

Permit No.	Date	Document ID No.
98-01	July 17, 2012	16903

Permit No.	Date	Document ID No.
98-01	October 23, 2012	17504

Received via a mail  
 Date: July 16, 2012  
 Solid Waste Section  
 Raleigh Central Office

July 16, 2012

**DOCUMENT APPROVED  
 FOR OPERATING DEWATER MAINTENANCE PROJECT**  
 Division of Waste Management  
 Solid Waste Section  
 Received Dated: **July 2012 and revised through October 2012**  
 Date: **October 23, 2012** By: **Ming-Tai Chao**

Mr. Ming-Tai Chao  
 Environmental Engineer II  
 NC DENR – Solid Waste Section  
 1646 Mail Service Center Road  
 Raleigh, North Carolina 27699-1646

**Re: Construction Record – 2011/2012 Dewatering Maintenance Project  
 Wilson County Municipal Solid Waste Landfill (MSWLF)  
 NC Solid Permit No. 98-01**

Dear Ming:

On Behalf of MP Wilson, LLC, Smith Gardner, Inc. (S+G) would like to submit documentation of the construction activities performed in the dewatering maintenance activities performed to optimize the existing gas collection system as originally proposed by Ms. Amy Ratliff, P.E. of Methane Power in September 2011<sup>1</sup> and subsequently approved by the NCDENR<sup>2</sup>. The project consisted of the following activities:

- Installing two (2) pneumatic pumps in existing gas wells GW-8 and GW-9;
- Installing two (2) pneumatic pumps in existing condensate sumps CS-1 and CS-2;
- Installing a two (2) inch dual-contained condensate force-main, a one (1) inch compressed air supply line and related appurtenances;
- Connecting the pumps, sumps, and piping to a new five (5) horsepower, 14 standard cubic feet per minute (scfm) compressor to remove excessive liquid inside the wells; and
- Erecting an approximate 9,500 gallon above ground storage tank (AST) with built-in secondary containment at the flare station to store the extracted condensate.

In accordance with the plan, S+G visited the site on March 21, 2012 and verified the following:

**Air Supply and Condensate Forcemain Piping**

All of the trenching and piping installation was performed by Chandler Construction in late 2011 and was completed in May 2012 which included some additional recommendations by S+G. The air supply and force-main were installed both in areas outside the waste limits and inside. The piping located inside the waste limit was placed within the top 18 inches of

<sup>1</sup> CH<sup>4</sup>Power letter from Amy Ratliff. "Dewatering Maintenance Operation Plan." Dated September 6, 2011.

<sup>2</sup> NCDENR – DWM letter from Ming-Tai Chao. "Authorization for Installing and Operating a Dewatering Maintenance Project." Dated September 9, 2011.

vegetative cover soils, above 24 inches of clay. During the site visit, S+G walked the alignment of the new piping, witnessing current progress of revegetation which appeared almost fully repaired. Shovel test pitting was performed in selected locations to verify location and depth. In all locations, the piping was placed no deeper than 12 inches and appeared to remain above the clay layer. Additionally, S+G verified pressure testing records provided by Methane Power in accordance with ASTM F-1417. A copy of the pressure test results is included as **Attachment A**.

### **Condensate Sumps**

Existing condensate sumps CS-1 and CS-2 were modified to include new Viridian VP-4 pneumatic pumps. The 12 inch flange on CS-1 was modified to receive the new pump by extrusion welding a 6 inch DR 17 piece of pipe into the 12 inch adaptor. Modification of CS-2 included removal of the existing 24 inch manway cover, fluid level indicator, existing 12 inch flange, and vacuum truck connection and piping. A new 24 inch blind HDPE flange was installed.

Following the completion of the system, Bartlett Engineering and Surveying established new control points and then the site as-built survey was calibrated by Bob Gettys using Trimble GPS to mark all locations in a drawing prepared by Methane Power. The as-built survey shows all installations, including air lines, condensate lines, and sump modifications as shown in the updated record drawing (provided as **Attachment B**).

### **Temporary AST for Condensate Storage**

A nominal 9,500 gallon AST was erected at the existing flare station on a concrete foundation prepared by Chandler Construction. The tank was provided by Protectoplas Company of Streetsboro, Ohio and was constructed upon a rebar-reinforced concrete pad. The tank is equipped with a secondary containment system and will be used as a temporary holding tank for condensate removed from gas wells prior to pump and haul to the City of Wilson. Condensate from the tank is transported to the City of Wilson Water Reclamation Facility according to the Special Use Sewer Discharge permit #2011-003 [Doc ID 13929].

S+G was not present during the construction of the tank. In the original plan by Ms. Ratliff, specific foundation plans were not included. Therefore, S+G requested a post construction analysis of the tank foundation by Ross Linden Engineers to determine structural stability of the foundation. Ross Linden Engineers determined that the existing tank foundation was adequate to support the expected loads. A copy of this analysis, as well as the manufacturer's specifications for the tank, is included as **Attachment C**.

Following the site visit, S+G recommended that all exposed piping be insulated as all piping was Schedule 80 PVC and susceptible to freezing during the winter. Methane Power agreed with the request. Crowder Construction completed this effort and pictures are included in **Attachment D**.

In addition, a high level shut-off relay was installed on the AST. The modified schematic and information about the controls for the relay are included as **Attachment E**.

### Site Restoration

The final cover system of the Wilson County MSWLF was restored according to the approved Closure Plan. S+G personnel verified through site inspection that the trenching remained in the vegetative soil layer.

### Summary

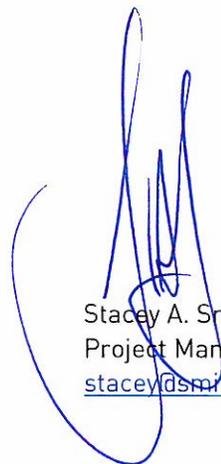
The Construction methods, locations, and details of the dewatering maintenance project components are in general agreement with the approved plan. **Attachment D** includes record photographs of the project.

Should you have any questions or require clarification, please contact us at (919) 828-0577 or by email below.

Cordially,

Smith + Gardner, Inc.

  
Lori Ann Phillips, P.E.  
Project Engineer, ext. 140  
[lori@smithgardnerinc.com](mailto:lori@smithgardnerinc.com)

  
Stacey A. Smith, P.E.  
Project Manager, x 127  
[stacey@smithgardnerinc.com](mailto:stacey@smithgardnerinc.com)



LAP/SAS

Att.

Cc: Mr. Ryan Hennessey, Methane Power  
Mr. Simon Haworth, Methane Power  
Andy Davis, Wilson County Solid Waste Department  
Gary Ahlberg, P.E., Blackrock Engineers  
File

## Chao, Ming-tai

	Permit No.	Date	Document ID No.
<b>From:</b> Chao, Ming-tai	98-01	September 04, 2012	17159
<b>Sent:</b> Wednesday, July 18, 2012 10:02 AM	<i>Issued via a mail</i>		
<b>To:</b> 'Lori Phillips'	<i>Date: July 18, 2012</i>		
<b>Cc:</b> Mussler, Ed; 'Stacey Smith'; 'Andy Davis'	<i>Solid Waste Section</i>		
<b>Subject:</b> comments on the Wilson County Record Letter	<i>Raleigh Central Office</i>		

Dear Ms. Phillips:

I have conducted a review of the "Construction Record - 2011-2012 Dewatering Maintenance Project" (Doc ID 16903) at the closed Wilson County MSWLF (permit # 98-01) and have some concerns/comments stated below.

1. The Construction Record (on page 1) didn't describe the status of the two pumps which originally planned to be installed into wells GW-31 & GW-32 according to the approved "Dewatering Maintenance Operation Plan" dated September 2011 (Doc ID 15082). The As-Built Survey/Record Drawing (Sheet 3 of 6) in Attachment B indicated that pumps have been installed into the wells GW-31 & GW-32. Please describe the status of the two pumps associated with wells GW-31 & GW-32; or if there is any deviation from the original plan, please provide the causes resulted in this deviation. If the proposal of installing two pumps had been removed from the original plan during the course of the project, please revise the drawing (Sheet 3 of 6) accordingly.
2. The Construction Record – Air Supply and Condensate Forcemain Ping (on page 2) reported that "S+G verified pressure testing records provided by Methane Power in accordance with ASTM F-1417." The Attachment A shown the hydrostatic tests were conducted according to ASTM F 2164. Please explain the discrepancy.
3. The Construction Record – Temporary Above-Ground Storage Tank (AST) for Condensate Storage (on page 2). Please address the leachate/condensate management stated below:
  - i. The tentative schedule for condensate/leachate removal [Rule .1680(b)(3)].
  - ii. The descriptions of measurement and record keeping scheme of the generated and removed condensate/leachate. A typical form for recording the generated and removed quantities of liquid waste is needed [Rule .1680(b)(2)].
  - iii. The tank foundation analysis in Attachment C concluded that the constructed anchor system and foundation system can adequately provide a resisting moment of the empty AST against the maximum overturning moment resulting from wind force calculated from wind speed up to 110 mph. Will this statement be an implication that the County will be empty the tank and shut down the LFGCCs during the course of hurricane or natural disaster preparedness? If so, please add the statement as a portion of the contingency plan.
  - iv. Please describe the routine inspection of the AST [Rule.1680(c)(5)].
  - v. Please describe the closure of the AST [Rule .1680(f)].
4. The As-Built Survey/Record Drawing (Sheet 3 of 6) in Attachment B of the Construction Record must be signed, sealed and dated by a Professional Engineer registered in the State of North Carolina or a NC licensed surveyor.

5. According to the photo (on Page 2 in Attachment D) the identification numbers of the well GW-9 has been changed into EW-9. Has the change been done at all gas wells or just at the selected gas wells which involve to the Dewatering Project? Please clarify. To avoid any confusion in the future, please describe the variation of well identifications and revise the as-built drawing accordingly.

Please contact me if you have any questions of these comments/concerns.

Ming-Tai Chao, P.E.  
Environmental Engineer  
Permitting Branch, Solid Waste Section  
Division of Waste Management  
**(Mailing Address)**

**1646 Mail Service Center  
Raleigh, NC 27699-1646**

(Street Address)  
Green Square, 217 West Jones Street  
Raleigh, NC 27603  
**Tel. 919-707-8251**  
[ming.chao@ncdenr.gov](mailto: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.*

---

**From:** Lori Phillips [<mailto:lori@rsgengineers.com>]  
**Sent:** Monday, July 16, 2012 4:47 PM  
**To:** King, Henry; 'Pedreira, Rebecca'  
**Cc:** 'Haworth, Simon'; 'Ryan Hennessy'; [adavis@wilson-co.com](mailto:adavis@wilson-co.com); 'Stacey Smith'; [gary@blackrocke2.com](mailto:gary@blackrocke2.com); Chao, Ming-tai  
**Subject:** Wilson County Record Letter

Please find attached an electronic copy of the signed Wilson County Construction Record letter for the dewatering maintenance project. I am taking the signed copy over to the NCDENR office now.

Thanks,

**Lori Ann Phillips, P.E.**  
Project Engineer

**SMITH + GARDNER**

14 N. Boylan Avenue  
Raleigh, NC 27603

**P (919) 828.0577 x140**  
**F (919) 828.3899**  
**C (570) 760.3639**

Permit No.	Date	Document ID No.
<b>98-01</b>	<b>September 04, 2012</b>	<b>17160</b>

August 31, 2012

Mr. Ming-Tai Chao, P.E.  
1646 Mail Service Center  
Raleigh, NC 27699-1646

Received via an email  
**Date: August 31, 2012**  
**Solid Waste Section**  
**Raleigh Central Office**

RE: **Response to Comments**  
**2011-2012 Dewatering Maintenance Project**  
**Wilson County MSWLF**

Dear Ming:

This letter is in response to your comments, submitted via email on July 18, 2012 (**attached**), concerning the Wilson County MSWLF Construction Record Letter for the 2011-2012 Dewatering Maintenance Project. The original letter and attachments were submitted to your office on July 16, 2012. Please find each of your comments, along with the MP Wilson, LLC's response in **bold**, addressed below.

