



# COUNTY OF LINCOLN, NORTH CAROLINA

115 WEST MAIN STREET, 2<sup>ND</sup> FLOOR CITIZENS CENTER, LINCOLNTON, NORTH CAROLINA 28092

## DEPARTMENT OF PUBLIC WORKS

PHONE (704) 736-8497

FAX (704) 736-8499

### MEMORANDUM

TO: Lincoln County Board of Commissioners

FROM: Donald V. Chamblee, Jr., Director of Public Works *DVC*

VIA: George Wood, County Manager

DATE: December 5, 2012

SUBJECT: Lincoln County Water Treatment Plant Improvements

#### ACTION REQUESTED:

Request that the Board of Commissioners authorize the County Manager to execute the contract with the lowest apparent bidder of Gilbert Engineering in the amount of \$3,449,000.

#### BACKGROUND:

The Lincoln County Water Treatment Plant was built in 1992. In 2011 Lincoln County Public Works retained Goodwyn Mills and Cawood to design, repairs, upgrades and improvements to the existing facility. Attached is a copy of Design Overview Memorandum from Goodwyn Mills and Cawood which sets out and explains the improvements to mixing and flocculation, chemical feed equipment, sedimentation basin and pipe gallery and sludge handling.

On November 29, 2012, Lincoln County opened bids for this project. There were five bidders with bids from \$3,449,000 to \$4,000,000.

The project is funded by the water and sewer capital improvement budget.

#### Attachment:

Bid Tabulation dated December 5, 2012  
Design Overview Memorandum  
Goodwyn Mills Cawood Recommendation Letter



December 5, 2012

Mr. Donald V. Chamblee  
Director of Public Works  
LINCOLN COUNTY PUBLIC WORKS  
115 West Main Street  
Lincolnton, NC 28092

RE: LINCOLN COUNTY WTP PLANS & SPECIFICATIONS

PROJECT: WTP IMPROVEMENTS  
FOR LINCOLN COUNTY PUBLIC WORKS  
GM&C PROJECT NO. 5-11-006

Dear Mr. Chamblee:

Goodwyn, Mills & Cawood, Inc. has reviewed the bids submitted for the referenced project received on Thursday, November 29, 2012.

The low bidder was Gilbert Engineering Company located in Statesville, N.C., We have reviewed their bid, as well as their qualifications, and found all information to be in order for approval. Goodwyn, Mills & Cawood, Inc. recommends award of the contract to Gilbert Engineering Company in the amount of \$3,449,000. We have enclosed a tabulation of the bids for your files.

If the county elects to move forward with awarding the contract, please send me a copy of the resolution. Also, if the award is made, please sign the three (3) copies of the *Notice of Award* and return all copies to our office (Montgomery) for further processing as soon as possible.

Should you have any questions, please call.

Sincerely,

J. Wheeler Crook, P.E.

JWC:jwc

Enclosures

xc: File 511006 BD  
Kevin Laird

GM\PROJECTS\LINCOLN COUNTY, NC 411006 LINCOLN CO WTP IMPROV 05 BID DOCUMENT - CONST. CONTRACTS\CROOK RECOMMEND AWARD.12.5.12.DOC

GOODWYN, MILLS AND CAWOOD, INC.

2660 EastChase Lane, Suite 200  
Montgomery, AL 36117  
Tel 334.271.3200 Fax 334.272.1566

GMCNETWORK.COM



## DESIGN MEMORANDUM

**Project Name:** LINCOLN COUNTY WTP IMPROVEMENTS  
**Project Number:** 5-11-006  
**RE:** DESIGN OVERVIEW MEMORANDUM

### 1. SUMMARY OF DESIGN

- a. The Lincoln County WTP Improvement project is comprised of a combination of repairs of existing devices and treatment equipment, as well as new improvements. The repairs items include concrete spalling, electrical, and mechanical issues that will be replaced by the general contractor. The new improvements include the modification of mixing/flocculation, chemical feed equipment upgrades, and enhanced sludge dewatering capabilities. The mixing/flocculation and the chemical feed equipment will allow for improved operation where the operators have more tools to optimize the plant's treatment of the water. The sludge dewatering element of the project provides a much needed method for mechanically dewatering solids. The current method allows for little flexibility with solids, and the added flexibility is much needed as the water production increases in Lincoln County. The below gives additional information regarding the project, but is intended to provide a broad overview, not a complete scope of work.

