

# Winston-Salem Forsyth County Utility Commission

## Wastewater Collection and Treatment System

### Performance Report for FY 2008-2009

*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, 2008 through June 30, 2009. This report is published and released to our customers annually.*

The Winston-Salem/Forsyth County Utility Commission operates two wastewater treatment plants (WWTPs) with a combined treatment capacity of 51 million gallons per day. During the period covered by this report a total of 11.61 billion gallons of wastewater was treated at these facilities. The collection and treatment system includes approximately 1,675 miles of sewer lines and 53 pumping stations. The Utility 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 and the disposal of our biosolids.

The Commission's collection system operates under wastewater collection system 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 a combination of land application onto farm land or burial in a lined landfill. The land application of biosolids is regulated by the North Carolina Division of Water Quality under Permit WS0000094. The Thermal Biosolids Dryer operates under Distribution of Residual Solids permit WQ0029804. During FY 2008-2009 6,186.23 dry tons of pelletized biosolids were produced and distributed to a contractor providing land application services.

The Commission's Archie Elledge WWTP reported no violations of its NPDES Permit during the reporting period. The Muddy Creek WWTP reported no NPDES violations during the reporting period. There was one violation of the land application permit during the reporting period which was due to an error by the contractor applying biosolids to farmland.

The City/County Utility Commission's two wastewater treatment plants met the minimum requirements imposed by the State of North Carolina's Division of Water Quality by a **safety factor of 6.07**. The bar chart in Appendix B shows the performance of the wastewater treatment plants during this period. Approximately 26,707 tons of regulated pollutants were removed by the treatment processes during the period ending June 30, 2008.

The Commission's goal is to have zero sanitary sewer overflows (SSO) from the sewer collection system. However, during the fiscal year 0.0007% of the wastewater collected by the sanitary sewer system was spilled to surface waters. There was a 19% decrease in the total number of SSOs during FY 2007-08 as compared to those reported in FY 2008-09 (129 vs. 117). Appendix A and D of this report lists a detailed summary of collection system overflows reported in FY 2008-09.

Since the passage of the North Carolina Clean Water Act in 1999 the total volume of annual SSOs has been tracked against the baseline year of FY 1998-99. The FY 2008-09 total volume of SSOs represents a 94.5% decrease from the volume reported for the baseline year. Diligence by maintenance personnel toward preventative maintenance and their attentiveness to response time continued to be a major factor contributing to SSO volumes remaining at a significantly lower level than that of the baseline year.

The majority of SSO occurrences were caused by grease blockages in FY 2008-09. Just under half, or 47.01%, of all line blockages were attributed to the accumulation of fats, oils, and grease in the collection system. There were 55 SSOs attributed to fats, oils, and grease during this FY compared to 55 events in FY 07-08 and 79 events in FY 06-07. This reduction is indicative of the continued effectiveness of the Commission's Grease Interceptor Ordinance (in place since 2003) and public education efforts. In addition, the reduction of grease related events is attributable to maintenance personnel's proactive approach to 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, which are the other major contributors to line blockages. This year, we have also spent \$287,800 dollars on contracted mainline cleaning as well as chemical root treatment which allowed us to clean approximately 354,355 linear feet of sewer lines by contract and an additional 1,054,924 linear feet by in-house personnel.

During FY 2008-09, the Commission continued its proactive efforts toward the reduction of SSOs by spending over \$3.05 million on the rehabilitation of 14,906 feet of gravity sewer mains, 121 manholes, and 123 service laterals. The sewer mains rehabilitated primarily ranged in size from 6" to 18". These sewer mains were rehabilitated by such means as pipe bursting, cured in place lining of pipes, point repairs, 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. Also, the Commission funded the closed circuit TV inspection of 23,500 feet of sewer mains. Staff and contractors also improved the access to collection system easements through the inspection and mowing/clearing of approximately 29 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.

