PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

1997

Chapter 94: Wasteload Management Report

March 31st, 1998

INTRODUCTION

Philadelphia, Pennsylvania is the nation's 5th largest urban center and spans a total land area of 136 square miles. Like many older cities, approximately 83 square miles (60%) of Philadelphia is serviced by combined sewers carrying a mix of domestic and industrial wastewater which is combined with storm water runoff during wet weather. During heavy rains, the quantity of flow may exceed the capacity of the treatment plants and their tributary sewers. The balance of the storm flow is then discharged to the receiving waters, more specifically, the Delaware and Schuylkill Rivers, and the Pennypack, Frankford, Tacony, and Cobbs Creeks.

The diversion of flow is currently controlled by combined sewerage regulating equipment. The regulator chambers divert the dry weather sewage flows to three Water Pollution Control Plants (WPCPs) to receive full secondary treatment prior to discharge to the Delaware river. The three WPCPs, Northeast, Southwest, and Southeast have design capacities of 210, 210, and 120 million gallons per day respectively. These facilities are permitted for instantaneous peaks and maximum daily average flows of 2 and 1.5 times design capacity in order to provide treatment for a portion of the storm flow.

The three WPCP's and their tributary sewer collection systems are regulated by the US. Environmental Protection Agency (US EPA), Pennsylvania Department of Environmental Protection (PA DEP), Delaware River Basin Commission (DRBC), and the Pennsylvania Fish Commission. The environmental legislation is enforced under the guidelines of the Clean Water Act, or more specifically the National Pollutant Discharge Elimination System (NPDES) permits which were renewed for a 5-year period on September 27th, 1993. As a result, the Department has currently undertaken a multi-year, multi-million dollar program to quantify the effects of Combined Sewer Overflows (CSO's) on the surrounding water bodies and to meet the CSO requirements of the NPDES permit.

An additional requirement of this permit and the Chapter 94 Wasteload Management Report, is that an Annual CSO Status Report be submitted to summarize activities completed pursuant to meeting obligation of the permit and the National CSO Control Policy. The Department's documentation of the completion of this task for calendar year 1997 is contained herein.

It is the intent of this report to serve as the documentation of the status of the various projects and other actions initiated by the Department as part of the CSO Compliance Program. These projects are comprised of the Department's ongoing water pollution control projects, initiated to comply with the terms and conditions of the NPDES permit, and projects required to address specific issues identified through the periodic regulatory meetings. For Calendar year 1997, the status of the individual projects are organized and presented within the same framework as the preceding year's report. This structure allows for progress to be readily cross referenced with individual activities which comprise the permit-related milestones (e.g. Nine Minimum Control (NMC) and Long Term Control Plan (LTCP). Summaries of the CSO related programs are detailed in the sections to follow.

1.0 OPERATION & MAINTENANCE

Reference Philadelphia NMC Report, 9/27/95 Section 1 pp. 61-62. The operation and maintenance program is well established and any changes or modifications to existing programs are indicated in the section below.

1.1 CSO Regulator Inspection Program

Start: 8/1/95 End: Status: Ongoing

1.1.1 Customized Regulator Inspection Forms

Start: 8/1/95 End: 12/31/98 Status: In Progress

The PWD Collector Systems Flow Control Unit (FCU) staff has developed a computerized regulator information summary reporting capability for internal tracking of regulator maintenance status. A customized CSO regulator preventative maintenance inspection report form is under development for

each individual regulator chamber. These reports will be used to document the preventative-maintenance performed on a yearly basis, ensure that proper regulator settings are maintained, and that system changes are documented. This project is currently ongoing and will allow for simplified tracking of site specific changes made during implementation of NMC's and ensure longevity and validity of the CSO maintenance program. This task is being incorporated into the new CDM contract scheduled to begin 7/1/98.

During this next year, customized regulator inspection reporting field forms and an associated data base entry screen using MSACCESS will be developed. The database will facilitate the compilation of the monthly dry weather overflow status report developed by the FCU. This application will facilitate the production of the Flow Control sections of future submissions of the Chapter 94 Wasteload Management report. The data incorporated into this system will include inspection data included on the current FCU inspection forms, data currently deposited in the CSO program databases, and will reflect the most up-to-date information documenting the current operational status of each facility included in the database. The database will include all facilities documented in the System Inventory and Characterization and the System Hydraulic Characterization Reports.

