AMITY TOWNSHIP
BERKS COUNTY, PENNSYLVANIA

CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
2006 ANNUAL REPORT

Prepared by:

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AMITY TOWNSHIP
CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
2006 ANNUAL REPORT

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Amity Township
2006 Annual Chapter 94 Report
HYDRAULIC LOADING

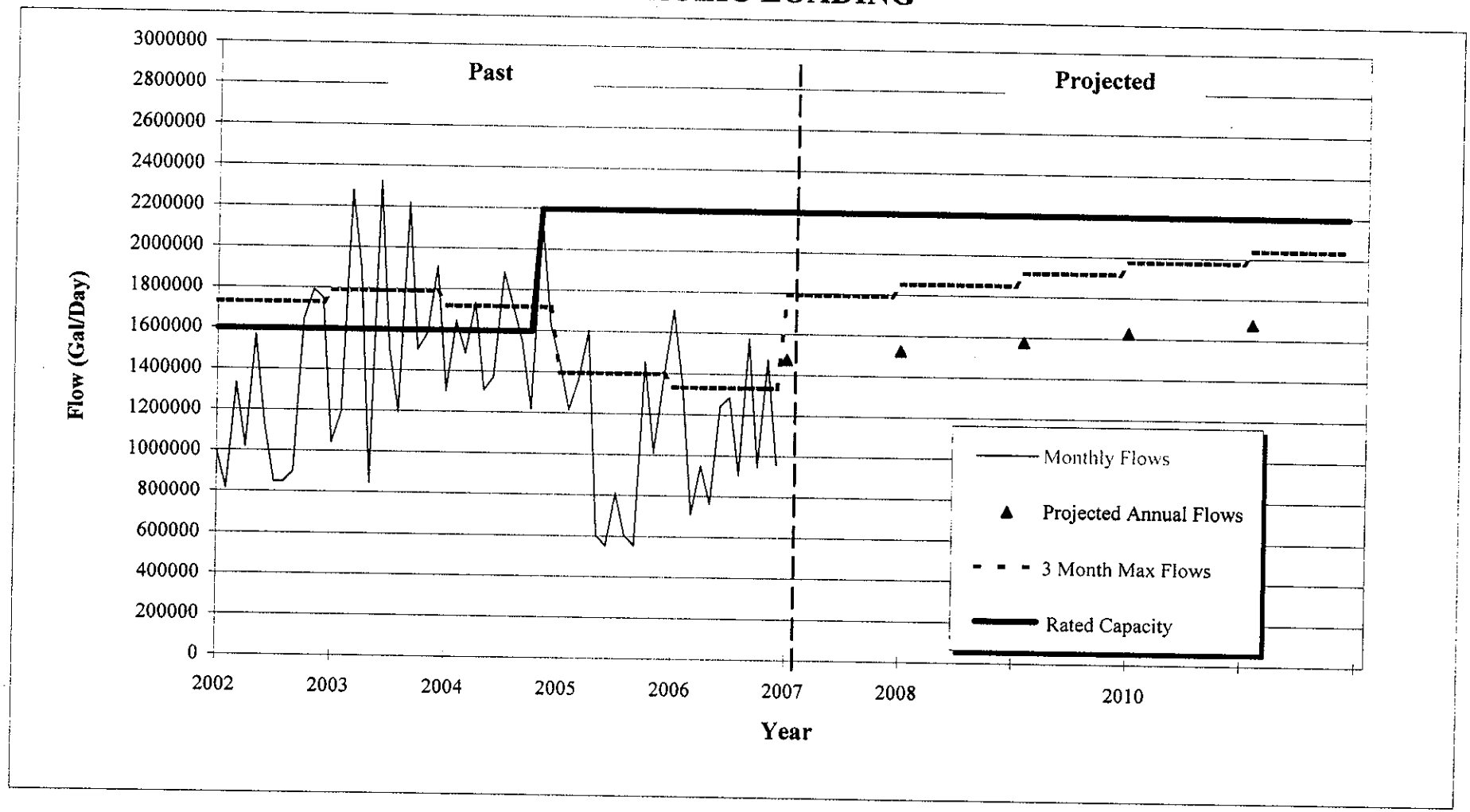


EXHIBIT 1

Amity Township
2006 Annual Chapter 94 Report
ORGANIC LOADING

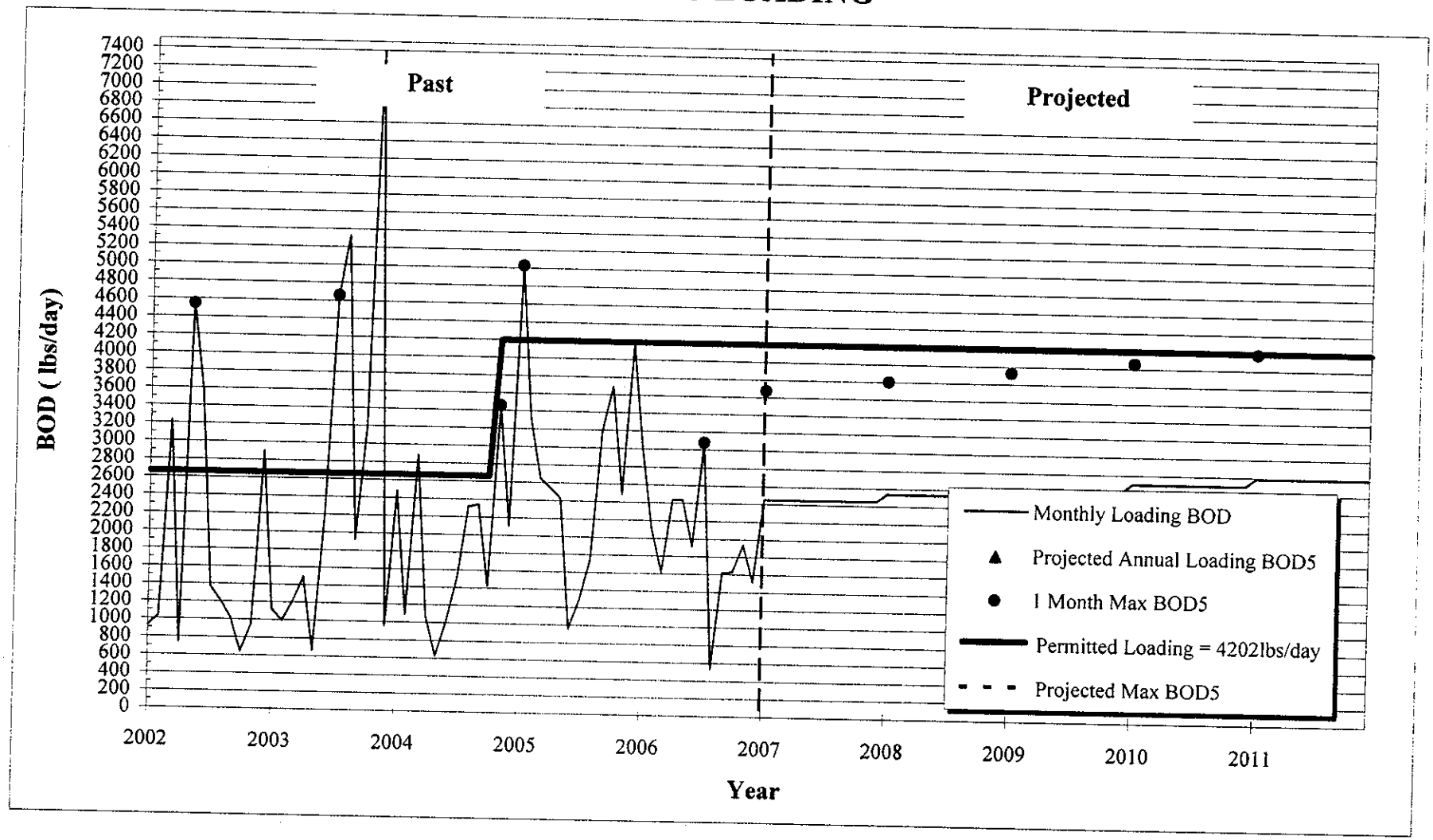


EXHIBIT 2

C. TREATMENT PLANT DESCRIPTION

The Amity wastewater treatment plant was expanded in 2003 and the expanded NPDES Permit was finalized in November 2004. The wastewater treatment plant is currently permitted to effectively treat an annual average daily flow of 2.2 MGD of wastewater flow. The current permitted organic capacity is 4,202 pounds of $CBOD_5$/day. Wastewater treatment is accomplished through the use of biological and physical processes. The basic unit processes are raw sewage, screenings removal, grit removal, biological treatment using an oxidation ditch activated sludge process with sedimentation, chlorination disinfection, sludge digestion, and sludge removal. The digested sludge may be applied into the reed drying beds, dewatered on the belt filter press, or hauled away in liquid form for further treatment and disposal. Dewatered sludge is landfilled for disposal. Disposal of the final dewatered reed bed sludge product will occur once every five to seven years.

Laboratory tests are performed routinely by the plant operators in order to control treatment processes and to determine plant operating efficiency. The results of these tests are recorded on a weekly and monthly log. One copy is forwarded to PaDEP and one copy should be forwarded and reviewed by the Consulting Engineer. The average daily flow through the treatment plant during 2006 was 1,158,833 gallons. The average monthly influent loading during 2006 was 1,995.9 lbs BOD_5/day. The average influent BOD_5 and suspended solids concentrations were 264 mg/L and 872 mg/L, respectively. The average effluent concentrations were 5.18 mg/L $CBOD_5$, 8.5 mg/L suspended solids, and 0.572 mg/L ammonia-nitrogen. The calculated percentage removals of each were 97.7% for BOD_5 and 97.9% for suspended solids.