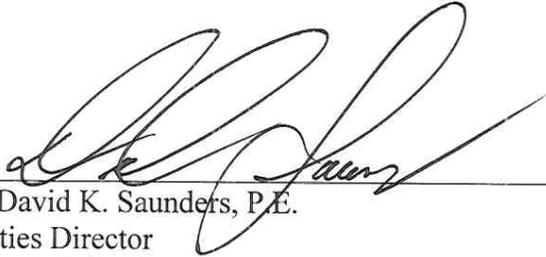
As always, customer involvement will continue to be a factor in the reduction of SSOs. All customers can do their part in helping to keep the sewer system free of materials that cause blockages by not dumping debris and fats, oils, or grease into the sewer system.

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 Mr. David Saunders, Utilities Director at (336) 727-8418. 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 City of Winston-Salem's website at <http://www.cityofws.org/utilities/documents.html>.

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, 2008.

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.



Date 8/31/09

Mr. David K. Saunders, P.E.  
Utilities Director  
Winston-Salem/Forsyth County Utility Commission

**Appendix A: Wastewater Treatment Plant and Pump Station Overflow/Spill Information  
Fiscal Year 2008-09**

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 2008	893,300,000	0	0	0
August 2008	932,200,000	0	0	0
Sept. 2008	953,500,000	0	0	0
October 2008	935,500,000	1	125	0
Nov. 2008	918,000,000	0	0	0
Dec. 2008	1,007,700,000	1	500	0
January 2009	1,030,400,000	0	0	0
February 2009	861,600,000	0	0	0
March 2009	1,087,000,000	1	25	0
April 2009	990,200,000	0	0	0
May 2009	991,000,000	0	0	0
June 2009	1,006,000,000	0	0	0
<b>ANNUAL TOTAL</b>	<b>11,607,400,000</b>	<b>3</b>	<b>650</b>	<b>0</b>

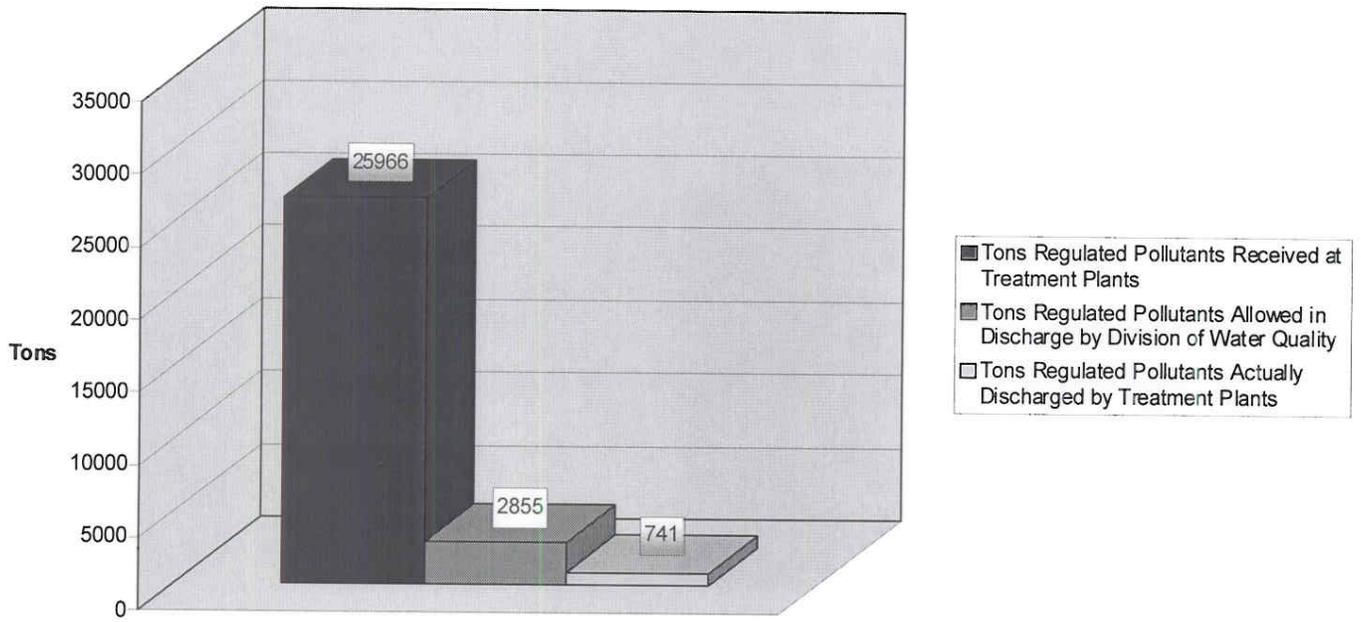
Notes:

