

August 2007

# UNION COUNTY, NORTH CAROLINA

## DEPARTMENT OF PUBLIC WORKS



# WASTEWATER SYSTEM PERFORMANCE SUMMARY

(FISCAL YEAR 2006-2007)

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## 1.0 INTRODUCTION

House Bill 1160, the Clean Water Act of 1999, was ratified by the North Carolina General Assembly on July 20, 1999 and signed into law by the Governor on July 21, 1999. This legislation placed significant reporting requirements on entities that own or operate wastewater systems. This Performance Summary is intended to establish compliance with said rule.

Union County Public Works (UCPW) is charged with the management, operation and maintenance of the County's sanitary sewer system. During the 2006-2007 fiscal year the wastewater system was comprised of 5 active wastewater treatment plants (WWTP), approximately 64 wastewater pumping stations and over 500 miles of pipe with over 26,000 connections. In addition to the 5 WWTP's which have a combined rated treatment capacity of 5.2 million gallons per day (MGD), the County, through contractual agreement, has 2.65 MGD and 3.0 MGD of capacity at the City of Monroe WWTP and Charlotte's McAlpine Creek WWTP respectively.

Public Works' Mission Statement is as follows:

*Develop water, sewer and solid waste infrastructure that supports residential, commercial, industrial and agricultural needs while meeting Federal/State regulations and providing our customer base with acceptable levels of service at cost effective rates*

## 2.0 DEFINITIONS

For the purposes of this Performance Report the following definitions apply:

- **Aerobic** – A condition in which atmospheric or dissolved molecular oxygen is present in the aquatic environment.
- **Automatic Telephone Dialer or ATD** – A device connected to the telephone system that will alert programmed telephone numbers of equipment status.
- **Biological Nutrient removal** – The process of removing nitrogen and phosphorus from wastewater using biological processes as opposed to chemical means.
- **Biosolids** – A primarily organic solid product, produced by wastewater treatment processes that can be beneficially recycled. The word *biosolids* is replacing the word *sludge*.
- **BOD – Biochemical Oxygen Demand** – The rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. The BOD Test is a procedure that measures the rate of oxygen use under controlled conditions of

time and temperature. BOD is typically used to express the “strength” of wastewater.

- **CL<sub>2</sub> – Chlorine Residual** – The amount of chlorine present in the final effluent after disinfection. Typically measured in micrograms per liter or milligrams per liter.
- **D.O. – Dissolved Oxygen** – Molecular (atmospheric) oxygen dissolved in a liquid.
- **Effluent** – Treated wastewater flowing from the treatment system.
- **Extended Aeration** – A type of wastewater treatment facility in which the wastewater is retained and treated for a minimum of 24 hours at design flow before discharge occurs.
- **Impeller**- A rotating set of vanes in a pump designed to pump or lift water.
- **Inflow and Infiltration (I&I)** - extraneous water that enters the sanitary sewer system through openings and/or defects in the collection system.
- **Fecal Coliform** – The coliform (bacteria) found in the feces of warm blooded animals. The presence of coliform-group bacteria is an indication of possible pathogenic bacterial contamination.
- **MGD – Million Gallons per Day** – Volumetric measurement of flow converted to millions. Example .150 MGD x 1,000,000 = 150,000 gallons per day (gpd).
- **NH<sub>3</sub> – Nitrogen as Ammonia** – A compound found naturally in wastewater. The compound is produced by the deamination of organic nitrogen containing compounds.
- **NPDES Permit – National Pollutant Discharge Elimination System - Permits**, required by the Federal Water Pollution Control Act Amendments of 1972, which regulate discharges to surface waters.
- **pH** – The expression of the intensity of the basic or acidic condition of a liquid.
- **Pump Station** – A holding tank with pumps that forces wastewater uphill when flow by gravity is not possible.
- **SBR – Sequencing Batch Reactor** – A type of wastewater treatment facility that treats and discharges water in batches as opposed to continuous flow.
- **Telemetry** – A system by which information pertaining to remote equipment status is transmitted via radio waves to a central location.
- **TSS – Total Suspended Solids** – Particles suspended in a liquid.
- **Turbidity** – The measurement of the clearness or cloudiness of a liquid.