A revised NPDES Permit was issued and became effective on November 16, 2005, for the Amity Township wastewater treatment facility. The permitted monthly average discharge limitations are as follows:

Flow	2.2 MGD
$CBOD_5$	25 mg/L
Total Suspended Solids	30 mg/L
NH_3N	12 mg/L (11/1 to 4/30)
Total Dissolved Solids	1,000 mg/L
Fecal Coliform (5/1 to 9/30)	200/100 ml
Fecal Coliform (10/1 to 4/30)	10,000/100 ml
Dissolved Oxygen	5.0 mg/L (minimum at all times)

The permit expires on November 30, 2010. During 2006, the treatment plant reported one NPDES Permit violation for exceeding total residual chlorine in October. This was due to a malfunction of the residual analyzer and it was corrected. No violations were reported since then.

Sludge Disposal

During 2006 there were 640,500 gallons of aerobically-digested sludge applied to the reed drying beds. There were also 473,223 gallons equal to 283.12 dry tons of dewatered sludge hauled to the Pioneer Crossing Landfill in Birdsboro, Pennsylvania, for disposal.

Wastewater Treatment Plant

The mechanical equipment is inspected daily. Maintenance performed is logged. The following maintenance and improvements were made at the treatment plant during 2006:

1. Two batteries were replaced on the digester generator.

2. The end shaft on Rotating Aerator No. 2 was rebuilt and a replacement bearing was installed on the end shaft.

3. The motor was replaced on Rotating Aerator No. 4.

4. The scum pump was rebuilt.

5. O-Rings were replaced on the Waste Activated Sludge Pumps.

6. O-Rings were replaced on the Return Sludge Pumps.

7. O-Rings were replaced on the Large Flood Pump.

8. O-Rings were replaced on Influent Pumps 1, 2, and 3.

9. The skimmer arm rubber and a shear pin were replaced on Final Clarifiers A & B.

10. Each piston was repacked on the Plunger Pumps.

11. Upper and lower belt lacing wires were replaced on the Belt Filter Press.

12. Five tubes were cleaned on the sludge heater.

13. Collector drive motors were replaced in the Primary Settling Tanks.

14. The chlorine residual analyzer pump was replaced twice.

15. There was flood damage to the treatment plant due to flooding that occurred on June 28-30, 2006.

    a. Thirteen gear boxes had oil changes
    b. Thirteen motors had all bearing grease replaced
    c. Fourteen pillow block bearings had all grease replaced
    d. Mud was flushed from about two-thirds of the plant area.

    Flood damage to the plant and to Pumping Stations No. 3 and No. 4 was estimated to be about $50,000.00.

