



**APPENDIX K  
STRASBURG BOROUGH AUTHORITY  
2011 CALENDAR YEAR CHAPTER 94  
WASTELOAD MANAGEMENT REPORT**

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**STRASBURG BOROUGH AUTHORITY**

**2011 CHAPTER 94  
ANNUAL REPORT**

**BOROUGH OF STRASBURG  
LANCASTER COUNTY, PENNSYLVANIA**

**FEBRUARY 2012**

**STRASBURG BOROUGH  
145 PRECISION AVENUE  
STRASBURG, PA 17579**

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## **GENERAL**

The Borough of Strasburg's system consists of collection and conveyance facilities that serve approximately 1,072 equivalent residential units and 74 commercial or combined commercial residential units which, when combined, make up the 1,146 connections in the system.

The entire flow is conveyed into the Suburban Lancaster Sewer Authority's (SLSA) system via a 10-inch force main from the Borough's Pump Station No. 5. The connection point to the SLSA system is located just east of the Village of Lampeter.

The SLSA system conveys the Borough's flow through its collection and conveyance system to the City of Lancaster's South Sewage Treatment Plant for treatment.

## **HYDRAULIC LOADING GRAPH**

The entire flow from the Borough is measured by the flow meter at Pump Station No. 5. This flow data is presented in Figure 1, Hydraulic Loading Graph, for the years 2007 through 2011. The Hydraulic Loading Data, Table 1 and the 2011 Flow Information, Table 4 are included in this report.

The future five year hydraulic loading projections, also plotted on Figure 1, are based on the projected future connections shown in Table 2. A flow contribution of 227 gallons per day per EDU was utilized for projection purposes. The 3-month, 5 year maximum average daily flow was computed to be 1.26 times the average annual daily flows for the years 2007 through 2011. The annual and monthly flow figures for 2011 are shown in Table 4 of this report.

As indicated in the Borough's 1994 Chapter 94 Annual Report, the flow meter at Pump Station No. 5 was replaced in May 1994 with a Marsh McBirney volume-type meter.

The meter is being inspected and certified once a year. The flow recordings are presented in Table 4 and in the Hydraulic Loading Graph from 2007 to the end of 2011 and were used to project future flows.

The Borough's annual average flow for 2011 was 258,743 GPD. This is reflected on the hydraulic loading graph, Figure 1.

The Strasburg Borough and Township's Joint Act 537 Plan was adopted on November 24, 1998 and approved by the Department on January 22, 1999. The Joint Act 537 Plan established the need for the Borough to acquire an additional 100,000 GPD of capacity from the SLSA to serve the ultimate future requirements of the Borough. This capacity was purchased in 1998 bringing the Borough's permanent treatment capacity allocation within the SLSA system to 420,000 GPD.

#### **CONTINUING PLAN TO REDUCE INFILTRATION AND INFLOW**

In 2012, the Borough will be continuing their Infiltration and Inflow (I&I) program and study. To help identify and monitor suspected areas of the system, the Borough purchased a portable Badger Q-tracker flow meter and is monitoring pump run time meters at their three unmetered Pump Stations. The Borough will continue to monitor run times at all four of their stations and with rainfall data recorded on a daily basis will be able to identify suspect areas.

#### **INDUSTRIAL WASTE REPORT**

The only permitted industrial waste discharge was the AMP Inc. groundwater recovery system, which was pumping approximately 30,000 GPD of treated effluent into the public sewer system. This discharge was terminated in late summer 1994 and is not anticipated to restart. The recovery system completed a monitoring period in mid-year 1995, and the system is abandoned.

As part of Ordinance 1994-4, Part 3, Restrictions on Use of Sewer System, enacted July 12, 1994, the Borough included wording complying with the requirements of SLSA and the City of Lancaster regarding substance discharge into the public sewer system.

### **COLLECTION SYSTEM CONNECTIONS**

In 2011 there were 1,146 customers connected to the system, which include 4 new residential homes and 3 commercial connections. Of the 1,146 customers, there are 1,072 equivalent residential units and 74 commercial or combined residential commercial units within the system, based on the Borough's billing records.

### **COLLECTION AND CONVEYANCE SYSTEM EXTENSIONS**

There were no sewer extensions made to the Borough's system in 2011.

### **FUTURE CONNECTIONS**

There are three land development projects under construction within the Borough at this time, a 24 lot development (Trails at Strasburg), a 126 unit Active Adult Community development for Charter Homes and 6 units for Trails at Strasburg Phase 2.

### **COLLECTION AND CONVEYANCE SYSTEM MONITORING, MAINTENANCE AND REPAIRS**

In general, the Borough system is in good condition, however, the I and I program identified areas that required repairs.

The Borough did not televise any sewer mains during 2011.

The Infiltration and Inflow program also identified wet well No. 2 as a significant source of infiltration due to the deterioration of the wet well floor. The Borough replaced the wet well in early 1998. This repair removed approximately 6 gpm of flow from the system.

