Winston-Salem Forsyth County Utility Commission
Wastewater Collection and Treatment System
Performance Report for FY 2013-2014

This report is published in accordance with the requirements of the North Carolina Clean Water Act of 1999 and provides information on the Publicly Operated Treatment Works (POTW) and Collection System operated by the Winston-Salem/Forsyth County Utility Commission. It covers the period from July 1, 2013 through June 30, 2014. This report is published and released to our customers annually.

The Winston-Salem/Forsyth County Utility Commission (Commission) operates two wastewater treatment plants (WWTPs) with a combined treatment capacity of 51 million gallons per day. The wastewater collection system includes approximately 1,730 miles of sewer lines, 49 pumping stations, and three chemical odor control stations. During the period covered by this report a total of 11.840 billion gallons of wastewater was collected and treated at these facilities. The Commission and its staff work hard to meet or exceed the requirements mandated by the North Carolina Clean Water Act and the requirements of the National Pollutant Discharge Elimination System (NPDES) permits that regulate the actual operation of the treatment plants, the disposal of our biosolids, and the operation and maintenance of our collection system.

The wastewater collection system operates under NPDES permit WQCS00003. The Archie Elledge WWTP operates under NPDES Permit NC0037834 and the Muddy Creek WWTP operates under NPDES permit NC0050342. The treatment and disposal of residual biosolids produced by the plants is accomplished by anaerobic digestion followed by processing in a biosolids drying facility at the Elledge WWTP under Permits WS0000094 and WQ0029804. The biosolids dryer facility produced 6286.99 dry tons of pelletized biosolids during FY 2013-2014, which were beneficially applied to farmland.

The Commission's Archie Elledge WWTP, Muddy Creek WWTP, and the biosolids dryer facility reported no violations of their permit limits during the reporting period as shown in Appendix A. The Commission's two wastewater treatment plants met the minimum requirements imposed by the State of North Carolina's Division of Water Resources by a **safety factor of 3.56.** The bar chart in Appendix B shows the performance of the wastewater treatment plants during this period. Approximately 23,895.20 tons of regulated pollutants were removed by the treatment processes during the period ending June 30, 2014.

The remainder of this document includes details about monitoring system discharges and overflows from our system, the preventative maintenance program the Commission has established to prevent potential problems and the degree to which we complied with State and Federal standards during the fiscal year ending June 30, 2014.

The Commission's goal is to have zero sanitary sewer overflows (SSO) from the sewer collection system. However, during the last fiscal year, 0.0009% of the wastewater collected was spilled/overflowed from the sanitary sewer system. Appendix A and D of this report lists a detailed summary of plant and collection system overflows reported in FY 2013-2014.

Since the passage of the North Carolina Clean Water Act in 1999 the total annual SSOs has been tracked against the baseline year of FY 1998-99 (Appendix C). The FY 2013-2014 total volume of SSOs represents a 93% decrease from the total reported for the baseline year. Diligence by maintenance personnel toward preventative maintenance continued to be a major factor contributing to SSOs remaining at a lower level than that of the baseline year. In fact, FY 2013-2014 has resulted in the lowest reported SSOs (82) since reporting began in 1999. This diligence includes the incorporative use of Geographic Information Systems (GIS) in our maintenance planning. The GIS application houses historical work order information which allows our crews to respond to areas where issues have repeatedly occurred. Our decision makers also use this same data to help develop future capital projects to alleviate the cause of repeat issues. In FY 2013-2014, key members of staff were trained to formally assess the condition of infrastructure through a universal standard of the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program. This certification will further our abilities to prioritize maintenance and rehabilitation/replacement of our aging infrastructure.

The majority of SSO occurrences in FY2013-2014 were attributed to grease accumulation. However, in recent history, this "major contributor" statistic has fluctuated between the causes of grease accumulation and root intrusion. For example, of all line blockages in the collection system since 2009, an average 42.36% were attributed to grease accumulation; and an average of 34.28% were attributed to roots. From this statistic, it is evident that these two contributors make-up 76% of all SSOs. Because of this, the commission continues to be proactive in fighting the occurrence of both contributors.