1. The Construction Record (on page 1) didn't describe the status of the two pumps which originally planned to be installed into wells GW-31 & GW-32 according to the approved "Dewatering Maintenance Operation Plan" dated September 2011 (Doc ID 15082). The As-Built Survey/Record Drawing (Sheet 3 of 6) in Attachment B indicated that pumps have been installed into the wells GW-31 & GW-32. Please describe the status of the two pumps associated with wells GW-31 & GW-32; or if there is any deviation from the original plan, please provide the causes resulted in this deviation. If the proposal of installing two pumps had been removed from the original plan during the course of the project, please revise the drawing (Sheet 3 of 6) accordingly.

**Pumps were not installed in wells GW-31 and GW-32. They were removed from the original plan once it became evident that the pumps installed in GW-8 and GW-9 were causing moderate drawdown of the water levels in GW-31 and GW-32. A revised Record Drawing attached to this letter reflects this change.**

2. The Construction Record – Air Supply and Condensate Forcemain Ping (on page 2) reported that "S+G verified pressure testing records provided by Methane Power in accordance with ASTM F-1417." The Attachment A shown the hydrostatic tests were conducted according to ASTM F 2164. Please explain the discrepancy.

**ASTM F 2164 was utilized for pressure testing and the reference to ASTM F 1417 in the original letter is incorrect. We apologize for any confusion.**

3. The Construction Record – Temporary Above-Ground Storage Tank (AST) for Condensate Storage (on page 2). Please address the leachate/condensate management stated below:
  - i. The tentative schedule for condensate/leachate removal [Rule .1680(b)(3)].

**The tank's maximum limit is 7,000 gallons; it is emptied every other week to ensure that this limit is not exceeded.**

- ii. The descriptions of measurement and record keeping scheme of the generated and removed condensate/leachate. A typical form for recording the generated and removed quantities of liquid waste is needed [Rule .1680(b)(2)].

Measurements are recorded on an "On-Site Wastewater Discharge Manifest". This manifest is completed by the designated discharge transporter, SWS Environmental Services, every time the AST is emptied. Information recorded includes: transporter company, tanker license number, authorization to discharge expiration date, total number of gallons discharged, and rated tank capacity. Signatures from both the transporter and City of Wilson operator are required.

- iii. The tank foundation analysis in Attachment C concluded that the constructed anchor system and foundation system can adequately provide a resisting moment of the empty AST against the maximum overturning moment resulting from wind force calculated from wind speed up to 110 mph. Will this statement be an implication that the County will be empty the tank and shut down the LFGCCs during the course of hurricane or natural disaster preparedness? If so, please add the statement as a portion of the contingency plan.

The statement is not intended to imply that the County will empty the AST or shut down the LFGCCs during the course of a hurricane or natural disaster. MP Wilson, LLC will review the current arrangement with SWS Environmental and investigate a potential course of action to be included in the contingency plan.

- iv. Please describe the routine inspection of the AST [Rule.1680(c)(5)].

A checklist has been developed and is used for the weekly inspection of the AST. The tank is inspected weekly for evidence of leaks, corrosion, and maintenance deficiencies. Inspection reports are kept onsite and are available upon request.

- v. Please describe the closure of the AST [Rule .1680(f)].

A Condensate Tank Closure Plan has been developed for this AST and is included as an attachment to this letter.

4. The As-Built Survey/Record Drawing (Sheet 3 of 6) in Attachment B of the Construction Record must be signed, sealed and dated by a Professional Engineer registered in the State of North Carolina or a NC licensed surveyor.

Please find attached the revised Record Drawing that has been signed, sealed, and dated by a NC licensed surveyor.

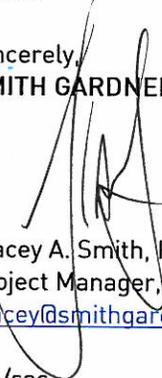
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Mr. Ming-Tai Chao, P.E.  
August 31, 2012  
Page 3

Temporary well identification numbers were used during construction and were not removed from the wells prior to taking the project completion photographs. The facility has relabeled each well so that they correspond to the identification numbers shown on the Record Drawing.

Please feel free to contact me with any additional questions or comments at 919-828-0577 or by email below.

Sincerely,  
SMITH GARDNER, INC.

  
Stacey A. Smith, P.E.  
Project Manager, ext. 127  
[stacey@smithgardnerinc.com](mailto:stacey@smithgardnerinc.com)



lap/sas  
att.

Cc: Mr. Ryan Hennessey, Methane Power  
Ms. Rebecca Pedeira, Methane Power  
Mr. Bob Gettys, Methane Power  
Mr. Simon Haworth, Methane Power  
Andy DAVIS, Wilson County Solid Waste Department  
Gary Ahlberg, P.E., Blackrock Engineers  
File

## Stacey Smith

---

**From:** Chao, Ming-tai <ming.chao@ncdenr.gov>  
**Sent:** Wednesday, July 18, 2012 10:02 AM  
**To:** Lori Phillips  
**Cc:** Mussler, Ed; Stacey Smith; Andy Davis  
**Subject:** comments on the Wilson County Record Letter

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Environmental Engineer  
Permitting Branch, Solid Waste Section  
Division of Waste Management  
**(Mailing Address)**

**1646 Mail Service Center  
Raleigh, NC 27699-1646**

(Street Address)  
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Raleigh, NC 27603  
**Tel. 919-707-8251**  
[ming.chao@ncdenr.gov](mailto:ming.chao@ncdenr.gov)  
<http://portal.ncdenr.org/web/wm/sw>

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**To:** King, Henry; 'Pedreira, Rebecca'  
**Cc:** 'Haworth, Simon'; 'Ryan Hennessy'; [adavis@wilson-co.com](mailto:adavis@wilson-co.com); 'Stacey Smith'; [gary@blackrocke2.com](mailto:gary@blackrocke2.com); Chao, Ming-tai  
**Subject:** Wilson County Record Letter

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Thanks,

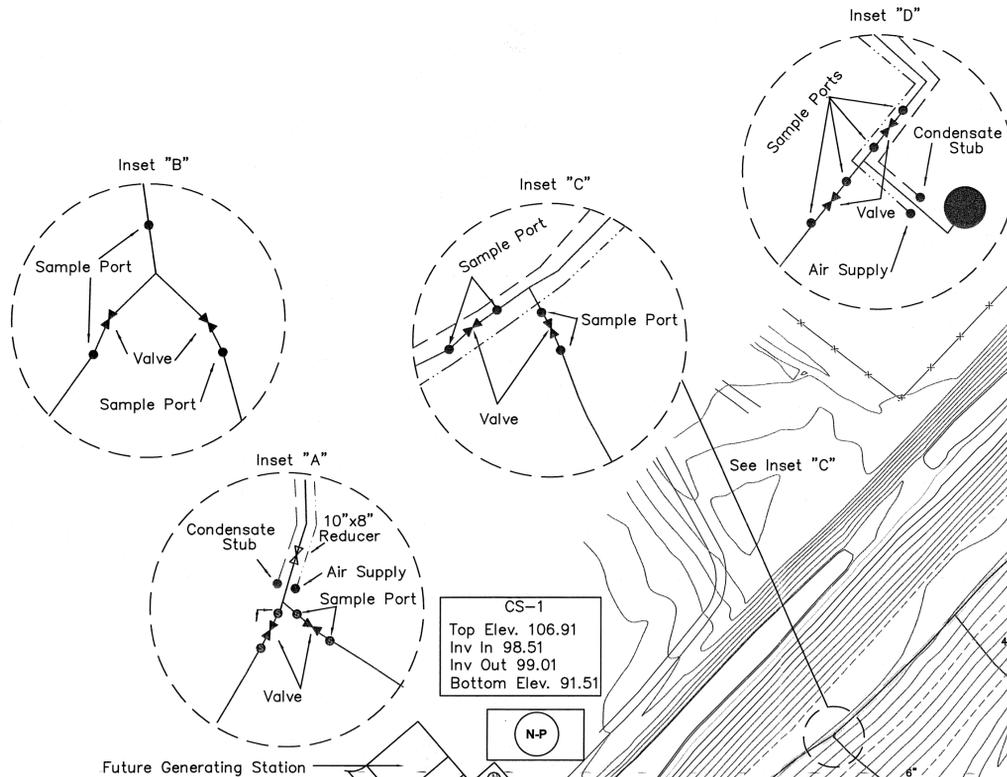
**Lori Ann Phillips, P.E.**  
Project Engineer

**SMITH + GARDNER**

14 N. Boylan Avenue  
Raleigh, NC 27603

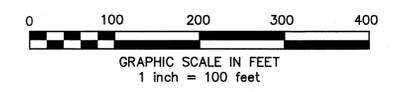
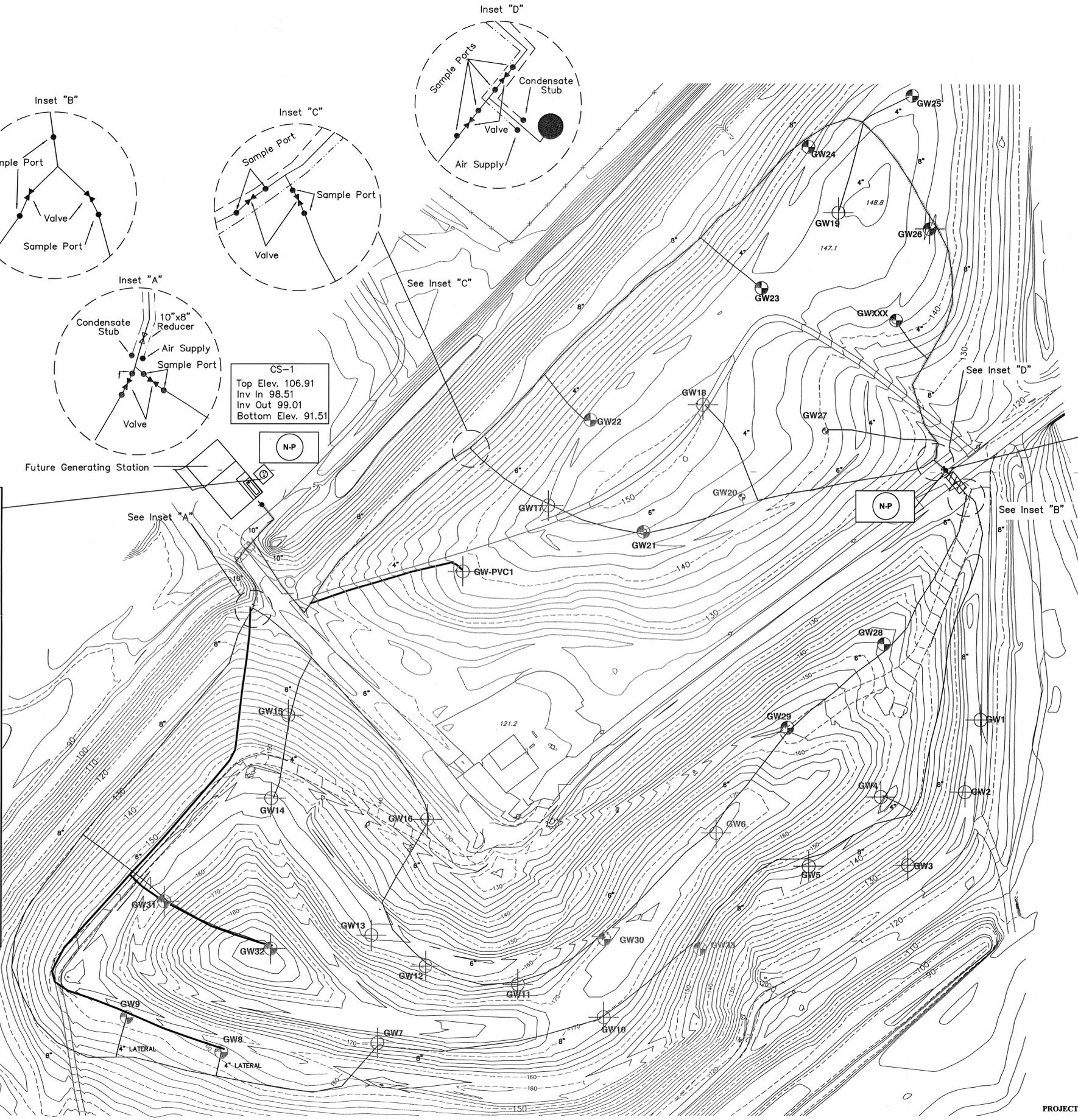
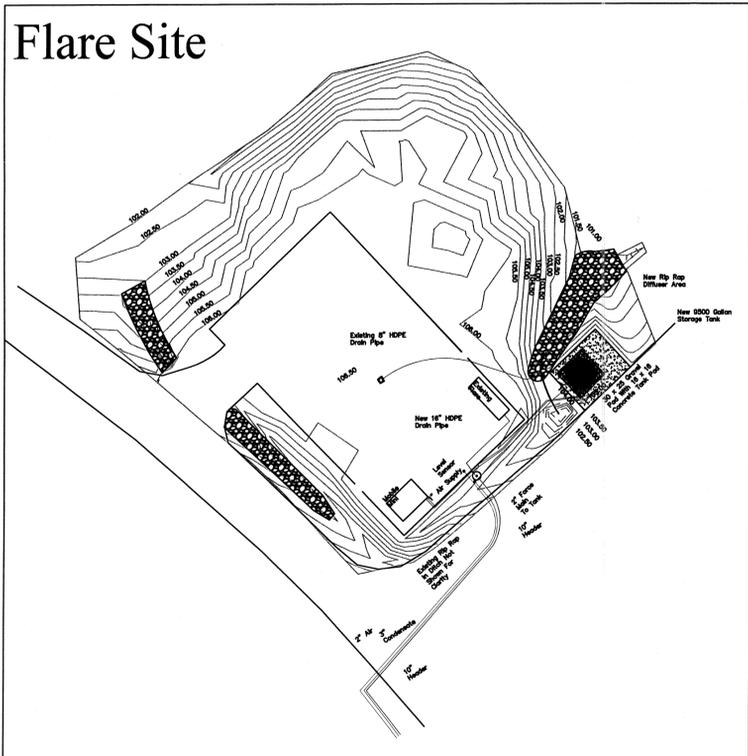
**P (919) 828.0577 x140**  
**F (919) 828.3899**  
**C (570) 760.3639**

