzer Procedure for CAI Gas Analyzer

Field Calibration and Automatic Calibration Procedures for the CAI Gas Analyzer:

The CAI Gas Analyzer self-calibrates using certified span gas. Detailed descriptions for setting up automatic calibration and manual calibration of the CAI Gas Analyzer are provided in the equipment's Operation Manual (See Appendix B). CAI Gas Analyzer calibration is filed checked using a calibrated GEM 2000. Forms for recording the Field Calibration Detailed procedures are provided in Appendix C.

8.4 Gas Flow Meter Procedure

Endress+Hauser recommends their flow meters are Factory calibrated at intervals between one and three years.

Quarterly field calibration of the Endress Hauser Mass Flow meter is completed using a Pitot tube and ASTM D3154-00 (reapproved 2006) procedure "Standard Test Method for Average Velocity in a Duct (Pitot Tube Method)"(see Appendix C) by an ISO 17025 Accredited Calibration Laboratory. Following calibration of the GEM 2000 gas analyzer, the gas flow rate from the landfill is checked using the procedure described below:

Wilson County Landfill flow meter flow meter adjustment

- The location of the flow measurement station relative to the upstream and downstream disturbances (as elbows, valves, and any similar fittings), are checked to determine that the upstream and downstream pipe alignments comply with Pitot tube test requirements;
- The geometrical properties of the LFG delivery pipe are measured (internal and external vertical and horizontal diameters at the flow measurement station);

- Determine that the relative position of the Pitot tube ports is 90^0 around the circumference of the gas delivery pipe;
- Measure the gas quality using the GEM 2000 gas analyzer. Parameters measured are: CH4%, CO2%, O2%, Balance gas%, barometric pressure and static pressure. The LFG is sampled on the GCP inlet pipe, upstream of the Pitot tube flow measurement station;
- Measure the gas temperature in one of the Pitot tube flow measurement station ports, using an insertion type temperature meter;
- Program the automatic data acquisition systems to record gas flow readings at one (1) minute intervals;
- Take readings using the Pitot tube at the horizontal port, noting the time, minimum differential pressure and maximum differential pressure at each traverse point;
- Take readings using the Pitot tube at the vertical port, noting the time, minimum differential pressure and maximum differential pressure at each traverse point;
- Stop the automatic data acquisition system and download the one (1) min interval data, and retain values which have the same time as the Pitot tube measurements.
-

The collected data is input into spreadsheets, which follow the ASTM D3154-00 calculation procedures, to determine flow rates of LFG to the Flare. The gas flow rate is the geometric mean velocity for maximum and minimum differential pressures multiplied by the cross sectional area of the pipe at the flow measurement station.

The flow meter correction factor is the ratio between the Pitot tube measured flow rate and the Endress+Hauser flow meter measured flow rate. Following determination of the correction factor, the meter is adjusted in accordance with Endress+Hauser procedures to provide the calibrated flow rate.

9 REPORTING REQUIREMENTS

This section describes the general requirement that LFG and Data Technicians maintain records of all gas flow, maintenance and monitoring at the Project.

Proper maintenance and operation of Project methane collection and destruction equipment is essential to Project success. To demonstrate that all maintenance and monitoring is performed, the LFG Technician will maintain simple, clear records of periods of startup, shutdown, maintenance, malfunction and the corrective actions taken to restore the malfunctioning equipment to its normal or usual manner of operation. This record will be kept on the Project Timeline file, Daily Log Forms and calibration forms as applicable.

The primary parameters to be monitored at the Project are gas flow and gas quality. The Monitoring Parameters are listed Table 1 which integrates the monitoring requirements for GHG emission reduction quantification, equipment operation and maintenance, and environmental permit compliance requirements of the Project, to ensure that adequate records are produced.

This section presents the reporting requirements for the project.

- Records of Air Emissions;
- Records of Condensate Production;
- Records of System Malfunction;
- Signed Certification of Regulatory Compliance

The MP Wilson LLC Project will keep all information described below for a period of 10 years after the information is generated or 7 years after the last verification. These records will be used for independent verification and historical documentation of the Project.

System information of the Project will retain includes:

- All data inputs for the calculation of the project emissions;
- Collection and control device information (installation dates, equipment list, etc.);
- LFG flow meter information (model number, serial number, manufacturer's calibration);
- Gas quality information (model number, serial number, calibration procedures);
- Destruction device monitor information (model number, serial number);
- Methane monitoring data; and,
- Gas analyzer calibration data.

All maintenance records relevant to the LFGCCS, monitoring equipment, and destruction devices are maintained by MP Wilson. Paper field records are kept onsite in the OMM Plan and copies kept at Applied Testing & Geosciences, LLC, Bridgeport PA, 610-313-9200.

10 RESPONSIBILITIES

10.1 Director of Compliance

The MP Wilson Compliance Director oversees GHG emission reduction calculations and documentation preparations to verify that these are performed in accordance with current CAR V 3.0 requirements.

10.2 Landfill Gas and Data Technician

The landfill gas extraction and piping network and Flare is operated, monitored and maintained by the LFG Technician. The LFG Technician is responsible for performing the following tasks in accordance with the methods set forth in this OMM Plan and documenting any deviations from such methods:

- Checking the gas quality, pressure and flow rates at each gas well as required by Flare operational needs such as Flare shut down and start up, notification by email (using MAIL NOTIFIER software), and daily checks on internet connection to the on-site computer using an OPC client;
- Adjusting the gas well head valves to maintain gas quality, extract the optimum gas quantity measured by O2 (typically less than 2%) and balance gas percentages (typically less than 10%)
- Checking the system for leaks;
- Downloading GEM 2000 data files to the data storage computer;
- Completing Daily Logs, updating the Project time line files;
- Completing GEM 2000 calibration and other calibration reports;
- Updating the landfill gas quality database;
- Updating the landfill gas GIS gas quality tracking system;
- Maintaining the spare parts inventory;

- Recording all system operational data in log books or forms;

Downloading data files from the OPC server via internet connection is the responsibility of the Data Technician who is also responsible for uploading RAW data files to X-Cd.com and processing the data files for CO2 equivalent tones. The Data Technician is also responsible for completing QA checks on the data files, and keeping the data upload log file up to date.

11 SITE SECURITY AND MEASURES/ACTIONS AGAINST VANDALISM

The Wilson County Landfill is a closed municipal solid waste (MSW) landfill that also accepted yard waste and construction and demolition (C&D) material. It is located east of the City of Wilson in Wilson County. The facility is owned and operated by Wilson County, North Carolina. The County continued to operate the facility as an onsite C&D disposal area after the MSW landfill was closed in 1997.

The landfill is a fenced facility with personnel onsite during operating hours. While the facility is open to the public during operating hours, the County monitors the public's access to the entire facility and, hence, the landfill gas collection and control system (LFGCCS). Access to the Flare and monitoring system is controlled by a six (6') foot chain link fence and gate that is kept locked at all times when LFGCCS personnel are not present.

The LFGCC facility is centrally located within the landfill which reduces the risk of vandalism or safety concerns during or after operating hours of the landfill. Onsite landfill and LFGCCS personnel have been instructed not to allow the general public access to the Flare and Warning/No Trespassing signs are posted on the fence surrounding the Flare.

In the event of a security breach or an act of vandalism, onsite personnel are instructed to contact the police or 911 as deemed necessary.

12 CONTINGENCY AND EMERGENCY RESPONSE PLAN

12.1 Scope and Intent

This Contingency and Emergency Response Plan (CERP) provides procedures and methods for the emergency response related to M.P. Wilson, LLC LFGCCs (MP Wilson) located in Wilson, North Carolina. The manual has been prepared in accordance with Title 49, Code of Federal Regulations, Part 191 – Transportation of Natural and Other Gas by Pipeline: Annual Reports, Incident Reports and Safety Related Condition Reports and Part 192 – Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards.

The intent of this CERP is to provide procedures for the efficient and safe operation of the LFGCC, with utmost regard for the public and the MP Wilson's employees and/or contractor employees, and to adhere to the Code requirements as stated below.

This manual is written to specifically include various topics of major significance to a gas collection and control system operator with regard to contingency and emergency response. All code and standards incorporated by reference are to be considered as part of the manual to the extent they are applicable. No written manual is fully inclusive of all details pertinent to contingency and emergency response. Therefore accepted methods shall apply to those areas not specifically addressed in this manual/section.

Landfill Fires

Due to the clay landfill cover system, ambient air infiltration into the waste mass due to the active gas system will be minimized thus reducing the potential for a landfill fire. However, the LFGCCS will be routinely monitored for temperature and oxygen content at each wellhead, and the wells will be adjusted accordingly if conditions for a landfill fire become favourable, such as

high well temperatures (in excess of 140 degrees F) and high oxygen content (in excess of 7.5 percent).

Should a landfill fire be suspected, MP Wilson will follow the existing procedures in the Post Closure Plan, which include notifying NCDENR and the local fire department. MP Wilson will turn off all nearby active gas wells to prevent additional air infiltration and monitor the carbon monoxide levels in the nearby wells to determine the extent of the fire. County and MP Wilson personnel who work on the LFG system will be trained on the proper response to a suspected landfill fire.

12.2 Code Requirements - §192.615 Emergency Plans.

(a) Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:

(1) Receiving, identifying, and classifying notices of events which require

(2) Establishing and maintaining adequate means of communication with appropriate fire, police, and other public officials.

(3) Prompt and effective response to a notice of each type of emergency, including the following:

i. Gas detected inside or near a building.

ii. Fire located near or directly involving a pipeline facility.

iii. Explosion occurring near or directly involving a pipeline facility.

iv. Natural disaster.

(4) The availability of personnel, equipment, tools, and materials, as needed at the scene of an emergency.

(5) Actions directed toward protecting people first and then property.

(6) Emergency shutdown and pressure reduction in any section of the operator's pipeline system necessary to minimize hazards to life or property.

(7) Making safe any actual or potential hazard to life or property.

(8) Notifying appropriate fire, police, and other public officials of gas pipeline emergencies and coordinating with them both planned responses and actual responses during an emergency.

(9) Safely restoring any service outage.

(10) Beginning action under 192.617, if applicable, as soon after the end of the emergency as possible.

(b) Each operator shall:

(1) Furnish its supervisors who are responsible for emergency action a copy of that portion of the latest edition of the emergency procedures established under paragraph (a) of this section as necessary for compliance with those procedures.

(2) Train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

(3) Review employee activities to determine whether the procedures were effectively followed in each emergency.

(c) Each operator shall establish and maintain liaison with appropriate fire, police, and other public officials to:

(1) Learn the responsibility and resources of each government organization that may respond to a gas pipeline emergency;

(2) Acquaint the officials with the operator's ability in responding to a gas pipeline emergency;

(3) Identify the types of gas pipeline emergencies of which the operator notifies the officials; and

(4) Plan how the operator and officials can engage in mutual assistance to minimize hazards to life or property.

12.3 Abnormal Operations

a. General – An abnormal operating condition will have occurred if there is a deviation from normal operation or a personnel error, which could have resulted in a hazard to persons or property. Abnormal operating conditions will include but are not limited to the following:

- Unintended shutdowns
- Unintended closure of valve(s)
- Operation of a relief valve
- Malfunction or failure of a system component such as a regulator
- Increase or decrease of pressures outside normal operating limits
- Increase or decrease of gas flow rate outside normal operating limits

b. Response – The response to an occurrence of an abnormal operating condition will include:

- Immediately notify the MP Wilson Supervisor/Manager as to the operating condition of the facility. If required, the MP Wilson Flare should be shut down.
- If the integrity of the system is in question, shut down the Flare.
- Immediately notify the MP Wilson Supervisor/Manger that an abnormal operating condition has occurred and provide details.
- Thoroughly investigate the abnormal operating condition until a cause is determined.
- Correct the cause of the abnormal operating condition.
- Obtain approval from MP Wilson Supervisor/Manager to resume operations.
- In a report, document the details of the abnormal operating condition including the time and date of occurrence, nature of the occurrence, immediate action taken, cause of occurrence, corrective measures taken and approval of MP Wilson Supervisor/Manager to resume operations.

- After the system is returned to operation, the system operation must be monitored at sufficient locations to verify continued integrity and safe operation.

c. Response Review – The response of the operator personnel to abnormal operating conditions and the corrective action taken will be formally reviewed annually by MP Wilson. More frequent reviews may be needed if the cause of an abnormal operating condition is identified as repetitive.

12.4 Emergencies Plan

This Section presents procedures for the M.P. Wilson Gas Collection and Control System for prompt and effective response to conditions which could result in property damage or injury if not promptly corrected. It is virtually impossible to establish a precise plan for each situation which could occur and appropriate actions will be dictated by the conditions at the place and time of the incident. The procedures are intended to provide guidelines for responses common to most emergency situations and are to be used in combination with personal judgment and common sense.

Emergency situations which could occur on a natural gas system include, but are not limited to, the following:

- Gas detected inside or near a building
- Fire located near or directly involving the landfill or Flare
- Explosion occurring near or directly involving the MP Wilson gas collection system or Flare
- Natural disasters such as an earthquake, flood, tornado, etc.
- Injuries or property damage
- Civil disturbances
- Hazardous leaks

- Any other condition that jeopardizes the safe operation of the system

Responses to emergencies should be predicated on the following priories:

(1) Safety for the public and MP Wilson and Wilson County operating employees

(2) Protection of public property and Wilson County property

(3) Restoration of gas service to the Flare

12.5 Responsibilities

Responsibility for implementing the emergencies procedures will ultimately be with all gas system operations personnel. In emergency situations, the direction and coordination of the overall emergency response will be the responsibility of the Manager/Supervisor. The success of an emergency operation is often largely dependent on the initial actions of the first gas system operations personnel at the scene of an incident. Regardless of the chain of command, the first gas system operation personnel at the scene will take command and initiate appropriate response actions immediately. As more gas system operations personnel arrive at the scene, command duties can be shifted up the chain of command.

The Manager/Supervisor will be responsible for maintaining the Emergencies Plan and for supervising the training, public education, and other provisions of the plan.

The Manager/Supervisor also has the responsibility of insuring that this Emergency plan is available to all MP Wilson personnel who might have to respond to an emergency.

12.6 Emergency Response Numbers

Emergency Response Number – (704) 659-2580 (MP Wilson LLC) and 911

MP Wilson Landfill Gas Technician (Cell) – (704) 340-8037 Ryan Hennessy

Wilson County Landfill Manager (252) 399-2808 (Andy Davis)

Law Enforcement/Fire/Rescue/Ambulance – 911

NC One Call – 811 or (800) 632-4949

12.7 Receiving Emergency Notifications

Notice of an occurrence that is suspected to be an emergency or is indeed an emergency will normally be received at the emergency telephone number (as posted on the marker posts, provided to the public, provided to excavators, and provided to entities in notices). The person receiving notice needs to obtain as much information as possible. The data will be recorded on Form 901 – Initial Notification of Emergency Form.

The person receiving notice will need to make a judgment if the notice indicates an actual emergency, including the potential for dispatching someone to the scene for an accurate determination. (Gas systems typically receive notice for a number of false indicators such as skunks, rotten food, etc.) Nevertheless, the person receiving notice should have the philosophy of erring on the side of safety.