In 2003, the Commission adopted a Grease Interceptor Ordinance which regulated the operation and maintenance of residential, commercial and industrial grease trap interceptors. This ordinance alone has been effective in reducing the amount of grease related SSOs since its adoption. In 2003, the total number of SSOs spiked at 269; the following year that number dropped by nearly 30 SSOs (241) and the count of SSOs has made a steady decline since that time. While this ordinance has been effective, further assistance from the public is necessary to completely solve this problem. Over the past year, in-house personnel have reached out to the public via community events and other media opportunities in an effort to educate the public on the proper disposal of cooking grease, fats and other oils. In addition, maintenance personnel have been proactive by cleaning the publicly maintained portion of sewer connections and keeping sewer main lines clean and free of grease as well as tree roots and debris. This year, in-house personnel have cleaned 846,260 linear feet of publicly owned/maintained sewer lines and $145,249.75 was spent on contracted mainline cleaning which provided for cleaning of approximately 122,358 linear feet of sewer lines, with an increasing focus on our large diameter sewer mains. Also, chemical root control contract is anticipated to treat approximately 110,000 linear feet of sewer main in the upcoming fiscal year.

During FY 2013-2014, the Commission continued its proactive efforts toward the reduction of SSOs by spending over $6.69 million on the rehabilitation of 68,567 feet of gravity sewer mains, 180 manholes, and 370 service laterals. The sewer mains rehabilitated primarily ranged in size from 6" to 18". The mains were rehabilitated by means of pipe bursting, cured-in-place lining of pipes, point repairs, replacements, or a combination of any of these methods. The enhanced condition of these sewer mains and manholes provided by the rehabilitation projects not only contributed to the reduction of SSOs but, also aided in the reduction of infiltration and inflow by reducing and/or eliminating sewer system access points for storm water runoff and groundwater. In addition, the Commission funded the closed circuit TV inspection of 173,459 feet of sewer mains. Staff and contractors also improved the access to collection system easements through the inspection and mowing/clearing of approximately 45 miles of easements.

Further, Commission staff continued to actively identify and plan for projects in an effort to reduce SSOs and infiltration and inflow into the sewer system. In addition to the benefits of reducing SSO volume and the reduction of water getting into the system, these projects have the added benefit of decreasing the amount of sewer to be treated thereby reducing overall operating costs.

As always, customer involvement will continue to be a factor in the reduction of SSOs. All customers can do their part in helping to keep the sewer system free of materials that cause blockages by not dumping debris and fats, oils, or grease into the system.

To report a sewer spill, please contact the **City of Winston-Salem 24–hour customer service line (CityLink) at (336) 727-8000.** For questions regarding the Commission's programs or additional information regarding this report, please contact Ron Hargrove, Utilities Director at (336) 747-7312. Copies of this report may be obtained by calling CityLink at (336) 727-8000 and requesting a copy. This report is also available at all branches of the Forsyth County Public Library and it is posted on the Utilities Division's website at *http://www.cityofws.org/departments/utilities/stats-reports*.

Certification of Accuracy:

I certify under penalty of law that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to all persons or concerns using the publicly owned wastewater collection and treatment facilities under the direction of the Winston-Salem/Forsyth County Utility Commission and that those persons or concerns have been notified as to the availability of this report.

Ron Hargrove, Utilities Director
Winston-Salem/Forsyth County Utility Commission

Date August 29, 2014

Appendix A: Wastewater Treatment Plant and Pump Station Overflow/Spill Information Fiscal Year 2013-14