16. The effluent flow meter was recalibrated by LRM, Inc., on January 10, 2006. Copies of the calibration service reports are included in the Appendix.

17. A level control sensor was replaced due to flood submergence in the Oxidation Ditch.

D. DISCUSSION OF HYDRAULIC AND ORGANIC LOADING PROJECTIONS

The hydraulic and organic loading projections were based on population projections developed by the tributary municipalities and ARRO Consulting, Inc. Data from the 2000 U.S. Census was also used to update current population figures. The projections of Earl Township, Union Township, and Douglass Township population growth included in their respective Chapter 94 report submissions have been taken into account. Table 4, which is included in the Appendix, shows the hydraulic and organic projections for the next five years for the entire wastewater treatment facility, which includes data from the contributing municipalities.

The hydraulic loading for the past five years was plotted. The average daily flow for each month and the annual average daily flow are shown in Table 2 for each year from January 2002 through December 2006. The average gallons per capita per day contribution for the last five years as shown in Table 4 was 143.36. This value times the projected population was used to determine the projected annual average daily flows. The highest average daily flows for three consecutive months for each of the past five years were averaged to determine the maximum three-month average daily flow for each year. The ratio of maximum three-month average daily flow to annual average daily flow was determined. For the past five years the ratio ranged from 1.09 to 1.41. The average ratio, 1.216, was used to project the maximum three-month average daily flows. The projections indicate an overload condition is not expected to occur within the next five years unless reductions in infiltration/inflow are achieved or the plant capacity is expanded. Infiltration/Inflow control is still needed to maintain plant flows below the design capacity.

The organic loading graph was developed by plotting the average daily organic load for each month for each of the past five years. The average pounds of BOD_5 per capita per day for the past five years as shown in Table 4 ranged from 0.201 to 0.292, and the average is 0.2387. The projected average annual organic load was determined by multiplying the projected population for each year by the average value of 0.2387 pounds of BOD_5 per capita per day. The maximum monthly loading for each of the past years was also used to project the maximum monthly loading in a similar manner. The peak pounds of BOD_5 per capita per day for the past five years ranged from 0.311 to 0.818, and the average is 0.5092. The ratio of maximum monthly organic loading to annual average organic loading for each of the last five years was determined. The ratio ranged from 1.55 to 2.84. The organic peaking factor, average five-year ratio of 2.099, was multiplied by the projected annual average BOD_5 loading to project the maximum monthly BOD_5 loading. The projections indicate an overload condition is not expected to occur within the next five years.

Both the hydraulic and organic five-year projections include the connections projected for all contributing municipalities as noted in their Chapter 94 Report information.

E. PLANS TO REDUCE OVERLOAD CONDITIONS

Amity Township completed a wastewater treatment plant expansion project and rerating of the permitted capacity in 2004. The Township has purchased a televising truck and equipment to implement a system-wide infiltration/inflow remediation project to reduce peak flows. The

Township has also initiated discussions with the neighboring townships to determine future capacity needs. The Township will begin looking into whether a plant expansion is necessary or if control of connections will be required.

F. SEWER CONNECTIONS AND EXTENSIONS

A total of 146 new connections to the Amity Sewer System were made during 2006.

Developments and Sewer Extensions

Lot 5B Douglassville –

333 feet 8" PVC pipe, 3 manholes

Woods Edge Phase 3 –

1 pumping station and generator building

1 4" ductile iron forcemain 1760 foot long

4,100 foot 8" PVC main sewer

15 manholes

Park Lane Project -

Flow pumped from Pump Station No. 3 through a 10" forcemain and gravity flow from areas west of Park Lane converged at manholes 188 and 187A. Surcharges sometimes occured in the 10" sewer along the North side of Route 422 Westbound and in the existing 20" sewer line along the South side of Route 422 Westbound.

ARRO designed a project to eliminate the sewer capacity problem. The project was constructed in 2006 and it has been in operation since September 2006. A 4,400 foot 12" ductile iron forcemain was constructed from Pumping Station No. 3 crossing under and running parallel to the Norfolk Southern tracks and tied into manhole 176. The 10" forcemain was plugged at both ends and abandoned in place. The 20" interceptor, which runs from manhole 176 to the Headwork's Building of the Amity Wastewater Treatment Plant, was replaced with 30" PVC pipe interceptor thereby increasing the main interceptor capacity. This project re-routed flows away from the surcharged sewer area of Park Lane and eliminated those problems.

G. SEWER SYSTEM MONITORING, MAINTENANCE, REPAIR, AND REHABILITATION

Sewer System

The Amity Township sewage collection system consists of approximately 75 miles of gravity sewer line, ranging in size from 8 inches to 30 inches. The original system was built in the mid-1970s to serve a development of several hundred lots known as Amity Gardens.

The portion of the sewage collection system serving Amity Gardens consists of approximately 12 miles of 8- and 10-inch sewer line, predominately constructed of vitrified clay pipe in five-foot sections. This older portion of the sewage system is clay pipe and experiences some infiltration/inflow problems. Internal sewer line videotaping projects have revealed defective pipes, cracked pipes, separated joints, deflected joints, and protruding lateral connections. Most of the system inflow and infiltration is believed to originate in this area.

The sewage collection system is in good, serviceable condition overall and functions in a satisfactory manner. The Township sewage treatment plant staff, which also operate the collection/conveyance system, are experienced and able to respond in a timely manner should a problem arise. Township staff perform regular maintenance to manholes, including concrete patching and tar coating.

Since the expansion of the sewage treatment plant in 1991, there have been major expansions of the collection system to serve several large subdivisions that have reserved capacity in advance. The 2004 report included a copy of the Amity Township sewer index map, which showed the existing sewerage system and developments. The overall plan is being updated currently and a new copy will be submitted in 2008.

Amity Township has contracted ARRO Consulting to build a computerized hydraulic model of the sewer system to evaluate the capacities of sewer lines and determine the effects of proposed development and infiltration/inflow repair work. The hydraulic model identified areas of the sewer system that are at or near capacity. These areas will be the first to be addressed under the Infiltration/Inflow program. The hydraulic model will continue to be calibrated and refined and will be a useful tool for the sewer system.