10/16/2008 – Elledge Plant - A discharge hose ruptured while pumping out secondary clarifier and lost an estimated 125 gallons into Salem Creek.

12/12/2008 – Elledge Plant – The centrate line to lagoons ruptured and lost an estimated 500 gallons of centrate into Salem Creek.

3/28/2009 – Muddy Creek – The sodium hypochlorite line to the secondary clarifiers had a leak that lost an estimated 25 gallons of sodium hypochlorite on the ground. It did not get into the storm drains or Muddy Creek

Wastewater Treatment Efficiency During FY 2008-09



## Appendix C: Fiscal Year 2008-2009 Performance Summary of Sewer Collection System

Month/Year	Total No. of SSO's	Reporting 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-08	6		1	0	9,796	893,300,000	0.0011%
August-08	7		0	0	2,025	932,200,000	0.0002%
September-08	4		2	0	3,600	953,500,000	0.0004%
October-08	12		5	0	9,135	935,500,000	0.0010%
November-08	10		2	0	6,470	918,000,000	0.0007%
December-08	14		1	0	6,915	1,007,700,000	0.0007%
January-09	17		4	0	14,789	1,030,400,000	0.0014%
February-09	11		1	0	7,354	861,600,000	0.0009%
March-09	7		1	0	3,664	1,087,000,000	0.0003%
April-09	11		1	0	8,187	990,200,000	0.0008%
May-09	8		1	0	3,148	991,000,000	0.0003%
June-09	10		1	0	10,350	1,006,000,000	0.0010%
<b>2008-2009 Annual TOTAL</b>	<b>117</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>85,433</b>	<b>11,607,400,000</b>	<b>0.0007%</b>
2007-2008 Annual Total	129	0	31	1	142,412	11,473,040,000	0.0012%
2006-2007 Annual TOTAL	161	0	40	8	571,946	12,475,820,000	0.0046%
2005-2006 Annual TOTAL	159	0	46	3	317,585	12,182,250,000	0.0026%
2004-2005 Annual TOTAL	211	0	49	3	246,290	12,621,450,000	0.0020%
2003-2004 Annual TOTAL	241	0	69	2	322,050	12,822,200,000	0.0025%
2002-2003 Annual TOTAL	269	0	116	16	2,305,175	13,408,980,000	0.0172%
2001-2002 Annual TOTAL	228	0	70	1	338,806	11,467,900,000	0.0030%
2000-2001 Annual TOTAL	193	0	84	4	533,108	11,930,700,000	0.0045%
1999-2000 Annual TOTAL	189	3	119	9	1,154,350	12,289,000,000	0.0094%
1998-1999 Annual TOTAL	194	0	118	21	1,541,054	11,804,100,000	0.0131%

<b>SSO Occurrences attributable to:</b>	<b>FY 2008-2009</b>	<b>Percentage</b>	<b>Quantity total (gal)</b>
Grease	56	47.9%	20,555
Roots	28	23.9%	19,906
Debris	22	18.8%	33,537
Inflow & Infiltration	0	0%	0
Vandalism	3	2.6%	3,050
Pipe Failure	7	6.0%	8,355
Pump Station Equipment Failure	1	0.4%	0
Severe Natural Conditions	0	0.0%	0
Other	1	0.4%	40
<b>TOTAL</b>	<b>117</b>	<b>100.0%</b>	<b>85,443</b>

\*See Appendix D (attached) for a complete listing of location, SSO (Sanitary Sewer Overflow) Total, and SSO volume in Water for all spills during this fiscal year in which wastewater in excess of 1000 gallons reached the surface waters of the state.