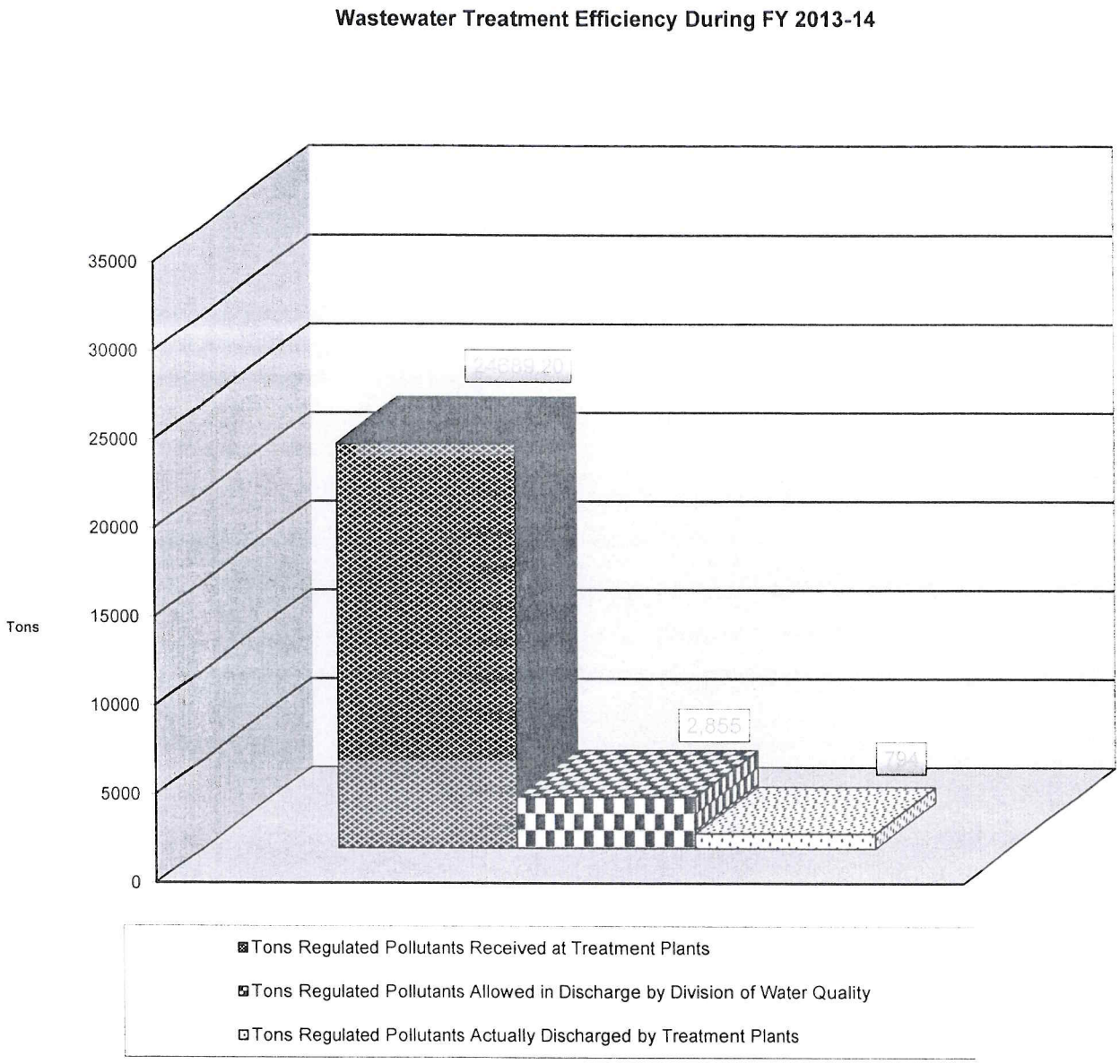
Month/Year	Flow Discharged From Treatment Plants, Gallons	Number of Overflow Events Reported	Volume of Overflows, gallons	Number of NPDES Permit Violations at Treatment Plants
July 2013	961,620,000	0	0	0
August 2013	934,800,000	0	0	0
Sept. 2013	952,320,000	0	0	0
October 2013	880,800,000	0	0	0
Nov. 2013	929,070,000	0	0	0
Dec. 2013	1,061,750,000	1	500	0
January 2014	1,121,270,000	0	0	0
February 2014	947,800,000	0	0	0
March 2014	1,107,100,000	1	5000	0
April 2014	1,069,200,000	0	0	0
May 2014	978,360,000	0	0	0
June 2014	896,100,000	0	0	0
ANNUAL TOTAL	**11,840,190,000**	**2**	**5500**	**0**

Notes:

December 31, 2013 – 500 gallons of treated centrate from Archie Elledge WWTP flowed into a tributary of Salem Creek due to an air relief failure.