Repair and Replacement

1. A lateral sewer was repaired at the intersection of Blacksmith Road and Route 662.
2. A lateral sewer was repaired on Russel Avenue.

Equipment purchased for sewer maintenance in 2006 includes a flushing, vactor truck and Envirosight Camera equipment.

Sewage Pumping Stations

There are eight pumping stations in the Amity Township sewerage system. All of the stations are in good physical condition and are operating satisfactorily.

1. A force main break was repaired at Pump Station No.1.
2. Due to flood submergence, the emergency generator was repaired and the 250 gallon fuel tank was emptied and refilled at Pump Station No. 3. An electrical panel was also repaired at Pump Station No. 3.
3. Electrical panel and transfer switch repairs were made at Pump Station No. 4.
4. A block heater was replaced at Pump Station No. 2.
5. Pump No. 1 was rebuilt at Pump Station No. 7.
6. O-Rings were replaced on a lot of pumping station equipment.

Pumping Station Annual Flows

Pump Station	Station Capacity (mgd)	2006 Average Flow (mgd)	2006 Max. Monthly Flow (mgd)	Max. Monthly % of Capacity
No. 1 – Amityville	0.504	0.035	0.046	9.13
No. 2 – Amity Gardens	2.160	0.467	0.498	23.10
No. 3 – Route 422 South	2.020	0.401	0.490	24.26
No. 4 – Monocacy Station	1.613	0.234	0.305	18.91
No. 5 – Manatawnny Creek	0.979	0.036	0.040	4.09
No. 6 – Cider Mill	0.461	0.024	0.032	6.94
No. 7 – Rosecliff	0.403	0.030	0.042	10.42
No. 8 – Sunset Knoll	0.374	0.002	0.044	11.76

1) Pump data taken from annual pump station run time tables provided by system superintendent. Pumping rates have not been field verified.

2) Pump Station No. 5 discharges into the same force main as Pump Station No. 1.
3) The lower capacity values result for Pump Stations No. 1 and No. 5 when both stations are operating simultaneously.
4) The capacity of Pump Station No. 3 was increased by installing a new forcemain.

Operation and maintenance of the sewer systems is carried out by municipal public works personnel. Amity treatment plant personnel do inspect the contributing municipalities meter stations on a periodic basis. Treatment plant personnel also assist in maintaining the Amity Township pump stations. When a new property connection is made, a plumbing inspector for the respective municipality inspects the new installation, and construction observation and testing of all new sewer mains is performed.

H. CONDITION OF THE SEWER SYSTEM

The Amity Township sewer system has some infiltration/inflow problems in the older clay pipe areas. The Township is concentrating its efforts to identifying and rehabilitating those areas. The township purchased cleaning and televising equipment in 2006 and will begin and Infiltration/Inflow Identification Program in early 2007.

Information related to the condition of each municipality's respective collection systems and pump stations is found in their respective reports in the Appendix.

I. INDUSTRIAL WASTE REPORT

There are no significant industrial dischargers in the Amity sewer system or any of the tributary systems. The commercial and light industrial dischargers are monitored, and communications between them and the Township are ongoing. Two industries in Amity Township currently have industrial waste discharge permits and monitoring requirements, but no problems are experienced.

Amity Township stopped accepting trucked-in leachate from landfills in 2005 due to problems with effluent total dissolved solids concentrations from the leachate treatment.

J. SIGNATURES

Report Prepared By	Permittee
Michael D. Sassaman	Amity Township
Name	Name
Operations Consultant	Charles E. Lyon
Title	Responsible Official
ARRO Consulting, Inc.	Township Manager
Company	Title
400 Washington Street, Suite 602 Reading, PA 19601	2004 Weavertown Road Douglassville, PA 19518
Address	Address
Signature of Preparer 3/22/07	Signature of Permittee 3/22/07
Date	Date

Appendix

AMITY TOWNSHIP
TRIBUTARY MUNICIPALITIES' POPULATION PROJECTIONS

Year	Amity Township	Union Township	Douglass Township	Earl Township	Total
2001	8,543	427	306	0	9,276
2002	8,798	430	357	0	9,585
2003	9,047	430	372	0	9,849
2004	9,251	430	375	127	10,183
2005	9,573	430	444	173	10,620
2006	9,945	425	503	296	11,169
2007	10,295	477	553	324	11,649
2008	10,645	642	603	428	12,318
2009	10,995	808	653	431	12,887
2010	11,345	904	703	434	13,386
2011	11,695	925	753	436	13809

Table 1
Amity Township
2006 PLANT PERFORMANCE SUMMARY

Month	Ave. Flow (gal/day)	BOD5 Daily Load (lbs/day)	BOD5 Influent (mg/l)	CBOD5 Effluent (mg/l)	CBOD5 Percent Removal	Suspended Solids Influent (mg/l)	Suspended Solids Effluent (mg/l)	Suspended Solids Percent Removal	Ammonia-Nitrogen Effluent (mg/l)
January	1,713,000	3,000.0	445	6.00	98.7	113	6.9	93.9	3.813
February	1,352,000	2,118.0	219	5.88	97.3	146	4.1	97.2	0.470
March	713,000	1,629.2	289	6.11	97.9	706	3.9	99.4	0.286
April	952,000	2,443.3	323	5.88	98.2	1424	5.9	99.6	0.429
May	767,000	2,445.2	414	8.40	98.0	2129	7.3	99.7	0.296
June	1,247,000	1,926.3	225	8.25	96.3	2933	13.6	99.5	0.540
July	1,288,000	[illegible]	355	6.00	98.3	538	18.1	96.6	0.343
August	909,000	551.9	82	6.33	92.2	309	17.8	94.2	0.268
September	[illegible]	1,629.9	201	2.88	98.6	998	7.6	99.2	0.113
October	[illegible]	1,640.5	244	2.44	99.0	319	7.6	97.6	0.100
November	[illegible]	1,945.9	185	2.00	98.9	380	5.0	98.7	0.100
December	961,000	1,531.9	185	2.00	98.9	467	4.4	99.1	0.113
Annual Average	**1,158,833**	**1,995.9**	**264**	**5.18**	**97.7**	**872**	**8.5**	**97.9**	**0.572**
Max. 3 Month Average	[illegible]								
Max. Month		[illegible]							
Rated Monthly Capacity	**2,200,000**	**4,202**							