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
	New 2" Condensate Force Main
	New 1" Air Supply Line
	New Well Pump Location
	Sump With New Pump
	Future 9,500 Gallon Condensate Storage Tank



CS-1  
Top Elev. 106.91  
Inv In 98.51  
Inv Out 99.01  
Bottom Elev. 91.51

CS-2  
Top Elev. 124.26  
Inv South 116.26  
Inv North 116.56  
Bottom Elev. 109.26



PROJECT OWNER:  
MP WILSON, LLC  
121 EDINBURGH SOUTH DRIVE, SUITE 207  
CARY, NORTH CAROLINA 27511

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 practice for land surveying in North Carolina.  
Witness my hand and seal this 14th day of August, 2012.

**RANDY D. WARD**  
PROFESSIONAL LAND SURVEYOR  
9696 RALPH WARD TRAIL  
ASH, NC 28420  
910-287-6556

An As-Built Drawing of  
**WILSON COUNTY LANDFILL**  
**GAS COLLECTION SYSTEM**  
**DEWATERING MODIFICATIONS**  
Wilson County, North Carolina

FIELDWORK: JBR  
CHECKED BY: JBR  
DRAWING DATE: 08/22/2012  
DRAWING SCALE: 1" = 100'

# Condensate Tank Closure Plan

## Wilson County Closed Municipal Solid Waste Landfill

Prepared For:



**MP Wilson, LLC**

**August 2012**

**Prepared By:**

---

NC LIC. NO. C-0828 (ENGINEERING)

**SMITH+GARDNER**

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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PRINTED ON 100% RECYCLED PAPER

# CONDENSATE TANK CLOSURE PLAN

## 1.0 INTRODUCTION

This Condensate Tank Closure Plan has been prepared by Smith + Gardner, Inc. (S+G) to present the procedures for closure of the temporary above ground condensate storage tank at the closed Wilson County Municipal Solid Waste Landfill (MSWLF) (North Carolina Solid Waste Facility Permit SWP- 98-01). The Wilson County MSWLF facility is located east of the city of Wilson, at 4537 Landfill Road approximately 1.4 miles south of NC 42 E or 1.3 miles north of US 264 Alternate. MP Wilson, LLC is the developer responsible for the landfill gas collection and control system (LFGCCS) and any maintenance activities associated with the LFGCCS.

## 1.1 Contact Information

In case of emergency, or if questions arise during implementation, please contact the following:

### 1.1.1 **Engineer:**

Smith Gardner, Inc.  
Attn.: Stacey A. Smith, P.E.  
14 N. Boylan Avenue  
Raleigh, NC 27603  
Phone: (919) 828-0577  
Email: [stacey@smithgardnerinc.com](mailto:stacey@smithgardnerinc.com)

### 1.1.2 **Owner:**

Wilson County Solid Waste Department  
Attn.: Andy Davis, Landfill Manager  
113 E. Nash Street  
P O Box 1728  
Wilson, NC 27894-1728  
Phone: (252) 399-2823  
Email: [adavis@wilson-co.com](mailto:adavis@wilson-co.com)

### 1.1.3 **Developer:**

MP Wilson, LLC  
Attn.: Ryan Hennessy, President  
121 Edinburgh South Drive  
Cary, NC 27511  
Phone: (704) 340-8037  
Email: [ryan@methanepower.net](mailto:ryan@methanepower.net)

## **2.0 CONDENSATE TANK BACKGROUND**

As part of dewatering maintenance activities<sup>1</sup> completed in May 2012, MP Wilson, LLC installed a 9,500 gallon above ground storage tank (AST) at the Wilson County Municipal Solid Waste Facility (MSWLF). The AST was installed at the existing flare station to temporarily store extracted condensate from the dewatering system. **Figure 1** (attached) shows the tank location at the facility. The tank was provided by Protectoplas Company of Streetsboro, Ohio and was constructed upon a rebar-reinforced concrete pad. The tank is equipped with a built-in secondary containment system. All exposed Schedule 80 PVC piping is insulated to prevent condensate from freezing. Condensate from the tank is transported to the City of Wilson Water Reclamation Facility according to the Special Use Sewer Discharge permit #2011-033 (Doc ID 13929).

## **3.0 TANK CLOSURE PROCEDURE**

After shut down of the gas collection system has occurred, the condensate management system will no longer be necessary, specifically the storage tank will not be required. Therefore, the following procedures will be followed to properly close the storage tank in accordance with North Carolina Leachate Storage Requirements Regulation 15A NCAC 13B .1680:

- Completely drain and remove all liquids, sludges, sediments, etc. from the storage tank and built-in secondary containment system.
- Disassemble the tank, piping, and appurtenances and dispose of the contents in a manner approved by the DWM.
- Any connecting lines remaining in place shall be securely capped.
- Sample and analyze the underlying soil for appropriate constituents inherent to condensate. Assess the results for evidence of contaminant migration.
- If contamination of underlying soils is exhibited, perform an assessment as to the degree of contamination and develop remedial actions with DWM approval.
- Perform the remedial actions as necessary to limit any threats to public health and the environment.
- Restore the area(s) to closely match pre-existing conditions in the vicinity of the containment area(s). Activities may include: filling, grading, topsoiling, and seeding.

---

<sup>1</sup> CH<sup>4</sup>Power letter from Amy Ratliff. "Dewatering Maintenance Operation Plan." Dated September 6, 2011.

## Chao, Ming-tai

---

**From:** Stacey Smith <stacey@smithgardnerinc.com>  
**Sent:** Friday, August 31, 2012 5:16 PM  
**To:** Chao, Ming-tai  
**Cc:** Pedreira, Rebecca; Haworth, Simon; Bob Gettys; 'Ryan Hennessy'; adavis@wilson-co.com; Gary Ahlberg  
**Subject:** Response to Comments on Wilson Dewatering System  
**Attachments:** Letter 8-31-12.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Ming,

Please find the response to your concerns regarding the record report for the Methane Power dewatering system at the Wilson County landfill. We will deliver a hard copy to you on Tuesday.

Feel free to call with any questions or concerns.

Thanks,

Sas

**Stacey A. Smith, P.E.**  
President, Senior Engineer

**SMITH + GARDNER**

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Fac/Perm/Co ID #	Date	Doc ID#
98-01	09/05/12	DIN 17194

**Chao, Ming-tai**

---

**From:** Chao, Ming-tai  
**Sent:** Wednesday, September 05, 2012 12:26 PM  
**To:** Stacey Smith (stacey@smithgardnerinc.com)  
**Cc:** 'Andy Davis'; Mussler, Ed; Barnes, Ben; Shackelford, Dennis  
**Subject:** FW: Response to Comments on Wilson Dewatering System

Hey Stacey:

Thanks to hand deliver the hard copy of the "Response to Comments" dated 08/31/2012 to my office yesterday, I received the document this morning.

After completing a review of your responses to the 07/18/2012 comments (Doc ID 17519) on the Construction Record – 2011/2012 Dewatering Maintenance Project, I have additional questions described below:

1. The Response to Comment No. 3 iii.

- Is there any time frame to finalize the revised contingency plan in Appendix B – Operation, Monitoring, & Maintenance Plan (Doc ID 11544) by including leachate management/ approaches for hurricane preparedness? The Solid Waste Section expects that the revised plan is properly prepared prior to operating the full-scale dewatering system. The completed plan must be available in the operating record located in the Wilson County Landfill Facility.
- Please be aware that Wilson County will ultimately be responsible for any spill clean-up, should it occurs; therefore, the revised contingency plan is required a review and approval from the representative (maybe Mr. Andy Davis) of Wilson County Landfill Facility.

2. The Response to Comment No. 3 iv.

- Please provide a hard copy of the checklist for the weekly inspection of the leachate tank.

3. Please provide a cost estimate for decommissioning / deconstructing the components of the dewatering system (including the tank, pumps, etc.), capping lines, decontaminating components, removing foundation, sampling and preparing result report (assume no corrective action is required) etc. This estimated closure costs for the dewatering system will be added to the costs for decommission LFGCCS in the amount of \$20,771.00 approved in 2011. The final amount (I believe that Wilson County will ask Methane Power to cover this part) shall be a portion of the financial assurance for the MSWLF post closure cares which will be due this fall.

Please just provide me a copy (one hard copy and one electronic copy) of the requested information. Thanks. Have a wonderful day.

Ming-Tai Chao, P.E.  
Environmental Engineer  
Permitting Branch, Solid Waste Section  
Division of Waste Management  
**(Mailing Address)**

**1646 Mail Service Center  
Raleigh, NC 27699-1646**

(Street Address)  
Green Square, 217 West Jones Street  
Raleigh, NC 27603  
Tel. 919-707-8251  
[ming.chao@ncdenr.gov](mailto: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.*

---

**From:** Chao, Ming-tai  
**Sent:** Tuesday, September 04, 2012 12:31 PM  
**To:** 'Stacey Smith'  
**Subject:** RE: Response to Comments on Wilson Dewatering System

Hey Stacy:

I received the response (Doc ID 17160) and will review it today. The approval letter may be issued this week.

Ming

---

**From:** Stacey Smith [<mailto:stacey@smithgardnerinc.com>]  
**Sent:** Friday, August 31, 2012 5:16 PM  
**To:** Chao, Ming-tai  
**Cc:** Pedreira, Rebecca; Haworth, Simon; Bob Gettys; 'Ryan Hennessy'; [adavis@wilson-co.com](mailto:adavis@wilson-co.com); Gary Ahlberg  
**Subject:** Response to Comments on Wilson Dewatering System

Ming,

Please find the response to your concerns regarding the record report for the Methane Power dewatering system at the Wilson County landfill. We will deliver a hard copy to you on Tuesday.

Feel free to call with any questions or concerns.