March 11, 2014 – 5000 gallons of treated biosolids from Muddy Creek WWTP discharged on the ground and 750 gallons of it flowed into a tributary of Salem Creek due to an air relief valve failure.

Appendix B


Wastewater Treatment Efficiency During FY 2013-14
Tons
35000
30000
25000
20000
15000
10000
5000
0
2,855
794
Tons Regulated Pollutants Received at Treatment Plants
Tons Regulated Pollutants Allowed in Discharge by Division of Water Quality
Tons Regulated Pollutants Actually Discharged by Treatment Plants

Appendix C: **Fiscal Year 2013-2014 Performance Summary of Sewer Collection System**

Month/Year	Total No. of SSO's	Notice of Violations	SSO w/> 1000 gal. in Surface waters*	SSO w/> 15,000 gal. in Surface waters	Total SSO Volume (gal)	Total Sewer Collected** (gal.)	SSO Percentage of Total
July-13	7	4	1	-	3,440	961,810,000	0.0004%
August-13	6	0	0	-	588	966,000,000	0.0001%
September-13	3	2	0	-	1,350	921,730,000	0.0001%
October-13	6	2	1	-	3,612	910,140,000	0.0004%
November-13	3	0	0	-	365	899,090,000	0.0000%
December-13	9	2	0	-	3,750	1,061,870,000	0.0004%
January-14	9	3	2	-	18,349	1,121,540,000	0.0016%
February-14	7	5	2	-	8,975	947,770,000	0.0009%
March-14	9	4	1	-	12,968	1,107,040,000	0.0012%
April-14	11	4	3	-	17,118	1,069,310,000	0.0016%
May-14	6	4	3	-	11,387	978,210,000	0.0012%
June-14	6	0	2	-	24,482	896,120,000	0.0027%
2013-2014 Annual TOTAL	**82**	**30**	**15**	**0**	**106,834**	**11,840,630,000**	**0.0009%**
2012-2013 Annual Total	111	38	11	0	144,549	11,331,870,000	0.0013%
2011-2012 Annual Total	117	61	10	0	65,273	11,289,980,000	0.0006%
2010-2011 Annual TOTAL	109	76	15	0	95,342	11,328,410,000	0.0008%
2009-2010 Annual TOTAL	106	77	16	3	1,840,134	12,291,330,000	0.0150%
2008-2009 Annual TOTAL	117	88	20	0	85,433	11,607,400,000	0.0007%
2007-2008 Annual TOTAL	129	N/A	31	1	142,412	11,473,040,000	0.0012%
2006-2007 Annual TOTAL	161	N/A	40	8	571,946	12,475,820,000	0.0046%
2005-2006 Annual TOTAL	159	N/A	46	3	317,585	12,182,250,000	0.0026%
2004-2005 Annual TOTAL	211	N/A	49	3	246,290	12,621,450,000	0.0020%
2003-2004 Annual TOTAL	241	N/A	69	2	322,050	12,822,200,000	0.0025%
2002-2003 Annual TOTAL	269	N/A	116	16	2,305,175	13,408,980,000	0.0172%
2001-2002 Annual TOTAL	228	N/A	70	1	338,806	11,467,900,000	0.0030%
2000-2001 Annual TOTAL	193	N/A	84	4	533,108	11,930,700,000	0.0045%
1999-2000 Annual TOTAL	189	N/A	119	9	1,154,350	12,289,000,000	0.0094%
1998-1999 Annual TOTAL	194	N/A	118	21	1,541,054	11,804,100,000	0.0131%

SSO Occurrences attributable to:	For FY 2013 - 2014	Percentage	Quantity total
Grease	26	31.7%	20,271
Roots	23	28.0%	12,201
Debris	17	20.7%	12,228
Inflow & Infiltration	2	2.4%	16,650
Vandalism	0	0.0%	0
Pipe Failure	13	15.9%	40,922
Pump Station Equipment. Failure	0	0.0%	0
Severe Natural Conditions	0	0.0%	0
Other	1	1.2%	4,112
TOTAL	**82**	100.0%	**106,384**

*See Appendix D (attached) for a complete listing of locations, SSO (Sanitary Sewer Overflow) Totals and SSO "Volume in Surface Water" for all spills during this fiscal year.