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

**APPENDIX D:**

**Collection System Sanitary Sewer Overflows**

<b>Month/Year</b>	<b>Probable Cause of SSO</b>	<b>Total SSO Volume (gal.)</b>	<b>SSO Volume in Surface waters</b>	<b>Location of SSO</b>
<b>JULY 2008</b>				
7/12/2008	ROOTS	7,515	7,515	2511 AARON LANE
7/2/2008	ROOTS	800	800	1229 BETHABARA RD
7/14/2008	ROOTS	100	100	910 MAGNOLIA ST
7/20/2008	VANDALISM	800	800	4301 GROVE AVE
7/21/2008	GREASE	500	500	1700 HARRISON AVE
7/23/2008	GREASE	162	81	1135 SALEM LAKE RD
<b>Total for July</b>	<b>6</b>	<b>9,877</b>	<b>9,796</b>	
<b>AUGUST 2008</b>				
8/4/2008	PIPE BREAK	50	50	1611 N. CLEVELAND AVE
8/9/2008	GREASE	300	300	NEAR 4300 GROVE AVE
8/16/2008	ROOTS	100	100	3919 HANOVER ARMS ST
8/15/2008	GREASE	400	400	HWY 421 W & SILAS CREEK PKWY
8/20/2008	GREASE	400	400	3201 LOWERY ST
8/22/2008	PIPE BREAK	375	375	14TH ST @ NEW WALKERTOWN
8/28/2008	DEBRIS	400	400	1000 SOUTH MAIN ST
<b>Total for August</b>	<b>7</b>	<b>2,025</b>	<b>2,025</b>	
<b>SEPTEMBER 2008</b>				
9/1/2008	PIPE BREAK	1,500	1,500	4600 OGBURN AVE
9/8/2008	PIPE BREAK	500	500	2800 MAPLEWOOD AVE
9/21/2008	DEBRIS	1,400	1,400	100 EDGEDALE COURT
9/24/2008	GREASE	200	200	2560 WILLARD RD
<b>Total for September</b>	<b>4</b>	<b>3,600</b>	<b>3,600</b>	
<b>OCTOBER 2008</b>				
10/1/2008	ROOTS	335	335	311 SALISBURY ST
10/1/2008	ROOTS	125	125	2748 W MOUNTAIN ST
10/5/2008	GREASE	400	400	496 MORRO DRIVE
10/13/2008	DEBRIS	1,225	1,225	3048 ZACHARY'S KEEP CT
10/14/2008	ROOTS	400	400	103 CHETLENHAM DRIVE
10/17/2008	GREASE	400	400	74 WOODBINE ST
10/21/2008	ROOTS	2,000	2,000	534 DEVONSHIRE STREET
10/20/2008	GREASE	400	400	3197 PETERS CREEK PKWY
10/22/2008	GREASE	400	400	2200 MARBLE ST
10/22/2008	GREASE	1,200	1,200	2770 DUDLEY ST
10/30/2008	VANDALISM	1,125	1,125	1590 WOODS ROAD
10/30/2008	VANDALISM	1,125	1,125	1610 WOODS AVE
<b>Total for October</b>	<b>12</b>	<b>9,135</b>	<b>9,135</b>	
<b>NOVEMBER 2008</b>				