Table 2
Amity Township
HYDRAULIC LOADING DATA (GPD)
2002 - 2006

Month	2002	2003	2004	2005	2006
January	999,000	1,046,000	1,305,000	1,450,000	1,713,000
February	819,000	[illegible]	1,647,000	[illegible]	1,352,000
March	1,333,000	[illegible]	1,489,000	[illegible]	713,000
April	1,021,000	[illegible]	1,736,000	[illegible]	952,000
May	1,571,000	851,000	1,310,000	607,000	767,000
June	1,131,000	2,326,000	1,375,000	556,000	1,247,000
July	851,000	1,517,000	[illegible]	815,000	1,288,000
August	853,000	1,198,000	[illegible]	606,000	909,000
September	902,000	2,222,000	[illegible]	560,000	[illegible]
October	[illegible]	1,506,000	1,220,000	1,457,000	[illegible]
November	[illegible]	1,588,000	2,143,000	1,013,000	[illegible]
December	[illegible]	1,913,000	1,632,000	1,382,000	961,000
Average Annual Flow (Gallons)	**1,222,333**	**1,628,083**	**1,584,583**	**1,053,750**	**1,158,833**
Max. 3 Month Ave. Flow (Gallons)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PEAKING FACTOR					
Max. 3 Month Ave. Flow / Ave. Annual Flow	**1.41**	**1.10**	**1.09**	**1.33**	**1.15**

[illegible]

Table 3
Amity Township
ORGANIC LOADING DATA (lbs BOD5/day)
2002 - 2006

Month	2002	2003	2004	2005	2006
January	932	1,133	2,488	[redacted]	3,000
February	1,042	1,004	1,097	3,328	2,118
March	3,242	1,220	2,893	2,654	1,629
April	757	1,498	1,084	2,549	2,443
May	[redacted]	678	637	2,432	2,445
June	3,600	2,210	1,017	970	1,926
July	1,379	4,665	1,517	1,296	[redacted]
August	1,220	5,336	2,324	1,748	552
September	1,030	1,934	2,344	3,201	1,630
October	650	3,200	1,435	3,702	1,641
November	955	[redacted]	[redacted]	2,496	1,946
December	2,907	966	2,117	4,179	1,532
Average Annual BOD (lbs/day)	**1,855**	**2,604**	**1,868**	**2,799**	**1,996**
Max. 1 Month BOD5 Loading (lbs/day)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
RATIO:					
Max. 1 Month BOD5 / Ave. Annual BOD5	**2.45**	**2.84**	**1.85**	**1.80**	**1.55**

[redacted]

Table 4
Amity Township
PAST AND PROJECTED TREATMENT PLANT LOADINGS

Year	Connected Population	Average Total Flow (gal.)	Max. 3 Month Ave. Flow (gal.)	Per Capita Flow (gpcd)	Average Total BOD5 (lbs/day)	Max. Month BOD5 (lbs/d)	Per Capita BOD5 (lbs/day)	Max. Per Capita BOD5 (lbs/day)
2002	8,798	1,222,333	1,729,333	138.9	1,855	4,551	0.211	0.517
2003	9,047	1,628,083	1,790,000	180.0	2,604	7,399	0.288	0.818
2004	9,251	1,584,583	1,719,333	171.3	1,868	3,463	0.202	0.374
2005	9,573	1,053,750	1,399,667	110.1	2,799	5,035	0.292	0.526
2006	9,945	1,158,833	1,334,667	116.5	1,996	3,089	0.201	0.311
Average	**9,323**	**1,329,516**		**143.36**	**2,224**		**0.2387**	**0.5092**
Projected Loadings								
2007	10,295	1,475,847	1,794,630	143.36	2,458	3,687	0.2387	0.5092
2008	10,645	1,526,022	1,855,642	143.36	2,541	3,812	0.2387	0.5092
2009	10,995	1,576,196	1,916,654	143.36	2,625	3,937	0.2387	0.5092
2010	11,345	1,626,371	1,977,667	143.36	2,708	4,063	0.2387	0.5092
2011	11,695	1,676,545	2,038,679	143.36	2,792	4,188	0.2387	0.5092

Population Projections

Year	Amity Twp. EDUs	Amity Twp. Pop Equv	Union Twp EDUs	Union Twp Pop Equv	Douglas Twp. EDUs	Douglas Twp. Pop Equv	Earl Twp. EDUs	Earl Twp. Pop Equv	Total Population
2001	3,350	8,543	167	427	120	306	0	0	9,276
2002	3,450	8,798	169	430	140	357	0	0	9,585
2003	3,548	9,047	169	430	146	372	0	0	9,849
2004	3,628	9,251	169	430	147	375	50	127	10,183
2005	3,754	9,573	169	430	174	444	68	173	10,620
2006	3,900	9,945	167	425	197	503	116	296	11,169
2007	4,037	10,295	187	477	217	553	127	324	11,649
2008	4,175	10,645	252	642	236	603	168	428	12,318
2009	4,312	10,995	317	808	256	653	169	431	12,887
2010	4,449	11,345	355	904	276	703	170	434	13,386
2011	4,586	11,695	363	925	295	753	171	436	13,809

Population equivalent calculated at 2.55 persons per EDU per 2000 Berks County census data.

Proof of Flow Meter Calibration

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 10, 2006

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Effluent Flow Left (Lower)

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Prosonic 861 /

HEAD PRODUCER: 43 ¼" weir (3.604') $7.756 X H^{1.5}$

SETTINGS:

V	H		
0	1	1.602'	Zero
0	6	5	20 mA span
1	5,6,7	1000	Tortalizer pulse
2	0	3	manual curve

CHANGE SETTINGS: Zero change to 1.598

LOOP INSTRUMENTATION: Chlor. system control, Plant Computer

COMMENTS:
Zero checked with no flow over weir
Flow meter operates at the factory stated accuracy of 1% of span error.