**This is the total volume of treated waste discharged from the plant but is assumed to be equal to what is collected.

APPENDIX D:

Month/Year	Probable Cause of SSO	Total SSO Volume (gal.)	SSO Volume in Surface waters	Location of SSO
JULY 2013				
7/6/2013	DEBRIS	150	150	1500 DIGGS BLVD
7/11/2013	GREASE	30	30	1620 LOCUST AVE
7/14/2013	GREASE	405	405	113 OAKWOOD DR
7/15/2013	GREASE	50	50	3407 OLD LEXINGTON RD
7/16/2013	ROOTS	1,905	1,905	103 ECHO GLENN DR
7/18/2013	GREASE	450	450	4080 BETHANIA STATION RD
7/29/2013	DEBRIS	450	450	200 W FIRST ST
Total for July	7	3,440	3,440	
AUGUST 2013				
8/5/2013	GREASE	100	100	3401 ROBINHOOD RD
8/6/2013	DEBRIS	125	125	1500 BK CLEVELAND AVE
8/12/2013	ROOTS	113	56	3920 WEST POINT BLVD
8/12/2013	ROOTS	75	75	3941 WEST POINT BLVD
8/14/2013	ROOTS	75	15	2909 WINDY RIDGE RD
8/15/2013	GREASE	100	50	2618 CLAREMONT AVE
Total for August	6	588	421	
SEPTEMBER 2013				
9/4/2013	GREASE	450	450	3400 BK GLENN AV.
9/5/2013	DEBRIS	225	225	3400 BK GLENN AV.
9/15/2013	ROOTS	675	675	833 CLOVERLY RD
Total for September	3	1,350	1,350	
OCTOBER 2013				
10/1/2013	PIPE FAILURE	2250	2,250	513 27TH ST
10/4/2013	ROOTS	500	500	703 PARK LAWN COURT
10/7/2013	GREASE	150	75	1508 OAKSHIRE COURT
10/10/2013	DEBRIS	150	150	2700 W 28TH ST
10/19/2013	GREASE	450	450	3148 S STRATFORD RD
10/21/2013	PIPE FAILURE	112	28	247 CREEK BEND DR
Total for October	6	3,612	3,453	
NOVEMBER 2013				
11/3/2013	ROOTS	50	25	917 MACHINE ST
11/9/2013	DEBRIS	300	150	837 LEICHESTER SQUARE CT
11/19/2013	GREASE	15	15	489 VILLA DR KVILLE
Total for November	3	365	190	