11/2/2008	ROOTS	150	150	910 MAGNOLIA STREET
11/3/2008	PIPE BREAK	2,215	2,215	534 W. DEVONSHIRE RD
11/4/2008	DEBRIS	800	800	7105 DONEGAL CT
11/5/2008	ROOTS	25	25	1580 WOODS ROAD
11/6/2008	GREASE	250	250	1600 ATTUCKS AVE
11/7/2008	GREASE	200	200	1944 HINSHAW
11/12/2008	GREASE	1,905	1,905	1615 OAK GROVE ROAD
11/16/2008	PIPE BREAK	800	800	180 PARK BLVD
11/20/2008	GREASE	25	25	1137 TOWER ST
11/22/2008	DEBRIS	100	100	4435 MEREDITH DRIVE
<b>Total for November</b>	<b>10</b>	<b>6,470</b>	<b>6,470</b>	
<b>DECEMBER 2008</b>				
12/1/2008	GREASE	100	100	837 LEICHESTER SQ.CT
12/4/2008	GREASE	115	115	736 SALT STREET
12/6/2008	GREASE	100	100	1613 EAST 23RD STREET
12/13/2008	ROOTS	200	200	856 McGregor ROAD
12/13/2008	DEBRIS	4,000	4,000	495 ARBOR HILL
12/15/2008	ROOTS	400	400	5080 HUTCHINS STREET
12/17/2008	GREASE	400	400	MOCK & ALDER STREET
12/17/2008	DEBRIS	150	150	215 LOCKLAND AVENUE
12/18/2008	DEBRIS	125	125	2510 IVY AVENUE
12/21/2008	GREASE	125	125	2400 WESTOVER DRIVE
12/21/2008	GREASE	400	400	16TH STREET& PATTERSON AVE
12/23/2008	GREASE	350	350	624 GOLDFLOSS STREET
12/24/2008	ROOTS	200	200	203 STONEYBROOK DR
12/25/2008	GREASE	250	250	1643 EAST 23RD STREET
<b>Total for December</b>	<b>14</b>	<b>6915</b>	<b>6,915</b>	
<b>JANUARY 2009</b>				
1/1/2009	ROOTS	200	50	1000 SOUTH BEND DRIVE
1/3/2009	GREASE	150	150	3558 NOTTINGHAM DRIVE
1/7/2009	DEBRIS	3,810	3,810	2679 KNOB HILL DRIVE
1/7/2009	GREASE	1,200	1,200	1500 DUNDEE STREET
1/9/2009	ROOTS	600	500	3033 CORRY CIRCLE
1/12/2009	ROOTS	800	200	1000 SOUTH BEND DRIVE
1/13/2009	GREASE	100	100	262 HARRINGTON CIRCLE
1/14/2009	DEBRIS	2,505	1,200	5355 UNIVERSITY PKWY
1/17/2009	DEBRIS	500	500	306 HORACE MAIN DRIVE
1/20/2009	GREASE	1,207	1,207	130 FLINTFIELD DRIVE
1/21/2009	DEBRIS	200	50	875 NORTHWEST BLVD
1/21/2009	GREASE	635	635	3800 WABASH BLVD
1/24/2009	GREASE	400	100	212 MAR DON HILL CIRCLE INTERSECTION OF FOSTER AND FREE ST
1/25/2009	GREASE	635	635	
1/26/2009	GREASE	662	662	549 ARBOR HILL DRIVE
1/27/2009	OTHER	40	40	1407 KINGS LAND COURT
1/27/2009	DEBRIS	3,750	3,750	1519 WILLIAMSON STREET
<b>Total for January</b>	<b>17</b>	<b>17,394</b>	<b>14,789</b>	
<b>FEBRUARY 2009</b>				