12.8 Initial Response to Emergency Notification

The person receiving the emergency notification will obviously be in a position to make the first response to an emergency situation. Appropriate response includes:

- If appropriate, tell person reporting emergency to keep the scene area clear of people and to keep ignition sources from area.
- Contact Emergency Standby personnel advising them of the report and dispatch them to the scene to determine its severity and the actions required to protect life and property if necessary.
- Contact Manager/Supervisor to report findings thus far and await further instruction.

- Keep communication lines open pending a notification from the first responder who may need further assistance.
- If appropriate, contact emergency response agencies and request that ambulance, fire department or police respond to the emergency scene or request that they stand by to respond as needed.
- Dispatch personnel to system origin anticipating a system shut down.

12.9 Action by Gas System Operations Personnel

As soon as possible the Manager/Supervisor will assume the responsibility for directing and coordinating the emergency response. Appropriate response will depend on the situation but consideration should be given to the following:

- Assess the situation and the scope of the emergency.
- Dispatch MP Wilson or their designated operating personnel to the scene.
- Establish communications as needed.
- Request emergency response agencies (fire department, police, and ambulance) to respond at the scene as needed.
- Notify LOCAL GAS SYSTEM if they have any gas lines in the vicinity of the emergency.
- Close hand valve at Flare (HV-100) to isolate the pipeline.
- Go to the Flare station Landfill and close main 10 inch valve which will stop the flow of gas into the system.
- If needed, close additional valves in the system to isolate sections of the gas collection system.
- Continue to monitor the situation and make safe any actual or potential hazard.

12.10 On the Scene Response

MP Wilson or their designated operating personnel at the scene of an emergency shall take action to first protect people and then property. On the scene responses include:

- Stay as calm as possible.
- Assess situation.
- If necessary, evacuate and/or assist all people to safety.
- Assess what can be done to reduce the risk to people and property.
- Take steps to block off the hazardous area to traffic and people.
- If necessary, notify emergency response agencies (fire, police, and ambulance) or if they are at the scene, coordinate with and assist the emergency response personnel.
- Establish communication with the Manger/Supervisor if they are not at the scene. Report on the scene needs and receive instructions as appropriate.
- Monitor the situation on the scene until any actual or potential hazard is made safe or until the Manager/Supervisor issues instructions to leave the scene.

12.11 News Media Interface

During an emergency, inquiries from the news media should be referred to the Manager/Supervisor. Verbal or written releases to the news media should use the following guidelines:

- Make factual statements.
- Allay unfounded fears.
- Do not jump to conclusions, make reckless comments, or speculate.
- Precisely explain what the public can do to help.
- Explain specifically what MP Wilson is doing in response to the emergency.

- Present most encouraging viewpoint of situation that facts will allow.

12.12 Post Emergency Activities

This section explains reporting requirements related to Incidents and Safety Related Conditions.

Emergency Report – A comprehensive report of each emergency will be prepared. The report shall contain a complete log of events including:

- Initial Notification of Emergency Form
- Details of injuries and property damage
- Responses and actions taken
- Any other significant known facts regarding the emergency
- Results of any investigations of failures (refer to paragraph below)
- Actions taken to restore gas system to operation

Drug And Alcohol Testing –After an accident, MP Wilson may drug and alcohol test each employee whose performance either contributed to an accident or cannot be completely discounted as a factor the accident. These drug tests shall be administered as soon as possible, but no later than 32 hours after an accident.

MP Wilson may decide not to test, but such a decision must be based on the best information available after the accident. This information must indicate the employee's performance could not have contributed to the accident or, because of the time between that performance and the accident, a drug test would not be effective in determining whether that performance was affected by drug use.

Emergency Response Critique – After each emergency, the Manager/Supervisor will conduct a post-emergency review of employee activities to determine whether the emergency response

procedures were effective. If deficiencies are found in the emergency response plan or in the actions taken by employees, or the designated operating personnel, MP Wilson will take appropriate corrective action. Actions taken by other response groups should be included in this critique. Critique results should be discussed with these groups so they will be aware of any deficiencies in their responses. The results of the emergency response critique will be documented in a report.

Restoration To Service – The Manager/Supervisor will prepare a written outline of the corrective measures to be taken and the steps necessary to return the system to service. The outline will be followed in the work done under the direction of the Manager/Supervisor.

12.13 Investigations of Failures

General – If the emergency is the result of a failure then a formal investigation must be conducted for the purpose of determining the cause of the failure and minimizing the possibility of a reoccurrence.

b. Response – Rapid response is necessary to preserve the integrity of specimens and gathering information.

Data Collection – When a detailed analysis is to be made, a person at the scene of the incident will be designated to coordinate the investigation. That person's responsibilities will include the following:

- Acting as a coordinator for all field investigative personnel.
- Maintaining a log of the personnel, equipment and witnesses.
- Recording in chronological order the events as they take place.
- Ensuring that photographs are taken of the incident and surrounding areas. These photographs may be of great value in the investigation.

- Ensuring the notification of all appropriate governmental authorities.
- Ensuring the preservation of evidence.

Investigation Team – When a detailed analysis is to be made, a fully qualified investigation team will be designated. The investigation team will be qualified either by training or experience in the proper procedures for investigation of an incident. The investigation will include the following:

- Determination of the probable cause of the incident.
- Evaluation of the initial response to the incident.
- The need for system improvements if necessary.
- The need for improvements in response, management and investigation of incidents.

Specimens – As required or appropriate the investigation team will specify how specimens are to be selected, collected, preserved, labeled and handled. The collection of metallurgical specimens should take precautions against changing the granular structure on the area of interest. When corrosion may be involved, the Corrosion Technician for the system will direct sampling of soil, ground water specimens or other items of interest.

The number of specimens collected at the failure site may vary depending on the type and number of tests anticipated. A series of independent or destructive tests may require multiple specimens. If there is a need to confirm the pipe materials specifications, then additional pipe specimens should be obtained near the failure, but in an area of the piping where the physical properties and characteristics are unaffected by the failure itself.

Testing & Analysis – Recognized testing laboratories and recognized standard destructive or nondestructive techniques will be utilized to examine the test specimens. The testing methods used should be suited to the particular material being tested, and be pertinent to the failure investigation.

Compilation & Review – Analysis and data on a failure will be compiled and reviewed. Corrective measures or the need for continuing surveillance will be determined and implemented. A summary report will be prepared.

12.14 Emergency Equipment & Tools

The Manager/Supervisor will compile a list of equipment and tools needed at the emergency response center and in gas system operation vehicles to effectively and promptly respond to an emergency situation. The minimum requirements may be as outlined below:

- Wrench to operate valves, flashlights, communication means, first aid kit and miscellaneous hand tools, portable gas detector, ropes, signs, etc., hand tools as required.

13 METHANE GAS MONITORING PLAN

MP Wilson's Methane Gas monitoring Plan will comply with the requirements of the Post Closure Plan for the Wilson County Landfill and augment those requirements as appropriate for the operation of the LFGCCS. The existing system activities will continue to be followed to the extent applicable. The existing Post Closure documents do not include sections regarding a Landfill Gas Collection and Control System (LGCCS); therefore, this section provides information for the additional efforts that will be necessary for the LGCCS.

Periodically, the entire existing landfill gas collection system will be monitored and balanced to maximize proper operation. Only trained personnel, with the proper experience and equipment, will perform system monitoring and balancing. These efforts will be critical to supplying suitable landfill gas to the Flare system while balancing migration control efforts. The closed landfill and its systems will continue to be operated to meet the landfill migration requirements of 15A NCAC 13B.1626(4).

The gas collection system will be routinely inspected by monitoring personnel, at a minimum frequency based on the component's monitoring schedule, to verify proper operation. System components will typically be inspected at the time monitoring or maintenance takes place. Inspections and maintenance of the system will be required to keep it operating properly and efficiently.

The frequency of monitoring will vary depending on the consistency of landfill gas generation. The data collection system will continuously monitor and report specified operating data. The data collection system will be accessible via the Internet. Operating personnel will be able to evaluate operating parameters on an as-needed basis, and the system will automatically notify operating personnel when specified alarm conditions occur. The data collection system will provide the current values of key parameters and will log specific key parameter data and record it a specified frequencies. The key parameters are as follows and are recorded every 10 minutes:

- The Flare combustion temperature;
- The total landfill gas flow rate;
- The total vacuum pressure being applied to the landfill;
- The overall methane content of the landfill gas;
- Gas temperature on the inlet side of the Blower.

Gas quality (CH4, CO2, O2, Balance gas, Temperature, Gas well pressure and System pressure etc) at each gas well head and at the gas header line sampling ports (see Gas Collection System Plan for locations) will be monitored using the GEM 2000 gas analyzer typically on a weekly basis or as required to maintain system efficiency and to prevent ingress of atmospheric air to the landfilled materials. All data will be recorded on the GEM 2000 and downloaded to the Project files for reference.

14 SPILL PREVENTION AND RESPONSE PLAN

This LFGTE project claims exemption from the spill prevention, control, and countermeasures requirements of Chapter 40, Code of Federal Regulations, Section 112 (40 CFR 112) for the following reasons because there are no buried or above ground oil storage tanks associated with the LFGCCS. This project also claims exemption from the National Pollutant Discharge Elimination System (NPDES) requirements of the State of North Carolina because the project footprint is less than 1 acre. The project has disturbed less than 1/4 acre of land off the landfill footprint.

The only liquids associated with the operation of the LFGCCS are small quantities of lubricants (grease) for the Flare electrical motor and the Flare Blower and condensate which gravity drains to the two pressure tested condensate sumps. Condensate from the sumps will be removed by vacuum truck and transported to the City of Wilson POTW.

The landfill gas blower/ Flare skid will generate small amounts of condensate which will gravity drain back to the Condensate sump.

Site-specific Best Management Practices (BMPs) will be utilized to reduce or prevent pollutants, resulting from site activities, from impacting storm water and authorized non-stormwater discharges; and identify the recommended countermeasures (cleanup materials) to be maintained on-site for use in addressing spills and other identified exposed materials.

An inspection and preventive maintenance program will be implemented for the LFGCCS facility. The program will include recommended manufacturer's maintenance schedules and practices, together with additional site-specific activities. At a minimum the following items will be complied with:

- Inspection schedules and procedures;
- Routine system checks for integrity, leaks and spills;
- Proper storage requirements for new and waste materials;
- Proper procedures that require the performance of O&M work over suitable surfaces and the utilization of spill prevention materials;
- Maintenance requirements for project records including O&M and inspection activities; and,
- Proper collection, storage, and disposal procedures for waste materials

Spill Cleanup Materials

Suitable cleanup materials will be maintained on-site to address needs during O&M activities. Materials will be available for routine O&M activities and for unanticipated leaks and spills to reduce or prevent storm water contamination. The site cleanup kit will be maintained within the Flare station storage and monitoring unit and will include at a minimum the following:

- Safety goggles
- Gloves
- Oil dry
- Absorbent pillows and pads
- Shovel, broom, and waste pan
- Various waste disposal containers
- Labelling materials for new and used spill materials.

Spill Response Procedures

The spill response procedures are as follows:

1. **Notify the Emergency Response Coordinator.** The O&M person discovering a leak or spill will immediately notify the project's Project Emergency Response Coordinator (PERC). The PERC, or designee, will be on-call and available to on-site staff. The PERC will contact the Facility Manager, or designee, based on the severity of the leak or spill. Spill notification and project contact information is provided for in the

2. **Stay clear of the spill.** Personnel who are not directly involved with the spill shall stay away from the leak or spill.

3. **Assess the spill.** The PERC, or designee, will first assess the nature and extent of the spill and the potential threat to human life or the environment, and make a determination regarding the steps required to safeguard personnel (e.g., evacuation, personal protective equipment, etc.).

    a. As necessary, the PERC will evacuate personnel, notify local authorities, advise if area control or evacuation is recommended, activate emergency response personnel and equipment, and enlist outside emergency services as necessary.

    b. The PERC will determine the exact source and the amount of the release, and determine the need for notification of authorities and regulatory agencies.

4. **Stop the spill.** After implementing the required safety-related measures, the PERC will authorize immediate action to prevent further releases to the extent possible by cutting off the flow at the source.

5. **Contain the spill.** Immediately after determining what safety precautions and containment equipment are appropriate, the PERC will authorize immediate containment procedures to stop or reduce migration of the spill. Efforts will include the management of containments that may have migrated beyond the LFGCCS boundary.

6. **Clean up spill.** To the extent practicable, spilled material will be retrieved and stored in leak-proof containers until the materials can be disposed of properly. A spill kit will be available on-site. If a large spill occurs (more than what can be cleaned up with the

typical spill kit materials), additional materials will be procured and utilized and/or a clean-up contractor will be contacted to provide additional equipment as deemed necessary.

7. **Dispose of contaminated material.** The PERC will direct the collection of the contaminated material (including both spilled material and cleanup media) and have the material disposed of in accordance with applicable regulations. The exact means of disposal will depend upon the nature and volume of the contaminated material.

8. **Record the spill event information.** The PERC will record leak and spill details as applicable. Completed spill event forms will be maintained by the System Operator Manager and stored in the on site storage unit.

9. **Update the Spill Prevention and Response Plan.** The Facility Manager and other employees involved with the project will periodically review leak and spill records and will implement measures to prevent repeat occurrences and improve response measures.

10. **Replace used countermeasures.** Following a leak or spill cleanup, the Facility Manager, or designee, will assess the inventory of response equipment and restock the spill kit as necessary.

11. **Submit required reports.** The Facility Manager will prepare required follow-up written reports to the appropriate regulatory agencies, in accordance with applicable reporting requirements. Copies of site report will be maintained at the on site storage unit.

15 PERSONNEL TRAINING AND SAFETY

All staff and subcontractors working on the MP Wilson LLC LFGCCS will be trained at a minimum to the standards described in "Compilation of Landfill Gas Field Practises and Procedures" March 1992 Landfill Gas Division of the Solid Waste association of North America (SWANA). All work will be completed in accordance with “Methane Power, Inc. Health and Safety Plan for Landfill Gas Projects”, February 23, 2010 Rev. 1.0. Copies of both documents will be kept on site.

16 SYSTEM DECOMMISSIONING

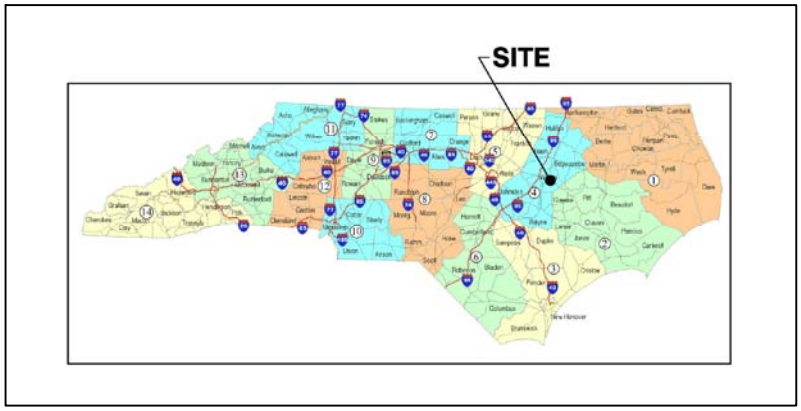
When the quantity or quality of the LFG produced by the Wilson County landfill falls below economically viable values the following Decommissioning Plan will be applied in order to secure the site. The main goal of the Decommissioning Plan is to remove all the above grade facilities, main and ancillary equipment and to seal off all the gas header lines and laterals that will no longer be used. The final result after the completion of the Decommissioning Plan will be a proper and a safe site with a passive gas venting system.