### **3.0 SYNOPSIS OF WASTEWATER TREATMENT FACILITIES (Fiscal Year 2006-2007)**

During the 2006-2007 fiscal year the Department of Public Works operated and maintained a total of five (5) active wastewater treatment facilities and maintained one (1) inactive facility. Although each Permit requires facility visitation daily, excluding weekends and holidays, Public Works' active wastewater treatment facilities are checked 7 days per week 365 days per year. All treatment facilities are equipped with emergency back-up power generators. Each treatment facility is equipped with an automated telephone dialer (ATD). In addition to an ATD, each facility has both audible and visual trouble alarms. Wastewater treatment plant staff rotate "call duty" for after hour situations that may arise.

A brief overview of each facility and a performance summary table for each facility is provided herein.

#### **3.1 Twelve Mile Creek Water Reclamation Facility**

Permit No. NC0085359. Twelve Mile is an extended aeration facility utilizing biological nutrient removal and tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Twelve Mile effluent is discharged into Twelve Mile Creek, which is part of the Catawba River Basin. The facility was permitted to discharge up to 2.5 MGD of treated wastewater through March 2007. Effective April 1, 2007 the facility's allowable discharge was increased 3.0 MGD. This increase was made possible by the completion of select facility improvements associated with an ongoing expansion to 6.0 MGD.

Numerous permit violations were experienced during this reporting period. Facility improvements as well as operational changes that took effect in mid to late 2006 resulted in significant compliance improvement. Twelve Mile Creek WWTP is located at 3104 Providence Road South and serves Waxhaw as well as portions of Indian Trail, Stallings and Weddington. Please refer to Table 3-1.

#### **3.2 Crooked Creek Water Reclamation Facility**

Permit No. NC0069841. Crooked Creek is an extended aeration facility utilizing tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Crooked Creek effluent is pumped over 17,000 feet to discharge into the North Fork Crooked Creek which lies in the Yadkin Pee Dee River Basin. This facility is permitted to discharge up to 1.9 MGD of treated wastewater. Crooked Creek is located at 4015 Sardis Church Road and serves the Indian Trail, Lake Park and Stallings areas. Please refer to Table 3-2.

### **3.3 Hunley Creek Wastewater Treatment Plant**

Permit No. NC0072508. This WWTP was taken off-line May 10, 2006 via flow diversion project. The facility is inactive. Hunley Creek is located at 6913 Stevens Mill Road and served the subdivisions of Shanamara, Hunley Creek and Stevens Mill. Due to "Inactive Status" of the Hunley Creek WWTP, there was no data to report for fiscal year 2006-2007.

### **3.4 Olde Sycamore Water Reclamation Facility**

Permit No. WQ0011928. Olde Sycamore is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to .150 MGD of treated wastewater. Olde Sycamore serves the Olde Sycamore Golf Community located off Highway 218 and Rock Hill Church Road. Olde Sycamore effluent is discharged to a manmade impoundment where it is then pumped onto the Olde Sycamore Golf Course as a source of irrigation. Please refer to Table 3-4.

### **3.5 Tallwood Estates Wastewater Treatment Plant**

Permit No. NC0069523. Tallwood is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to .05 MGD of treated wastewater. Tallwood is located within and serves the Tallwood Subdivision off Brief Road. Tallwood effluent is discharged to Clear Creek, which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-5.

### **3.6 Grassy Branch Wastewater Treatment Plant**

Permit No. NC0085812. Grassy Branch is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to .05 MGD of treated wastewater. Grassy Branch is located at 1629 Old Fish Road and currently serves the Unionville Elementary, Piedmont Middle and Piedmont High Schools as well as the Loxdale and Smithfield Farms subdivisions. Grassy Branch effluent is discharged to Crooked Creek which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-6.