Thanks,

Sas

**Stacey A. Smith, P.E.**  
President, Senior Engineer

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October 18, 2012

Permit No.	Date	Document ID No.
<b>98-01</b>	<b>October 18, 2012</b>	<b>17480</b>

Mr. Ming-Tai Chao, P.E.  
 1646 Mail Service Center  
 Raleigh, NC 27699-1646

Received via an e-mail  
 Date: **October 18, 2012**  
 Solid Waste Section  
 Raleigh Central Office

RE: **Response to Comments**  
**2011-2012 Dewatering Maintenance Project**  
**Wilson County MSWLF**

Dear Ming:

This letter is in response to your comments, submitted via email on September 5, 2012 (**attached**) concerning the Wilson County MSWLF Construction Record Letter for the 2011-2012 Dewatering Maintenance Project. Please find each of your comments in italics, response in **bold**, addressed below.

Comment No. 3 iii.

*Is there any time frame to finalize the revised contingency plan in Appendix B – Operation, Monitoring, & Maintenance Plan (Doc ID 11544) by including leachate management/approaches for hurricane preparedness? The Solid Waste Section expects that the revised plan is properly prepared prior to operating the full-scale dewatering system. The complete plan must be available in the operating record located in the Wilson County Landfill Facility.*

S+G does not believe that a contingency plan is necessary for hurricane preparedness. Hurricane preparedness focuses on preventing liquid spills from open storage tanks and/or lagoons, and minimizing head on the liner of a landfill. These issues do not pertain to the dewatering maintenance project at the Wilson County MSWLF because 1) condensate is stored in a closed above ground storage (ABS) tank; and 2) the landfill is an unlined unit. Furthermore, the ABS tank has a safety "interlock" where the pumping system shuts down in the event the liquid in the tank reaches a set maximum. Furthermore, the dewatering system is operated as a convenience to enhance gas recovery and can be shut off in the event of extreme weather conditions.

Comment No. 3 iii.

*Please be aware that Wilson County will ultimately be responsible for any spill clean-up should it occur; therefore, the revised contingency plan is required a review and approval from the representative (maybe Mr. Andy Davis) of Wilson County Landfill facility.*

Please see e-mail from Mr. Andy Davis Attached.

Comment No. 3 iv.

*Please provide a hard copy of the checklist for the weekly inspection of the leachate tank.*

The inspection list is attached.

**Comment**

*Please provide a cost estimate for decommissioning/deconstructing the components of the dewatering system (including the tank, pumps, etc.), capping lines, decontaminating components, removing foundation, sampling and preparing result report (assume no corrective action is required) etc. The estimated closure costs for the dewatering system will be added to the costs for decommission LFGCCS in the amount of \$20,771.00 approved in 2011. The final amount (I believe that Wilson County will ask Methane Power to cover this part) shall be a portion of the financial assurance for the MSWLF post closure cares will be due this fall.*

Please see Table 1 Attached.

Please feel free to contact us with any additional questions or comments at 919-828-0577 or by email below.

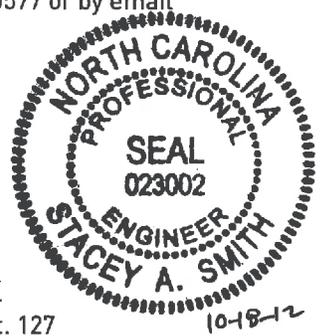
Sincerely,  
SMITH GARDNER, INC.



Cybele M. Brockmann  
Project Engineer, ext. 141  
[Cybele@smithgardnerinc.com](mailto:Cybele@smithgardnerinc.com)



Stacey A. Smith, P.E.  
Project Manager, ext. 127  
[stacey@smithgardnerinc.com](mailto:stacey@smithgardnerinc.com)



lap/sas  
att.

- Cc: Mr. Ryan Hennessey, Methane Power  
Ms. Rebecca Pedeira, Methane Power  
Mr. Bob Gettys, Methane Power  
Mr. Simon Haworth, Methane Power  
Andy Davis, Wilson County Solid Waste Department  
Gary Ahlberg, P.E., Blackrock Engineers  
File

**From:** Chao, Ming-tai [[mailto:ming\\_chao@ncdenr.gov](mailto:ming_chao@ncdenr.gov)]  
**Sent:** Wednesday, September 05, 2012 12:26 PM  
**To:** Stacey Smith ([stacey@smithgardnerinc.com](mailto:stacey@smithgardnerinc.com))  
**Cc:** Andy Davis; Mussler, Ed; Barnes, Ben; Shackelford, Dennis  
**Subject:** FW: Response to Comments on Wilson Dewatering System

Hey Stacey:

Thanks to hand deliver the hard copy of the "Response to Comments" dated 08/31/2012 to my office yesterday, I received the document this morning.

After completing a review of your responses to the 07/18/2012 comments (Doc ID 17519) on the Construction Record – 2011/2012 Dewatering Maintenance Project, I have additional questions described below:

1. The Response to Comment No. 3 iii.
  - Is there any time frame to finalize the revised contingency plan in Appendix B – Operation, Monitoring, & Maintenance Plan (Doc ID 11544) by including leachate management/ approaches for hurricane preparedness? The Solid Waste Section expects that the revised plan is properly prepared prior to operating the full-scale dewatering system. The completed plan must be available in the operating record located in the Wilson County Landfill Facility.
  - Please be aware that Wilson County will ultimately be responsible for any spill clean-up, should it occurs; therefore, the revised contingency plan is required a review and approval from the representative (maybe Mr. Andy Davis) of Wilson County Landfill Facility.
2. The Response to Comment No. 3 iv.
  - Please provide a hard copy of the checklist for the weekly inspection of the leachate tank.
3. Please provide a cost estimate for decommissioning / deconstructing the components of the dewatering system (including the tank, pumps, etc.), capping lines, decontaminating components, removing foundation, sampling and preparing result report (assume no corrective action is required) etc. This estimated closure costs for the dewatering system will be added to the costs for decommission LFGCCS in the amount of \$20,771.00 approved in 2011. The final amount (I believe that Wilson County will ask Methane Power to cover this part) shall be a portion of the financial assurance for the MSWLF post closure cares which will be due this fall.

Please just provide me a copy (one hard copy and one electronic copy) of the requested information. Thanks. Have a wonderful day.

Ming-Tai Chao, P.E.  
Environmental Engineer  
Permitting Branch, Solid Waste Section  
Division of Waste Management  
**(Mailing Address)**

**1646 Mail Service Center  
Raleigh, NC 27699-1646**

(Street Address)  
Green Square, 217 West Jones Street  
Raleigh, NC 27603  
Tel. 919-707-8251  
[ming.chao@ncdenr.gov](mailto: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.*

## Stacey Smith

---

**From:** Andy Davis <adavis@wilson-co.com>  
**Sent:** Monday, October 15, 2012 3:16 PM  
**To:** Stacey Smith  
**Subject:** RE: Wilson County Condensate Storage Tank Plan

Stacey,

Wilson County understands the responsibility as permit holder of the project. Wilson County also understands and agrees with the tank closure plan.

If you need anything please give me a call.

Thanks,

Andy Davis  
Wilson County Solid Waste Director  
PO BOX 1728  
Wilson , NC 27894-1728  
Phone#(252)399-2823  
Fax# (252)399-0904  
[adavis@wilson-co.com](mailto:adavis@wilson-co.com)

---

**From:** Stacey Smith [<mailto:stacey@smithgardnerinc.com>]  
**Sent:** Tuesday, September 18, 2012 3:08 PM  
**To:** Andy Davis  
**Cc:** Cybele Brockmann  
**Subject:** Wilson County Condensate Storage Tank Plan

Andy,

As you are aware, we recently received comments from Mr. Ming Chao, P.E. of the NCDENR. One of his comments regarded the responsibility of Wilson County in the event of any spill cleanup. I have attached the Condensate Storage Tank Closure Plan for your review and approval. Please also be aware that some features were added to the tank to further prevent the potential of overflow as follows:

1. The incoming condensate lines were insulated and heat traced to prevent freezing during the winter as well as prevent UV exposure damage;
2. A high level switch was installed to "lock out" the incoming pump from operating in the event the tank is full.
3. A high level switch was installed to "lock out" the air to the pneumatic pump system to also prevent over filling of the pump station located at the flare.

For the purpose of response to Mr. Chao's concerns, please acknowledge Wilson County's understanding of the project, agreement with the tank closure plan, and the responsibility as the permit holder for the site.

Thanks,

Sas

**Stacey A. Smith, P.E.**  
President, Senior Engineer

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**Wilson County Landfill  
Weekly Leachate Tank Inspection Checklist/Log**

Inspector Name:
Inspection Date:

**Inspection Guidance:**

1. The weekly aboveground storage tank (AST) inspection is intended for monitoring the external AST condition and its containment containment structure in accordance with the North Carolina Leachate Storage Requirements (15A NCAC 13B .1680). This visual inspection shall be performed by the responsible facility representative who is familiar with the site and can identify changes and developing problems.
2. **Complete this checklist weekly and retain all completed checklists for the lifetime of the AST.**

Item	Status			Comments
	Yes	No	N/A	
Drainage pipes/valves fit for continued service?				
Evidence of tank settlement or foundation washout?				
Cracking or spalling of concrete pad?				
Storm water able to drain away from tank?				
Tank supports in satisfactory condition?				
Noticeable shell/head distortions, buckling, denting, or bulging?				
Evidence of shell/head corrosion or cracking?				
Flanged connection bolts tight and fully engaged with no sign of wear or corrosion?				
Is the overfill protection system in working order?				
Vents free of obstructions?				
Insulation missing or exhibiting damage?				
Are there noticeable areas of moisture or mold on insulation?				
Are tank grounding lines in good condition?				
Are there any drips or signs of leakage?				

**Additional Comments:**

TABLE 1  
Wilson County MSW Landfill  
Gas Collection System Decommissioning Estimate

Decommissioning Elements	Item	Quantity	Unit	Cost	Subtotal	Comments
In advance of any decommissioning works, the site shall be inspected for adequate and safe operational conditions;	1	1	LS	\$1,000	\$1,000.00	Ratiff Engineering and Consulting Estimate
Remove all gas wellheads and flex-pipes;	1	1	LS	\$5,000	\$5,000.00	Ratiff Engineering and Consulting Estimate
Cut all horizontal header pipe protrusions 12 inches below grade;	31	31	EA	\$50	\$1,550.00	Ratiff Engineering and Consulting Estimate
Install concrete plugs in abandoned header pipe ends;	39	39	EA	\$100	\$3,900.00	Ratiff Engineering and Consulting Estimate
Fill hole to grade;	39	39	EA	\$50	\$1,950.00	Ratiff Engineering and Consulting Estimate
Remove above grade operator handles from buried valves;	8	8	EA	\$25	\$200.00	Ratiff Engineering and Consulting Estimate
Cut all sampling port vertical pipes 12 inches below grade plug pipes and backfill;	15	15	EA	\$100	\$1,500.00	Ratiff Engineering and Consulting Estimate
Remove the blower flare skid and any other mechanical and/or electrical equipment;	1	1	LS	\$0	\$0.00	Removed for Salvage Value
Remove flare station fencing;	1	1	LS	\$0	\$0.00	Removed for Salvage Value
Remove any condensate from the condensate sumps;	1	1	LS	\$0	\$0.00	Sumps will be drained as part of operation
Remove electro-mechanical equipment from condensate sumps, cut tops 12 inches below grade and back fill with suitable earth fill;	2	2	EA	\$1,000	\$2,000.00	
Remove all Generator sets (if installed) and their mechanical and/or electrical equipment;	0	0	LS	\$0	\$0.00	Not installed at this stage
Remove Generator set foundations till 12 inches below grade, backfill with suitable earth fill and revegetate;	0	0	LS	\$0	\$0.00	Not installed at this stage
Revegetate all disturbed areas;	1	1	LS	\$500	\$500.00	Smith Gardner Estimate
Monitoring of decommissioning work;	1	1	LS	\$1,000	\$1,000.00	Ratiff Engineering and Consulting Estimate
Drain, Remove, and Drain Storage Tank	9,500	9,500	GAL	\$0.50	\$4,750.00	Smith Gardner Estimate
Submit notification letter to NCDENR Division of Waste Management when decommissioning is complete	1	1	LS	\$1,000	\$1,000.00	Ratiff Engineering and Consulting Estimate
<b>Total Estimate</b>					<b>\$24,350.00</b>	

- NOTES:
- All costs are presented in current dollars and should be increased at an inflation rate prescribed by the NCDENR Division of Waste Management per <http://portal.ncdenr.org/web/ww/sw/financialassurance> if additional review is not performed annually.
  - This ESTIMATE has been prepared for financial assurance purposes only and shall not be considered a replacement for an actual bid from a licensed contractor and is considered acceptable within a +/- 10% of the Total Estimate value.