1.1.2 Regulator O & M Program

Start: 9/27/96 End: Status: Ongoing

No changes reported for the existing O & M Program. Annual summaries of the comprehensive and preventative maintenance activities completed the past year are included in Appendix A.

1.2 Pumping Station Maintenance

Start: 8/1/95 End: Ongoing Status: In Progress

Annual summaries of the Wastewater Pumping summaries are included in Appendix B for:

- Flows
- Station Outages
- Station Condition
- Pump Performance
- Pump Availability
- Maintenance Breakdown

1.2.1 Central Schuylkill Pumping Station (CSPS) Quarterly Grit Pocket Cleanings

Start: 8/1/95 End: Status: Ongoing

Grit removal operations are performed at the Central Schuylkill Pumping on a periodic basis to maintain the capacity of the siphon. In calendar year 1997, 20 and 25 cubic yards of debris were removed from the grit pockets on March 24 and December 16, 1997 respectively.

In March 1997 the south tube of the North siphon shaft was partially blocked by the collapsing of the steel liner. This obstruction is preventing the debris bucket from traveling down to the grit pocket. The flows are being closely monitored in the siphon tubes and the obstruction has had no impact on the station

operation in dry or wet weather. Currently a commercial diving contractor, Walker Diving Inc., is under contract to remove the steel obstruction. This work will be completed in calendar 1998.

1.2.2 WW Pumping Predictive Maintenance Program

Start: 8/1/95 End: 1/1/98 Status: Ongoing

This program is currently under development and is structured to allow the operating unit to anticipate maintenance needs before they develop into problems. The Predictive Maintenance Committee which is comprised of key Operations Division personnel within the Water Department, is currently developing programs for key facilities in the water conveyance and wastewater collection systems. The program is ongoing and has had several benefits in the past year. Ultra sonic scanning of the pipe wall thickness has revealed that the 42nd Street pump station discharge piping and main header is wearing thin and will require replacement in the near future. This work has been scheduled for 1999. Yearly infrared testing of the electrical switch gear at all stations has revealed several loose electrical connections which were corrected on the spot.

1.3 Pump Station Emergency Backup Power

Start: 9/27/95 End: 9/27/97 Status: In Progress

This project entails the installation of emergency back-up power generators at 8 pumping stations which presently only have a single electrical source. Projections indicate that this project will eliminate approximately 95% of pumping station failures attributed to power outages. See pump station maintenance annual summaries in Appendix B. The contract to install emergency generators was awarded in September 1997. The work has progressed at a rapid pace with all generators now in place on the concrete pads. Electrical connections to the main bus and installation of instrument circuits have begun at several stations. It is anticipated that the first station will go on-line by June 1998. The Department has provided the contractor with a priority order of installation based on the frequency of PECO outages observed at the stations.

1.4 Sewer Cleaning Contracts

Start: 12/1/95 End: Status: Ongoing

Recent sewer cleaning projects have been part of the capital program and are being completed at an expense much greater than would typically be characterized by a NMC. Sewer cleaning projects have been moved to the Long Term Control Plan Projects discussed in Section 10.1 Conveyance Improvements. More specifically these projects were detailed in section's 10.1.2 Somerset Interceptor Cleaning and 10.5.5 RTC – SWMG, CC, LSWS.

1.5 Inflow Prevention Program

Start: 8/1/95 End: 1/1/98 Status: In Progress

Program can be referenced on p 2-12 of the NMC Documentation under NMC #2 Maximize Storage It has been moved to the O & M section of this report for organizational and scheduling purposes. The

intention of this program was to evaluate specific locations and to develop implementation schedules for collection system improvements designed to prevent tidal inflow of river water into the conveyance and treatment system.

1.5.1 Tide Gate Inspection Program

Start: 8/1/95 End: Status: Ongoing

Summaries of the tide gate inspection and maintenance completed during calendar 1997 are found in Appendix A.