### 2. MIXING AND FLOCCULATION

- a. The project replaces the current rapid mixer with a more efficient mixing device. Another redundant rapid mixer will also be installed.
- b. The flocculators will be replaced with Invent hyperbolic flocculators that will reduce the shearing of floc in the mixing and flocculation process.
- c. The mix and flocculation plan will now allow the operator to use multiple flow patterns to achieve his water quality goals. The design allows him to pass all the water through a single rapid mix unit, then through a series of flocculation stages, or split the water into two (2) separate paths. The design offers overall flexibility and redundancy for the WTP.
- d. All mixers/flocculators include inverter duty motors with variable frequency drives such that the G factor may be changed based on jar testing performed by the operators. This optimization of the mixing speed helps the operators maximize their floc forming efficiency.
- e. A Streaming Current Detector (instrumentation) will be installed to optimize coagulation & flocculation. This proven technology will minimize/optimize chemical usage.
- f. Drain lines will be added to these basins such that they can be maintained and cleaned properly.

### 3. CHEMICAL FEED EQUIPMENT

- a. The chemical feed pumps (Alum, Caustic, Corrosion Inhibitor, Fluoride and Caustic) will be replaced. Day tanks are being installed for improved monitoring of the amount of chemicals being utilized for treatment. The day tanks also assist in the operators requirements to keep a log of the chemical use for DENR. An improved working surface to hold the new bulk Alum and Fluoride tanks, as well as the existing steel caustic tank will be constructed. The area under the tanks will hold the necessary containment area for chemical spills.
- b. The MIOX system will undergo minor piping and rotameter improvements for operator measuring.



- c. A NaOCl (sodium Hypochlorite) dilution panel will be installed. This panel allows the operator to purchase bulk bleach and dilute to the necessary ~0.8% solution in case of failure of the MIOX system or routine maintenance of the bleach system. This panel adds critical redundancy to the WTP's disinfection system.
  - d. The small diameter chemical piping will all be replaced and labeled.
4. SEDIMENTATION BASIN & PIPE GALLERY
- a. The old deteriorating drives for the sedimentation basin sludge system will be replaced.
  - b. Miscellaneous piping, hydrants, and actuators will be installed and/or replaced for improved operations.
  - c. A manual hoisting system will be installed in the pipe gallery to allow the operators the ability to remove actuators, fittings, etc. from the pipe gallery using a chain and hoist system.
5. SLUDGE HANDLING
- a. The largest portion of the project will be the construction of a new dewatering building with equipment for mechanical dewatering, as well as improvements to the sludge thickeners.
  - b. Existing (2) sludge thickeners will be retrofitted and reused with a mechanical thickening device, as well as floating decanters to discharge acceptable, settled water to the lake.
  - c. The new dewatering equipment including pumps, polymer system and screw press is a low energy method for dewatering sludge from the treatment process. The sludge handling process will be more effective, as it is covered, and can be better managed by operators.
  - d. In building encompassing the sludge handling system allows for trucks and/or dumpsters to be placed for dewatered sludge storage. A conveyor will transfer the dried cake to the covered area for sludge hauling.
  - e. The sludge dewatering process can operate unmanned using the manufacturer's control panel, and can be monitored on the SCADA system, after the integrator provides the required programming(NIC).

**TABULATION OF BIDS**  
**LINCOLN COUNTY WATER TREATMENT PLANT IMPROVEMENTS**  
**FOR THE LINCOLN COUNTY, LINCOLNTON, NORTH CAROLINA**  
**LINCOLN COUNTY BID NOT. 2013-1129 - WTP IMPROVEMENTS**  
**GMC PROJECT NO. 5-11-006**