TABLE 3-1

**Twelve Mile Creek Water Reclamation Facility  
NPDES Permit #: NC0085359  
Fiscal Year: 2006-2007 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
<b>FLOW (permitted for 3.0 MGD beginning April 2007)</b>	<b>2.5/3.0 MGD</b>	2.11	2.11	2.48	2.44	2.98 <sup>9</sup>	2.73 <sup>12</sup>	3.42 <sup>14</sup>	3.26 <sup>16</sup>	3.03 <sup>19</sup>	2.90	2.76	2.57
<b>pH</b>	<b>6-9 SU</b>	7.12-7.63	7.14-7.39	7.09-7.35	7.00-7.37	7.00-7.28	6.90-7.23	6.89-8.97	6.8-7.6	6.8-7.2	6.8-7.1	6.8-7.2	6.8-7.2
<b>BOD<sub>5</sub></b>	<b>5 mg/l</b>	4.03 <sup>1</sup>	1.18	0.12	4.90						5.0	1.6	0.5
	<b>10 mg/l</b>					1.73	8.06	7.35	9.8	7.5			
<b>AMMONIA NITROGEN</b>	<b>2/1 mg/l</b>	0.9	0.0	0.0	0.1						0.0	0.0	0.0
	<b>4/2 mg/l</b>					0.4	0.8	0.7	1.6	0.8			
<b>TOTAL SUSPENDED RESIDUE</b>	<b>30 mg/l</b>	2.8	1.9	0.2	2.5	1.6	9.9	7.1	8.8	6.6	4.5	1.3	4.0
<b>FECAL COLIFORM</b>	<b>200/100 ml</b>	73 <sup>2</sup>	4	2	4	11 <sup>10</sup>	6	6	23 <sup>17</sup>	3	2	5	2
<b>DISSOLVED OXYGEN</b>	<b>≥ 6 mg/l</b>	7.37 <sup>3</sup>	8.01	8.32	8.16	8.66	8.94	9.16	9.5	8.7	8.5	8.7	8.3
<b>COPPER</b>	<b>18.5 ug/l</b>	0.9	3.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.7	0.5
<b>ZINC</b>	<b>172.0 ug/l</b>	68.0 <sup>4</sup>	90.0	73.0	67.0	59.0	47.0	39.0	30.0	55.0	90.0	86.0	82.0
<b>TOTAL PHOSPHOROUS</b>	<b>41.7 #/day</b>	47.69 <sup>5</sup>	95.98 <sup>6</sup>	46.65 <sup>7</sup>	25.41 <sup>8</sup>	7.71 <sup>11</sup>	5.80 <sup>13</sup>	9.96 <sup>15</sup>	13.12 <sup>18</sup>	10.56 <sup>20</sup>	18.05 <sup>21</sup>	14.72 <sup>22</sup>	28.99 <sup>23</sup>

<sup>1</sup> BOD<sub>5</sub> weekly parameter violation clarifier blockage cleaned and regained compliance; Monthly BOD<sub>5</sub> compliant

<sup>2</sup> Fecal Coliform daily violation for 6 days due to defective components, components replaced ; Monthly Fecal Coliform compliant

<sup>3</sup> Dissolved Oxygen 2 daily violations due to sampling during non- flow hours; sampling method corrected

<sup>4</sup> Zinc daily violation week of July 28th; NC-DWQ established new limit August 1st

<sup>5</sup> Phosphorus monthly and annual average non-compliant; seeking methods to identify phosphorus source(s) & subsequent treatment

<sup>6</sup> Phosphorus monthly and annual average non-compliant; seeking methods to identify phosphorus source(s) & subsequent treatment

<sup>7</sup> Phosphorus monthly and annual average non-compliant; seeking methods to identify phosphorus source(s) & subsequent treatment

<sup>8</sup> Phosphorus annual average non-compliant. Monthly Phosphorous average compliant. Implemented Phosphorus reduction methods acquired

<sup>9</sup> Monthly Flow discharge limits were violated due to heavy rains and related I & I

<sup>10</sup> Fecal Coliform daily violation for 2 days due to UV control panel electrical failure, components replaced ; Monthly Fecal Coliform compliant

<sup>11</sup> Monthly Phosphorus compliant; annual mass loading violation due to high previous months

<sup>12</sup> Monthly Flow discharge limits were violated due to heavy rains and related I & I

<sup>13</sup> Monthly Phosphorus compliant; annual mass loading violation due to high previous months

<sup>14</sup> Monthly Flow discharge limits were violated due to heavy rains and related I & I

<sup>15</sup> Monthly Phosphorus compliant; annual mass loading violation due to high previous months