The largest source of infiltration was found to be entering the system through manhole lids. The Borough purchased two hundred (200) manhole inserts and has installed approximately two hundred (200) at this time. This work removed approximately 7 gpm of flow from the system.

The Borough will continue the I and I program and study through 2012 and beyond. Any areas found or suspected to have I and I will be targeted for televising and repair.

### **FUTURE PLANNED MAINTENANCE**

As a result of the I and I investigations the Borough will be repairing manholes, installing manhole cover inserts and repairing or replacing sewer lines. The Borough has also begun televising all streets that have been selected as part of their paving program and repairs are made prior to initiating the project.

### **PUMPING STATIONS**

The Borough system includes four (4) pumping stations, Nos. 2, 3, 4 and 5, which are in good condition. All stations receive routine inspections and maintenance as required.

Pump Station No. 5 is a metered station that pumps the entire flow from the Borough and conveys it into the SLSA system. The other three stations do not have meters; however, the Borough has installed pump run time meters at these stations. None of the stations are at their design capacity, as reflected in Table 3 of this report.

Pump Station No. 2 consists of a 25 horsepower duplex, submersible Midland Sewer Pump System with a 6-inch force main. The station serves approximately 297 residential and commercial customers, with an estimated average flow of 79,980 GPD.

Pump Station No. 3 consists of a 15 horsepower, duplex, submersible Midland Sewer Pump System with a 6-inch force main. The station serves approximately 36 residential customers, with an estimated average flow of 2,880 GPD.

Pump Station No. 4 consists of a 20 horsepower, duplex, submersible Midland Sewer Pump System with a 6-inch force main. The station serves approximately 108 residential customers, with an estimated average flow of 25,620 GPD.

Pump Station No. 5 consists of a 30 horsepower, duplex, submersible Midland Sewer Pump system with a 10-inch force main. The station receives the entire flow from the Borough and conveys it into

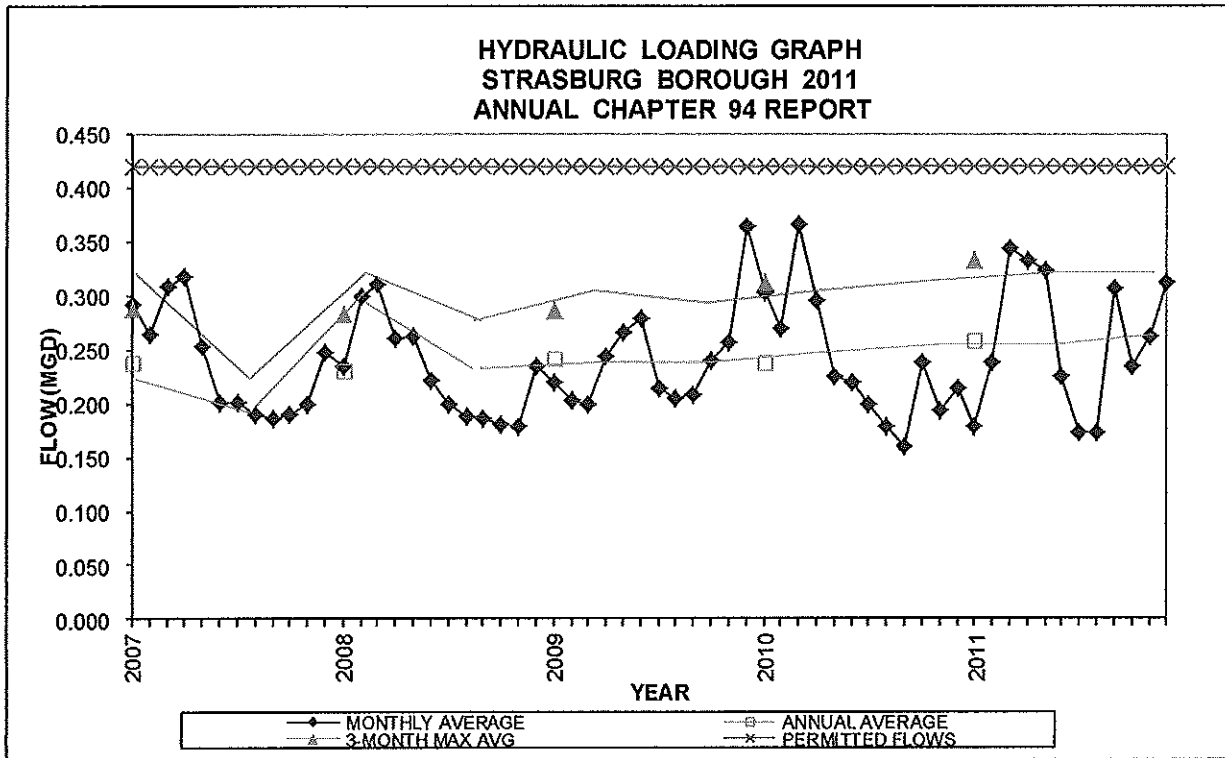


the SLSA system, with an estimated average flow of 258,743 GPD in 2011.