BID OPENING DATE: THURSDAY, NOVEMBER 29, 2012 @ 2:00 P.M. EST

Gilbert Engineering Company  
Statesville, NC

<u>ITEM</u>	<u>SECTION / DIVISION</u>	<u>DESCRIPTION</u>	<u>MANUFACTURER*</u>	<u>TOTAL PRICE</u>
1	11010/11020	Rapid Mix & Flocculation Improvements	Invent Environmental Technologies	200,000.00
2	N/A	Sedimentation Basin Improvements (Including sludge system drive repairs, etc.)	Leopold	100,000.00
3	3700	Sedimentation Basin Concrete Repair	Tnemec Xypex	150,000.00
4	11820	Chemical Feed Pump Skids	Watson & Marlow	300,000.00
5	6550	Chemical Bulk & Day Tanks	Poly Processing OR Snyder	150,000.00
6	15200, et al.	Chemical Feed and Sample Line Piping, Valves, Meters, etc.	Per Specifications	50,000.00
7	11390	Existing Sludge Holding Tanks Modifications into Sludge Thickeners	Westech Envirodyne	319,000.00
8	11825	Modify Existing Sludge Building - Polymer Feed System	Acrison	130,000.00
9	Div. 4,5 et. Al.	Sludge Handling Building	Per Specifications	200,000.00
10	11600	Sludge Dewatering System (Including feed pumps, screw presses, conveyor, etc)	Huber	600,000.00
11	13200/13330	Instrumentation, etc.	Rosemount	15,000.00
12	15200	Yard Piping & Valves	Per Specifications	300,000.00
13	Div. 15	Mechanical & HVAC	Per Specifications	75,000.00
14	Div. 16	Electrical	Sq.D/Siemens/Cutler Hammer	330,000.00
15		All Other Items	N/A	530,000.00
<b>TOTAL BID</b>				<b>\$3,449,000.00</b>

**Dellinger, Inc.  
Monroe, NC**

ITEM	SECTION / DIVISION	DESCRIPTION	MANUFACTURER*	TOTAL PRICE
1	11010/11020	Rapid Mix & Flocculation Improvements	Invent Environmental Technologies	175,910.00
2	N/A	Sedimentation Basin Improvements (including sludge system drive repairs, etc.)		221,708.00
3	3700	Sedimentation Basin Concrete Repair	Tnemec	5,000.00
4	11820	Chemical Feed Pump Skids	Watson & Marlow	278,506.00
5	6550	Chemical Bulk & Day Tanks	<b>Poly Processing OR Snyder</b>	131,382.00
6	15200, et al.	Chemical Feed and Sample Line Piping, Valves, Meters, etc.	Per Specifications	65,075.00
7	11390	Existing Sludge Holding Tanks Modifications into Sludge Thickeners	Westech <b>Envirodyne</b>	333,842.00
8	11825	Modify Existing Sludge Building - Polymer Feed System	Acrison	4,215.00
9	Div. 4,5 et. Al.	Sludge Handling Building	Per Specifications	238,034.00
10	11600	Sludge Dewatering System (Including feed pumps, screw presses, conveyor, etc)	Huber	688,483.00
11	13200/13330	Instrumentation, etc.		12,894.00
12	15200	Yard Piping & Valves	Per Specifications	66,048.00
13	Div. 15	Mechanical & HVAC	Per Specifications	45,144.00
14	Div. 16	Electrical	<b>Sq.D/Siemens/Cutler Hammer</b>	333,959.00
15		All Other Items	N/A	981,684.00
<b>TOTAL BID</b>				<b>\$3,581,884.00</b>

Dellinger, Inc. - Did not add column correctly.

**Hickory Construction Company  
Hickory, NC**

<u>ITEM</u>	<u>SECTION / DIVISION</u>	<u>DESCRIPTION</u>	<u>MANUFACTURER*</u>	<u>TOTAL PRICE</u>
1	11010/11020	Rapid Mix & Flocculation Improvements	Invent Environmental Technologies	150,000.00
2	N/A	Sedimentation Basin Improvements (including sludge system drive repairs, etc.)		275,000.00
3	3700	Sedimentation Basin Concrete Repair	Thermecc	25,000.00
4	11820	Chemical Feed Pump Skids	Watson & Marlow	300,000.00
5	6550	Chemical Bulk & Day Tanks	<b>Poly Processing OR Snyder</b>	160,000.00
6	15200, et al.	Chemical Feed and Sample Line Piping, Valves, Meters, etc.	Per Specifications	50,000.00
7	11390	Existing Sludge Holding Tanks Modifications into Sludge Thickeners	<b>Westech Envirodyne</b>	350,000.00
8	11825	Modify Existing Sludge Building - Polymer Feed System	Acrison	225,000.00
9	Div. 4,5 et. Al.	Sludge Handling Building	Per Specifications	400,000.00
10	11600	Sludge Dewatering System (Including feed pumps, screw presses, conveyor, etc)	Huber	500,000.00
11	13200/13330	Instrumentation, etc.		75,000.00
12	15200	Yard Piping & Valves	Per Specifications	200,000.00
13	Div. 15	Mechanical & HVAC	Per Specifications	100,000.00
14	Div. 16	Electrical	<b>Sq.D/Siemens/Cutler Hammer</b>	350,000.00
15		All Other Items	N/A	571,200.00
<b>TOTAL BID</b>				<b>\$3,731,200.00</b>