**Twelve Mile Creek Water Reclamation Facility  
 NPDES Permit #: NC0085359  
 Fiscal Year: 2006-2007 Effluent Limits and Performance  
 continued**

<sup>16</sup>	Monthly Flow discharge limits were violated due to heavy rains and related I & I
<sup>17</sup>	Fecal Coliform daily violation for 2 days due to power failure damaging UV components, components replaced ; Monthly Fecal Coliform compliant
<sup>18</sup>	Monthly Phosphorus compliant; annual mass loading violation due to high previous months
<sup>19</sup>	Monthly Flow discharge limits were violated due to heavy rains and related I & I
<sup>20</sup>	Monthly Phosphorus compliant; annual mass loading violation due to high previous months
<sup>21</sup>	Monthly Phosphorus compliant; annual mass loading violation due to high previous months
<sup>22</sup>	Monthly Phosphorus compliant; annual mass loading violation due to high previous months
<sup>23</sup>	Monthly Phosphorus compliant; annual mass loading violation due to high previous months

TABLE 3-2

**Crooked Creek Water Reclamation Facility**  
**NPDES Permit #: NC0069841**  
**Fiscal Year: 2006-2007 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
<b>FLOW</b>	<b>1.900 MGD</b>	1.367	1.465	1.550	1.515	1.497	1.222	1.416	1.291	1.391	1.242	1.083	1.259
<b>pH</b>	<b>6-9 SU</b>	5.84 <sup>1</sup> 7.36 <sup>1</sup>	6.89-7.67	6.17-7.28	6.69-7.39	6.87-7.61	6.50-7.68	6.81-7.62	7.09-7.56	6.72-7.51	6.66-7.43	7.02-7.53	6.25-7.78
<b>Cl<sub>2</sub></b>	<b>17 ug/l</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>BOD<sub>5</sub></b> <b>SUMMER (APR.1 - OCT.31)</b>	<b>5 mg/l</b>	3.84	4.30	3.38	4.10						4.37	5.2 <sup>3</sup>	5.4 <sup>4</sup>
<b>WINTER (NOV.1 - MAR.31)</b>	<b>10 mg/l</b>					4.09	4.62	5.00	10.67 <sup>2</sup>	4.91			
<b>AMMONIA NITROGEN</b> <b>SUMMER</b>	<b>2 mg/l</b>	0.1	0.0	0.0	0.0						0.0	0.0	0.0
<b>WINTER</b>	<b>4 mg/l</b>					0.9	0.0	0.1	0.1	0.1			
<b>TOTAL SUSPENDED RESIDUE</b>	<b>30 mg/l</b>	6.2	3.4	6.5	6.2	9.5	10.3	14.4	9.8	3.3	5.9	9.1	5.0
<b>FECAL COLIFORM</b>	<b>200/100 ml</b>	10	11	15	23	10	6	5	3	11	11	23	20
<b>DISSOLVED OXYGEN</b>	<b>≥ 6 mg/l</b>	7.68	7.45	7.90	8.75	9.17	10.25	11.00	11.98	10.33	9.43	8.76	8.14

<sup>1</sup> pH daily violation went below limits and soda ash was immediately added to bring pH up to normal status

<sup>2</sup> BOD<sub>5</sub> monthly violation due to rain event which contributed to unfavorable effluent BOD

<sup>3</sup> BOD<sub>5</sub> monthly violation due to random "higher-than-normal" daily BOD data of undetermined causes

<sup>4</sup> BOD<sub>5</sub> monthly violation due to random "higher-than-normal" daily BOD data of undetermined causes

TABLE 3-3

Hunley Creek Wastewater Treatment Plant  
 NPDES Permit #: NC0072508  
 Fiscal Year: 2006-2007 Effluent Limits and Performance

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
FLOW	0.231 MGD	<p><b>Hunley Creek WWTP                      is not in service.                      This facility was listed as inactive as of May 2006;                      therefore there is no data reported for this fiscal year</b></p>											
pH	6-9 SU												
Cl <sub>2</sub>	20 ug/l												
BOD <sub>5</sub> SUMMER (APR.1 - OCT.31)	5 mg/l												
WINTER (NOV.1 - MAR.31)	10 mg/l												
AMMONIA NITROGEN SUMMER	2 mg/l												
WINTER	4 mg/l												
TOTAL SUSPENDED RESIDUE	30 mg/l												
FECAL COLIFORM	200/100 ml												
DISSOLVED OXYGEN	≥ 5 mg/l												