The steps required to decommission the components of the LFGCCs are:

1. In advance of any decommissioning works, the site shall be inspected for adequate and save operation conditions;
2. Remove all gas well heads and flex-pipes;
3. Cut all horizontal header pipe protrusions 12 inches below grade;
4. Install concrete plugs in abandoned header pipe ends;
5. Fill hole to grade and re-vegetate the disturbed areas;
6. Remove above grade operators handles from buried valves;
7. Cut all sampling port vertical pipes 12 inches below grade plug pipes and backfill and re-vegetate area;
8. Remove the blower Flare skid and any other mechanical and/or electrical equipment.
9. Remove Flare station fencing;
10. Remove any condensate from the condensate sumps and dispose at City of Wilson POTW;
11. Remove electro-mechanical equipment from condensate sumps, cut tops 12 inches below grade and back fill with suitable earth fill;
12. Remove all Generator sets (if installed) and their mechanical and/or electrical equipment;
13. Remove Generator set foundations till 12 inches below grade, back fill with suitable earth fill and re-vegetate;
14. Re-vegetate all disturbed areas; and,
15. Submit notification letter to the NCDENR Division of Waste Management when decommissioning is complete.

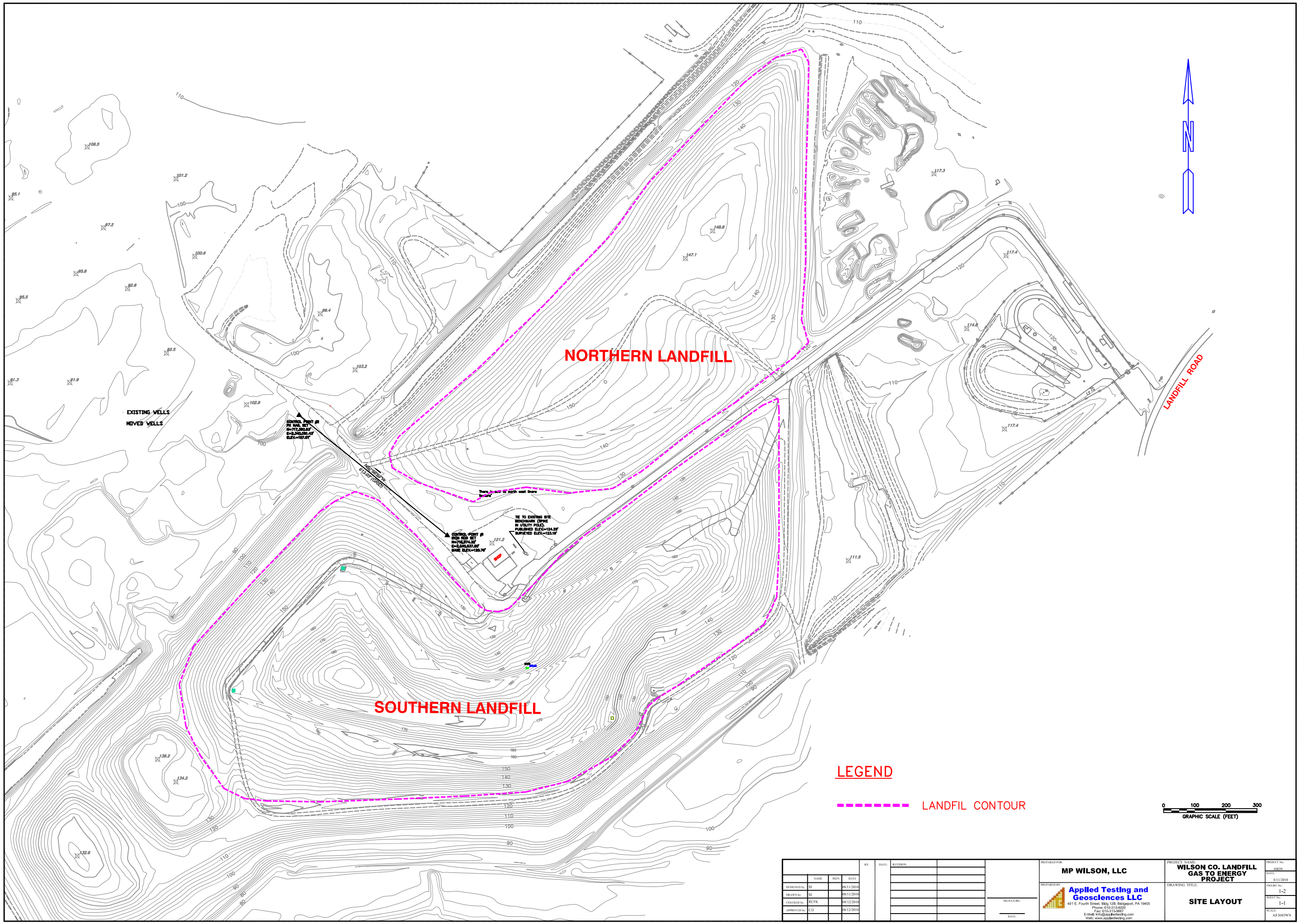
FIGURES

N



MP WILSON, LLC SITE ADDRESS:
4537 Landfill Road
Wilson, North Carolina 27893

APPLIED TESTING & GEOSCIENCES Inc.	CH4POWER smart energy	TITLE: SITE LOCATION MAP	
	CLIENT: MP WILSON, LLC	DATE: 8/11/2010 SCALE: NTS	FIGURE 1-1



	NAME	MON	DATE
DESIGNED by:	SI		08/11/2010
DRAWN by:	SI		08/11/2010
CHECKED by:	RCFK		08/12/2010
APPROVED by:	CJI		08/12/2010

BY: DATE: REVISION:

SIGNATURE:

DATE:

PREPARED FOR: MP WILSON, LLC

PREPARED BY: Applied Testing and Geosciences LLC
401 E. Fourth Street, Bldg 128, Bridgeport, PA 19405
Phone: 610-313-8200
Fax: 610-313-9667
E-Mail: info@appliedtesting.com
Web: www.appliedtesting.com

PROJECT NAME: WILSON CO. LANDFILL GAS TO ENERGY PROJECT

DRAWING TITLE: SITE LAYOUT

PROJECT No.: 10839

DATE: 8/11/2010

FIGURE No.: 1-2

SHEET No.: 1-1

SCALE: AS SHOWN

APPENDIX A

AS-BUILT DRAWINGS

CONSTRUCTION DRAWINGS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM INSTALLATION - 2010
WILSON COUNTY LANDFILL

OWNER:

WILSON COUNTY, NORTH CAROLINA
WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893
(252) 399-2823

IN PARTNERSHIP WITH:

MP WILSON, LLC
P.O. BOX 65837
TUSCON, ARIZONA 85728
(520) 615-8995

ENGINEER:

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765

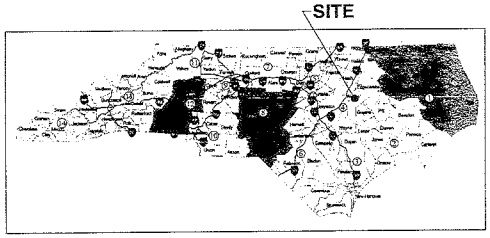
CEC JOB NO. J1-209205-00

AUGUST 2010

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN
3	SITE DATA SHEET
4	DETAILS
5	DETAILS
6	DETAILS

AS-BUILTS



AREA MAP
SCALE: AS SHOWN

NORTH CAROLINA PROFESSIONAL SEAL 028934 ENGINEER
8-23-10

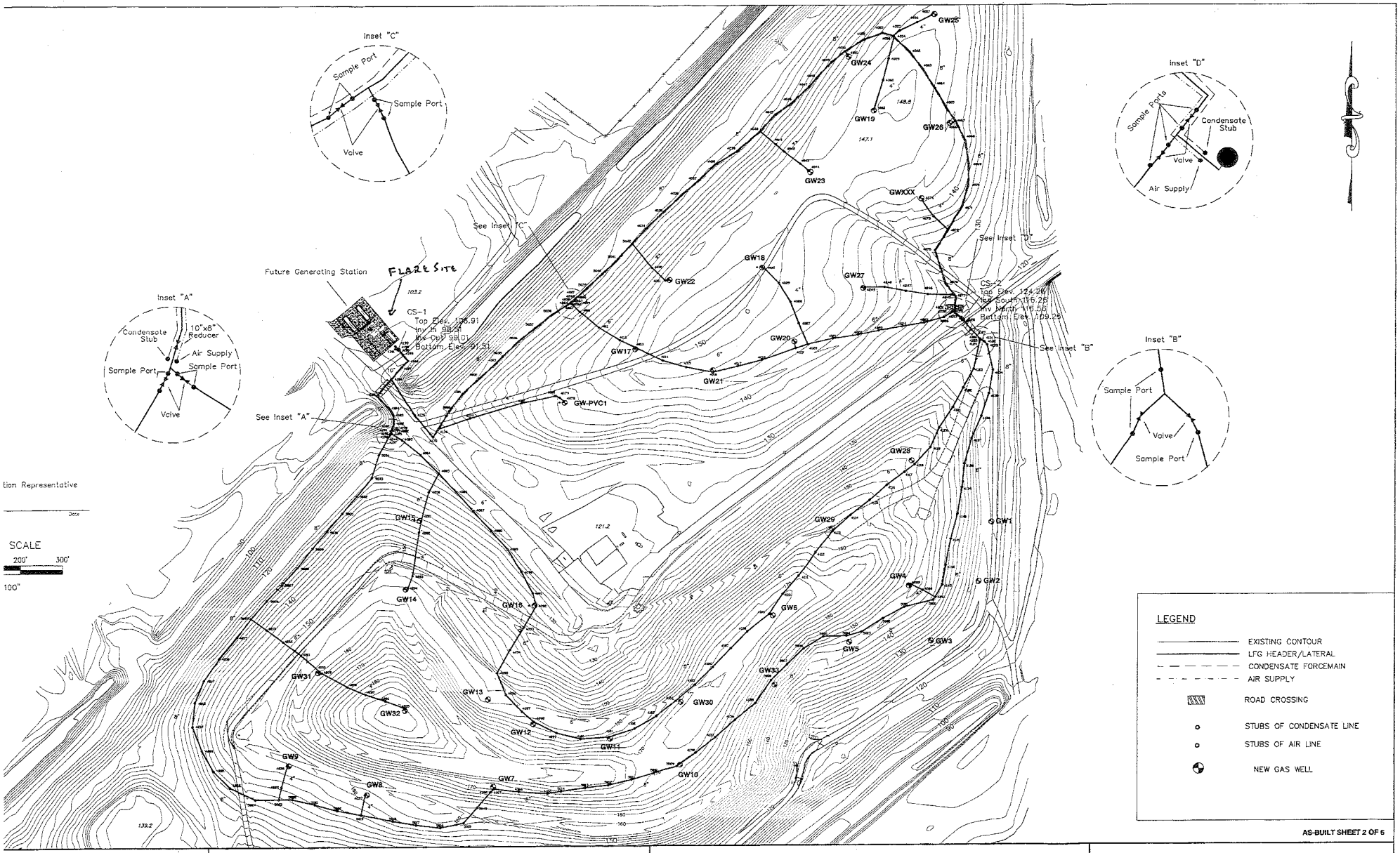
Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, P.LLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

DRAWING TITLE:	TITLE SHEET
PROJECT:	LFG COLLECTION SYSTEM DESIGN WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA
CLIENT:	MP WILSON, LLC

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-209205-00	DWG. WILSON.LFG.TITLE	REV. 0
SCALE	NO SCALE	SHEET 1 OF 6	
DATE	AUGUST 2010		



AS-BUILT SHEET 2 OF 6

Randy D. Ward
Professional Land Surveyor
9696 Ralph Ward Trail
Ash, NC 28420
910-287-6556

REVISIONS:

Asbuilt Survey
For

WILSON COUNTY, NORTH CAROLINA

WILSON COUNTY LANDFILL
4537 LANDFILL ROAD
WILSON, NORTH CAROLINA 27893

THE PURPOSE OF THIS MAP IS FOR LOCATION ONLY AND DOES NOT REPRESENT A BOUNDARY SURVEY BY ME.

I, Randy D. Ward, a Professional Land Surveyor, certify that the Ratio of Precision is 1: 10,000+ and that this map meets the Minimum Standards of Practice for Land Surveying in North Carolina.

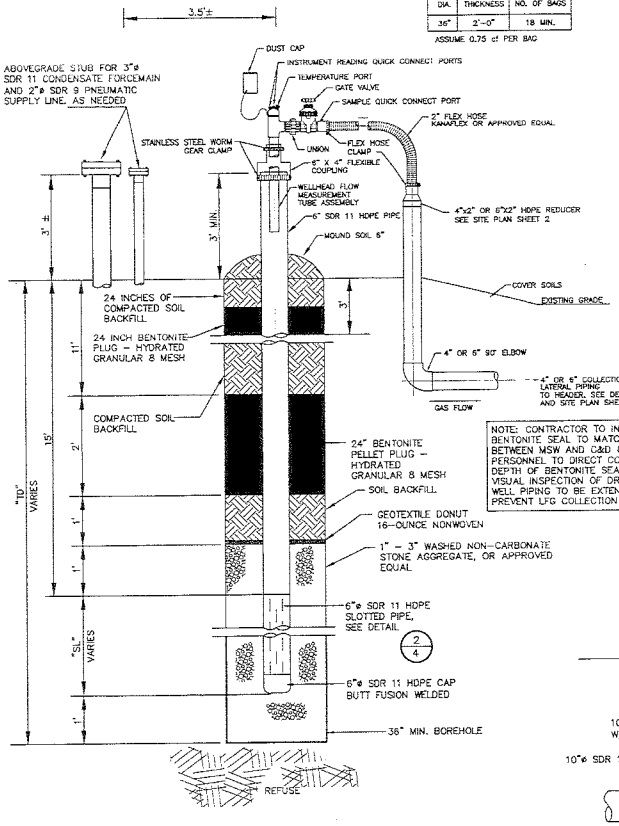
Witness my hand and seal this 6th day of August, 2010

NORTH CAROLINA PROFESSIONAL SEAL L-3494 RANDY D. WARD

Randy D. Ward L-3494

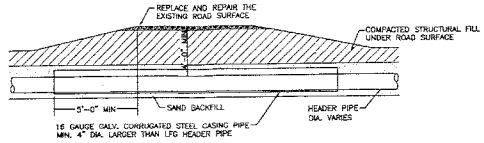
BENTONITE SCHEDULE		
DIA.	THICKNESS	NO. OF BAGS
36"	2'-0"	18 MIN.

ASSUME 0.75 cf PER BAG



VERTICAL EXTRACTION WELL DETAIL 1/4
NOT TO SCALE

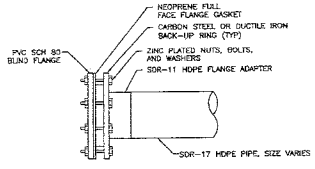
NOTES:
1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL AF2V WELLHEAD ASSEMBLY. TEL. 1-800-LANDTEC, FAX 213-895-5866.