### **PUMP STATION IMPROVEMENTS**

Pump station improvements made in 1999 included the replacement of the wet well at Pump Station No. 2. The Borough routinely cleans the interior surface of all wet well's with a high pressure washer and all excess material is pumped out by a certified personnel.

Figure 1



**TABLE 1**

STRASBURG BOROUGH  
HYDRAULIC LOADING DATA & PROJECTIONS

MONTH	Average Daily Flows, mgd					5 Year Avg.
	2007	2008	2009	2010	2011	
January	0.292	0.235	0.220	0.304 *	0.179	0.246
February	0.264 *	0.299 *	0.203	0.270 *	0.238	0.255
March	0.308 *	0.311 *	0.200	0.366 *	0.344 *	0.306
April	0.318 *	0.260 *	0.244	0.296	0.333 *	0.290
May	0.254	0.263	0.267	0.226	0.323 *	0.267
June	0.201	0.221	0.280	0.219	0.225	0.229
July	0.201	0.200	0.215	0.199	0.173	0.198
August	0.191	0.188	0.204	0.179	0.174	0.187
September	0.187	0.186	0.209	0.160	0.307	0.210
October	0.191	0.181	0.240 *	0.239	0.234	0.217
November	0.199	0.179	0.257 *	0.193	0.262	0.218
December	0.247	0.234	0.365 *	0.215	0.313	0.275
Annual Avg	0.238	0.230	0.242	0.239	0.259	0.241
Max 3 Month Avg	0.297	0.290	0.287	0.313	0.333	0.304
Ratio	1.25	1.26	1.19	1.31	1.29	1.26

Annual Rainfall, Inch	45.7	49.4	56.4	52.7	55.7
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\* Used in calculating the 3 month maximum daily flow average.

5 YEAR FLOW PROJECTIONS (ALL FLOWS EXPRESSED AS GPD)							
Year	Prev Yr Flow	Addt'l EDU's	Flow Increase ***	Projected Flow	Projected		Hydraulic Overload
					3 Mo Max Peak Fac	3 Mon Max	
2012	258,743	8	1,816	260,559	1.26	328,177	No
2013	260,559	30	6,810	267,369	1.26	336,754	No
2014	267,369	38	8,626	275,995	1.26	347,619	No
2015	275,995	22	4,994	280,989	1.26	353,909	No
2016	280,989	20	4,540	285,529	1.26	359,627	No

\*\*\* Flow Per EDU is based on 227 GPD.

**TABLE 2**  
**BOROUGH OF STRASBURG**  
**PROJECTED FUTURE CONNECTIONS**

<u>Development</u>	<u>Total</u> <u>EDU's</u>	<u>Connected</u> <u>EDU's</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Trails at Strasburg	24	22	0	2	0	0	0
Trails at Strasburg Phase II	6	0	0	3	3	0	0
Miscellaneous	7	1	0	2	2	2	0
S. E. Smoker	9	3	0	3	3	0	0
Charter Homes	126	28	<u>8</u>	<u>20</u>	<u>30</u>	<u>20</u>	<u>20</u>
			8	30	38	22	20
Projected Flow (GPD) =			1,816	6,810	8,626	4,994	4,540

Notes:

1. EDU stands for equivalent dwelling unit.
2. Flow per EDU is based on 227 GPD.
3. Commercial customers will be based on equivalent EDU's.
4. (F) Indicates future land development projects.

**TABLE 3**  
**BOROUGH OF STRASBURG**  
**PUMPING STATIONS**

<u>Pump Station</u>	<u>Horsepower</u>	<u>2011 Avg. Flow (MGD)</u>	<u>Pump Capacity (GPM)</u>	<u>Average Design Capacity (MGD)</u>	<u>Peak Design Capacity (MGD)</u>
P.S. No. 2	2 - 25	0.07998	225	0.184	0.461
P.S. No. 3	2 - 15	0.00288	80	0.047	0.115
P.S. No. 4	2 - 20	0.02562	175	0.101	0.252
P.S. No. 5	2 - 30	0.2587	600	0.420	0.864

- The flows for Pump Stations 2, 3 and 4 are based on run time meters
- Pump Station No. 5 flows are metered.

**TABLE 4**  
**BOROUGH OF STRASBURG**  
**2011 SEWER FLOW INFORMATION**

<u>Month</u>	<u>Inches Precipitation</u>	<u>Total Gallons</u>	<u>ADF</u>
January	0.4	5,557,847	179,285
February	1.1	6,663,578	237,985
March	5.5	10,672,766	344,283
April	6.2	9,981,580	332,719
May	5.7	10,027,130	323,456
June	2.9	6,748,507	224,950
July	2.1	5,373,648	173,343
August	8.7	5,408,447	174,466
September	10.7	9,207,277	306,909
October	3.8	7,245,821	233,736
November	4.8	7,848,236	261,608
December	<u>3.8</u>	<u>9,706,264</u>	<u>313,105</u>
	55.7 Total		
		<b>Annual 2011 ADF</b>	<b>258,743</b>

Note: All flows for the 2011 year were recorded using the flow meter at Pump Station No. 5.