No violations for fiscal year

TABLE 3-4

**Olde Sycamore Water Reclamation Facility**  
**NPDES Permit #: WQ0011928**  
**Fiscal Year: 2006-2007 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
<b>FLOW</b>	<b>0.150 MGD</b>	0.058	0.064	0.055	0.045	0.051	0.046	0.057	0.064	0.056	0.057	0.044	0.043
<b>pH</b>	<b>6-9 SU</b>	6.47-7.07	6.56-7.19	6.64-7.23	6.72-7.29	6.58-7.28	6.39-7.27	6.32-7.40	6.50-7.20	6.41-7.17	6.00-7.32	6.64-7.34	7.01-7.47
<b>BOD<sub>5</sub></b>	<b>10 mg/l</b>	0.00	0.00	0.00	0.00	1.16	0.00	0.00	1.51	0.50	0.59	0.00	0.00
<b>AMMONIA NITROGEN</b>	<b>4 mg/l</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>TOTAL SUSPENDED RESIDUE</b>	<b>5 mg/l</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
<b>FECAL COLIFORM</b>	<b>14/100 ml</b>	2	1	1	1	1	1	1	2	1	1	1	1
<b>TURBIDITY</b>	<b>≤ 10 NTU</b>	0.5	0.5	0.7	0.6	1.8	4.8	0.9	1.6	1.3	1.1	0.6	0.8

No violations for fiscal year

TABLE 3-5

**Tallwood Estates Wastewater Treatment Plant  
NPDES Permit #: NC0069523  
Fiscal Year: 2006-2007 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
<b>FLOW</b>	<b>0.050 MGD</b>	0.024	0.023	0.024	0.027	0.038	0.031	0.041	0.032	0.033	0.027	0.022	0.024
<b>pH</b>	<b>6-9 SU</b>	6.2-7.4	6.63-7.31	6.61-7.46	6.38-7.21	6.42-7.73	6.34-7.52	6.40-7.35	6.65-7.28	6.36-7.30	6.29-7.34	6.43-7.28	6.73-7.17
<b>BOD<sub>5</sub></b> SUMMER (APR 1-OCT 31)	<b>5 mg/l</b>	2.80	1.80	2.31	3.03						3.89	1.41	1.97
WINTER (NOV.1 - MAR.31)	<b>10 mg/l</b>					2.27	1.93	1.45	0.51	3.64			
<b>AMMONIA NITROGEN</b> SUMMER	<b>2 mg/l</b>	0.0	0.0	0.0	0.0						0.0	0.4	0.0
WINTER	<b>4 mg/l</b>					0.0	0.0	0.0	0.0	0.0			
<b>TOTAL SUSPENDED RESIDUE</b>	<b>30 mg/l</b>	3.4	0.80	0.00	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00
<b>FECAL COLIFORM</b>	<b>200/100 ml</b>	1	1	1	1	1	1	1	1	1	1	1	1
<b>DISSOLVED OXYGEN</b>	<b>≥ 6 mg/l</b>	7.9	7.42	8.34	9.05	9.67	9.95	10.70	10.72	9.13	8.78	7.67	7.57