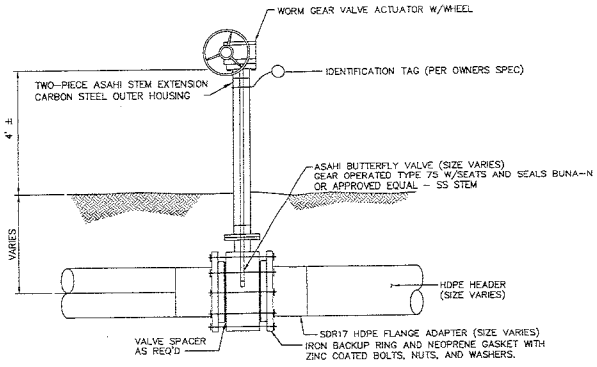
ROAD CROSSING DETAIL 3/4
NOT TO SCALE

NOTE: ROAD CROSSINGS TO BE INSTALLED TO MAXIMIZE LFG PIPING SLOPE TO ACCOMODATE DIFFERENTIAL SETTLEMENT BELOW ROADWAYS. CONTRACTOR AND COA PERSONNEL TO REVIEW ROAD CROSSING SLOPES BEFORE INSTALLATION TO MAXIMIZE BASED ON AVAILABLE GRADES.

NOTE: CONTRACTOR TO INSTALL LOWER BENTONITE SEAL TO MATCH CLAY LAYERS BETWEEN MSW AND C&D OVERFILL. COA PERSONNEL TO DIRECT CONTRACTOR ON DEPTH OF BENTONITE SEALS BASED ON VISUAL INSPECTION OF DRILL TAILINGS. SOLID WELL PIPING TO BE EXTENDED AS NEEDED TO PREVENT LFG COLLECTION IN C&D AREAS.

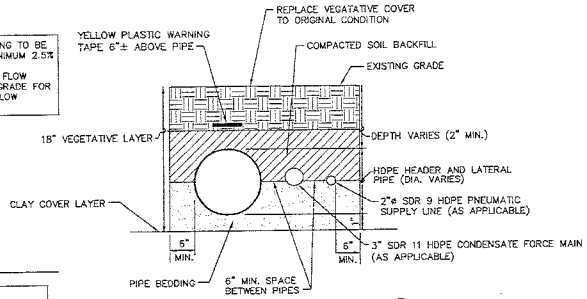


HEADER PIPE BLIND FLANGE 4/4
NOT TO SCALE



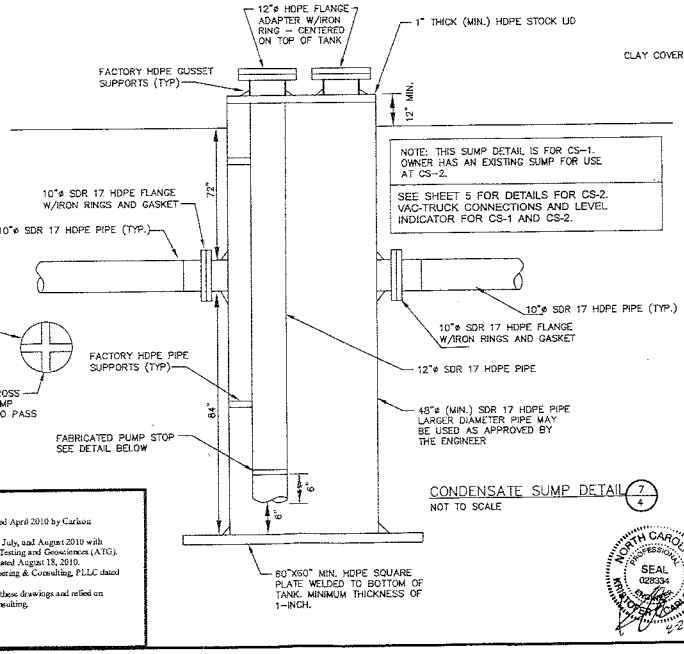
LFG COLLECTION SYSTEM BUTTERFLY VALVE DETAIL 5/4
NOT TO SCALE

NOTE: ALL LFG PIPING TO BE INSTALLED AT A MINIMUM 2.5% GRADE FOR ALL COUNTER-CURRENT FLOW SECTIONS AND 2% GRADE FOR ALL CONCURRENT FLOW SECTIONS.



HEADER/LATERAL TRENCH DETAIL 6/4
NO SCALE

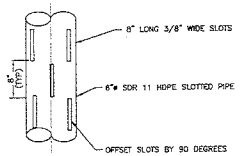
NOTE: EXISTING LANDFILL FINAL COVER SYSTEM CONSISTS OF APPROXIMATELY 18 INCHES OF COVER SOILS, 24 INCHES OF CLAY, AND 12 INCHES OF INTERIM SOILS OVER THE WASTE. ALL LFG PIPING TO BE INSTALLED IN THE UPPER 18 INCHES, UNLESS MAINTAINING PIPE SLOPE REQUIRES INSTALLATION OF LFG PIPING IN THE CLAY OR INTERIM LAYERS. SHOULD LFG PIPING BE INSTALLED IN OR THROUGH THE CLAY CAP, BENTONITE CLAY SHALL BE ADDED TO THE AREAS OF PENETRATION TO REPLACE THE DISTURBED CAP. COA PERSONNEL TO DOCUMENT ANY DISTURBANCE OF THE CLAY LANDFILL CAP AND ALL REPAIRS.



NOTE: THIS SUMP DETAIL IS FOR CS-1. OWNER HAS AN EXISTING SUMP FOR USE AT CS-2.

SEE SHEET 5 FOR DETAILS FOR CS-2. VAC-TRUCK CONNECTIONS AND LEVEL INDICATOR FOR CS-1 AND CS-2.

CONDENSATE SUMP DETAIL 7/4
NOT TO SCALE



SLOTTED PIPE FOR VERTICAL WELLS DETAIL 2/4
NO SCALE

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER KRISTOFER T. CARLSON 8-23-10

AS-BUILTS

DRAWING TITLE: **DETAILS**

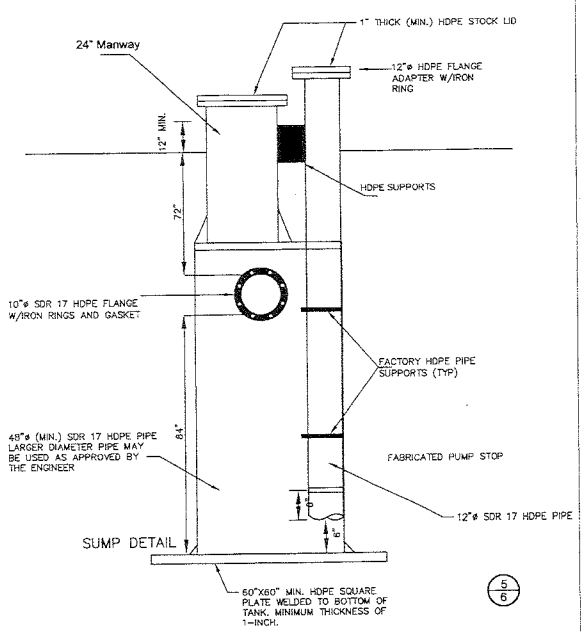
PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

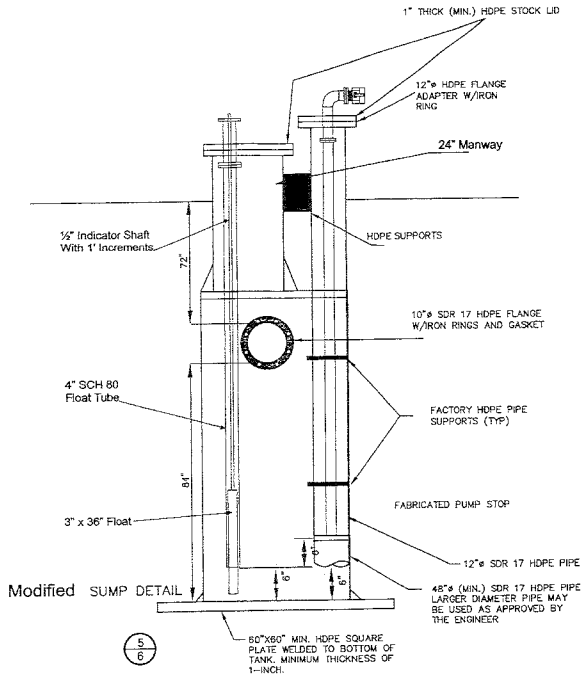
CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9766
FAX (704) 283-9755

CEC PROJECT NO.	J1-20905-00	DWG. WILSON.LFG	REV. 0
SCALE	NO SCALE	SHEET 4 OF 6	
DATE	AUGUST 2010		

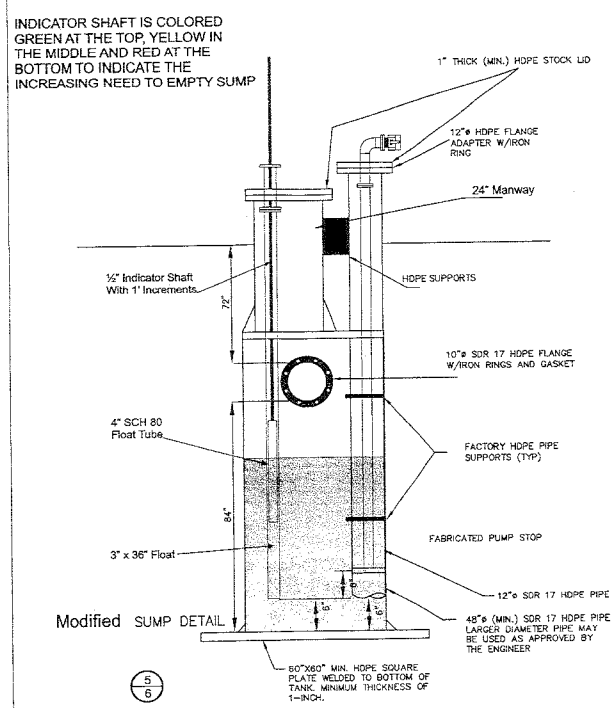
CS-2 Details

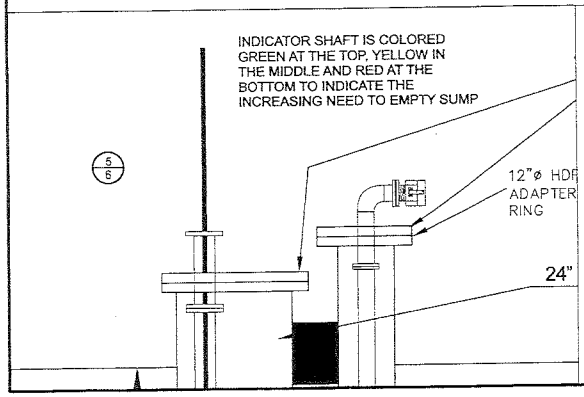


Level Indicator Vac-truck Connection For CS-1, CS-2,



Level Indicator For CS-1, CS-2, Approaching Danger Level





AS-BUILTS

NORTH CAROLINA PROFESSIONAL SEAL 023635 ENGINEER RICHARD P. CARLSON 10-23-12

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

DRAWING TITLE:	DETAILS
PROJECT:	LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010 PERMIT DRAWINGS
SITE:	MP WILSON, LLC WILSON COUNTY LANDFILL WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112

(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO. J1-20905-00	DWG. WILSON.DETAILS	REV. 0	
SCALE NO SCALE	SHEET 5 OF 6		
DATE AUGUST 2010			

NOTES:

1. UNLESS OTHERWISE AGREED TO BY OWNER, CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS TO PERFORM THE WORK DESCRIBED HEREIN.

2. PRIOR TO DRILLING, CONTRACTOR TO VERIFY WELL LOCATIONS, LANDFILL SURFACE GRADES, AND TOTAL WELL DEPTHS WITH OWNER. ALL WELL DRILLING MUST REMAIN A MINIMUM OF 15 FEET ABOVE THE LANDFILL LINER SYSTEM.

3. CONTRACTOR SHALL HAUL AND DISPOSE OF ALL WASTE MATERIALS TO AN APPROVED WASTE DISPOSAL LOCATION INCLUDING MUNICIPAL SOLID WASTE EXCAVATED DURING THE INSTALLATION OF THE VERTICAL WELLS AND LFG HEADER PIPE.

4. ALL BOLTS, NUTS AND WASHERS SHALL BE ZINC COATED STEEL. IF A FLANGE OR A VALVE IS USED AND IT IS BURIED, THE FLANGE AND/OR VALVE MUST BE WRAPPED WITH A 5-MIL PLASTIC SHEETING.

5. UNLESS OTHERWISE DIRECTED BY OWNER, CONTRACTOR SHALL PROVIDE TO OWNER AS-BUILT DRAWINGS INCLUDING DETAILED SURVEY OF THE NEW VERTICAL WELLS, NEW LFG HEADER PIPING, NEW VALVES, NEW SUMPS, AND NEW CONDENSATE AND PNEUMATIC PIPING. SURVEY TO INCLUDE NORTHING, EASTING, AND GROUND SURFACE ELEVATION OF ALL VERTICAL WELLS, VALVES, AND NORTHING, EASTING, AND TOP OF PIPE ELEVATION OF ALL BURIED HEADER AND LATERAL LFG PIPING AND CONDENSATE AND PNEUMATIC PIPING AT MINIMUM DISTANCES BETWEEN POINTS OF 50 LINEAR FEET AND AT ALL TEES, FLANGES, VALVES, AND RISERS.

6. CONTRACTOR SHALL USE FACTORY MOLDED OR FACTORY FABRICATED TEE AND REDUCERS FOR CONNECTIONS. FIELD MADE BRANCH SADDLE CONNECTIONS ARE NOT TO BE USED, UNLESS OTHERWISE APPROVED BY OWNER. IF BRANCH SADDLE CONNECTIONS ARE APPROVED BY OWNER, CONTRACTOR PERSONNEL PERFORMING BRANCH SADDLE CONNECTIONS MUST BE A CERTIFIED HDPE FUSION TECHNICIAN, AS TRAINED BY MCELROY FUSION (OR EQUAL). TRAINING CERTIFICATES MUST BE PROVIDED TO CQA PERSONNEL OR OWNER PRIOR TO BEGINNING WORK.

7. CONTRACTOR TO USE FACTORY PERFORATED PIPE FOR VERTICAL WELLS, UNLESS OTHERWISE APPROVED BY OWNER.

8. CONTRACTOR RESPONSIBLE FOR DAMAGES INCURRED TO LANDFILL COVER SYSTEM DURING HIS CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL RETURN LANDFILL COVER SYSTEM TO ORGINIAL CONDITION AND/OR TO THE SATISFACTION OF OWNER. CONTRACTOR TO SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS TO THE SATISFACTION OF OWNER.