1.5.2 Emergency Overflow Weir Modification

Start: 11/7/94 End: 7/1/98 Status: In Progress

The System Inventory and Characterization Report (SIAC) identified 88 CSO's influenced by the tides. Many of these sites have openings above the tide gate. During extreme high tides inflow into the trunk sewer can occur. During these events, significant quantities of additional flow can be conveyed to the treatment plant and thus reduce capacity for storm flow, as well as increasing treatment costs. Page 2-12 of the NMC report describes a program to install tide gates, or other backflow prevention structures, at regulators having an emergency overflow weir above the tide gate. These measures will significantly reduce the likelihood of tide inflow into the conveyance and treatment system.

1.5.2a Emergency Overflow Weir Inflow Assesment

Start: 2/1/96 End: 2/27/97 Status: Completed

A tide inflow study was completed and corrective actions determined for the remaining sites which may be periodically (excessively high peak high tides) experiencing inflow problems. This study reviewed monitored tide data, modeled inflow rates, and researched past O & M records. For monitored sites, frequency and magnitudes of inflow were determined on a site-specific basis. From this information, a prioritized listing of sites, the selected control alternative and implementation schedule were developed. $238,000 has been budgeted for this project. The preliminary implementation schedule was established in Table 1.1 as follows:

Table 1.1 Listing of gates to be installed as part of tide inflow protection project.

Drainage District	# Sites (gates)	Installation Date
Northeast (CC)	7	6/30/97
Northeast	18	1/1/98
Southwest	9	3/1/98
Southeast	10	7/1/98

CC- Computer Controlled Regulators

1.5.2b Emergency Overflow Weir Modifications

Start: 2/27/97 End: 7/1/98 Status: In-Progress

Flap gates were installed in previous years in the emergency overflow weirs of the following sites:

- S_44 26th St. 700' N off Hartranft St on 11/7/94

- D_61 Catherine St. E. of Swanson St. on 12/22/95
- D_71 Bigler St. & Delaware Ave. on 12/27/95

The following sites were modified during calendar 1997 to have flexible flap gates installed in the emergency overflow weir area:

- D_02 Cottman St. SE of Milnor St
- D_03 Princeton Ave SE of Milnor St.
- D_11 Sanger St. SE of Milnor St.
- F_25 Ash St. W of Creek Basin

The following sites were modified during calendar 1997 to raise the emergency overflow weir elevation with aluminum stop logs:

- S_50 43rd St. E of Woodland Ave.
- F_23 Bridge St. NW of Creek Basin
- S_05 24th St. 155' S. of Park Towne Place
- D_05 Magee St. SE of Milnor St.

1.5.3 River Backflow Prevention Project

Start: 8/1/95 End: 1/1/98 Status: In Progress

Monitoring in the Northeast Drainage District has shown that, it is possible for regulators at elevations above the tidal stages to be subjected to backflow from the smaller streams during wet weather. In order to protect these regulators from potential inflow, a program was initiated to install tide gates or other backflow prevention structures at these regulators. A plan is currently in the design phase to install 6 backflow preventers at low lying sites on the Cobbs Creek Low Level Interceptor. It is projected that the installation of additional diversion dams as part of 2.0 Maximize In-System Storage will eliminate this occurrence at the other non-tidal CSO's.

1.5.3a Cobbs Creek Inflow Assesment

Start: 8/1/95 End: 6/1/97 Status: Completed

1.5.3b Design Inflow Controls

Start: 6/1/97 End: 8/1/97 Status: Completed

1.5.3c Bid Contract

Start: 1/1/99 End: 7/1/98 Status: Planned

1.5.3d Construction of Controls

Start: 1/6/99 End: 1/6/00 Status: Planned

2.0 MAXIMIZE IN-SYSTEM STORAGE

Reference Philadelphia NMC Report, 9/27/95 Section 2 pp. 1-15

An effective control for providing in-system storage, is to raise the overflow elevation by physically modifying the overflow structure. However, this approach must be implemented cautiously, since raising the overflow elevation also raises the hydraulic grade line in the combined sewer during storm flows, and therefore can increase the risk of basement and other structural flooding within the upstream sewer system.

Adding a diversion dam was proposed as a means to increase the hydraulic capacity of slot regulators which presently do not have a diversion dam. The flow maximization plan detailed in NMC #4 included the addition of dams at these locations. The NMC report recommended 57 locations for the addition of a diversion dam; 40 locations in the SWDD, 15 locations in the NEDD and 2 locations in the SEDD. As a means to increase both the hydraulic capacity of the regulators and the available in-system storage, it was deemed feasible to raise the overflow weir elevation at these selected regulator locations. Additionally, an analysis was completed to determine the opportunity for implementing Real Time Control (RTC) of CSO discharges.