TECHNICIAN:
Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

CALIBRATION DATE: January 10, 2006

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

LOOP DESIGNATION: Effluent Flow Right Upper

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Prosonic 861 /

HEAD PRODUCER: 43 ¼" weir (3.604') $7.756 \times H^{1.5}$

SETTINGS:

V	H		
0	1	1.612'	Zero
0	6	5	20 mA span
1	5,6,7	1000	Tortalizer pulse
2	0	3	manual curve

CHANGE SETTINGS: No Change

LOOP INSTRUMENTATION: Chlor. system control, Plant Computer

COMMENTS: Zero was checked at no flow
The flow meter operates at the factory stated accuracy of 1% of span.

TECHNICIAN:
Ross Crawford

215 N. Main Street · Souderton, PA 18964 · 215-721-4840 · Fax 215-721-4923

LRM, Inc

Instrumentation & Disinfection Systems

CALIBRATION CERTIFICATE

OWNER: Amity Township Subregional Wastewater Treatment
120 Old Philadelphia Pike
Douglasville, PA 19518

MANUFACTURER/ MODEL NO./SERIAL NO.:
Endress & Hauser / Prosonic 861 /

HEAD PRODUCER: 43 ¼" weir (3.604') $7.756 X H^{1.5}$

V2H5	V2H3	V2H4
1	0	0
2	.04	.062
3	.08	.1753
4	.12	.3219
5	.16	.4964
6	.20	.6934
7	.21	.746
8	.22	.8
9	.23	.853
10	.24	.912
11	.28	1.148
12	.32	1.404
13	.36	1.674
14	.4	10962
15	.44	2.265
16	.48	2.579
17	.52	2.908
18	.56	3.249
19	.6	3.606
20	.64	3.971
21	.68	4.351
22	.72	4.739
23	.76	5.138
24	.8	5.55

Chapter 94 Report Information From Union Township

B. **SANITARY SEWER EXTENSIONS (2006 ONLY)***

Name/Area Served	Sewer Extension Size	Sewer Extension Length	DEP Permit No.	Housing Units Served – EDUs (Actual/Estimated) 2006	2007	2008	2009	2010	2011
N/A									

*Attach plans of sanitary sewer system detailing additions made in 2006.

C. **PROPOSED HOUSING DEVELOPMENTS**

Name/Area Served	Permits Obtained (Yes/No)	DEP Permit No.	Proposed Housing Units (EDUs) 2007	2008	2009	2010	2011
N/A							

7. Combined sewers:

   a. Location: N/A

   b. Percent of total system: N/A

8. Major Interceptors:

Interceptor Name	Length (feet)	Pipe Diameter (inches) Maximum	Pipe Diameter (inches) Minimum	Estimated Service Population
N/A				

9. Collection System Capacity Problems:

If existing or proposed flows exceed the limiting section capacity at any time, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the overload condition. Use additional sheets if necessary.

N/A

TRIBUTARY SEWER SYSTEM QUESTIONNAIRE

Municipality Name: UNION TOWNSHIP MUNICIPAL AUTHORITY Date: 2/8/07
UNION TOWNSHIP, BERKS COUNTY

A. SEWER SYSTEM DETAILS

1. Connected Population (# of People)

	Projected				
Present 2006	2007	2008	2009	2010	2011
425	477	642	808	904	925

2. Connected EDUs

	Projected				
Present 2006	2007	2008	2009	2010	2011
164	184	248	312	349	357

1 EDU = 233 GPD (PER UTMA TAPPING FEE CALCULATIONS)

3. Total length of pipe in sewer system: 13,658 feet (actual or estimated)

4. Range of pipe sizes:

   a. Laterals: 6 inches (actual or estimated)

   b. Sewer mains

      (1) Smallest: 8 inches (actual or estimated)

      (2) Largest: 12 inches (actual or estimated) - 70 FT. LONG INFLUENT LINE TO EXIST. P.S. #3

5. Total number of manholes: 51 (actual or estimated)

6. Construction material:

   a. Pipes: PVC; DIP; AC

   b. Manholes: PRECAST CONCRETE

D. PUMPING STATIONS AND COLLECTION SYSTEM

1. Description

Name/Number	Location	Capacity (gpd) Existing	Capacity (gpd) Ultimate	Metered (Yes/No)	Force Main Length (Feet)	Force Main Size (Inches)	Estimated Service Population
PUMP STATION #3	S.R. 0724	449,280	-	YES	1,700	6"	425

2. Pumping Station Flows

	Present 2006	Projected Peak Flows (gpd)* 2007	2008	2009	2010	2011
Name: P.S. #3	27,516	41,048	58,489	75,929	86,012	88,192
Name:						
Name:						
Name:						
Name:						
Name:						

*NOTE: Projected Peak Flows listed are Maximum 3-Month Average Flow (refer to Full Report for additional information). The projected peak daily flow for 2007 based on 229 gpd per EDU and a peaking factor of 2.5 is 105,340 gpd. For 2008, the projected peak daily flow is 141,980 gpd.

3. Pumping Station Condition

Discuss condition, maintenance, and repair of each pumping station.

Name: Pump Station is in good condition; Maintenance is performed on a regular basis; Alarm system is tested daily; A portable stand-by generator is tested weekly;

[redacted]: In 2006, a storm event occured on June 23 that caused flooding that damaged the flow meter and recorder. The flow meter was replaced with a

[redacted]: new Polysonics DCT6088 Transit Time Flow Meter that was placed into operation on August 29, 2006.

Name:

Name:

Name:

4. Pumping Station Capacity Problems

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the potential overload condition. Use additional sheets if necessary.

No known capacity problems.

5. Sewer System Maintenance or Repairs

Describe any maintenance or repair work that was performed in the past year that would reduce infiltration/inflow or flows. Include infiltration/inflow reduction figures if available.

In January, 2006, the Authority was notified of a sinkhole in the area of an existing sanitary sewer lateral that serves 10 Magnolia Drive. After television inspection of the lateral, it was found the lateral pipe was cracked. The cracked pipe was replaced with new 6-inch PVC SDR 35 pipe.

6. Sewer System Flows

Attach a table of flows recorded at your main sewer meter located at the point of connection. Include the average daily flow for each month and maximum daily flow for each month if available.

Refer to bound complete report for this information.

E. METER PITS

Name/Number	Location	Size/Type*	Sensor**	Estimated Connected Population
	P.S. #3	6" Pipe	Digital Correlation Transit Time	425

* i.e., weir, flume, pipe, etc.
** i.e., float, bubbler, ultrasonic, etc.