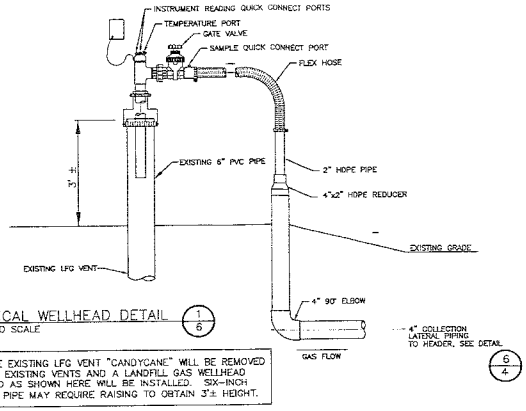
9. OWNER MAY CONTRACT WITH A THRID PARTY FOR CONSTRUCTION QUALITY ASSURANCE (CQA) SERVICES. CONTRACTOR SHALL ALLOW (AND PROVIDE ADVANCE NOTIFICATION) FOR CQA PERSONNEL TO OBSERVE (AND TEST IF NECESSARY) ALL WORK PRIOR TO BURIAL.

10. CONTRACTOR TO AIR PRESSURE TEST ALL SOLID-WALL LFG HEADER AND LATERAL PIPING PRIOR TO BURIAL. LENGTHS OF PRESSURE TESTING NOT TO EXCEED 500 LINEAR FEET WITHOUT OWNER'S APPROVAL. CONTRACTOR TO SEAL ALL PIPE ENDS AND RISERS WITH FUSED CAPS OR FLANGES. PRESSURE TEST ON LFG HEADER/LATERAL PIPING TO BE PERFORMED AT 5 PSIG, ON CONDENSATE FORCEMAIN PIPING TO BE 50 PSI, AND ON AIR SUPPLY PIPING TO BE 100 PSI AND PRESSURE DROP SHALL NOT EXCEED ONE PERCENT OVER A ONE HOUR PERIOD CORRECTED FOR TEMPERATURE. CONTRACTOR TO SUPPLY TESTING FLANGE WITH TEMPERATURE GAUGE AND DIGITAL MANOMETER. CONTRACTOR TO SUPPLY AIR COMPRESSOR AND TO COORDINATE PRESSURE TEST WITH CQA PERSONNEL OR OWNER. ANY AIR LEAKS TO BE REPAIRED BY CONTRACTOR AND A RE-TEST OF THE PRESSURE TESTING MUST BE COMPLETED.

11. ALL LFG HEADER AND LATERAL PIPING TO BE INSTALLED AT A MINIMUM SLOPE OF 2 PERCENT (CONCURRENT FLOW) AND 2.5 PERCENT (COUNTERCURRENT FLOW) TO DRAIN CONDENSATE LIQUIDS TO CONDENSATE SUMPS LOCATED THROUGH OUT THE LFG SYSTEM. LFG HEADER AND LATERAL PIPING THROUGH ROAD CROSSINGS TO BE INSTALLED AT A MINIMUM SLOPE OF 3 PERCENT. PIPING WAS INSTALLED AS DIRECTED BY THE QUALITY ASSURANCE MANAGER WHEN THE ABOVE GRADES COULD NOT BE ACHIEVED.

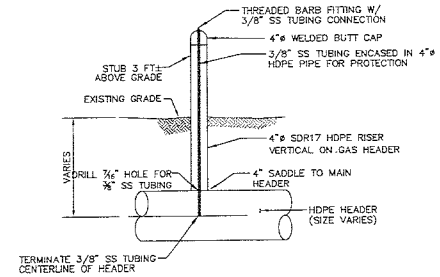
12. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE HEALTH AND SAFETY OF HIS EMPLOYEES AND SUBCONTRACTORS. CONTRACTOR TO PROVIDE SERVICES IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL HEALTH AND SAFETY REGULATIONS. CONTRACTOR IS ASSUMED TO BE EXPERIENCED IN WORKING WITH LANDFILL GAS AND IN A POTENTIALLY HAZARDOUS LANDFILL ENVIRONMENT. CONTRACTOR TO PROVIDE FOUR (4) COPIES OF A SITE-SPECIFC HEALTH AND SAFETY PLAN TO OWNER PRIOR TO BEGINNING WORK. CONTRACTOR TO NOTIFY OWNER OF ANY UNSAFE CONDITIONS DURING CONSTRUCTION. CONTRACTOR IS MADE AWARE THAT HYDROGEN SULFIDE GAS MAY BE PRESENT IN THE LANDFILL GAS. CONTRACTOR TO HAVE A PORTIBLE HYDROGEN SULFIDE METER PRESENT DURING ALL WELL DRILLING AND IN-TRENCH WORK.

13. CONTRACTOR TO REPLACE ALL LANDFILL BERMS TO PRE-CONSTRUCTION OR BETTER CONDITIONS. BASED ON SOLID WASTE PLANS, ALL BERMS ARE "TACK-ON" SOIL BERMS WITH EROSION CONTROL BLANKETS. CONTRACTOR TO BE AWARE THAT WILSON COUNTY WILL HAVE THE FINAL APPROVAL FOR ALL REVEGETATION, LANDFILL CAP REPAIRS, AND BERM REPAIRS AND REPLACEMENTS MADE AS PART OF THE LFG PROJECT.

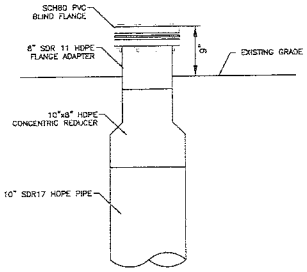


TYPICAL WELLHEAD DETAIL (1/6)
NOT TO SCALE

NOTE: THE EXISTING LFG VENT "CANDYCANE" WILL BE REMOVED FROM THE EXISTING VENTS AND A LANDFILL GAS WELLHEAD SIMILAR TO AS SHOWN HERE WILL BE INSTALLED. SIX-INCH PVC WELL PIPE MAY REQUIRE RAISING TO OBTAIN 3'± HEIGHT.



LFG HEADER SAMPLE PORTS (2/6)
NOT TO SCALE



CS-1 OUTLET STUB UP (3/6)
NOT TO SCALE

AS-BUILTS

Notes:

1. Asbuilt Drawings are based on Construction Drawings dated April 2010 by Carlson Environmental Consultants, PC.
2. Construction performed by Chandler Construction in June, July, and August 2010 with construction quality assurance services provided by Applied Testing and Geosciences (ATG).
3. Asbuilt surveying was provided by Randy D. Ward, PLS dated August 18, 2010.
4. Asbuilt Certification Document provided by Ratliff Engineering & Consulting, PLLC dated August 23, 2010.
5. CEC did not field verify the asbuilt information shown on these drawings and relied on information provided by ATG and Ratliff Engineering & Consulting.

NORTH CAROLINA PROFESSIONAL SEAL 028334 ENGINEER KRISTOPHER L. CARLSON 8-23-10

DRAWING TITLE: **DETAILS**

PROJECT: LANDFILL GAS COLLECTION AND CONTROL SYSTEM - 2010
PERMIT DRAWINGS

SITE: MP WILSON, LLC
WILSON COUNTY LANDFILL
WILSON, NORTH CAROLINA

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

CEC PROJECT NO.	J1-20905-00	DWG. WILSON.DETAILS	REV. 0
SCALE	NO SCALE	SHEET 6 OF 6	
DATE	AUGUST 2010		

APPENDIX B

EQUIPMENT MANUALS

APPENDIX C

FORMS

Applied Testing & Geosciences

When Quality Counts

Equipment: LFG Mass Flow Meter (Flare)
Brand: Endress + Hauser
Model: t-mass 65 I
Calibration Procedure: TBD

FIELD VERIFICATION of CALIBRATION DATASHEET (Flare Flow Meter)

T-mass 65 I

Site: Wilson County Landfill Project # : _____ Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

T-mass 65 I Factory Calibration Information: Unit Serial Number: _____

Last Time Field Verification Date (mm/dd/yyyy): _____ Expires: _____ (3 mos. from last verification)

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Information:

Equipment used for verification:

Provider: Pitot tube Type: n/a

Brand: Dwyer Serial #: n/a

Model: Series 160 Factory Calibration Datasheet: n/a

Calibration Parameter	***Calibration Equipment Reading (CER)***	***Flow Meter Reading (FMR)***
Gas Temperature (oF)		
Gas Humidity (%)		
Gas Velocity (ft/min)		
***Gas Flow Rate* (scfm)**		
Actual Deviation (%)		#DIV/0!

Notes: a) Allowable deviation: ±5.0%

b) Actual Gas Flow Rate deviation to be calculated, using Gas Flow Rate data, as follows:
(CER-FMR) / FMR * 100

c) Verification equipment reading to be performed as per ASTM D3154-00 (reapproved 2006)

These results are within the acceptable ranges. ☐ Yes ☐ No (see Remaks below)

Remarks:

Signed By: _____ _____ _____
Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

Applied Testing & Geosciences

When Quality Counts

Equipment: Portable Gas Analyzer
Brand: LANDTEC
Model: GEM2000
Calibration Procedure: ATG Calibration Instructions

FIELD CALIBRATION DATASHEET

GEM2000

Site: Wilson County Landfill Project # : 10839 Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

GEM2000 Factory Calibration Information: Unit Serial Number: _____

Factory Calibration Date (mm/dd/yyyy): _____ Expires: _____ (6 mos. from FCD Max)

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Gas #1

Provider: LANDTEC ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

CH_4 50.0% ☐ or _____ ; CO_2 35.0% ☐ or _____ ;N_2 Balance

Calibration Gas #2

Provider: LANDTEC ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

O_2 4.0% ☑ or _____ ;N_2 Balance

Reference Gas	***Value Before Calibration (%)***	***Value After Calibration (%)***	***Value at End of Day (%)***	
Methane (CH_4)				% Range: ±2.0% Reading
Carbon Dioxide (CO_2)				% Range: ±2.0% Reading
Oxygen (O_2)				% Range: ±1.0% Reading
Ambient Oxygen (O_2)				% Range: 19.9% - 21.9%

These results are within the acceptable ranges. ☐ Yes ☐ No (see Remaks below)

Remarks: _

Signed By: _____ _____ _____

Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

Applied Testing & Geosciences

When Quality Counts

Equipment: Landfill Gas Analyzer
Brand: California Analytical Instruments
Model: 600 L
Calibration Procedure:

FIELD CALIBRATION DATASHEET

CAI 600 L

Site: Wilson County Landfill Project # : 10839 Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

CAI 600 L Factory Calibration Information: Unit Serial Number: _____ (CH4)

_____ (CO2 & O2)

Factory Calibration Date (mm/dd/yyyy): _____ Expires: _____

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Gas #1

Provider: Air Gas Co. ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

CH_4 50.0% ☐ or _____ ; CO_2 35.0% ☐ or _____

Provider: Air Gas Co. ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

O_2 21.0% ☐ or _____

Reference Gas	***Value Before Calibration (%)***	***Value After Calibration (%)***	
Methane (CH_4)			% Range: ±2.0% Reading
Carbon Dioxide (CO_2)			% Range: ±2.0% Reading
Oxygen (O_2)			% Range: ±1.0% Reading

These results are within the acceptable ranges. ☑ Yes ☐ No (see Remaks below)

Remarks:

Signed By: _____ _____ _____

Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

MP WILSON, LLC
LFG Daily Log

DATE:

Date		MM/DD/YY	System Pressure		" H20	Gas Temp		Deg F
Time		*24:00	Gas Flow Rate		SCFM	Pipeline pressure		PSI
GEM Readings Taken		Taken Y/N	GEM Calibrated		Y/N	LFG 2000 Cal		Y/N
CH4		%	O2		%	CO2		%
Gallons Condensate pumped		Approx Gal	Electricity meter reading		KWHrs	Check performed by ?		Initials

Timed Log Entries:

Time	*Initials*	*Log Entry*

Continued on following page: Yes / No

Wilson County Landfill
Daily Log

Continued Page # ____

Date: _____

Timed Log Entries(continued):

Time	*Initials*		*Log Entry*

Continued on following page: Yes / No

FORM

MP WILSON, LLC

LANDFILL GAS TO ENERGY PROJECT

Well Liquid Level Data

Date: Inspector:

Well ID	Design Well Depth	Perforated Pipe Length	Measured Well Depth	Depth to Liquid	Liquid Column Length	Comment

APPENDIX D

PERMITS

NCDENR

North Carolina Department of Environment and Natural Resources

Division of Land Resources

Land Quality Section

James D. Simons, PG, PE
Director and State Geologist

Beverly Eaves Perdue, Governor
Dee Freeman, Secretary

May 03, 2010

LETTER OF APPROVAL WITH MODIFICATIONS

Methane Power
ATTN :- Lewis Gay
122 Harbor Cove Lane
Mooresville, NC 28117

RE: Project Name: Landfill Gas Collection and Control System Installation
Project ID: WILSO-2010-004 Acres Approved: 6.00
County: Wilson, 4537 Landfill Road, Wilson
River Basin: Neuse Stream Classification: Other
Submitted By: Amy Ratliff, Ratliff Engineering & Consulting, PLLC
Date Received by LQS: 5/3/10
Plan Type: New

Dear Sir or Madam:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable with modifications and hereby issue this letter of Approval with Modifications. The Modifications Required for Approval are listed on the attached page. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

Please be advised that Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, you should consider this letter to give the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG01000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Due to the location of this project, it should be noted that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997 The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0233) applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with existing vegetation on the adjacent land or "riparian area". In riparian areas with existing vegetation in the first 30 feet directly adjacent to the stream, the rule prohibits land disturbance or new development within the first 30 feet of land next to the water (the remaining 20 feet of the total buffer must be revegetated upon completion of any proposed land-disturbing activity). In riparian areas with existing vegetation that is less than 30 feet wide, the rule prohibits land disturbance or new development within the area that contains the existing vegetation (but not the entire 50 foot riparian area). For more information about this riparian area rule, please contact the Division of Water Quality's Wetland/401 Unit at 919-733-1786, or a Division of Water Quality representative at this regional office.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,

Karyn Pageau

Karyn Pageau, EIT, CPESC
Assistant Regional Engineer
Land Quality Section

Enclosures: Certificate of Approval
Modifications Required for Approval
NPDES Permit

cc: Amy Ratliff, PE, Ratliff Engineering & Consulting, PLLC, 4224 Lazyriver Drive, Durham, NC 27712
Danny Smith, DWQ – SWP Supervisor, Raleigh Regional Office

MODIFICATIONS REQUIRED FOR APPROVAL

Project Name: Landfill Gas Collection and Control System Installation

Project ID: WILSO-2010-004

County: Wilson

1.Provide statement on the drawings for maintenance of sediment control measures.Provide 1 copy of drawings revised as a result of requested changes to this office by May 25, 2010 or prior to construction beginning, whichever is sooner.

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

B. Keith Overcash, P.E.
Director

Dee Freeman
Secretary

April 29, 2009

Mr. James Voss
President
Wilson County Landfill
P. O. Box 65837
Tuscon, AZ 85728

Subject: Air Permit No. 09991R00
Wilson County Landfill
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

Dear Mr. Voss:

In accordance with your completed application received March 26, 2009, we are forwarding herewith Permit No. 09991R00 to Wilson County Landfill, Wilson, Wilson County, North Carolina for the construction and operation of air emissions sources or air cleaning devices and appurtenances. Please note the records retention requirements are contained in General Condition 2 of the General Conditions and Limitations.

If any parts, requirements, or limitations contained in this permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. Such a request will stay the effectiveness of the entire permit. This hearing request must be in the form of a written petition, conforming to G.S. 150B-23 of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Unless a request for a hearing is made pursuant to G.S. 150B-23, this air permit shall be final and binding.

You may request modification of your air permit through informal means pursuant to G.S. 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that the permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under G.S. 150B-23.