References:  
1. Operation, Monitoring & Maintenance Plan for Wilson County Landfill Gas Collection and Control System dated August 2010 prepared for MP Wilson, LLC by Ratiff Engineering & Consulting, PLLC

## Chao, Ming-tai

---

**From:** Cybele Brockmann <cybele@smithgardnerinc.com>  
**Sent:** Thursday, October 18, 2012 12:41 PM  
**To:** Chao, Ming-tai  
**Cc:** 'Ryan Hennessy'; 'Pedreira, Rebecca'; 'Haworth, Simon'; robert@methanepower.net; gary@blackrockengineerse2.com; adavis@wilson-co.com; stacey@smithgardnerinc.com  
**Subject:** Response to comments - Wilson County MSWLF Construction Record  
**Attachments:** DWM comments response letter SIGNED - October 2012 with attachments.pdf

Hello Mr. Chao,

Please find attached, SG's response to your comments concerning the Wilson County MSWLF Construction Record letter for the 2011-2012 Dewatering Maintenance Project. Please feel free to call myself or Stacey with any questions. Thank you, Cybele Brockmann

**Cybele Brockmann**  
Staff Engineer

**SMITH + GARDNER**

14 N. Boylan Avenue  
Raleigh, NC 27603

**P (919) 828.0577**  
**F (919) 828.3899**  
**C (919) 946.8790**

**Attachment A**  
**Pressure Test Results**

**Wilson County Landfill Phase 1  
Hydrostatic Pressure Test Documentation (ASTM F 2164)**

Test Procedure: ASTM F 2164

Date: 10/14/2011

Contractor: Chandler Construction

Test Observed by: Bob Gettys

Description: Primary - 4 x 2 Duel Contained force main. This test was to verify the integrity of the primary piping. Started equalization period (4hrs) at 71psi. Started 1hr test period at 61psi as noted below.

**Calculations:**

$$\text{Pressure Correction: } P_c = \frac{(P_t + 14.7)(T_t + 273)}{(T_i + 273)}$$

$$\% \text{ Pressure Drop: } \frac{P_c - P_i}{P_c} \times 100\%$$

where:

- T<sub>t</sub> = Temperature in °C at time "t"
- T<sub>i</sub> = Initial temperature in °C
- P<sub>t</sub> = Test pressure in psig at time "t"
- P<sub>i</sub> = Initial test pressure in psig =
- P<sub>c</sub> = Pressure in psig corrected for temperature (T<sub>t</sub>) at time "t"
- t = Time in minutes from start of the test

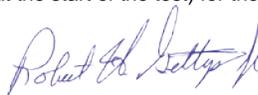
**Pressure Test Results (See Notes 1 and 2):**

Time (min)	T <sub>t</sub> Temp. (°C)	P <sub>t</sub> Guage Pressure (psig)	P <sub>c</sub> Corrected Pressure (psi)	% Pressure Drop
0	23	61.0	67.4	0.0%
10	23	61.0	67.4	0.0%
20	23	61.0	67.4	0.0%
30	23	61.0	67.4	0.0%
40	23	61.0	67.4	0.0%
50	23	61.0	67.4	0.0%
60	23	61.0	67.4	0.0%

Notes:

- 1 Per ASTM F 2164, pressurize pipe for 4 hours, reduce pressure by 10 psi, and then begin the 1 hour test period.
- 2 Per ASTM F 2164, a passing test is indicated by no visual leakage and the test pressure remaining steady (within 5% of the pressure at the start of the test) for the 1 hour test period.

Test Result (Pass/Fail): PASS



**ABC Landfill - Phase 1  
Hydrostatic Pressure Test Documentation (ASTM F 2164)**

Test Procedure: ASTM F 2164

Date: 10/14/2011

Contractor: Chandler Construction

Test Observed by: Bob Gettys

Description: Secondary - 4 x 2 Duel Contained force main. This test was to verify the integrity of the secondary piping. Started equalization period (4hrs) at 70psi. Started 1hr test period at 60psi as noted below.

**Calculations:**

$$\text{Pressure Correction: } P_c = \frac{(P_t + 14.7)(T_t + 273)}{(T_i + 273)}$$

$$\% \text{ Pressure Drop: } \frac{P_c - P_i}{P_c} \times 100\%$$

where:

- T<sub>t</sub> = Temperature in °C at time "t"
- T<sub>i</sub> = Initial temperature in °C
- P<sub>t</sub> = Test pressure in psig at time "t"
- P<sub>i</sub> = Initial test pressure in psig =
- P<sub>c</sub> = Pressure in psig corrected for temperature (T<sub>t</sub>) at time "t"
- t = Time in minutes from start of the test

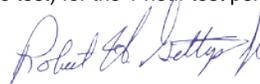
**Pressure Test Results (See Notes 1 and 2):**

Time (min)	T <sub>t</sub> Temp. (°C)	P <sub>t</sub> Guage Pressure (psig)	P <sub>c</sub> Corrected Pressure (psi)	% Pressure Drop
0	23	60.0	66.3	0.0%
10	23	60.0	66.3	0.0%
20	23	60.0	66.3	0.0%
30	23	60.0	66.3	0.0%
40	23	60.0	66.3	0.0%
50	23	60.0	66.3	0.0%
60	23	60.0	66.3	0.0%

Notes:

- 1 Per ASTM F 2164, pressurize pipe for 4 hours, reduce pressure by 10 psi, and then begin the 1 hour test period.
- 2 Per ASTM F 2164, a passing test is indicated by no visual leakage and the test pressure remaining steady (within 5% of the pressure at the start of the test) for the 1 hour test period.

Test Result (Pass/Fail): PASS



**Attachment B**

**As-Built Survey/Record Drawing**

# Details Index

Pump Stop Details

1  
4

CS-1 Sump Details (Existing)

2  
4

CS-2 Sump Details (Existing)

3  
4

VP-4 Pump Details

1  
5

CS-1 Sump Modification Details

2  
5

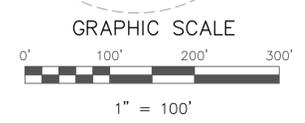
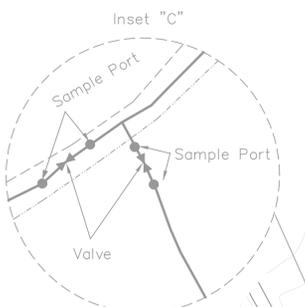
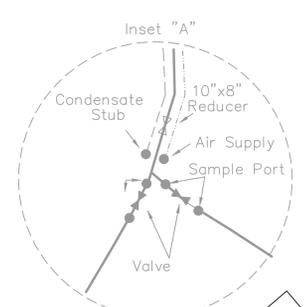
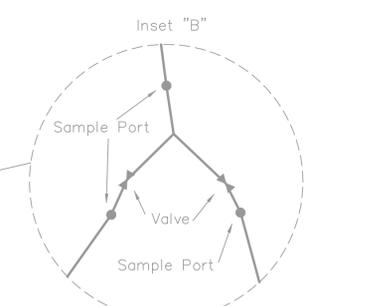
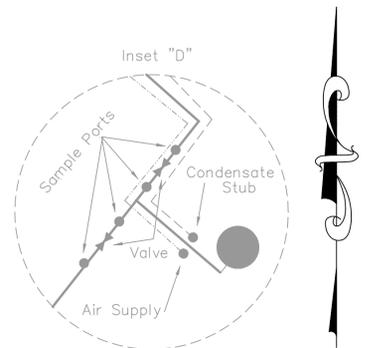
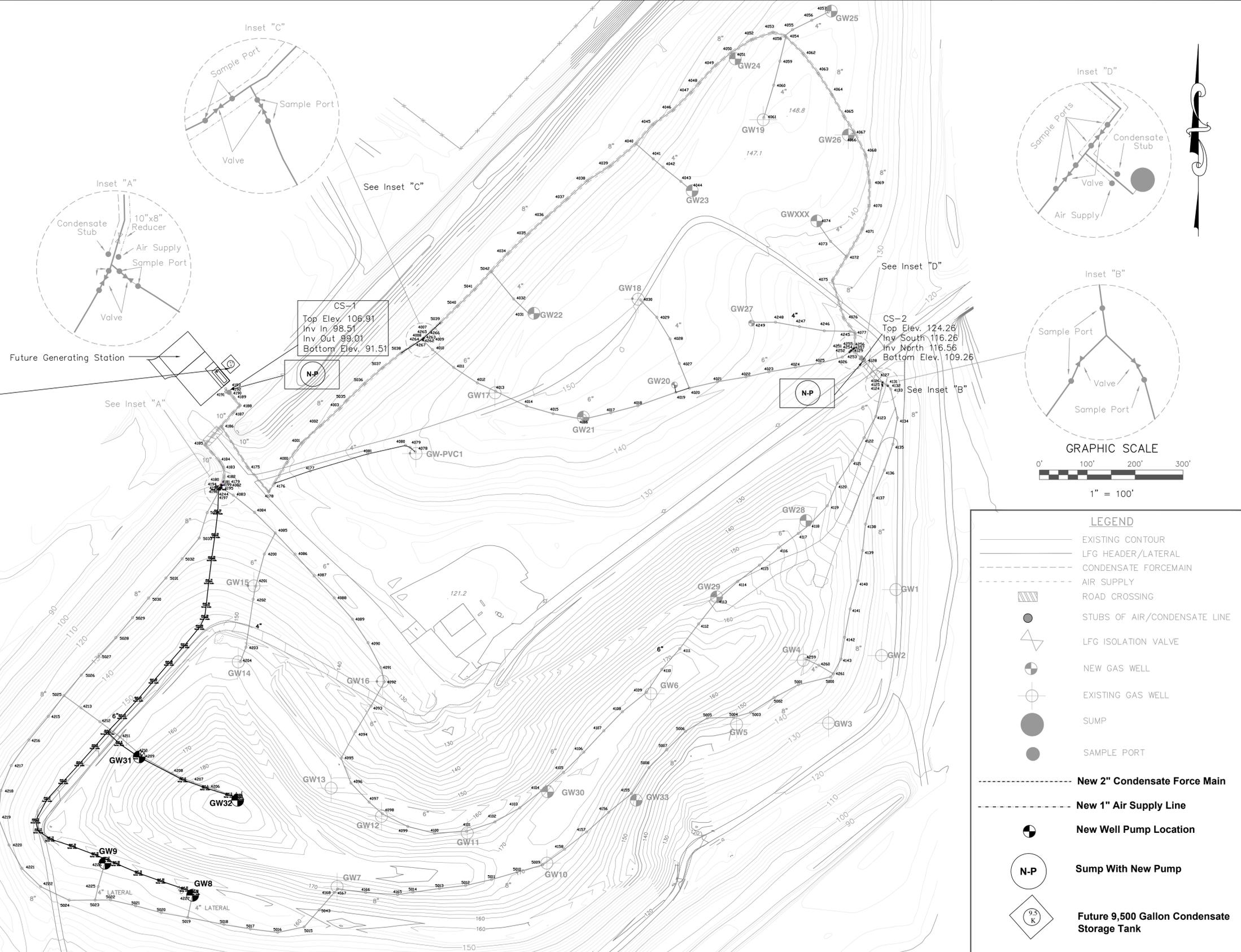
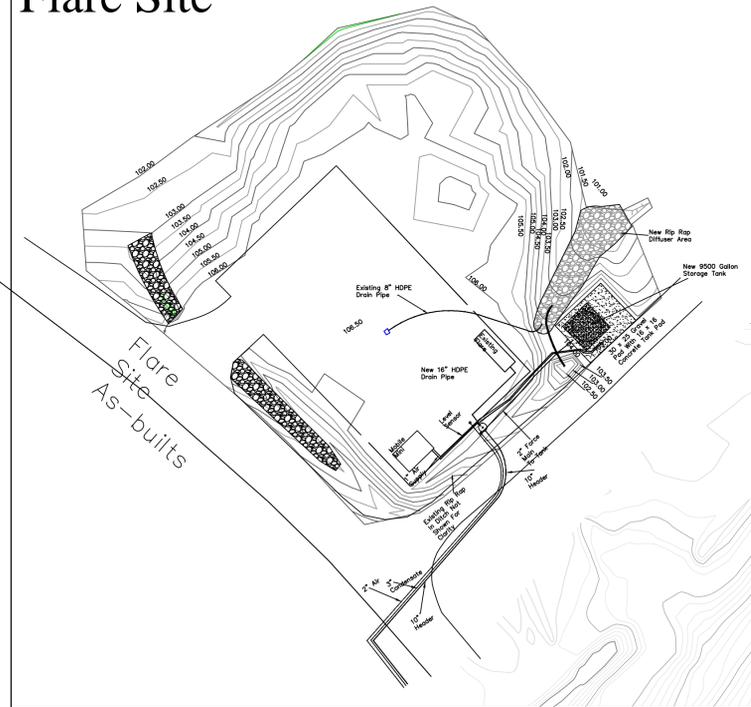
CS-2 Sump Modifications Details