F. INDUSTRIAL FLOWS

Industry Name	SIC Code	Location	2006 Average Current Flow GPD	Metered (Yes/No)	Average Waste Strength mg/L BOD_5
N/A					

G. OPERATION AND MAINTENANCE

1. Describe routine operation and maintenance procedures:

   a. Sewer system: TELEVISING AND GROUTING REPAIR WORK IS PERFORMED ON AN AS-NEEDED BASIS

   b. Pump stations: PUMP STATION IS CHECKED ON DAILY BASIS; PUMPS ARE LUBRICATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

   c. Meter pits: The flow meter is calibrated annually by factory certified technician.

2. Known problem areas:

Location	Nature of Problem	Corrective Measures Taken
* HILLSIDE LANE R/W	SEWER LINE HAS SOME CRACKS	POINT LINING AND/OR DIG-UP REPAIRS TO BE DONE

i.e., surcharging, line blockage, etc.

* THIS AREA INCLUDED PINE TREES THAT WERE LOCATED WITHIN THE EXISTING SANITARY SEWER RIGHT-OF-WAY. THE TREES WERE CUT DOWN AND REMOVED IN 2006. REPAIRS TO THE SEWER LINE ARE EXPECTED TO BE DONE IN 2007.

H. PREPARER

Signed: Keith R Showalter

Typed Name: KEITH R. SHOWALTER

Title: UNION TOWNSHIP MUNICIPAL AUTHORITY ENGINEER

Address: SYSTEMS DESIGN ENGINEERING, INC.
1032 JAMES DRIVE
LEESPORT, PA 19533

Phone Number: (610) 916-8500

NOTE: A map must be included which shows the following: all sewer extensions constructed in the past calendar year, sewer extensions approved or exempted in the past calendar year, in accordance with Act 537, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages.

Chapter 94 Report Information From Douglass Township

SANITARY SEWER COLLECTION SYSTEM

D.E.P. RULES AND REGULATIONS - CHAPTER 94
DOUGLASS TOWNSHIP'S ANNUAL REPORT TO THE TOWNSHIP OF AMITY
2006

PREPARED FOR:

DOUGLASS TOWNSHIP
1068 DOUGLASS DRIVE
BOYERTOWN, PA 19512

PREPARED BY:

SYSTEMS DESIGN ENGINEERING, INC.
1032 JAMES DRIVE
LEESPORT, PA 19533

07-0428-0218

STATEMENT OF ACCEPTANCE

IN ACCORDANCE WITH D.E.P. RULES AND REGULATIONS, CHAPTER 94, THE ATTACHED REPORT WAS APPROVED TO BE SUBMITTED TO AMITY TOWNSHIP AT THE DOUGLASS TOWNSHIP, BERKS COUNTY MEETING OF___ March 6, 2007.

CHAIRPERSON
DOUGLASS TOWNSHIP, BERKS COUNTY

DOUGLASS TOWNSHIP
BERKS COUNTY, PENNSYLVANIA

CHAPTER 94 – MUNICIPAL WASTELOAD MANAGEMENT
ANNUAL REPORT – 2006
CONTRIBUTORY FLOW TO AMITY TOWNSHIP

TABLE OF CONTENTS

Pursuant to P.L. 1987, Chapter 94 - Municipal Wasteload Management, Douglass Township submits the following information for compilation into the Township of Amity Sewage Treatment Plant - Chapter 94:

A. PRESENT CONNECTION AND QUARTERLY AVERAGE DAILY FLOWS

The number of residential, light commercial and light industrial connections from Douglass Township, Berks County served by Amity Township's Sewage Treatment Plant is approximately 189. The number of sewer EDU's from Douglass Township for 2006 was approximately 197. This number is based on a billing EDU of 12,500 gallons per quarter.

The sewage is metered at the wet well type (Duplex - submersible pumps) pumping station.

The latest quarterly meter readings were:

1st Quarter 2006	2,909,050 gallons
2nd Quarter 2006	20,400,500 gallons*
3rd Quarter 2006	3,118,180 gallons*
4th Quarter 2006	3,289,610 gallons

The three month max occurred in April, May & June with a total flow of 20,400,500 gallons or 224,181 gpd.

*Note: There was a significant amount of rainfall at the end of June, 2006 which caused flooding at the Old Philadelphia Pike pump station. The meter got stuck and therefore the above 2nd and 3rd Quarter meter readings are considered erroneous. The corrected 2nd Quarter meter reading is 3,478,202 gallons and the corrected 3rd Quarter meter reading is 3,155,076 gallons.

B. NEW CONNECTIONS AND EXTENSIONS

The system was constructed during the years 1999 and 2000. The system came on line with the first connections being May / June 2000. In year 2006, there were twenty-three (23) new connections to the collection system, increasing the above connection and EDU totals by twenty-three (23). At this time no new extensions are anticipated by the Township. Any new extensions will be provided by individual developers.

The following Subdivision/Land Development plans are currently in the preliminary plan stage.

1. Crable Tract*	44 single family units
2. Lot 12 Long LDP	2 EDU's (located at the Traprock Business Center)
3. Innovative Machine Tech	Unknown number of EDU's (planning module not yet approved)
4. Goodwest Building Addition (Warehouse)	Unknown number of EDU's (planning module not yet approved)

*Note: The Crable Tract is currently on hold due to the lack of available sewer EDU's.

Presently there is one (1) development which is currently under construction. This is an active project and connections are on-going.

1. Douglass Village Mobile Home Park — 302 total connections

The following land development plan has received final plan approval and is recorded but construction has not yet begun.

1. Bush Group LDP — 2 EDU's (located at the Traprock Business Center)

The following subdivision/land development plans are presently at final plan stage and will be recorded in the near future.

1. Douglass Village Self Storage — 1 commercial lot for office
2. NYCE Truck Terminal (At Traprock Business Center) — 2 EDU's
3. 84 Lumber LDP — 1-2 EDU's (expand lumber yard and new office building)

C. SEWER SYSTEM MONITORING AND MAINTENANCE

Douglass Township employs three (3) full time people whom do all monitoring and maintenance work on the sanitary sewer. The metering equipment exists at the pumping station site. This metering equipment is checked periodically for unusual readings and preventative maintenance.