Unless exempted by a condition of this permit or the regulations, construction of new air pollution sources or air cleaning devices, or modifications to the sources or air cleaning devices described in this permit must be covered under a permit issued by the Division of Air Quality prior to construction. Failure to do so is a violation of G.S. 143-215.108 and may subject the Permittee to civil or criminal penalties as described in G.S. 143-215.114A and 143-215.114B.

This permit shall be effective from April 29, 2009 until March 31, 2014, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein.

Changes have been made to the permit stipulations. The Permittee is responsible for carefully reading the entire permit and evaluating the requirements of each permit stipulation. The Permittee shall comply with all terms, conditions, requirements, limitations and restrictions set forth in this permit. Noncompliance with any permit condition is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

Should you have any questions concerning this matter, please contact Lori Ann Phillips at (919) 791-4200.

Sincerely,

Patrick Butler

Patrick Butler, P.E.
Regional Air Quality Supervisor

LAP
Enclosures

c: Central Files
Raleigh Regional Office

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF AIR QUALITY

AIR PERMIT NO. 09991R00

Issue Date: April 29, 2009
Expiration Date: March 31, 2014

Effective Date: April 29, 2009
Replaces Permit: (new)

To construct and operate air emission source(s) and/or air cleaning device(s), and for the discharge of the associated air contaminants into the atmosphere in accordance with the provisions of Article 21B of Chapter 143, General Statutes of North Carolina (NCGS) as amended, and other applicable Laws, Rules and Regulations,

Wilson County Landfill
4537 Landfill Road
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

(the Permittee) is hereby authorized to construct and operate the air emissions sources and/or air cleaning devices and appurtenances described below:

Emission Source ID	Emission Source Description	Control System ID	Control System Description
ES-1	Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute)	N/A	N/A

in accordance with the completed application 9800227.09A received March 26, 2009 including any plans, specifications, previous applications, and other supporting data, all of which are filed with the Department of Environment and Natural Resources, Division of Air Quality (DAQ) and are incorporated as part of this permit.

This permit is subject to the following specified conditions and limitations including any TESTING, REPORTING, OR MONITORING REQUIREMENTS:

A. SPECIFIC CONDITIONS AND LIMITATIONS

1. Any air emission sources or control devices authorized to construct and operate above must be operated and maintained in accordance with the provisions contained herein. The Permittee shall comply with applicable Environmental Management Commission

Regulations, including Title 15A North Carolina Administrative Code (NCAC), Subchapter 2D .0202, 2D .0516, 2D .0521, 2D .0535, 2D .0540, 2D .1806 and 2Q .0711.

2. EMISSION INVENTORY REQUIREMENT - At least 90 days prior to the expiration date of this permit, the Permittee shall submit the air pollution emission inventory report in accordance with 15A NCAC 2D .0202, pursuant to N.C. General Statute 143 215.65. The report shall be submitted to the Regional Supervisor, DAQ. The report shall document air pollutants emitted for the 2012 calendar year. The Regional Office will send information on how to submit the emissions inventory, along with a reminder to renew your permit, about six months prior to your permit expiration. If you do not receive this information, please contact the Regional Supervisor, DAQ.

3. SULFUR DIOXIDE CONTROL REQUIREMENT - As required by 15A NCAC 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources," sulfur dioxide emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1) shall not exceed 2.3 pounds per million Btu heat input.

4. VISIBLE EMISSIONS CONTROL REQUIREMENT - As required by 15A NCAC 2D .0521 "Control of Visible Emissions," visible emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1), manufactured after July 1, 1971, shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. However, sources which must comply with 15A NCAC 2D .0524 "New Source Performance Standards" or .1110 "National Emission Standards for Hazardous Air Pollutants" must comply with applicable visible emissions requirements contained therein.

5. NOTIFICATION REQUIREMENT - As required by 15A NCAC 2D .0535, the Permittee of a source of excess emissions that last for more than four hours and that results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, shall:

   a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:

      i. the name and location of the facility,

      ii. the nature and cause of the malfunction or breakdown,

      iii. the time when the malfunction or breakdown is first observed,

      iv. the expected duration, and

      v. an estimated rate of emissions.

b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

This reporting requirement does not allow the operation of the facility in excess of Environmental Management Commission Regulations.

6. FUGITIVE DUST CONTROL REQUIREMENT - As required by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 2D .0540(f).

   "Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

7. CONTROL AND PROHIBITION OF ODOROUS EMISSIONS - As required by 15A NCAC 2D .1806 "Control and Prohibition of Odorous Emissions" the Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

8. TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT - Pursuant to 15A NCAC 2Q .0711 "Emission Rates Requiring a Permit," for each of the below listed toxic air pollutants (TAPs), the Permittee has made a demonstration that facility-wide actual emissions do not exceed the Toxic Permit Emission Rates (TPERs) listed in 15A NCAC 2Q .0711. The facility shall be operated and maintained in such a manner that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed TPERs listed in 15A NCAC 2Q .0711.

   a. A permit to emit any of the below listed TAPs shall be required for this facility if actual emissions from all sources will become greater than the corresponding TPERs.

   b. PRIOR to exceeding any of these listed TPERs, the Permittee shall be responsible for obtaining a permit to emit TAPs and for demonstrating compliance with the requirements of 15A NCAC 2D .1100 "Control of Toxic Air Pollutants".

   c. In accordance with the approved application, the Permittee shall maintain records of operational information demonstrating that the TAP emissions do not exceed the TPERs as listed below:

Pollutant	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
Acrylonitrile (107-13-1)	10			
Benzene (71-43-2)	8.1			
Carbon disulfide (75-15-0)		3.9		
Carbon tetrachloride (56-23-5)	460			
Chlorobenzene (108-90-7)		46		
Chloroform (67-66-3)	290			
Dichlorofluoromethane (75-43-4)		10		
Ethyl mercaptan (75-08-1)			0.025	
Ethylene dibromide (dibromoethane) (106-93-4)	27			
Hexane, n- (110-54-3)		23		
Hydrogen sulfide (7783-06-4)		1.7		
MEK (methyl ethyl ketone, 2-butanone) (78-93-3)		78		22.4
MIBK (methyl isobutyl ketone) (108-10-1)		52		7.6
Methyl mercaptan (74-93-1)			0.013	
Methylene chloride (75-09-2)	1600		0.39	
Perchloroethylene (tetrachloroethylene) (127-18-4)	13000			
Toluene (108-88-3)		98		14.4
Vinyl chloride (75-01-4)	26			
Xylene (mixed isomers) (1330-20-7)		57		16.4

B. GENERAL CONDITIONS AND LIMITATIONS

1. TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to the:

   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Raleigh Regional Office
   3800 Barrett Drive
   Raleigh, NC 27609
   (919) 791-4200

2. RECORDS RETENTION REQUIREMENT - Any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. PERMIT RENEWAL REQUIREMENT - The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 2Q .0304(d) and (f). Pursuant to 15A NCAC 2Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

4. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 2Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

5. EQUIPMENT RELOCATION - A new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

6. This permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. The facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. REPORTING REQUIREMENT - Any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

c. changes in the quantity or quality of materials processed.

If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

8. This permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

9. This issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

10. This permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

11. Reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

12. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

13. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

14. The Permittee must comply with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

15. PERMIT RETENTION REQUIREMENT - The Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

16. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 40 CFR Part 68 "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan in accordance with 40 CFR Part 68.

17. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

18. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 2D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval.

Permit issued this the 29th of April, 2009.
NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Patrick Butler, P.E.
Regional Air Quality Supervisor
By Authority of the Environmental Management Commission

Air Permit No. 09991R00

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
Division of Waste Management
Beverly Eaves Perdue
Governor
Dexter R. Matthews
Director
Dee Freeman
Secretary
Solid Waste Section

April 21, 2009

Mr. Steve Clayton, Director
Wilson County Landfill
P.O. Box 1728
Wilson, North Carolina 27893

Subject: Authorization for the Installation of a Landfill Gas Collection and Control System
Wilson County Landfill, Wilson County,
Permit #98-01, Document ID No. (DIN) 7315

Dear Mr. Clayton:

The Division of Waste Management, Solid Waste Section has reviewed the document titled *Request for NCDENR Division of Waste Management Approval Construction and Operation of Landfill Gas System (Proposal)*, dated March 27, 2009. DIN 7160. This document was submitted on your behalf by Carlson Environmental Consultants, PC (CEC) and was received by the Solid Waste Section on March 27, 2009.

Based on this review, the Solid Waste Section hereby grants Wilson County Landfill the authorization for installing a landfill gas collection and control system (LFGCCs) in accordance with the above-referenced document. Please note that this authorization for the installation of LFGCCs does not remove any responsibilities Wilson County may have to comply with any permit condition, or any local, state or federal regulation.

Upon completion of the construction of LFGCCs, the Solid Waste Section may grant Wilson County Landfill a final authorization to operate the constructed system. This authorization will be issued pending receipt and approval of the following:

1. Payment of $3000 permit activity fee (Modification to Post-Closure Land Use Permit).

2. The LFGCCs construction completion documentations (as described in the Proposal dated March 27, 2009). Additionally, the document should include the well abandoned report (wells GW-1, GW-2, GW-3 & GW-13 are proposed to be abandoned as shown on the drawing Sheet 2 of 4), if the activities were conducted. The survey coordinates and elevations of the final locations of gas wells, valves, condensate traps/sumps must be provided by the licensed surveyor registered in the State of North Carolina.

3. The modified Post-Closure Plan by including the Operation and Maintenance Plan of LFGCCs. The plan should address the following issues, but not limited to:

- Site security and measures/actions against vandalism.
- The Contingency and Emergency Response Plan to manage fire fighting, prevention, and notification, power outrage/inclement weather, odor and noise nuisances.
- Methane gas monitoring plan by including additional monitoring activities around LFGCCs.
- Personnel training and safety working around the LFGCCs.
- Condensate management – routine inspection of the leachate level in the holding tanks and sumps and spillage prevention and response.
- Requirements (such as frequency, checklist, report/recordation) of the routine inspection, repair, and maintenance of the LFGCCs.
- Descriptions of steps necessary to decommission the components of the LFGCCs (wells, piping, holding tanks, flare, blower, instrument panels, etc.) and restoration of the final cover system damaged by removing collection system at the end of their useful life.
- The revised post-closure care cost estimates and updated financial assurance mechanism by including the costs for decommission the components of the LFGCCs and repair the final cover system at the end of their useful life.

4. The copy of updated air quality permit approved by the Division of Air Quality.

5. The copy of the permit approved by the Wilson County Waste Water Treatment Plant to accept the condensate/leachate.

Please incorporate requested document (items 2 to 5) to a submittal including a written hard copy and an electronic copy (including as-built drawings) of the Permit Application for Post-Closure Land Use. If you should have any questions regarding this matter please contact me at 919-508-8507.

Sincerely,

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section

cc: Kristofer L. Carlson, P.E., CEC
Donna Wilson, DWM
Dennis Shackelford, DWM
Ed Mussler, Permitting Branch Supervisor
Ben Barnes, DWM
Central Files

APPENDIX C

FORMS

MP WILSON, LLC
LFG Daily Log

DATE:

Date		MM/DD/YY	System Pressure		" H20	Gas Temp		Deg F
Time		*24:00	Gas Flow Rate		SCFM	Pipeline pressure		PSI
GEM Readings Taken		Taken Y/N	GEM Calibrated		Y/N	LFG 2000 Cal		Y/N
CH4		%	O2		%	CO2		%
Gallons Condensate pumped		Approx Gal	Electricity meter reading		KWHrs	Check performed by ?		Initials

Timed Log Entries:

Time	*Initials*	*Log Entry*

Continued on following page: Yes / No

Wilson County Landfill
Daily Log

Continued Page # ____

Date: _____

Timed Log Entries(continued):

Time	*Initials*		*Log Entry*

Continued on following page: Yes / No

FORM

MP WILSON, LLC

LANDFILL GAS TO ENERGY PROJECT

Well Liquid Level Data

Date: Inspector:

Well ID	Design Well Depth	Perforated Pipe Length	Measured Well Depth	Depth to Liquid	Liquid Column Length	Comment

Applied Testing & Geosciences

When Quality Counts

Equipment: LFG Mass Flow Meter (Flare)
Brand: Endress + Hauser
Model: t-mass 65 I
Calibration Procedure: TBD

FIELD VERIFICATION of CALIBRATION DATASHEET (Flare Flow Meter)

T-mass 65 I

Site: Wilson County Landfill Project # : _____ Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

T-mass 65 I Factory Calibration Information: Unit Serial Number: _____

Last Time Field Verification Date (mm/dd/yyyy): _____ Expires: _____ (3 mos. from last verification)

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Information:

Equipment used for verification:

Provider: Pitot tube Type: n/a

Brand: Dwyer Serial #: n/a

Model: Series 160 Factory Calibration Datasheet: n/a

Calibration Parameter	***Calibration Equipment Reading (CER)***	***Flow Meter Reading (FMR)***
Gas Temperature (oF)		
Gas Humidity (%)		
Gas Velocity (ft/min)		
***Gas Flow Rate* (scfm)**		
Actual Deviation (%)		#DIV/0!

Notes: a) Allowable deviation: ±5.0%

b) Actual Gas Flow Rate deviation to be calculated, using Gas Flow Rate data, as follows:
(CER-FMR) / FMR * 100

c) Verification equipment reading to be performed as per ASTM D3154-00 (reapproved 2006)

These results are within the acceptable ranges. ☐ Yes ☐ No (see Remaks below)

Remarks:

Signed By: _____ _____ _____
Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

Applied Testing & Geosciences

When Quality Counts

Equipment: Landfill Gas Analyzer
Brand: California Analytical Instruments
Model: 600 L
Calibration Procedure:

FIELD CALIBRATION DATASHEET

CAI 600 L

Site: Wilson County Landfill Project # : 10839 Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

CAI 600 L Factory Calibration Information: Unit Serial Number: _____ (CH4)

_____ (CO2 & O2)

Factory Calibration Date (mm/dd/yyyy): _____ Expires: _____

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Gas #1

Provider: Air Gas Co. ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

CH_4 50.0% ☐ or _____ ; CO_2 35.0% ☐ or _____

Provider: Air Gas Co. ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

O_2 21.0% ☐ or _____

Reference Gas	***Value Before Calibration (%)***	***Value After Calibration (%)***	
Methane (CH_4)			% Range: ±2.0% Reading
Carbon Dioxide (CO_2)			% Range: ±2.0% Reading
Oxygen (O_2)			% Range: ±1.0% Reading

These results are within the acceptable ranges. ☑ Yes ☐ No (see Remaks below)

Remarks:

Signed By: _____ _____ _____

Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

Applied Testing & Geosciences

When Quality Counts

Equipment: Portable Gas Analyzer
Brand: LANDTEC
Model: GEM2000
Calibration Procedure: ATG Calibration Instructions

FIELD CALIBRATION DATASHEET

GEM2000

Site: Wilson County Landfill Project # : 10839 Date (mm/dd/yyyy): _____

Technician Name: _____ Time (hh:mm): _____

GEM2000 Factory Calibration Information: Unit Serial Number: _____

Factory Calibration Date (mm/dd/yyyy): _____ Expires: _____ (6 mos. from FCD Max)

Ambient barometric pressure: _____ psia Weather: _____ (windy, sunny, humid, etc…)

Ambient temperature: _____ °F

Calibration Gas #1

Provider: LANDTEC ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

CH_4 50.0% ☐ or _____ ; CO_2 35.0% ☐ or _____ ;N_2 Balance

Calibration Gas #2

Provider: LANDTEC ☐ Other: _____

Lot #: _____ Expiration Date (mm/dd/yyyy): _____

Calibration Gas Concentration:

O_2 4.0% ☑ or _____ ;N_2 Balance

Reference Gas	***Value Before Calibration (%)***	***Value After Calibration (%)***	***Value at End of Day (%)***	
Methane (CH_4)				% Range: ±2.0% Reading
Carbon Dioxide (CO_2)				% Range: ±2.0% Reading
Oxygen (O_2)				% Range: ±1.0% Reading
Ambient Oxygen (O_2)				% Range: 19.9% - 21.9%

These results are within the acceptable ranges. ☐ Yes ☐ No (see Remaks below)

Remarks: _

Signed By: _____ _____ _____

Print Name Signature Date

The client is authorized to reproduce or distribute the report only if reproduced in its entirety.