2.1 Evaluate Real Time Control in LTCP

Start: 2/1/96 End: 1/27/97 Status: Completed

See section 10.5 Real Time Control Program

2.2 Install Diversion Dams

Start: 8/1/95 End: 6/30/97 Status: Completed

The NMC Documentation listed 57 sites which did not have diversion dams installed to aid in diverting the combined flow into the orifice opening of a slot-type regulator. Of these 57, 40 were located in the SW DD, 15 in the NE DD, and 2 in the SE DD. Construction of diversion dams increases in-system storage at a relatively low cost and reduces susceptibility to dry weather discharge. 56 of the 57 sites now have dams completed. The remaining site discharges to another regulator (S_38) and should be completed this calendar year.

3.0 MODIFY PRETREATMENT PROGRAM

Reference Philadelphia NMC Report, 9/27/95 Section 3 pp. 1-13

3.1 Phase I Implementation

Start: 8/1/1995 End: 2/1/1997 Status: In Progress

3.1.1 Inventory Significant Non-Domestic

Start: 8/1/1995 End: 8/21/1995 Status: Completed

An inventory of significant non-domestic discharges to the combined sewer system was completed by Industrial Waste Unit engineering support staff.

3.1.2 Guidance Memorandum

Start: 8/1/1995 End: 1/26/1996 Status: Completed

A guidance memorandum was created to permit the administrators to evaluate all SIU's and target those capable of avoiding or reducing pollutant discharge during wet weather events in which there is an overflow.

3.1.3 Develop Data Form for Annual Inspections

Start: 3/1/1996 End: 9/1/1997 Status: Completed

Inspection write-ups were completed for the industries with batch discharges. Copies of the write-ups are available upon request.

3.1.4 Pretreatment Inspections - 1st 50%

Start: 3/1/1996 End: 7/1/1996 Status: Completed

Initiated and completed annual pretreatment inspections for 50% of the SIU's. Used guidance criteria to judge the capability of process discharge restrictions or determine other wet weather process pollution prevention actions. Industry specific assessment memos were completed for the industries with batch discharges. Copies of the write-ups are available upon request.

CSO Control #3 implementation

phase I work

Industrial Discharger	CSO Downstream	Batch	Continuous	status of inspection	Nature of Pollutants	Action
Abbey Color & Chemical	*yes*	*x*		*completed*	*clean discharge*	*no control needed*
Columbia Silk Dyeing	*yes*	*x*		*completed*	*clean discharge*	*no control needed*
GATX	*yes*	*x*		*completed*	*stormwater only*	*no control needed*
Independence Brewing Co.	*yes*	*x*		*completed*	*high BOD, food source*	*recommend no control*
Maritank Philadelphia, Inc.	*yes*	*x*		*completed*	*dissolved hydrocarbons*	*controls recommended*
McWhorter Varnish	*yes*	*x*		*completed*	*high BOD*	*initiated controls*
National Chemical	*yes*	*x*		*completed*	*high BOD*	*initiating controls*
Neatsfoot Oil Company	*yes*	*x*		*completed*	*high BOD*	*controls in place*
Regal Leather	*yes*	*x*		*completed*	*high BOD,chromium*	*zero discharge*
United Color Technology	*yes*	*x*		*completed*	*clean discharge*	*no control needed*
Abaco Company	yes		x			
Abbots Plating	yes		x			
Acme Uniform Rental Service	yes		x			
All-Brite	yes		x			
Anchor Dyeing & Finishing	yes		x			
Angelica Health Care	yes		x			
Arbill Industries, Inc.	yes		x			
Arway Apron and Uniform	yes		x			
Clean Rental Services, Inc.	yes		x			
Cooper's Cooperage	yes		x			
Coyne Textile Services	yes		x			
Cutler Dairy Products	yes		x			
Cardone Industries	yes		x			
CCL Company	yes		x			
Chelsea Plating Company	yes		x			
Delaware Valley Wool Scour	yes		x			
Domestic Linen Supply Co.	yes		x			
Frankford Plating, Inc.	yes		x			
Franklin Smelting & Refining	yes		x			
GV. Freda Sausage Co.	yes		x			
General Electric Apparatus	yes		x			
General Felt	yes		x			
Global Pharmaceutical	yes		x			
Globe Dye Works	yes		x			
Gross Metals	yes		x			