A pumping station is maintained near Old Philadelphia Pike adjacent to S.R. 0442 and the Pottstown Bypass. This station is checked daily except weekends and holidays. Inspection of the collection system is accomplished as time permits. All connections installed into the sanitary collection system are inspected as completed.

D. CONDITION OF SEWER COLLECTION SYSTEM

The sanitary sewer collection system consists of approximately 4,453 linear feet of 10" PCV pipe, 19,042 linear feet of 8" PVC pipe, 2,568 linear feet of 6" pipe, 2,701 linear feet of 8" SDR 21 plastic force main, and a duplex submersible pump pumping station with valve box and metering equipment. The sewer system is in good condition. Presently the system has sufficient capacity to handle all proposed and existing flows during the next five (5) years with no areas of the system exceeding conveyance capacity due to projected flows for the next five (5) years.

E. PUMP STATION

Location:	Old Philadelphia Pike adjacent to S.R. 0442 and the Pottstown Bypass
Pumps To:	Amity Township Municipal Authority's interceptor at Old River Road and River Bridge Road for treatment at Amity Township's wastewater treatment plant.

Pumps: Two (2) Gorman-Rupp

Specified Capacity: 349 GPM at 37.4 feet TDH each pump

The pumping station is in good operating condition and is being maintained adequately.

F. INDUSTRIAL WASTELOADS

There are no industrial discharges that fall within EPA pretreatment regulations draining to the pumping station.

Chapter 94 Report Information From Earl Township

TRIBUTARY SEWER SYSTEM QUESTIONNAIRE
– COMPLEMENTING THE CHAPTER 94 REPORT –

Municipality Name: EARL TOWNSHIP **Date:** 2-23-07

A. SEWER SYSTEM DETAILS

1. Connected Population (# of People) – UNCOUNTED

	Projected				
Present 2006	2007	2008	2009	2010	2011

2. Connected EDUs

	Projected				
Present 2006	2007	2008	2009	2010	2011
116	127	168	169	170	171

1 EDU = _____ GPD

3. Total length of pipe in sewer system: 17,400 feet (~~actual or~~ estimated)
   (COMMON-USE)
4. Range of pipe sizes:
   a. Laterals: 1¼ – 6 inches (actual or estimated)
   b. Sewer mains
      (1) Smallest: 2 inches (actual ~~or estimated~~)
      (2) Largest: 8 inches (actual ~~or estimated~~)
5. Total number of manholes: _____ (actual or estimated)
6. Construction material:
   a. Pipes: HDPE, PVC
   b. Manholes: PRECAST CONCRETE

7. Combined sewers:

   a. Location: N/A

   b. Percent of total system: N/A

8. Major Interceptors:

Interceptor Name	Length (feet)	Pipe Diameter (inches) Maximum	Pipe Diameter (inches) Minimum	Estimated Service Population
N/A				

9. Collection System Capacity Problems:

If existing or proposed flows exceed the limiting section capacity at any time, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the overload condition. Use additional sheets if necessary.

N/A

B. **SANITARY SEWER EXTENSIONS (2006 ONLY)***

Name/Area Served	Sewer Extension Size	Sewer Extension Length	DEP Permit No.	Housing Units Served – EDUs (Actual/Estimated) 2006	2007	2008	2009	2010	2011
N/A									

*Attach plans of sanitary sewer system detailing additions made in 2006.

C. **PROPOSED HOUSING DEVELOPMENTS**

Name/Area Served	Permits Obtained (Yes/No)	DEP Permit No.	Proposed Housing Units (EDUs) 2007	2008	2009	2010	2011
N/A							

D. PUMPING STATIONS AND COLLECTION SYSTEM

1. Description

Name/Number	Location	Capacity (gpd) Existing	Capacity (gpd) Ultimate	Metered (Yes/No)	Force Main Length (Feet)	Force Main Size (Inches)	Estimated Service Population
N/A							

2. Pumping Station Flows

	Present 2006	Projected Peak Flows (gpd) 2007	2008	2009	2010	2011
Name: N/A						
Name:						
Name:						
Name:						
Name:						
Name:						

3. Pumping Station Condition

Discuss condition, maintenance, and repair of each pumping station.

Name: N/A

Name:

Name:

Name:

Name:

Name:

4. Pumping Station Capacity Problems

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and ongoing efforts to correct the potential overload for each instance. Estimate the probable success of these efforts in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

5. Sewer System Maintenance or Repairs

Describe any maintenance or repair work that was performed in the past year that would reduce infiltration/inflow or flows. Include infiltration/inflow reduction figures if available.

N/A

6. Sewer System Flows

Attach a table of flows recorded at your main sewer meter located at the point of connection. Include the average daily flow for each month and maximum daily flow for each month if available.

E. **METER PITS**

Name/Number	Location	Size/Type*	Sensor**	Estimated Connected Population
PLEASE SEE REPORT				

* i.e., weir, flume, pipe, etc.
** i.e., float, bubbler, ultrasonic, etc.

F. **INDUSTRIAL FLOWS**

Industry Name	SIC Code	Location	2006 Average Current Flow GPD	Metered (Yes/No)	Average Waste Strength mg/L BOD_5
N/A					

G. OPERATION AND MAINTENANCE

1. Describe routine operation and maintenance procedures:

   a. Sewer system: SUPPLY CONDITIONING STATION

   b. Pump stations: N/A

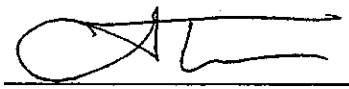
   c. Meter pits: QUARTERLY CALIBRATION AND CLEANING

2. Known problem areas:

Location	Nature of Problem	Corrective Measures Taken
N/A		

i.e., surcharging, line blockage, etc.

H. **PREPARER**

Signed: 

Typed Name: CURTIS TRAN

Title: ENGINEERING DESIGNER

Address: ENTECH ENGINEERING, INC.

P.O. BOX 32

READING, PA 19603

Phone Number: 610 373-6667

NOTE: **A map must be included which shows the following: all sewer extensions constructed in the past calendar year, sewer extensions approved or exempted in the past calendar year, in accordance with Act 537, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages.**