3  
5

Trench Details

4  
5

## Flare Site



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
	New 2" Condensate Force Main
	New 1" Air Supply Line
	New Well Pump Location
	Sump With New Pump
	Future 9,500 Gallon Condensate Storage Tank

DRAWN BY: RG
SURVEY BY:
CHECKED BY: AR
FILE NAME:
CUCWILNC-92011

Project Owner:
<b>MP WILSON, LLC</b>
<b>121 EDINBURGH SOUTH DRIVE, SUITE 207</b>
<b>CARY, NORTH CAROLINA 27511</b>
(PH) 919-297-7206
(FAX) 919-297-7211

SEAL:
-------

Project Title:
<b>WILSON COUNTY LANDFILL</b>
<b>GAS COLLECTION SYSTEM</b>
<b>DEWATERING MODIFICATIONS</b>

DRAWING TITLE:
SITE OWNER:
SCALE:
DATE:
SHEET NO.

AS-BUILT SYSTEM DEWATERING MODIFICATIONS:
WILSON COUNTY LANDFILL, NC
1" = 100'
February 2012
3 OF 6

**Attachment C**

**Storage Tank Foundation Analysis and Tank Specifications**

# ROSS LINDEN

ENGINEERS P C

Project No. C120306

22 March 2012

Stacey A. Smith, PE  
Richardson Smith Gardner & Associates  
14 N. Boylan Avenue  
Raleigh, NC 27603

Re: Wilson County Landfill  
Analysis of existing tank foundation

Dear Mr. Smith –

Per your request, we have evaluated the existing tank foundation at the Wilson County Landfill site for structural adequacy based on the information you have provided. It is our understanding that a 9500 gallon HDPE tank has been installed on site. The tank has been provided by Protectoplas Company of Streetsboro, Ohio. The design of the tank and the anchorage of the tank to the concrete foundation have been provided by the manufacturer.

Foundation dimensions and reinforcing information for the tank foundation has been provided by the contractor. The "Tank Pad Details" drawings shows that the foundation consists of a 12" thick concrete slab reinforced with (2) layers of #5 bars at 12" spacing in each direction. The drawing shows the tank pad to be 16'-0" x 16'-0". The foundation is currently in place, and we are therefore unable to verify that the reinforcement has been placed in the concrete pad in accordance with the provided drawing. Our analysis of the tank foundation has been made under the assumption that the existing foundation was built per the information provided.

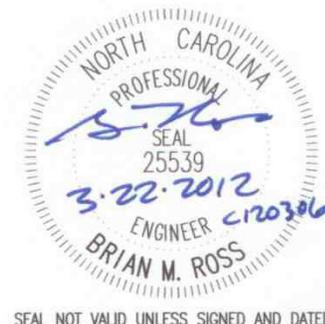
Based on a maximum wind speed of 100 mph, and assuming an empty tank, the maximum overturning moment due to wind loads is approximately 18.4 k-ft, in accordance with ASCE 7 and the NC Building Code. Based on the dimensions of the tank pad provided by the contractor, the maximum resisting moment of the foundation is approximately 307.2 k-ft, resulting in a safety factor of 16. Assuming a full tank, the maximum weight of the tank is approximately 85,000 lbs. The maximum bearing pressure beneath the foundation is approximately 335 psf. Based on my professional judgment, the existing tank foundation (based on the information provided for our review) is adequate to support the expected loads for the existing tank on site.

We appreciate the opportunity to provide this service. Please feel free to contact me if you have any questions or if you need any additional information.