DECEMBER 2013				
12/16/2013	GREASE	1800	900	9680 EAST 2ND ST
12/17/2013	GREASE	30	30	1501 DIGGS BV
12/18/2013	ROOTS	10	10	459 CORONA AV
12/21/2013	ROOTS	450	450	1940 AUSTIN PLACE
12/23/2013	ROOTS	50	50	419 HARPER ST
12/27/2013	GREASE	150	50	2856 LOCH DR
12/27/2013	DEBRIS	300	150	3130 BIRCH WAY LN
12/29/2013	GREASE	60	60	826 W SPRAUGE ST
12/29/2013	GREASE	900	450	3745 REYNOLDA RD
Total for December	9	3,750	2,150	
JANUARY 2014				
1/7/2014	ROOTS	60	60	211 HARMON LN
1/11/2014	I&I	5,400	5,400	3850 EBERT RD
1/11/2014	I&I	11,250	11,250	1522 JANITA DR
1/14/2014	GREASE	100	100	THURMAN & BROAD ST
1/17/2014	DEBRIS	417	417	142 WEATHERWOOD LN
1/20/2014	ROOTS	465	232	4255 MINERAL AV
1/22/2014	ROOTS	337	34	8345 LISMORE ST
1/22/2014	DEBRIS	250	150	1433 17TH ST
1/26/2014	GREASE	70	7	1300 UNDERWOOD AV
Total for January	9	18,349	17,650	
FEBRUARY 2014				
2/5/2014	DEBRIS	1,175	588	0 DIGGS BLVD
2/7/2014	PIPE FAILURE	825	825	3683 OLD LEXINGTON RD
2/9/2014	DEBRIS	450	225	1018 CRESTWOOD DR
2/10/2014	ROOTS	112	28	2028 POPE RD
2/10/2014	PIPE FAILURE	1,538	1,538	219 OAKHURST DR
2/18/2014	ROOTS	900	450	2200 TRYON ST
2/19/2014	DEBRIS	3,975	1,987	980 PETERS CREEK PKWY
Total for February	7	8,975	5,641	
MARCH 2014				
3/1/2014	ROOTS	450	400	2961 BURLWOOD DRIVE
3/3/2014	GREASE	1,325	398	421 JEFFERSON AVE
3/5/2014	GREASE	9,900	4,950	2618 MARBLE ST
3/11/2014	ROOTS	50	25	2830 SAINT GEORGE RD
3/13/2014	ROOTS	5	5	W 7TH ST AND LINDEN ST
3/25/2014	GREASE	900	900	VARGRAVE ST AND PARKVIEW ST
3/26/2014	DEBRIS	1	1	SHOREFAIR AND 30TH ST
3/27/2014	GREASE	300	150	496 MARRO DRIVE
3/28/2014	ROOTS	37	18	104 BRADFORD PLACE LN
Total for March	9	12,968	6,847	

APRIL 2014				
4/2/2014	ROOTS	70	70	4151 MACARTHUR ST
4/4/2014	GREASE	2,150	2,150	800 WHISPERINGBROOK RD
4/8/2014	ROOTS	500	250	3120 ORMOND DR
4/9/2014	DEBRIS	675	675	601 SALEM AVE
4/12/2014	GREASE	75	75	1425 EAST 17TH ST
4/14/2014	GREASE	23	23	810 MOCK ST
4/17/2014	PIPE FAILURE	100	100	700 BLOCK OF SALEM AVE
4/21/2014	PIPE FAILURE	8,400	8,400	SALEM AVE
4/21/2014	GREASE	225	225	1305 BYRON ST
4/21/2014	PIPE FAILURE	4,837	4,837	420 DONNY BROOK CT
4/28/2014	GREASE	63	32	3819 S MAIN ST
Total for April	11	17,118	16,837	
MAY 2014				
5/8/2014	OTHER	4,112	4,112	201 CHESTNUT ST
5/14/2014	PIPE FAILURE	50	50	4RTH AND CHESTNUT
5/20/2014	DEBRIS	1,300	130	3RD AND CHESTNUT
5/19/2014	PIPE FAILURE	2,925	2,925	2546 WESTOVER DR
5/20/2014	PIPE FAILURE	975	975	632 HERTFORD ROAD
5/20/2014	DEBRIS	2,025	2,025	4855 REIDSVILLE RD
Total for May	6	11,387	10,217	
JUNE 2014				
6/2/2014	PIPE FAILURE	18,360	1,160	1105 EAST MOUNTAIN ST
6/2/2014	DEBRIS	260	260	301 THIRD ST
6/12/2014	ROOTS	112	112	455 QUAIL HAVEN LN
6/17/2014	ROOTS	5,200	2,600	908 TULANE DR
6/23/2014	PIPE FAILURE	500	500	1700 N CLEVELAND AVE
6/30/2014	PIPE FAILURE	50	50	901 N. TRADE STREET
Total for June	6	24,482	4,682	
2014	82	106,384	72,878	