401 E. Fourth Street, Bldg 12-B, Bridgeport, PA 19405
Phone: 610-313-3227 Fax: 610-313-9667
Email: Info@appliedtesting.com Web: www.appliedtesting.com

APPENDIX D

PERMITS

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
Division of Waste Management
Beverly Eaves Perdue
Governor
Dexter R. Matthews
Director
Dee Freeman
Secretary
Solid Waste Section

April 21, 2009

Mr. Steve Clayton, Director
Wilson County Landfill
P.O. Box 1728
Wilson, North Carolina 27893

Subject: Authorization for the Installation of a Landfill Gas Collection and Control System
Wilson County Landfill, Wilson County,
Permit #98-01, Document ID No. (DIN) 7315

Dear Mr. Clayton:

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- Requirements (such as frequency, checklist, report/recordation) of the routine inspection, repair, and maintenance of the LFGCCs.
- Descriptions of steps necessary to decommission the components of the LFGCCs (wells, piping, holding tanks, flare, blower, instrument panels, etc.) and restoration of the final cover system damaged by removing collection system at the end of their useful life.
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5. The copy of the permit approved by the Wilson County Waste Water Treatment Plant to accept the condensate/leachate.

Please incorporate requested document (items 2 to 5) to a submittal including a written hard copy and an electronic copy (including as-built drawings) of the Permit Application for Post-Closure Land Use. If you should have any questions regarding this matter please contact me at 919-508-8507.

Sincerely,

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section

cc: Kristofer L. Carlson, P.E., CEC
Donna Wilson, DWM
Dennis Shackelford, DWM
Ed Mussler, Permitting Branch Supervisor
Ben Barnes, DWM
Central Files

CERTIFICATE OF PLAN APPROVAL

The posting of this certificate certifies that an erosion and sedimentation control plan has been approved for this project by the North Carolina Department of Environment and Natural Resources in accordance with North Carolina General Statute 113A - 57 (4) and 113A - 54 (d) (4) and North Carolina Administrative Code, Title 15A, Chapter 4B.0007 (c). This certificate must be posted at the primary entrance of the job site before construction begins and until establishment of permanent groundcover as required by North Carolina Administrative Code, Title 15A, Chapter 4B.0027 (b).

Landfill Gas Collection and Control System Installation - Wilson Co.

Project Name and Location

May 3, 2010

Date of Plan Approval

NCDENR

Regional Engineer

NCDENR

North Carolina Department of Environment and Natural Resources

Division of Land Resources

Land Quality Section

James D. Simons, PG, PE
Director and State Geologist

Beverly Eaves Perdue, Governor
Dee Freeman, Secretary

May 03, 2010

LETTER OF APPROVAL WITH MODIFICATIONS

Methane Power
ATTN :- Lewis Gay
122 Harbor Cove Lane
Mooresville, NC 28117

RE: Project Name: Landfill Gas Collection and Control System Installation
Project ID: WILSO-2010-004 Acres Approved: 6.00
County: Wilson, 4537 Landfill Road, Wilson
River Basin: Neuse Stream Classification: Other
Submitted By: Amy Ratliff, Ratliff Engineering & Consulting, PLLC
Date Received by LQS: 5/3/10
Plan Type: New

Dear Sir or Madam:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable with modifications and hereby issue this letter of Approval with Modifications. The Modifications Required for Approval are listed on the attached page. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

Please be advised that Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, you should consider this letter to give the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG01000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Due to the location of this project, it should be noted that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997 The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0233) applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with existing vegetation on the adjacent land or "riparian area". In riparian areas with existing vegetation in the first 30 feet directly adjacent to the stream, the rule prohibits land disturbance or new development within the first 30 feet of land next to the water (the remaining 20 feet of the total buffer must be revegetated upon completion of any proposed land-disturbing activity). In riparian areas with existing vegetation that is less than 30 feet wide, the rule prohibits land disturbance or new development within the area that contains the existing vegetation (but not the entire 50 foot riparian area). For more information about this riparian area rule, please contact the Division of Water Quality's Wetland/401 Unit at 919-733-1786, or a Division of Water Quality representative at this regional office.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,

Karyn Pageau

Karyn Pageau, EIT, CPESC
Assistant Regional Engineer
Land Quality Section

Enclosures: Certificate of Approval
Modifications Required for Approval
NPDES Permit

cc: Amy Ratliff, PE, Ratliff Engineering & Consulting, PLLC, 4224 Lazyriver Drive, Durham, NC 27712
Danny Smith, DWQ – SWP Supervisor, Raleigh Regional Office

MODIFICATIONS REQUIRED FOR APPROVAL

Project Name: Landfill Gas Collection and Control System Installation

Project ID: WILSO-2010-004

County: Wilson

1.Provide statement on the drawings for maintenance of sediment control measures.Provide 1 copy of drawings revised as a result of requested changes to this office by May 25, 2010 or prior to construction beginning, whichever is sooner.

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

B. Keith Overcash, P.E.
Director

Dee Freeman
Secretary

April 29, 2009

Mr. James Voss
President
Wilson County Landfill
P. O. Box 65837
Tuscon, AZ 85728

Subject: Air Permit No. 09991R00
Wilson County Landfill
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

Dear Mr. Voss:

In accordance with your completed application received March 26, 2009, we are forwarding herewith Permit No. 09991R00 to Wilson County Landfill, Wilson, Wilson County, North Carolina for the construction and operation of air emissions sources or air cleaning devices and appurtenances. Please note the records retention requirements are contained in General Condition 2 of the General Conditions and Limitations.

If any parts, requirements, or limitations contained in this permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. Such a request will stay the effectiveness of the entire permit. This hearing request must be in the form of a written petition, conforming to G.S. 150B-23 of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Unless a request for a hearing is made pursuant to G.S. 150B-23, this air permit shall be final and binding.

You may request modification of your air permit through informal means pursuant to G.S. 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that the permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under G.S. 150B-23.

Unless exempted by a condition of this permit or the regulations, construction of new air pollution sources or air cleaning devices, or modifications to the sources or air cleaning devices described in this permit must be covered under a permit issued by the Division of Air Quality prior to construction. Failure to do so is a violation of G.S. 143-215.108 and may subject the Permittee to civil or criminal penalties as described in G.S. 143-215.114A and 143-215.114B.

This permit shall be effective from April 29, 2009 until March 31, 2014, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein.

Changes have been made to the permit stipulations. The Permittee is responsible for carefully reading the entire permit and evaluating the requirements of each permit stipulation. The Permittee shall comply with all terms, conditions, requirements, limitations and restrictions set forth in this permit. Noncompliance with any permit condition is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

Should you have any questions concerning this matter, please contact Lori Ann Phillips at (919) 791-4200.

Sincerely,

Patrick Butler

Patrick Butler, P.E.
Regional Air Quality Supervisor

LAP
Enclosures

c: Central Files
Raleigh Regional Office

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF AIR QUALITY

AIR PERMIT NO. 09991R00

Issue Date: April 29, 2009
Expiration Date: March 31, 2014

Effective Date: April 29, 2009
Replaces Permit: (new)

To construct and operate air emission source(s) and/or air cleaning device(s), and for the discharge of the associated air contaminants into the atmosphere in accordance with the provisions of Article 21B of Chapter 143, General Statutes of North Carolina (NCGS) as amended, and other applicable Laws, Rules and Regulations,

Wilson County Landfill
4537 Landfill Road
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

(the Permittee) is hereby authorized to construct and operate the air emissions sources and/or air cleaning devices and appurtenances described below:

Emission Source ID	Emission Source Description	Control System ID	Control System Description
ES-1	Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute)	N/A	N/A

in accordance with the completed application 9800227.09A received March 26, 2009 including any plans, specifications, previous applications, and other supporting data, all of which are filed with the Department of Environment and Natural Resources, Division of Air Quality (DAQ) and are incorporated as part of this permit.

This permit is subject to the following specified conditions and limitations including any TESTING, REPORTING, OR MONITORING REQUIREMENTS:

A. SPECIFIC CONDITIONS AND LIMITATIONS

1. Any air emission sources or control devices authorized to construct and operate above must be operated and maintained in accordance with the provisions contained herein. The Permittee shall comply with applicable Environmental Management Commission

Regulations, including Title 15A North Carolina Administrative Code (NCAC), Subchapter 2D .0202, 2D .0516, 2D .0521, 2D .0535, 2D .0540, 2D .1806 and 2Q .0711.

2. EMISSION INVENTORY REQUIREMENT - At least 90 days prior to the expiration date of this permit, the Permittee shall submit the air pollution emission inventory report in accordance with 15A NCAC 2D .0202, pursuant to N.C. General Statute 143 215.65. The report shall be submitted to the Regional Supervisor, DAQ. The report shall document air pollutants emitted for the 2012 calendar year. The Regional Office will send information on how to submit the emissions inventory, along with a reminder to renew your permit, about six months prior to your permit expiration. If you do not receive this information, please contact the Regional Supervisor, DAQ.

3. SULFUR DIOXIDE CONTROL REQUIREMENT - As required by 15A NCAC 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources," sulfur dioxide emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1) shall not exceed 2.3 pounds per million Btu heat input.

4. VISIBLE EMISSIONS CONTROL REQUIREMENT - As required by 15A NCAC 2D .0521 "Control of Visible Emissions," visible emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1), manufactured after July 1, 1971, shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. However, sources which must comply with 15A NCAC 2D .0524 "New Source Performance Standards" or .1110 "National Emission Standards for Hazardous Air Pollutants" must comply with applicable visible emissions requirements contained therein.

5. NOTIFICATION REQUIREMENT - As required by 15A NCAC 2D .0535, the Permittee of a source of excess emissions that last for more than four hours and that results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, shall:

   a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:

      i. the name and location of the facility,

      ii. the nature and cause of the malfunction or breakdown,

      iii. the time when the malfunction or breakdown is first observed,

      iv. the expected duration, and

      v. an estimated rate of emissions.

b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

This reporting requirement does not allow the operation of the facility in excess of Environmental Management Commission Regulations.

6. FUGITIVE DUST CONTROL REQUIREMENT - As required by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 2D .0540(f).

   "Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

7. CONTROL AND PROHIBITION OF ODOROUS EMISSIONS - As required by 15A NCAC 2D .1806 "Control and Prohibition of Odorous Emissions" the Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

8. TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT - Pursuant to 15A NCAC 2Q .0711 "Emission Rates Requiring a Permit," for each of the below listed toxic air pollutants (TAPs), the Permittee has made a demonstration that facility-wide actual emissions do not exceed the Toxic Permit Emission Rates (TPERs) listed in 15A NCAC 2Q .0711. The facility shall be operated and maintained in such a manner that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed TPERs listed in 15A NCAC 2Q .0711.

   a. A permit to emit any of the below listed TAPs shall be required for this facility if actual emissions from all sources will become greater than the corresponding TPERs.

   b. PRIOR to exceeding any of these listed TPERs, the Permittee shall be responsible for obtaining a permit to emit TAPs and for demonstrating compliance with the requirements of 15A NCAC 2D .1100 "Control of Toxic Air Pollutants".

   c. In accordance with the approved application, the Permittee shall maintain records of operational information demonstrating that the TAP emissions do not exceed the TPERs as listed below:

Pollutant	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
Acrylonitrile (107-13-1)	10			
Benzene (71-43-2)	8.1			
Carbon disulfide (75-15-0)		3.9		
Carbon tetrachloride (56-23-5)	460			
Chlorobenzene (108-90-7)		46		
Chloroform (67-66-3)	290			
Dichlorofluoromethane (75-43-4)		10		
Ethyl mercaptan (75-08-1)			0.025	
Ethylene dibromide (dibromoethane) (106-93-4)	27			
Hexane, n- (110-54-3)		23		
Hydrogen sulfide (7783-06-4)		1.7		
MEK (methyl ethyl ketone, 2-butanone) (78-93-3)		78		22.4
MIBK (methyl isobutyl ketone) (108-10-1)		52		7.6
Methyl mercaptan (74-93-1)			0.013	
Methylene chloride (75-09-2)	1600		0.39	
Perchloroethylene (tetrachloroethylene) (127-18-4)	13000			
Toluene (108-88-3)		98		14.4
Vinyl chloride (75-01-4)	26			
Xylene (mixed isomers) (1330-20-7)		57		16.4

B. GENERAL CONDITIONS AND LIMITATIONS

1. TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to the:

   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Raleigh Regional Office
   3800 Barrett Drive
   Raleigh, NC 27609
   (919) 791-4200

2. RECORDS RETENTION REQUIREMENT - Any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. PERMIT RENEWAL REQUIREMENT - The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 2Q .0304(d) and (f). Pursuant to 15A NCAC 2Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

4. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 2Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

5. EQUIPMENT RELOCATION - A new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

6. This permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. The facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. REPORTING REQUIREMENT - Any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

c. changes in the quantity or quality of materials processed.

If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

8. This permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

9. This issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

10. This permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

11. Reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

12. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

13. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

14. The Permittee must comply with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

15. PERMIT RETENTION REQUIREMENT - The Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

16. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 40 CFR Part 68 "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan in accordance with 40 CFR Part 68.

17. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

18. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 2D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval.

Permit issued this the 29th of April, 2009.
NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Patrick Butler, P.E.
Regional Air Quality Supervisor
By Authority of the Environmental Management Commission

Air Permit No. 09991R00

WILSON
NORTH CAROLINA

May 14, 2010

CERTIFIED MAIL
RETURN RECEIPT

Kristofer L. Carlson
President
Carlson Environmental Consultants, PC
305 South Main Street
Monroe, NC 28112

SUBJECT: Landfill Gas Condensate

Dear Mr. Carlson:

The City of Wilson has reviewed your request on behalf of Methane Power for Authorization to Discharge the Landfill Gas Condensate as described in a letter dated April 14, 2010. Follow up discussions describing the process of collecting the condensate were held with Mr. James Voss, President and CEO of Methane Power, LLC.

Per our discussion and based on information provided, the City's position is to grant the request; however, once project is complete and condensate has been collected in the sump, the City will require a sample to be collected and analyzed to verify the absence of toxic pollutants. If condensate proves to be acceptable, Methane Power will use a local septic hauler to bring condensate to the Water Reclamation Facility. Methane Power will be required to notify the City of the selected hauler.