phase I work

Industrial Discharger	CSO Downstream	Batch	Continuous	status of inspection	Nature of Pollutants	Action
Harvey M. Stern & Company	yes		x			
Henshell Div.of Gross Metals	yes		x			
Hillock Anodizing	yes		x			
Inolex Chemical Co.	yes		x			
James Abbott	yes		x			
JWS Delavau	yes		x			
Kelly's Cooperage	yes		x			
Laurel Linen	yes		x			
Leatex Chemical Company	yes		x			
Lustrick Corporation	yes		x			
Martin's Metals	yes		x			
Max Levy Autograph	yes		x			
ML Desserts	yes		x			
Belmont Filter Plant	yes		x			
Queen Lane WTP	yes		x			
Model Finishing Co.	yes		x			
Mrs. Resslers	yes		x			
Mutual Pharmaceutical Co.	yes		x			
Newman & Company Inc.	yes		x			
O'Neil Industries, Inc.	yes		x			
Parachem	yes		x			
PGW	yes		x			
PGW	yes		x			
Penn Ventilator	yes		x			
Phila. Rust Proof Company	yes		x			
Philadelphia Newspapers Inc.,	yes		x			
Philadelphia Coca Cola	yes		x			
Pottero Company, Inc.	yes		x			
Purolite Ltd.	yes		x			
Stone Container	yes		x			
Simkar	yes		x			
Smith Kline Beechman Corp.	yes		x			
Trigen	yes		x			
United States Mint	yes		x			
US Uniform	yes		x			
Wade Technologies, Inc.	yes		x			
Action Manufacturing	zero discharg					
Automotive Rebuiders, Inc.	zero discharge					

phase I work

Industrial Discharger	CSO Downstream	Batch	Continuous	status of inspection	Nature of Pollutants	Action
Cattie Galvanizing Co.	zero discharge					
Chestnut Display	zero discharge					
Garfield Smelting & Refining	zero discharge					
Gryphyn	zero discharge					
US Banknote	zero discharge					
Viz Manufacturing	zero discharge					
Anzon	closed					
Herman Wolf Co.	closed					
Imperial Metal & Chemicals	closed					
Janbridge, Inc.	closed					
Jerome Foods	closed					
Kurz Hastings	closed					
Kraftco Corp. (Good Humor)	closed					
Acme Plating	closed					
Arrowhead Industrial Water	no	x				
Avery	no	x				
Ajax Adhesives & Chemicals	no	x				
Ashland Chemical Co.	no	x				
Darby Creek Tank Farm	no	x				
Coal Tech, Inc	no	x				
Connelly Container, Inc.	no	x				
Container Corporation	no	x				
Yeager Manufacturing	no	x				
Arco Chemical Company	no		x			
Buchan Industries	no		x			
Goodmark Foods	no		x			
Multi-Flex Spring & Wire	no		x			
PPG Industries	no		x			
Precious Metals Plating Co.	no		x			
Remco Finishing Corp.	no		x			
United Chemical Technology	no		x			
Yankee Point Water Co.	no		x			
Advanced Plating Tech.	no		x			
Aeco, Inc.	no		x			
Allied Signal	no		x			
Allied Tube Company	no		x			
American Packaging	no		x			
Atochem	no		x			