No violations for fiscal year

TABLE 3-6

**Grassy Branch Wastewater Treatment Plant  
NPDES Permit #: NC0085812  
Fiscal Year: 2006-2007 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '06	AUG '06	SEP '06	OCT '06	NOV '06	DEC '06	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07
<b>FLOW</b>	<b>0.050 MGD</b>	0.006	0.008	0.013	0.015	0.023	0.014	0.017	0.018	0.019	0.016	0.012	0.013
<b>pH</b>	<b>6-9 SU</b>	7.59-8.01	6.82-8.02	6.97-7.55	7.18-7.61	7.01-7.70	6.62-7.46	6.80-7.35	6.92-7.52	6.55-7.16	7.06-7.50	6.92-7.56	7.29-7.80
<b>Cl<sub>2</sub></b>	<b>17 ug/l</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>BOD<sub>5</sub></b>	<b>5 mg/l</b>	0.52	1.85	0.52	1.67						2.72	1.37	2.04
	<b>10 mg/l</b>					1.91	1.95	1.57	2.99	1.10			
<b>AMMONIA NITROGEN</b>	<b>2 mg/l</b>	0.0	0.0	0.5	0.0						0.0	0.0	0.0
	<b>4 mg/l</b>					0.0	0.0	0.0	0.0	0.0			
<b>TOTAL SUSPENDED RESIDUE</b>	<b>30 mg/l</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	1.2	1.2	0.0
<b>FECAL COLIFORM</b>	<b>200/100 ml</b>	1	6	5	4	9	19	14	2	1	27	5	24
<b>DISSOLVED OXYGEN</b>	<b>≥ 6 mg/l</b>	8.13	7.71	7.77	8.36	9.15	9.84	10.75	10.87	9.61	8.00	7.86	8.05

No violations for fiscal year

#### **4.0 BIOSOLIDS MANAGEMENT**

Biosolids are managed and disposed of in accordance with Permit No. WQ0007486 issued by the North Carolina Department of Environment and Natural Resources. Biosolids are stored at both the Crooked Creek and Twelve Mile Creek WWTP's. The solids are aerobically digested and then applied as "fertilizer" to permitted sites. The solids are considered stabilized, and thus suitable for land application, when the volatile solids content is reduced by 38%. If this 38% volatile solids reduction can not be achieved, then alkaline stabilization, injection or incorporation is employed to ensure Permit compliance.

#### **5.0 SYNOPSIS OF WASTEWATER COLLECTION SYSTEM (Fiscal Year 2006-2007)**

Currently The Department of Public Works operates and maintains approximately 64 wastewater pumping stations and over 500 miles of sewer lines that serve approximately 26,330 customers throughout Union County. These pumping stations are equipped with an ATD or telemetry as well as both audible and visual alarms. Inspection of all stations meets or exceeds State requirements. All stations are checked a minimum of twice a week and many are checked daily to ensure proper maintenance and operation. Emergency back up power is provided to all stations via portable or permanent generators. Wastewater personnel are on a call rotation allowing assistance 24 hours a day, seven days a week, 365 days a year.

Public Works maintains emergency response equipment in a ready state at all times. This emergency equipment varies in nature from spare electrical parts and plumbing supplies, to vacuum trucks and backhoes. Workers' safety is of utmost importance, with safety equipment such as night lighting, gas monitors, and reflective cones/signs readily available.

Public Works has numerous ongoing programs to identify and correct deficiencies associated with the wastewater collection system. Inflow and Infiltration (I&I) reduction is one of these programs. During the fiscal year 2006-2007 over 3,322 manholes were inspected and 1,431 repairs were made. The repairs resulted in the elimination of an estimated 1 MGD of extraneous flow. Approximately 3,216 linear ft of sewer collection line was inspected via CCTV. Approximately 16 miles of pipe was smoke tested to locate sources of I&I.

Another important program is the FOG program or Fats, Oil, and Grease program. This program is aimed at reducing backups and overflows by educating the public of the hazards associated with the disposal of cooking grease into the wastewater system. A grease trap inspection program is

aimed at better insuring restaurants and other food preparation facilities properly maintain grease traps and interceptors.

Approximately 65 miles of gravity sewer lines were cleaned via high pressure “jetting” in an effort to proactively reduce the number of overflows caused by blockages.

A Gray Water Tank Inspection Program and an Air Relief Valve Inspection Program were implemented to better ensure uninterrupted sewer service to our customers.

**Major system improvements during fiscal year 2006-2007 include:**

- A \$175,000.00 project to rehabilitate two (2) wastewater pump stations in the eastern portion of Union County. This project increased the overall reliability of the stations.
- The continued development of a comprehensive electronic sewer map. This map will help Public Works better track problematic areas as well as track scheduled maintenance, improvements and repairs throughout the service area.
- Pumping capacity was increased at the 12 Mile Creek WWTP influent pump station. The increase in pumping capacity will significantly reduce surcharging and overflows in close proximity to the WWTP that are associated with I&I.