Methane Power must alert the City of Wilson once the project is complete. The review (and approval) of the discharge shall in no way relieve Methane Power from the responsibility to produce an effluent acceptable to the city's wastewater treatment system.

If you have any questions, or I may be of further assistance, please contact me at (252) 399-2499.

Sincerely,

JoEllen Gay

JoEllen Gay
Pretreatment Coordinator

cc: Barry Parks, Assistant Director of Public Services/ Water Resources
Russell P. Brice, Water Reclamation Manager
James Voss, President and CEO Methane Power, Inc.

CEC

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NC 28112
704-283-9765
704-283-9755 FAX

March 31, 2010

Mr. Barry Parks
Assistant Director of Water Resources
City of Wilson Water Treatment
112 Goldsboro Street - PO Box 10
Wilson, North Carolina 27894-0010

Subject: Landfill Gas Condensate

Dear Mr. Parks,

Per our telephone conversation today, this letter is intended to confirm our understanding of the process in which landfill gas condensate may be processed at City of Wilson Water Treatment Plant (WTP). As we discussed, MP Wilson, LLC is in partnership with Wilson County to install a landfill gas collection and control system at the Wilson County Landfill for renewable energy purposes. This project will generate liquids from the condensation of the landfill gases. In our discussion, you mentioned that City of Wilson Water Treatment does not require specific permits for liquid disposal and typically accepts landfill leachate. We also understand that the WTP has the capacity to treat our expected liquid volume of 1,000 to 5,000 gallons per month.

Landfill gas condensate is typically non-hazardous and similar to landfill leachate. CEC has sampled the gasses at the Wilson County Landfill and laboratory analyses indicate the compounds expected to be present in the condensate. Attached can be found a list of those compounds. Please let us know if any of these compounds will pose a problem for the WTP and if there are any specific thresholds.

The North Carolina Department of Environment and Natural Resources (NCDENR) has requested that MP Wilson, LLC and Wilson County obtain written approval from the City of Wilson Water Treatment Plant confirming acceptance of the condensate. Please let us know if based on this information, we can obtain approval for the LFG condensate disposal or if you require additional information.

Please feel free to contact me at (704) 283-9765.

Very Truly Yours,

Stevia Morton
Environmental Scientist
CEC

Kristofer L. Carlson, PE
President
CEC

Attachments

cc: Richard King, Applied Testing & Geosciences, LLC
Jim Voss, MP Wilson LLC

Section 12: Air Quality Permit

This section presents a copy of the updated air quality permit approved by the Division of Air Quality. The permit is attached to this section.

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

B. Keith Overcash, P.E.
Director

Dee Freeman
Secretary

April 29, 2009

Mr. James Voss
President
Wilson County Landfill
P. O. Box 65837
Tuscon, AZ 85728

Subject: Air Permit No. 09991R00
Wilson County Landfill
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

Dear Mr. Voss:

In accordance with your completed application received March 26, 2009, we are forwarding herewith Permit No. 09991R00 to Wilson County Landfill, Wilson, Wilson County, North Carolina for the construction and operation of air emissions sources or air cleaning devices and appurtenances. Please note the records retention requirements are contained in General Condition 2 of the General Conditions and Limitations.

If any parts, requirements, or limitations contained in this permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. Such a request will stay the effectiveness of the entire permit. This hearing request must be in the form of a written petition, conforming to G.S. 150B-23 of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Unless a request for a hearing is made pursuant to G.S. 150B-23, this air permit shall be final and binding.

You may request modification of your air permit through informal means pursuant to G.S. 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that the permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under G.S. 150B-23.

Unless exempted by a condition of this permit or the regulations, construction of new air pollution sources or air cleaning devices, or modifications to the sources or air cleaning devices described in this permit must be covered under a permit issued by the Division of Air Quality prior to construction. Failure to do so is a violation of G.S. 143-215.108 and may subject the Permittee to civil or criminal penalties as described in G.S. 143-215.114A and 143-215.114B.

This permit shall be effective from April 29, 2009 until March 31, 2014, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein.

Changes have been made to the permit stipulations. The Permittee is responsible for carefully reading the entire permit and evaluating the requirements of each permit stipulation. The Permittee shall comply with all terms, conditions, requirements, limitations and restrictions set forth in this permit. Noncompliance with any permit condition is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

Should you have any questions concerning this matter, please contact Lori Ann Phillips at (919) 791-4200.

Sincerely,

Patrick Butler

Patrick Butler, P.E.
Regional Air Quality Supervisor

LAP
Enclosures

c: Central Files
Raleigh Regional Office

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF AIR QUALITY

AIR PERMIT NO. 09991R00

Issue Date: April 29, 2009
Expiration Date: March 31, 2014

Effective Date: April 29, 2009
Replaces Permit: (new)

To construct and operate air emission source(s) and/or air cleaning device(s), and for the discharge of the associated air contaminants into the atmosphere in accordance with the provisions of Article 21B of Chapter 143, General Statutes of North Carolina (NCGS) as amended, and other applicable Laws, Rules and Regulations,

Wilson County Landfill
4537 Landfill Road
Wilson, Wilson County, North Carolina
Fee Class: Small
Facility ID# 9800227

(the Permittee) is hereby authorized to construct and operate the air emissions sources and/or air cleaning devices and appurtenances described below:

Emission Source ID	Emission Source Description	Control System ID	Control System Description
ES-1	Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute)	N/A	N/A

in accordance with the completed application 9800227.09A received March 26, 2009 including any plans, specifications, previous applications, and other supporting data, all of which are filed with the Department of Environment and Natural Resources, Division of Air Quality (DAQ) and are incorporated as part of this permit.

This permit is subject to the following specified conditions and limitations including any TESTING, REPORTING, OR MONITORING REQUIREMENTS:

A. SPECIFIC CONDITIONS AND LIMITATIONS

1. Any air emission sources or control devices authorized to construct and operate above must be operated and maintained in accordance with the provisions contained herein. The Permittee shall comply with applicable Environmental Management Commission

Regulations, including Title 15A North Carolina Administrative Code (NCAC), Subchapter 2D .0202, 2D .0516, 2D .0521, 2D .0535, 2D .0540, 2D .1806 and 2Q .0711.

2. EMISSION INVENTORY REQUIREMENT - At least 90 days prior to the expiration date of this permit, the Permittee shall submit the air pollution emission inventory report in accordance with 15A NCAC 2D .0202, pursuant to N.C. General Statute 143 215.65. The report shall be submitted to the Regional Supervisor, DAQ. The report shall document air pollutants emitted for the 2012 calendar year. The Regional Office will send information on how to submit the emissions inventory, along with a reminder to renew your permit, about six months prior to your permit expiration. If you do not receive this information, please contact the Regional Supervisor, DAQ.

3. SULFUR DIOXIDE CONTROL REQUIREMENT - As required by 15A NCAC 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources," sulfur dioxide emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1) shall not exceed 2.3 pounds per million Btu heat input.

4. VISIBLE EMISSIONS CONTROL REQUIREMENT - As required by 15A NCAC 2D .0521 "Control of Visible Emissions," visible emissions from Landfill gas/propane-fired open flare (30 million Btu per hour maximum heat input and 1,000 standard cubic feet per minute) (ID No. ES-1), manufactured after July 1, 1971, shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. However, sources which must comply with 15A NCAC 2D .0524 "New Source Performance Standards" or .1110 "National Emission Standards for Hazardous Air Pollutants" must comply with applicable visible emissions requirements contained therein.

5. NOTIFICATION REQUIREMENT - As required by 15A NCAC 2D .0535, the Permittee of a source of excess emissions that last for more than four hours and that results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, shall:

   a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:

      i. the name and location of the facility,

      ii. the nature and cause of the malfunction or breakdown,

      iii. the time when the malfunction or breakdown is first observed,

      iv. the expected duration, and

      v. an estimated rate of emissions.

b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

This reporting requirement does not allow the operation of the facility in excess of Environmental Management Commission Regulations.

6. FUGITIVE DUST CONTROL REQUIREMENT - As required by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 2D .0540(f).

   "Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

7. CONTROL AND PROHIBITION OF ODOROUS EMISSIONS - As required by 15A NCAC 2D .1806 "Control and Prohibition of Odorous Emissions" the Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

8. TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT - Pursuant to 15A NCAC 2Q .0711 "Emission Rates Requiring a Permit," for each of the below listed toxic air pollutants (TAPs), the Permittee has made a demonstration that facility-wide actual emissions do not exceed the Toxic Permit Emission Rates (TPERs) listed in 15A NCAC 2Q .0711. The facility shall be operated and maintained in such a manner that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed TPERs listed in 15A NCAC 2Q .0711.

   a. A permit to emit any of the below listed TAPs shall be required for this facility if actual emissions from all sources will become greater than the corresponding TPERs.

   b. PRIOR to exceeding any of these listed TPERs, the Permittee shall be responsible for obtaining a permit to emit TAPs and for demonstrating compliance with the requirements of 15A NCAC 2D .1100 "Control of Toxic Air Pollutants".

   c. In accordance with the approved application, the Permittee shall maintain records of operational information demonstrating that the TAP emissions do not exceed the TPERs as listed below:

Pollutant	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
Acrylonitrile (107-13-1)	10			
Benzene (71-43-2)	8.1			
Carbon disulfide (75-15-0)		3.9		
Carbon tetrachloride (56-23-5)	460			
Chlorobenzene (108-90-7)		46		
Chloroform (67-66-3)	290			
Dichlorofluoromethane (75-43-4)		10		
Ethyl mercaptan (75-08-1)			0.025	
Ethylene dibromide (dibromoethane) (106-93-4)	27			
Hexane, n- (110-54-3)		23		
Hydrogen sulfide (7783-06-4)		1.7		
MEK (methyl ethyl ketone, 2-butanone) (78-93-3)		78		22.4
MIBK (methyl isobutyl ketone) (108-10-1)		52		7.6
Methyl mercaptan (74-93-1)			0.013	
Methylene chloride (75-09-2)	1600		0.39	
Perchloroethylene (tetrachloroethylene) (127-18-4)	13000			
Toluene (108-88-3)		98		14.4
Vinyl chloride (75-01-4)	26			
Xylene (mixed isomers) (1330-20-7)		57		16.4

B. GENERAL CONDITIONS AND LIMITATIONS

1. TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to the:

   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Raleigh Regional Office
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   Raleigh, NC 27609
   (919) 791-4200

2. RECORDS RETENTION REQUIREMENT - Any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. PERMIT RENEWAL REQUIREMENT - The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 2Q .0304(d) and (f). Pursuant to 15A NCAC 2Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

4. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 2Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

5. EQUIPMENT RELOCATION - A new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

6. This permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. The facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. REPORTING REQUIREMENT - Any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

c. changes in the quantity or quality of materials processed.

If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

8. This permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

9. This issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

10. This permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

11. Reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

12. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

13. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

14. The Permittee must comply with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

15. PERMIT RETENTION REQUIREMENT - The Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

16. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 40 CFR Part 68 "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan in accordance with 40 CFR Part 68.

17. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

18. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 2D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval.

Permit issued this the 29th of April, 2009.
NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Patrick Butler, P.E.
Regional Air Quality Supervisor
By Authority of the Environmental Management Commission

Air Permit No. 09991R00

Section 13: Waste Water Permit

This section presents a copy of the permit approved by the Wilson County Waste Water Treatment Plan to accept the condensate/leachate generated by the operation of the LFGCCS. The permit is attached to this section.

It should be noted that the attached documentation is a tentative approval. The final letter of acceptance from the WWTP will be forwarded to NCDENR once the required condensate sample has been analyzed and approved after system Start-Up.

A sample of condensate will be obtained from the Condensate Sumps as soon as possible after system startup and submitted for analysis. The results of the analyses will be submitted to the City of Wilson POTW within 7 days of sampling and submitted to the Department within 7 day after the approval letter is issued by City of Wilson. A copy of the approve letter and the sample results will be placed in the Operating Record at the landfill facility

WILSON
NORTH CAROLINA

May 14, 2010

CERTIFIED MAIL
RETURN RECEIPT

Kristofer L. Carlson
President
Carlson Environmental Consultants, PC
305 South Main Street
Monroe, NC 28112

SUBJECT: Landfill Gas Condensate

Dear Mr. Carlson:

The City of Wilson has reviewed your request on behalf of Methane Power for Authorization to Discharge the Landfill Gas Condensate as described in a letter dated April 14, 2010. Follow up discussions describing the process of collecting the condensate were held with Mr. James Voss, President and CEO of Methane Power, LLC.

Per our discussion and based on information provided, the City's position is to grant the request; however, once project is complete and condensate has been collected in the sump, the City will require a sample to be collected and analyzed to verify the absence of toxic pollutants. If condensate proves to be acceptable, Methane Power will use a local septic hauler to bring condensate to the Water Reclamation Facility. Methane Power will be required to notify the City of the selected hauler.

Methane Power must alert the City of Wilson once the project is complete. The review (and approval) of the discharge shall in no way relieve Methane Power from the responsibility to produce an effluent acceptable to the city's wastewater treatment system.

If you have any questions, or I may be of further assistance, please contact me at (252) 399-2499.

Sincerely,

JoEllen Gay

JoEllen Gay
Pretreatment Coordinator

cc: Barry Parks, Assistant Director of Public Services/ Water Resources
Russell P. Brice, Water Reclamation Manager
James Voss, President and CEO Methane Power, Inc.

CEC

CARLSON ENVIRONMENTAL CONSULTANTS, PC

305 SOUTH MAIN STREET
MONROE, NC 28112
704-283-9765
704-283-9755 FAX

March 31, 2010

Mr. Barry Parks
Assistant Director of Water Resources
City of Wilson Water Treatment
112 Goldsboro Street - PO Box 10
Wilson, North Carolina 27894-0010

Subject: Landfill Gas Condensate

Dear Mr. Parks,

Per our telephone conversation today, this letter is intended to confirm our understanding of the process in which landfill gas condensate may be processed at City of Wilson Water Treatment Plant (WTP). As we discussed, MP Wilson, LLC is in partnership with Wilson County to install a landfill gas collection and control system at the Wilson County Landfill for renewable energy purposes. This project will generate liquids from the condensation of the landfill gases. In our discussion, you mentioned that City of Wilson Water Treatment does not require specific permits for liquid disposal and typically accepts landfill leachate. We also understand that the WTP has the capacity to treat our expected liquid volume of 1,000 to 5,000 gallons per month.

Landfill gas condensate is typically non-hazardous and similar to landfill leachate. CEC has sampled the gasses at the Wilson County Landfill and laboratory analyses indicate the compounds expected to be present in the condensate. Attached can be found a list of those compounds. Please let us know if any of these compounds will pose a problem for the WTP and if there are any specific thresholds.

The North Carolina Department of Environment and Natural Resources (NCDENR) has requested that MP Wilson, LLC and Wilson County obtain written approval from the City of Wilson Water Treatment Plant confirming acceptance of the condensate. Please let us know if based on this information, we can obtain approval for the LFG condensate disposal or if you require additional information.

Please feel free to contact me at (704) 283-9765.

Very Truly Yours,

Stevia Morton
Environmental Scientist
CEC

Kristofer L. Carlson, PE
President
CEC

Attachments

cc: Richard King, Applied Testing & Geosciences, LLC
Jim Voss, MP Wilson LLC