phase I work

Industrial Discharger	CSO Downstream	Batch	Continuous	status of inspection	Nature of Pollutants	Action
Cintas Corporation	no		x			
Continental Baking	no		x			
C.W. Industries	no		x			
Computer Components Corp.	no		x			
Curtiss Laboratories	no		x			
Dietz & Watson	no		x			
Durand Products	no		x			
G. Whitfield Richard Co.	no		x			
Hygrade Food Products	no		x			
International Paper Co.	no		x			
Ketema	no		x			
LaFrance Company	no		x			
Lannett Company, Inc.	no		x			
Lavelle Aircraft	no		x			
Marshall Labs	no		x			
Matlack Inc.	no		x			
Merin Studios	no		x			
Nabisco Brands	no		x			
Paper Manufacturers	no		x			
Penn Fishing Tackle Mfg.	no		x			
Penn Maid	no		x			
Pepsi	no		x			
Philadelphia Baking	no		x			
Premier Medical	no		x			
Q Tech	no		x			
Ready Food Products	no		x			
Rohm & Haas Company	no		x			
Sanofi-Bio	no		x			
SPD Technologies	no		x			
SPS Technologies Inc.	no		x			
TastyKake Company	no		x			
Vibroplating Inc.	no		x			
Fleetwash	dry weather discharge only					
My Mobile Cleaning Service	dry weather discharge only					

3.1.5 Asses SIU Wet Weather Monitoring

Start: 7/1/1996 End: 8/1/1997 Status: Completed

The determination of a significant wet weather event is it would be left up to the SIU to determine the status or the potential for a wet weather event to occur during or immediately preceding a planned process discharge.

3.1.6 1st 50% of SIU's Reduce Discharge

Start: 10/1/1996 End: 1/1/1997 Status: Completed

This project entails initiating an outreach program to those of the first 50% of SIU's who exhibit the potential to restrict discharges. In calendar 1997, two out of three industries indicated a willingness to move forward with changes on their own. The third industry did not indicate that it would move forward with any restrictions.

3.1.7 Pretreatment Inspections - 2nd 50%

Start: 7/1/1996 End: 12/31/1996 Status: Completed

All SIUs have been evaluated for the potential to restrict process flow in wet weather. Under the criteria and definitions established at the outset of this program, batch discharge was narrowly defined to mean to apply at the end of the pipe. For continuous dischargers there may be an opportunity to hold a pollutant-bearing batch process stream apart from other continuous process streams in a wet weather event. Inspections to be carried in 1998 will evaluate if any internal batches exist in a continuous end of the pipe discharge upstream of a CSO.

3.1.8 2nd 50% SIU's Reduce Discharge

Start: 1/1/1997 End: 12/31/1998 Status: In-Progress

Initiation of an outreach program to the remaining 50% of SIU's who exhibit the potential to restrict discharges. This task has been modified to initate an outreach program to those continuous dischargers who have batch pollutant dischargers within a continuous discharge stream.

3.2 Phase II Implementation

Start: 3/1/1997 End: 6/1/1998 Status: In-Progress

Phase II implementation will assess discharge reductions realized from the Phase I Implementation Program. The 1998 inspections will evaluate those two dischargers who indicated that they would go forward with some controls voluntarily.

3.2.1 Report - Performance of Phase I Activities

Start: 3/1/1997 End: 3/31/1997 Status: Completed

Table 3.1 Summarizes the following performance criteria for the SIU's inspected as part of the Phase I NMC Program:

1. # capable – 10 dischargers
2. # willing – 2 dischargers
3. # implementing restrictions – 1 forced to terminate altogether

3.2.2 Annual Pretreatment Inspections - Criteria

Start: 3/18/1997 End: 9/27/1998 Status: In-Progress

Inspections are now being conducted using guidance criteria on evaluating wet weather pollution prevention efforts for those industries who may have batch operations within a continuous discharge.

4.0 MAXIMIZE WPCP FLOW

Reference Philadelphia NMC Report, 9/27/95 Section 4 pp. 28-42

The results of the hydraulic modeling of the interceptor sewers and regulators documented in the System Hydraulic Characterization Report (PWD; June 27, 1995) clearly demonstrated that CSOs occur before the WPCPs have reached capacity, and in most cases before the interceptor sewers have reached capacity. This is an intentional result of the prevailing regulator design philosophy at the time that these structures were designed and built. Although an appropriate approach when protection of the WPCPs from hydraulic overloading was the principal concern, this approach is now obsolete in the current situation where the primary objective is maximizing the capture and treatment of wet-weather flows.

The basic strategy of flow maximization, or Modified Regulator Plan (MRP) is to deliver more flow to the WPCPs more frequently, to enable greater pollutant removals. The results of the hydraulic modeling of the interceptor sewers under the flow maximization scenarios indicate that significantly higher rates of flow can be delivered to the WPCPs more frequently than under current conditions.