During the Fiscal Year 2006-2007, the County’s wastewater system collected and conveyed for treatment in excess of 2.28 billion gallons. Thirty-four (34) spills, with a combined total of 467,759 gallons, occurred within the system. A brief description of each spill is presented below.

<u>DATE</u>	<u>LOCATION</u>	<u>CAUSE</u>	<u>SURFACE WATER</u>	<u>VOLUME (GALLONS)</u>
7/12/2006	SEDFIELD OUTFALL	DEBRIS	UN-NAMED TRIBUTARY	300
8/24/2006	4200 UNIONVILLE IT RD	DEBRIS	NONE	450
8/29/2006	4100 PAULA LN	DEBRIS	UN-NAMED TRIBUTARY	90
8/31/2006	MCINTYRE RD	I & I	MEADOWS BRANCH	21,600
8/31/2006	CRANE RD	I & I	UN-NAMED TRIBUTARY	400
8/31/2006	HWY 16	I & I	12 MILE CREEK	43,200
09,02/06	701 PERTH RD	DEBRIS	UN-NAMED TRIBUTARY	180
9/14/2006	HWY 16	I & I	12 MILE CREEK	840
10/18/2006	PRESCOTT GLEN WAY	I & I	UN-NAMED TRIBUTARY 12 MILE CREEK	2,160
11/16/2006	HWY 16	I & I	12 MILE CREEK	44,100
11/16/2006	MCINTYRE RD	I & I	MEADOWS BRANCH	15,600
11/16/2006	PRESCOTT GLEN WAY	I & I	UN-NAMED TRIBUTARY 12 MILE CREEK	10,080
11/16/2006	2125 - SHARON DR	I & I	RONE BRANCH	6,120

11/22/2006	HWY 16	I & I	12 MILE CREEK	45,000
11/22/2006	PRESCOTT GLEN WAY	I & I	UN-NAMED TRIBUTARY 12 MILE CREEK	28,080
11/22/2006	2125- SHARON DR	I & I	RONE BRANCH	6,600
11/22/2006	MCINTYRE RD	I & I	MEADOWS BRANCH	19,320
12/12/2006	MAYFLOWER TRAIL	DEBRIS	W FORK 12 MILE CREEK	960
12/23/2006	HWY 16	I & I	12 MILE CREEK	26,064
12/25/2006	HWY 16	I & I	12 MILE CREEK	55,440
12/27/2006	HWY 16	I & I	12 MILE CREEK	12,150
1/2/2007	HWY 16	PUMP FAILURE	12 MILE CREEK	2,400
1/2/2007	PRESCOTT GLEN WAY	PUMP FAILURE	UN-NAMED TRIBUTARY 12 MILE CREEK	5,400
1/8/2007	SARDIS CHURCH RD N	I & I	E FORK CROOKED CREEK	5,800
1/8/2007	PRESCOTT GLEN WAY	I & I	UN-NAMED TRIBUTARY 12 MILE CREEK	34,400
1/8/2007	HWY 16	I & I	12 MILE CREEK	40,000
1/22/2007	SARDIS CHURCH RD N	I & I	E FORK CROOKED CREEK	810
1/31/2007	3400 BROOKTREE LN	VANDALISIM	UN-NAMED TRIBUTARY	600
3/2/2007	SARDIS CHURCH RD N	I & I	E FORK CROOKED CREEK	3,360
3/2/2007	HWY 16	I & I	12 MILE CREEK	33,300
3/31/2007	405 Marvin Branch Ct. 3007 SALMON RIVER DR.	GREASE & DEBRIS	UN-NAMED TRIBUTARY SIX MILE CREEK	960
4/2/2007		DEBRIS	UN-NAMED TRIBUTARY 12 MILE CREEK	60
4/3/2007	SARDIS CHURCH RD.	DEBRIS	UN-NAMED TRIBUTARY CROOKED CREEK	135
4/29/2007	6 MILE OUTFALL	DEBRIS	McBRIDE BRANCH	1,800

For questions concerning this Wastewater System Performance Summary or additional information, please contact the Public Works Department at:

(704) 296-4210

or write to:

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This document can also be viewed at <http://UCPW.co.union.nc.us>