Sincerely,

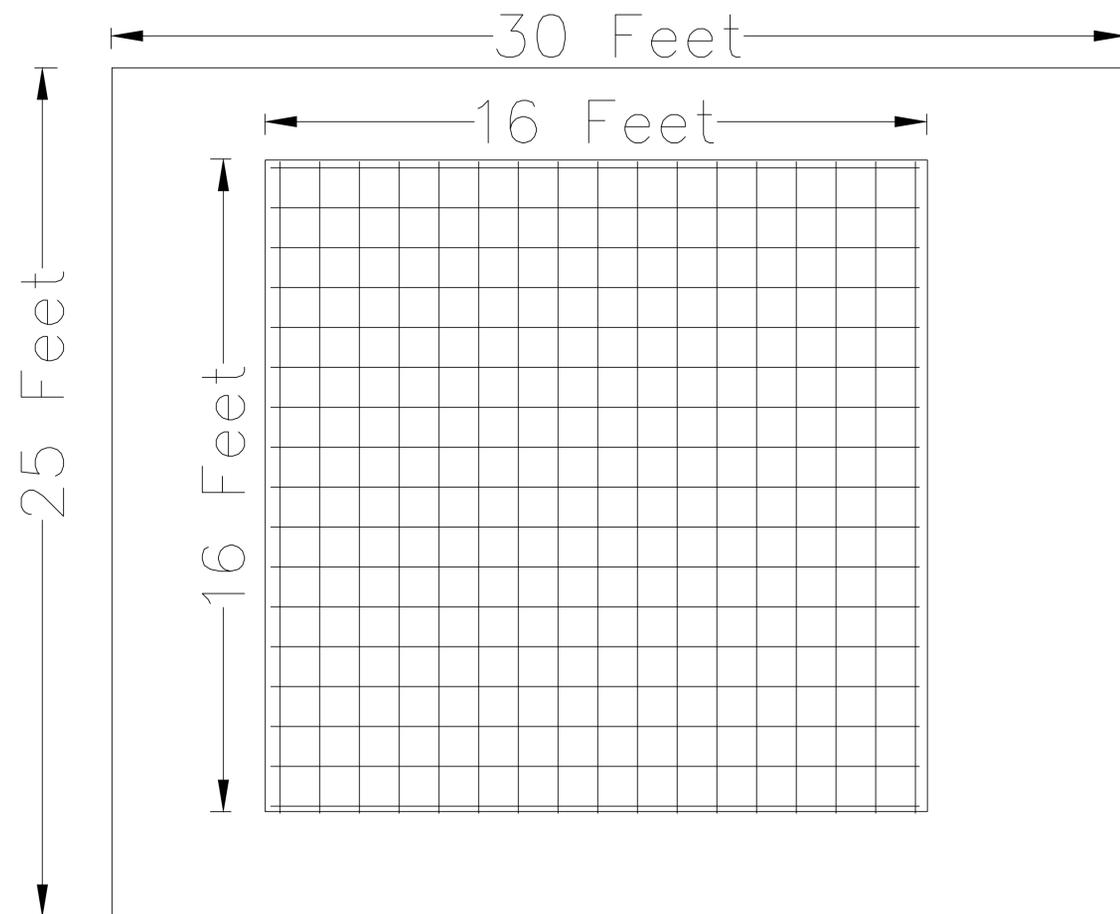


Brian M. Ross, PE  
Vice President  
Structural Engineer

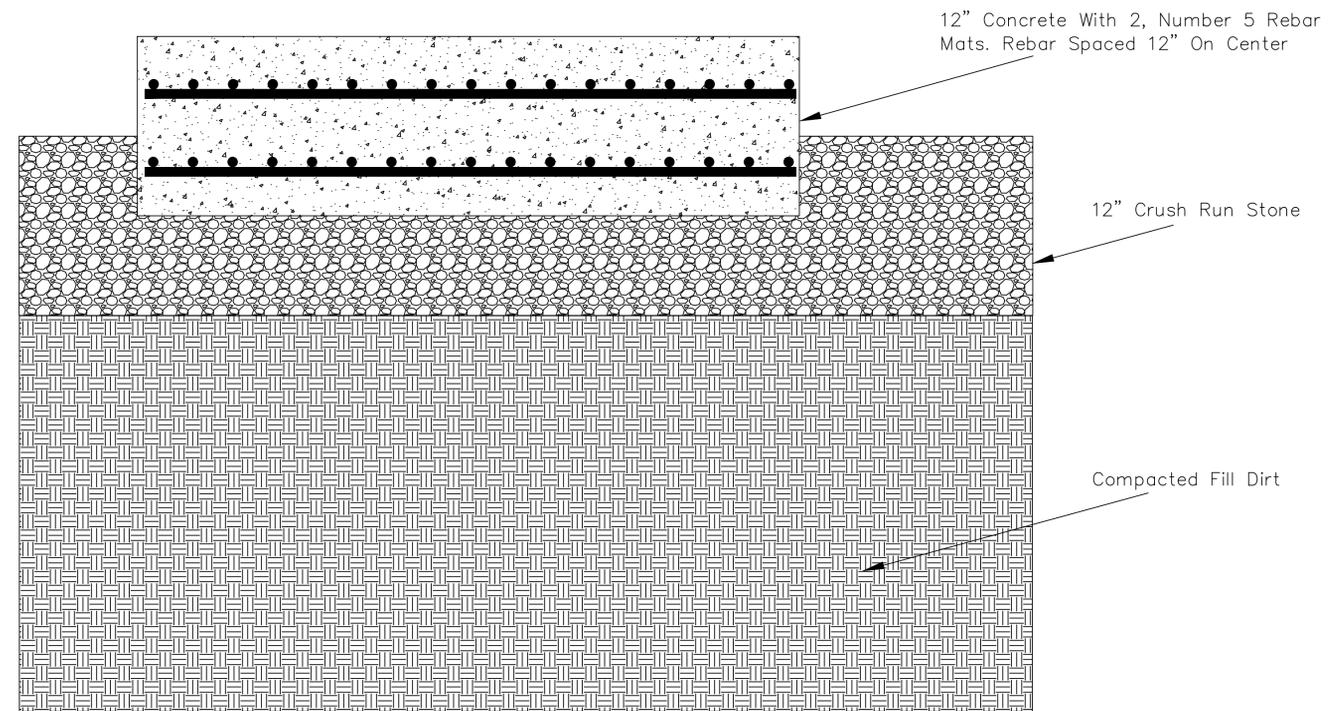


SEAL NOT VALID UNLESS SIGNED AND DATED

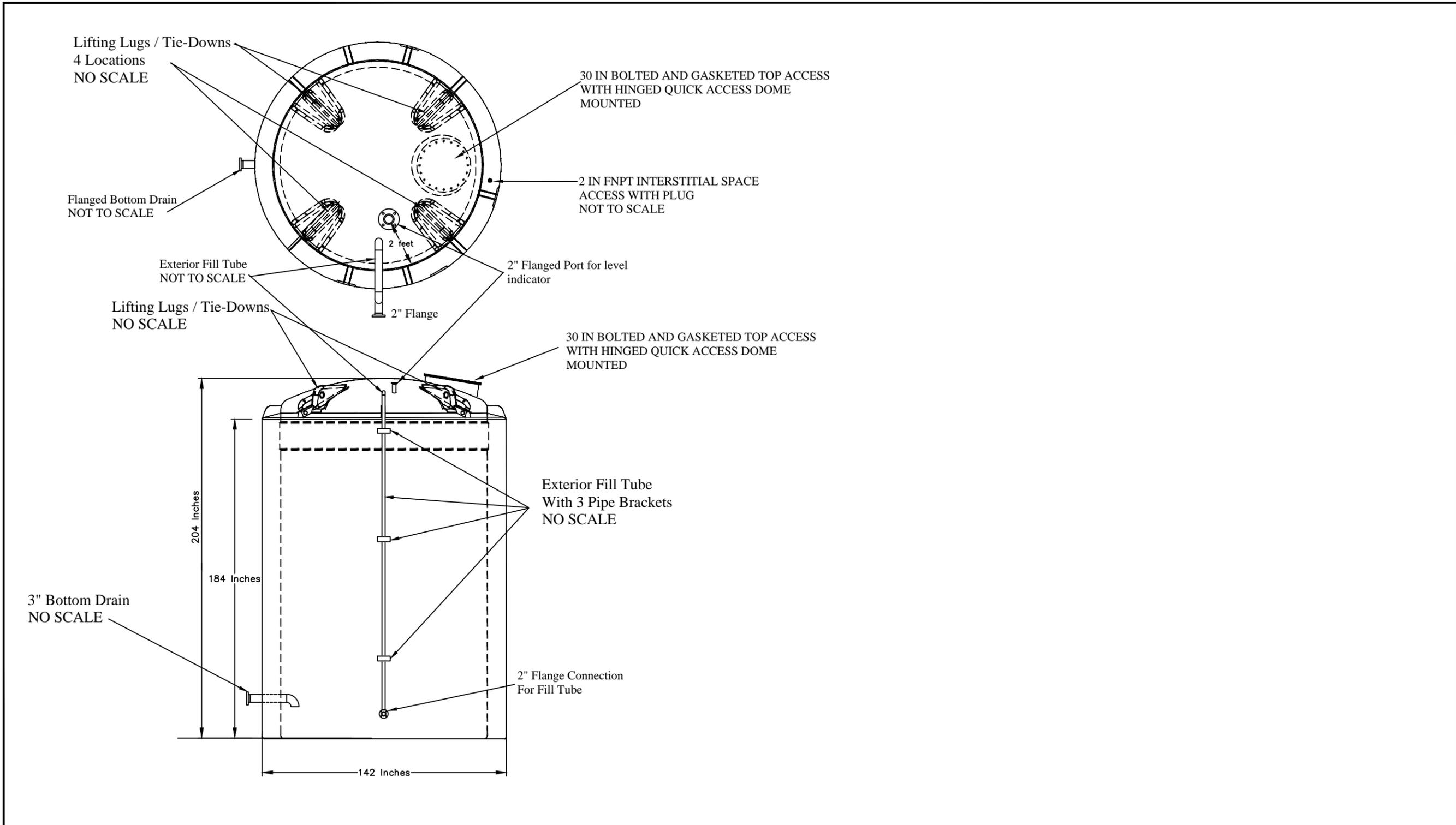
Plan View



Section View



DRAWN BY: RG	<b>Project Owner:</b> <b>MP WILSON, LLC</b> <b>121 EDINBURGH SOUTH DRIVE, SUITE 207</b> <b>CARY, NORTH CAROLINA 27511</b>  (PH) 919-297-7206 (FAX) 919-297-7211	SEAL:	<b>Project Title:</b> <b>Wilson County LFG Expansion</b> <b>Tank Pad Details</b>	DRAWING TITLE:	TANK PAD DETAILS
SURVEY BY:				SITE OWNER:	WILSON COUNTY LANDFILL, NC
CHECKED BY:				SCALE:	NONE
FILE NAME:				DATE:	January 2012
				SHEET NO.	1 OF 1



DRAWN BY: SURVEY BY: CHECKED BY: FILE NAME: CUCWILNC-1091	<i>Project Owner:</i> <b>MP WILSON, LLC</b> <b>121 EDINBURGH SOUTH DRIVE, SUITE 207</b> <b>CARY, NORTH CAROLINA 27511</b> (PH) 919-297-7206      (FAX) 919-297-7211	<i>SEAL:</i>	<i>Project Title:</i> <b>WILSON COUNTY LANDFILL</b> <b>GAS COLLECTION SYSTEM</b> <b>DEWATERING MODIFICATIONS</b>	DRAWING TITLE: <b>FUTURE 9500 CONDENSATE STORAGE TANK :</b> SITE OWNER: <b>WILSON COUNTY LANDFILL, NC</b> SCALE: <b>NONE</b> DATE: <b>SEPTEMBER 2011</b> SHEET NO. <b>1 OF 1</b>
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# PROTECTOPLAS COMPANY

DIVISION OF EBCO, INC.

3500 CRANE CENTER DRIVE

STREETSBORO OHIO 44241 USA

TELEPHONE: 800.525.2661 & 330.562.8265 FAX: 330.562.2560

QUALITY PLASTIC TANKS & PROCESSING EQUIPMENT SINCE 1972

QUOTE #: 2511-473

TO:

CHANDLER CONST SERVICES  
1511 NINETY SIX HIGHWAY  
NINETY SIX, SC 29666  
BOB GETTYS

DATE: 8/31/2011	TERMS: 25%/ 50% / 25% Net 30	FOB: STREETSBORO, OH	SHIP VIA: BEST WAY
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QTY.	DESCRIPTION
1	9500 GAL DOUBLE WALLED TANK. HEAVY PRIMARY CONTAINMENT TO BE (1) PIECE MOLDED HDLPE. SECONDARY TO BE (1) PIECE MOLDED OF HDLPE. TANK IS FLAT BOTTOM, VERTICAL, CLOSED TOP. TANK HAS A SEALED AND VENTED INTERSTITIAL SPACE. NOM DIM OF 142 IN DIA X 204 IN TALL. TANK DESIGNED FOR CONTENTS TO 1.7 S.G PER ASTM D-1998 USING A 600 PSI HOOP. COLOR: NATURAL  TANK INCLUDES:  1-SEALED INTERSTITIAL SPACE 1-1 IN INTERSTITIAL SPACE DOWNPIPE WITH MUSHROOM VENT 1-2 IN FNPT INTERSTITIAL SPACE ACCESS WITH PLUG 4-COMBO LIFTING / HOLD DOWN LUGS
1	30 IN BOLTED AND GASKETED TOP ACCESS AND HINGED QUICK ACCESS DOME MOUNTED
1	2 IN RAISED FACE WELDED FLANGE NOZZLE GUSSETED IN (4) PLACES 150LB BOLT SPACING DOME MOUNTED
3	EXTERIOR SIDE WALL PIPE CLAMPS
1	2" SCH 80 PVC EXTERIOR FILL PIPE. TERMINATES WITH 2 IN PP BALL VALVE WITH 2 IN MALE QUICK CONNECT AND DUST CAP
1	2 IN RAISED FACE, WELDED, 150# ANSI BOLT SPACED, DOUBLE WALL FLANGE FITTING SIDE BOTTOM DRAIN
TANK SHIPS AS AN OVERSIZED LOAD VIA DEDICATED DOUBLE DROP TRUCK.	



**Attachment D**  
**Record Photographs**



Photo #1: Completed temporary storage tank



Photo #2: Rebar tank foundation prior to pouring concrete.



Photo #3: Completed pump installation at EW-9.



Photo #4: Completed condensate sump CS-2.



Photo #5: View of project facing northwest.



Photo #6: View of project facing southeast.



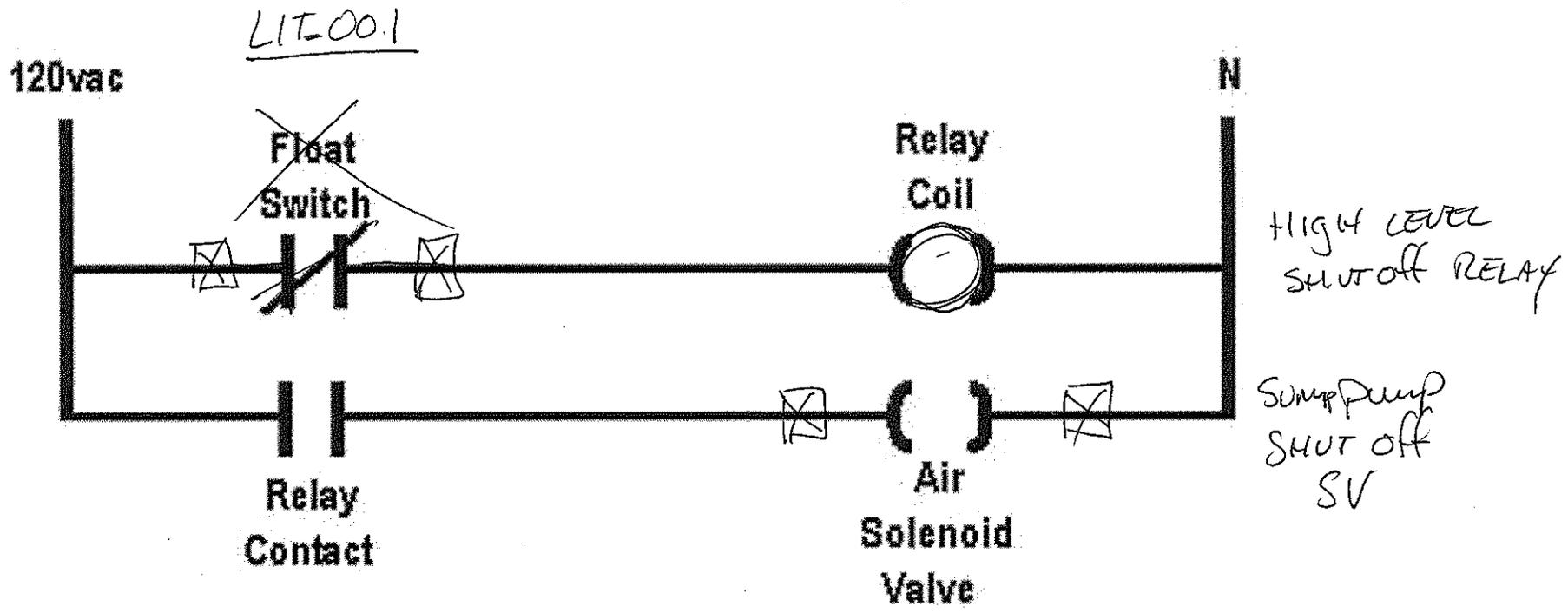
Photo #7: Shovel test pit.



Photo #8: Completed insulation on storage tank.

**Attachment E**

**High Level Shut-off Relay**



SUMP PUMP RELAY PANEL

# Level Measurement

## Continuous level measurement – Ultrasonic controllers

### HydroRanger 200

#### Overview



HydroRanger 200 is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring.

#### Application

For water authorities, municipal water, and wastewater plants, HydroRanger 200 is an economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards. It offers single point monitoring with all models, and optional dual-point monitoring with 6 relay model. As well, it has digital communications with built-in Modbus RTU via RS-485.

The standard 6 relay HydroRanger 200 will monitor open channel flow and features more advanced relay alarming and pump control functions as well as volume conversion. It is compatible with SIMATIC PDM, allowing for PC configuration and setup. Sonic Intelligence advanced echo-processing software provides increased reading reliability. The optional 1 or 3 relay models provide accurate level measurement functions only; these two models do not provide open channel flow, differential level measurement or volume conversion functions.

HydroRanger 200 uses proven continuous ultrasonic echo ranging technology to monitor water and wastewater of any consistency up to 15 m (50 ft) in depth. Achievable resolution is 0.1% with accuracy to 0.25% of range. Unlike contacting devices, HydroRanger 200 is immune to problems caused by suspended solids, harsh corrosives, grease or silt in the effluent, reducing downtime.