To date, 100% of the projected flow increase associated with the Modified Regulator Plan has been implemented. Some modifications remain in order to completely implement the optimization plan, but no additional capture is expected to result. The remaining modifications will optimize where the additional flow s are diverted from in order to minimize industrial impacts.

Since the completion of these modifications, the Department has been compiling data to study the impact that these changes have on the effects of the treatment plants with respect to cost, permit limits, and high flow management issues. Upon gaining this experience with higher storm flows implementation is now expected to continue to the full flow increase identified in the MRP within the next year. High-flow management practices will be further analyzed by stress testing of individual unit processes to ensure adequate factors of safety and process availability under high flow circumstances. The following sections detail the status of these efforts.

4.1 POTW Stress Testing

Start: 9/1/1997 End: 8/1/1998 Status: In-Progress

Project moved to LTCP Implementation section 10.2 WPCP Flow Optimization.

4.2 Prelim Costs - NMC #4 Implementation

Start: 8/1/1995 End: 12/20/1995 Status: Completed

This task identified the component costs which would increase as a result of implementing the modified regulator plan. The increases in pumping and biosolids handling (BRC) costs represented the majority of the increase and was accommodated within existing budgets, thus allowing for the MRP to be implemented without delay.

4.3 NE DD Modified Regulator Plan (MRP)

Start: 1/1/1996 End: 7/1/1998 Status: In Progress

4.3.1 NE WPCP - 50% MRP

Start: 1/1/1996 End: 6/1/1996 Status: Completed

4.3.2 NE WPCP – Determine Additional Modifications for 100% MRP

Start: 11/4/1996 End: 12/14/1997 Status: Completed

A finalized list of regulator modifications was developed to increase capture of combined flows and minimize overflow of significant industrial user (SIU) discharges. This scenario refines the Nine Minimum Control Section 4 (NMC4) modified regulator scenario. These modifications eliminate/minimize the occurrence of flow reversals in CSO regulator dry weather outlet (DWO) pipes while maintaining increases in capture of combined flows. Flow reversals can occur at CSO regulators in PWD's combined sewer system (CSS) due to raised interceptor hydraulic grade lines (HGLs) during wet weather events. SWMM EXTRAN model results of the fully implemented NMC4 modified regulator scenario indicate interceptor HGLs rise above trunk sewer HGLs at various locations in PWD's CSS resulting in flow reversals in CSO DWO piping systems. These flow reversals allow flows previously captured in combined interceptor sewers to overflow. Many of the SIUs tributary to PWD's CSS discharge directly to combined interceptor sewers or to separate sanitary sewers directly connected to combined interceptor sewers. Flow reversals in DWO piping systems is the only means of overflow of these discharges.

Regulator modifications were implemented in the EXTRAN models to eliminate/minimize all DWO pipe flow reversals. Modifications of Brown and Brown regulators included removal of regulator chamber orifice plates and placement of regulator gates in full open position. Regulator gates were allowed to completely close using the float-pulley apparatus that closes the gate based on the water surface in the regulating chamber. This setup closes the regulator gate when HGLs in the interceptor rise and begin to flood the regulator chamber. Computer controlled regulators were modified to allow complete closure of regulator gates based on trunk sewer elevations (current computer controlled settings close gates to 60% of maximum opening). The closed regulator gates do not allow flow reversals in the DWO pipes. All other regulators were modified similar to NMC4 modifications (i.e. dams at all slot regulators and gate openings

maximized at water hydraulic sluice gate regulators). EXTRAN models were developed to simulate these regulator settings and SWMM RUNOFF models were used to develop input hydrographs using a ramped rainfall intensity. If flow reversals continued under this scenario, regulators were further modified until flow reversals were eliminated/minimized as much as possible without sacrificing overall CSO capture. If flow reversals were easily eliminated, further modifications were simulated in an attempt to increase capture at regulators. Results of this analysis yielded the finalized list of regulator settings to achieve increased CSO capture and minimize SIU overflow.

4.3.3 NE WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: In Progress

The detailed listing of remaining regulator modifications has been completed and is currently under review. The remainder of the regulator modifications for NMC #4 are being scheduled for this summer.