2/1/2009	DEBRIS	800	800	731 MOUNTAIN STREET
2/2/2009	ROOTS	200	200	4542 MAIN STREET
2/3/2009	GREASE	25	25	1720 ARGONNE BLVD
2/8/2009	GREASE	635	635	409 ELDORA ST
2/8/2009	ROOTS	635	300	1919 ALYSSUM PLACE
2/10/2009	DEBRIS	650	650	2875 OLD TOWN CLUB RD
2/14/2009	ROOTS	400	400	3814 S.MAIN ST
2/13/2009	ROOTS	4,875	3,656	421 SILAS CREEK PKWY
2/20/2009	GREASE	63	63	1010 POPLAR ST
2/20/2009	DEBRIS	600	600	315 ELM ST
2/20/2009	DEBRIS	100	25	5156 BRITT ROAD
<b>Total for February</b>	<b>11</b>	<b>8,983</b>	<b>7,354</b>	
<b>MARCH 2009</b>				
3/15/2009	GREASE	62	62	2500 Dacian STREET
3/17/2009	GREASE	600	150	1200 NEVA LANE
3/17/2009	GREASE	62	62	700 CARL RUSSELL AVE
3/21/2009	GREASE	63	63	1936 ANGEL STREET
3/25/2009	GREASE	250	250	1421 DIGGS BOULEVARD
3/26/2009	PIPE BREAK	2,915	2,915	2500 OLD LEXINGTON RD
3/27/2009	GREASE	162	162	1789 KENAN DRIVE
<b>Total for March</b>	<b>7</b>	<b>4,114</b>	<b>3,664</b>	
<b>APRIL 2009</b>				
4/1/2009	DEBRIS	800	800	1790 KENAN DRIVE
4/2/2009	DEBRIS	600	600	0 SUNNYSIDE DRIVE
4/3/2009	GREASE	237	237	2147 BOWEN BLVD
4/5/2009	ROOTS	10	10	827 FENIMORE STREET
4/6/2009	GREASE	150	150	100 NORTHWEST BLVD
4/11/2009	DEBRIS	5,080	5,080	1965 CAMDEN FOREST DR
4/13/2009	GREASE	400	400	947 FERNDAL DRIVE
4/14/2009	GREASE	400	200	6220 CHAMBERLINE PLACE LANE
4/16/2009	GREASE	100	100	3150 UNIVERSITY PKWY
4/20/2009	GREASE	410	410	VILLA DRIVE
4/27/2009	DEBRIS	200	200	2218 CLOVERDALE AVE
<b>Total for April</b>	<b>11</b>	<b>8,387</b>	<b>8,187</b>	
<b>MAY 2009</b>				
5/8/2009	ROOTS	300	150	4525 FERNHAVEN CIRCLE
5/14/2009	GREASE	400	320	390 GLENDARE DRIVE
5/16/2009	GREASE	937	468	2110 BLUE STONE LANE
5/21/2009	ROOTS	400	200	4080 CLINARD AVE
5/21/2009	GREASE	100	100	1915 WATERFORD VILLAGE
5/22/2009	ROOTS	300	240	240 GLENDARE DRIVE
5/22/2009	GREASE	2,540	1,270	521 STONE GATE LANE
5/22/2009	GREASE	400	400	4775 LENNOX ROAD
<b>Total for May</b>	<b>8</b>	<b>5,377</b>	<b>3,148</b>	
<b>JUNE 2009</b>				
6/1/2009	DEBRIS	10	10	601 VARGRAVE STREET
6/5/2009	DEBRIS	7262	7262	BURHAM @ PATTERSON AVE
6/5/2009	ROOTS	250	250	600 EAST 16 <sup>TH</sup> STREET
6/11/2009	ROOTS	400	390	4001 REICH STREET

6/16/2009	ROOTS	300	300	1637 KESTEVEN ROAD
6/20/2009	GREASE	571	571	1224 WEST SEDGFIELD DRIVE
6/21/2009	GREASE	50	50	426 CORONA STREET
6/25/2009	GREASE	517	517	0 CRANFORD STREET
6/28/2009	ROOTS	800	710	1680 WESTBROOK PLAZA DRIVE
6/29/2009	GREASE	300	300	2315 LEWSVILLE CLEMMONS ROAD
<b>Total for June</b>	<b>10</b>	<b>10,460</b>	<b>10,360</b>	<b>0</b>
<b>JUNE 2009</b>	<b>117</b>	<b>82,277</b>	<b>85,443</b>	