**Turner Murphy Company, Inc.  
Rock Hill, NC**

ITEM	SECTION / DIVISION	DESCRIPTION	MANUFACTURER*	TOTAL PRICE
1	11010/11020	Rapid Mix & Flocculation Improvements	Invent Environmental Technologies	250,000.00
2	N/A	Sedimentation Basin Improvements (including sludge system drive repairs, etc.)	<b>Xylem</b>	200,000.00
3	3700	Sedimentation Basin Concrete Repair	Themec	2,500.00
4	11820	Chemical Feed Pump Skids	Watson & Marlow	400,000.00
5	6550	Chemical Bulk & Day Tanks	<b>Poly Processing OR Snyder</b>	200,000.00
6	15200, et al.	Chemical Feed and Sample Line Piping, Valves, Meters, etc.	Per Specifications	175,000.00
7	11390	Existing Sludge Holding Tanks Modifications into Sludge Thickeners	Westech <b>Envirodyne</b>	400,000.00
8	11825	Modify Existing Sludge Building - Polymer Feed System	Acrison	75,000.00
9	Div. 4,5 et. Al.	Sludge Handling Building	Per Specifications	450,000.00
10	11600	Sludge Dewatering System (including feed pumps, screw presses, conveyor, etc)	Huber	850,000.00
11	13200/13330	Instrumentation, etc.	<b>Chemtrac</b>	25,000.00
12	15200	Yard Piping & Valves	Per Specifications	75,000.00
13	Div. 15	Mechanical & HVAC	Per Specifications	75,000.00
14	Div. 16	Electrical	<b>Sq.D/Siemens/Cutler Hammer</b>	350,000.00
15		All Other Items	N/A	336,500.00
<b>TOTAL BID</b>				<b>\$3,864,000.00</b>



**The Harper Corporation  
Greenville, SC**

ITEM	SECTION / DIVISION	DESCRIPTION	MANUFACTURER*		TOTAL PRICE
1	11010/11020	Rapid Mix & Flocculation Improvements	Invent Environmental Technologies		200,000.00
2	N/A	Sedimentation Basin Improvements (including sludge system drive repairs, etc.)	Xylem (Leopold)		100,000.00
3	3700	Sedimentation Basin Concrete Repair	Themec		200,000.00
4	11820	Chemical Feed Pump Skids	Watson & Marlow		360,000.00
5	6550	Chemical Bulk & Day Tanks	Poly Processing OR Snyder		150,000.00
6	15200, et al.	Chemical Feed and Sample Line Piping, Valves, Meters, etc.	Per Specifications		50,000.00
7	11390	Existing Sludge Holding Tanks Modifications into Sludge Thickeners	Westech Envirodyne		400,000.00
8	11825	Modify Existing Sludge Building - Polymer Feed System	Acrison		200,000.00
9	Div. 4,5 et. Al.	Sludge Handling Building	Per Specifications		500,000.00
10	11600	Sludge Dewatering System (Including feed pumps, screw presses, conveyor, etc)	Huber		650,000.00
11	13200/13330	Instrumentation, etc.	Rosemount		15,000.00
12	15200	Yard Piping & Valves	Per Specifications		120,000.00
13	Div. 15	Mechanical & HVAC	Per Specifications		80,000.00
14	Div. 16	Electrical	Sq.D/Siemens/Cutler Hammer		380,000.00
15		All Other Items	N/A		595,000.00
<b>TOTAL BID</b>					<b>\$4,000,000.00</b>

To the best of our knowledge, these bids are accurately tabulated and were accepted in accordance with applicable regulations.

  
 J. Wheeler Crook, PE, North Carolina License No. 37644