- Key Applications: wet wells, flumes/weirs, bar screen control

#### Benefits

- Monitors wet wells, weirs and flumes
- Digital communications with built-in Modbus RTU via RS-485
- Compatible with SmartLinx system and SIMATIC PDM configuration software
- Single or dual point level monitoring
- 6 relay (standard), 1 or 3 relay (optional)
- Auto False-Echo Suppression for fixed obstruction avoidance
- Anti-grease ring/tide mark buildup
- Differential amplifier transceiver for common mode noise rejection and improved signal-to-noise ratio
- Wall and panel mounting options

# Level Measurement

## Continuous level measurement – Ultrasonic controllers

HydroRanger 200

### Technical specifications

<b>Mode of Operation</b>	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft), transducer dependent
Measuring points	1 or 2
<b>Input</b>	
Analog	0 ... 20 mA or 4 ... 20 mA, from alternate device, scaleable (6 relay model)
Discrete	10 ... 50 V DC switching level Logical 0 = < 0.5 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA
<b>Output</b>	
Echomax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and Echomax series XPS-10/10F, XPS 15/15F, XCT-8, XCT-12 and XRS-5
Relays <sup>1)</sup>	Rating 5 A at 250 V AC, non-inductive
• Model with 1 relay <sup>2)</sup>	1 SPST Form A
• Model with 3 relays <sup>2)</sup>	2 SPST Form A/1 SPDT Form C
• Model with 6 relays	4 SPST Form A/2 SPDT Form C
mA output	0 ... 20 mA or 4 ... 20 mA
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range
<b>Accuracy</b>	
Error in measurement	0.25% of range or 6 mm (0.24"), whichever is greater
Resolution	0.1% of measuring range or 2 mm (0.08"), whichever is greater <sup>3)</sup>
Temperature compensation	<ul style="list-style-type: none"> <li>• -50 ... +150 °C (-58 ... +302 °F)</li> <li>• Integral temperature sensor in transducer</li> <li>• External TS-3 temperature sensor (optional)</li> <li>• Programmable fixed temperature values</li> </ul>
<b>Rated operating conditions</b>	
Installation conditions	
• Location	indoor / outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)

<b>Design</b>	
Weight	
• Wall mount	1.37 kg (3.02 lbs)
• Panel mount	1.50 kg (3.31 lbs)
Material (enclosure)	Polycarbonate
Degree of protection (enclosure)	
• Wall mount	IP65/Type 4X/NEMA 4X
• Panel mount	IP54/Type 3/NEMA 3
Cable	
• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 300 Vrms, 0.82 mm <sup>2</sup> (18 AWG), Belden 8760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1200 ft)
<b>Displays and controls</b>	
	100 x 40 mm (4 x 1.5") multi-block LCD with backlighting
Programming	Programming using handheld programmer or via PC with SIMATIC PDM software
<b>Power supply<sup>4)</sup></b>	
AC version	100 ... 230 V AC ± 15%, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
<b>Certificates and approvals</b>	
	<ul style="list-style-type: none"> <li>• CE, C-TICK<sup>5)</sup></li> <li>• Lloyd's Register of Shipping</li> <li>• ABS Type Approval</li> <li>• FM, CSA<sub>US/C</sub>, UL listed</li> <li>• CSA<sub>US/C</sub> Class I, Div. 2, Groups A, B, C and D, Class II, Div. 2, Groups F and G, Class III (wall mount only)</li> <li>• MCERTS Class 1 approved for Open Channel Flow</li> </ul>
<b>Communication</b>	
	<ul style="list-style-type: none"> <li>• RS-232 with Modbus RTU or ASCII via RJ-11 connector</li> <li>• RS-485 with Modbus RTU or ASCII via terminal blocks</li> <li>• Optional: SmartLinx cards for <ul style="list-style-type: none"> <li>- PROFIBUS DP</li> <li>- DeviceNet</li> <li>- Allen-Bradley Remote I/O</li> </ul> </li> </ul>

- <sup>1)</sup> All relays certified for use with equipment that fails in a state at or under the rated maximums of the relays
- <sup>2)</sup> This model is level control only; no open channel flow, differential level or volume conversion functions
- <sup>3)</sup> Program range is defined as the empty distance to the face of the transducer plus any range extension
- <sup>4)</sup> Maximum power consumption is listed
- <sup>5)</sup> EMC performance available upon request

# Level Measurement

## Continuous level measurement – Ultrasonic controllers

### HydroRanger 200

#### Selection and Ordering data

##### Siemens HydroRanger 200

Ultrasonic level controller for up to six pumps that provides control, differential control and open channel flow monitoring. The HydroRanger 200 is also available as a level measurement controller only. Select option from number of measurement points options below.

#### Mounting

Wall mount, standard enclosure  
Wall mount, 4 entries, 4 M20 cable glands included  
Panel mount<sup>1)</sup>

#### Power supply

100 ... 230 V AC  
12 ... 30 V DC

#### Number of measurement points

Single point model, 6 relays  
Dual point model, 6 relays  
Single point model, level only, 1 relay<sup>2)</sup>  
Single point model, level only, 3 relays<sup>2)</sup>

#### Communication (SmartLinX)

Without module  
SmartLinX Allen-Bradley Remote I/O module  
SmartLinX PROFIBUS DP module  
SmartLinX DeviceNet module  
See SmartLinX product page 5/120 for more information.

#### Approvals

General Purpose CE, FM, CSA<sub>US/IC</sub>, UL listed, C-TICK  
CSA Class I, Div. 2, Groups A, B, C and D; Class II, Div 2, Groups F and G; Class III (for wall mount applications only)

<sup>1)</sup> Available with approval option 1 only

<sup>2)</sup> This model is level control only; no open channel flow, differential level, or volume conversion functions

L) Subject to export regulations AL: N, ECCN: 3A991X.

Order No.

L) **7ML5034-**

#### Selection and Ordering data

##### Further designs

Please add "-Z" to Order No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:  
Measuring-point number/identification  
(max. 16 characters) specify in plain text

Y15

##### Operating Instructions

##### English

French

German

Note: The Operating Instructions should be ordered as a separate item on the order.

This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.

##### Other Operating Instructions

SmartLinX Allen-Bradley Remote I/O, English

SmartLinX PROFIBUS DP, English

SmartLinX PROFIBUS DP, German

SmartLinX DeviceNet, English

Note: The appropriate SmartLinX Operating Instructions should be ordered as a separate line on the order.

##### Accessories

##### Handheld programmer

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"),  
one text line, suitable for enclosure

Sunshield kit, 304 SS

SITRANS RD100 Remote display - see Chapter 8

SITRANS RD200 Remote display - see Chapter 8

SITRANS RD500 web, datalogging, alarming,  
ethernet, and modem support for instrumentation -  
see Chapter 8

##### Spare parts

Power Supply Board (100 ... 230 V AC)

Power Supply Board (12 ... 30 V DC)

Display Board

C) Subject to export regulations AL: N, ECCN: EAR99.

K) Subject to export regulations AL: N, ECCN: 5A991X.

Order code

Order No.

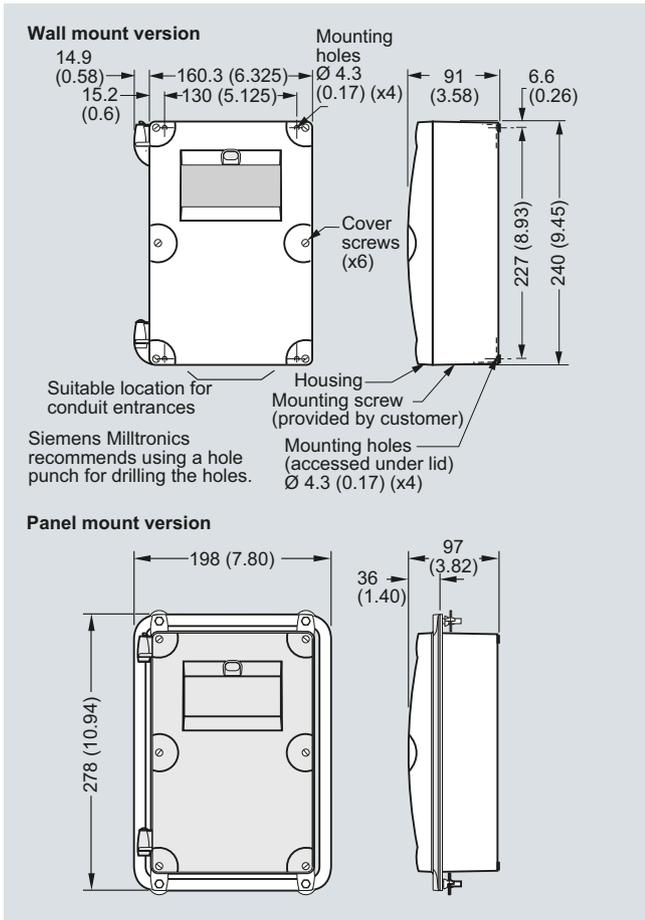
C) **7ML1998-5FC03**C) **7ML1998-5FC11**C) **7ML1998-5FC33**C) **7ML1998-1AP03**C) **7ML1998-1AQ03**C) **7ML1998-1AQ33**C) **7ML1998-1BH02****7ML1830-2AK****7ML1930-1AC****7ML1930-1GA**K) **7ML5750-1AA00-0**C) **7ML1830-1MD**C) **7ML1830-1ME**C) **7ML1830-1MF**

# Level Measurement

## Continuous level measurement – Ultrasonic controllers

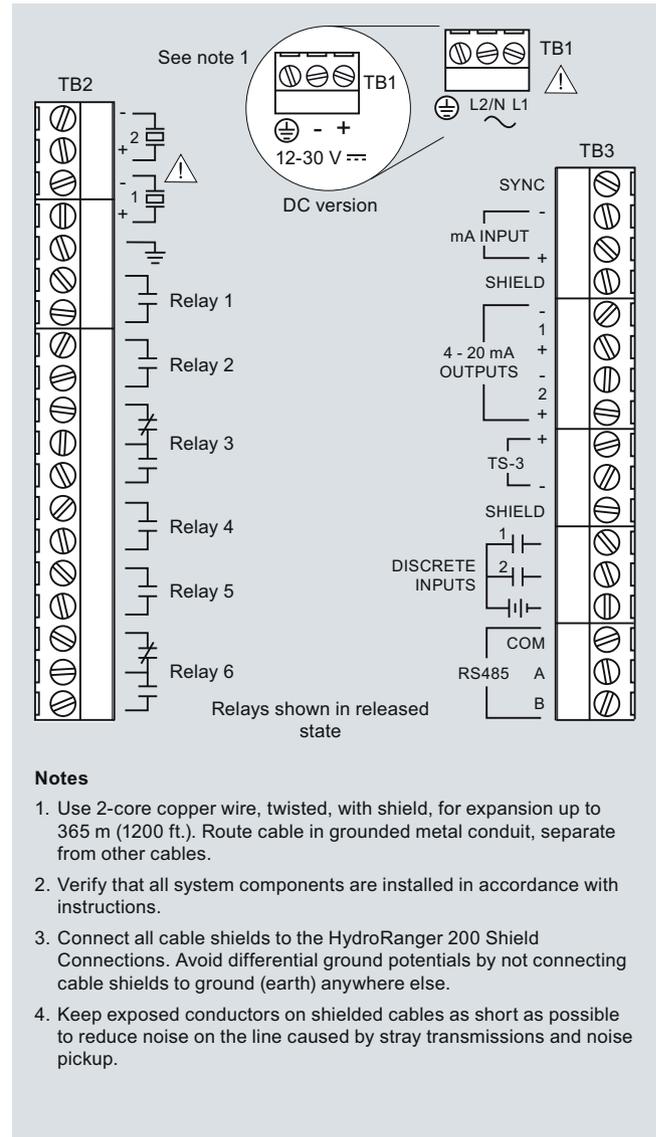
HydroRanger 200

### Dimensional drawings



HydroRanger 200, dimensions in mm (inch)

### Schematics



HydroRanger 200 connections