4.4 SW DD Modified Regulator Plan (MRP)

Start: 1/1/1996 End: 7/1/1998 Status: In Progress

4.4.1 SW WPCP - 50% MRP

Start: 11/11/1995 End: 6/1/1996 Status: Completed

4.4.2 SW WPCP - Determine Additional Modifications for 100% MRP

Start: 11/4/1996 End: 12/14/1997 Status: Completed

See 4.3.2

4.4.3 SW WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: In Progress

The detailed listing of remaining regulator modifications has been completed and is currently under review. The remainder of the regulator modifications for NMC #4 are being scheduled for this summer.

4.5 SE DD Modified Regulator Plan (MRP)

Start: 10/30/1995 End: 7/1/1998 Status: In Progress

4.5.1 SE WPCP - 50% MRP

Start: 10/30/1995 End: 6/1/1996 Status: Completed

4.5.2 SE WPCP - Determine Additional Modifications for 100% MRP

Start: 10/30/1995 End: 6/1/1996 Status: Completed

See 4.3.2

4.5.3 SE WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: In-Progress

The detailed listing of remaining regulator modifications has been completed and is currently under review. The remainder of the regulator modifications for NMC #4 are being scheduled for this summer.

4.6 NMC 4 Implementation Costs (LTCP)

Start: 5/1/1996 End: 9/1/1996 Status: Completed

Reassessed NMC #4 Costs in light of actual increase in cost for WPCP, Pumping, and BRC from actual experience resulting from implementation of MRP. Existing budgets were modified accordingly.

5.0 ELIMINATE DWO

Reference Philadelphia NMC Report, 9/27/95 Section 5 pp. 1-5

Dry weather discharges at CSO outfalls can occur in any combined sewer system on either a chronic (i.e., regular or even frequent) basis or on a random basis (i.e., as a result of unusual conditions, or equipment malfunction). Dry weather discharges can occur as a result of numerous site-specific conditions. Random dry weather discharges can occur at virtually any CSO outfall following sudden clogging by unusual debris in the sewer, structural failure of the regulator, or hydraulic overloading by an unusual discharge of flow to the combined sewer system. Chronic dry weather discharges can and should be prevented from occurring at all CSO outfalls. Random discharges cannot be prevented, but they can and must be promptly eliminated by cleaning repair, and/or identification and elimination of any excessive flow and/or debris sources.

As documented in Section 1 of the NMC report, regular inspections and maintenance of the CSO regulators are performed throughout the City. These programs ensure that sediment accumulations and/or blockages are identified and corrected immediately to avoid dry weather overflows. The results of these efforts are reflected in the Department's Monthly CSO Status Report submitted to PaDEP and EPA Region III and summarized on annual basis in the following sections.

5.1 CSO Monitoring Network

Start: 8/1/1995 End: 8/1/1997 Status: In-Progress

Status of the Current Monitoring System

The Philadelphia Water Department's CSO Monitoring Expansion Project, based upon state-of-the-art technologies selected from a six month CSO monitoring demonstration held in 1994, currently collects data from approximately 130 CSO, rain gauge DWO interceptors, and other hydraulic control point

locations throughout the Philadelphia area. The total number of sewer locations to be furnished with new hardware will total over 250, pending completion of the construction of site hardware and computer integration projected for fall 1998. Of this total, 72 sites are located in the Northeast district comprising first generation level monitoring equipment in operation since 1988. The remaining 50 sites currently in service in the Southeast and Southwest districts are monitored by new equipment chosen from the technology demonstration. All existing CSO locations in monitoring service since 1988 will receive updates to the new equipment with the philosophy of a uniform technology to comprise the entire monitoring system. An entirely new data acquisition and event alarming computer system is undergoing concurrent installation with the new metering equipment.

The flow metering additions as well as the overall expansion of the program into the Southeast and Southwest districts of the city will allow for the observance and rapid abatement of line blockages and dry weather discharges, as currently practiced in the Northeast district. Conversion to a Windows-based interface has enabled the ability to display up to eight separate monitoring locations, enabling observation of simultaneous level and flow characteristics in order to observe the level and flow through a large component of the city sewer system in a real-time mode.

The CSO monitoring network is currently under construction. A detailed status report is provided in Table 5.1 for the each of the major site types in the contract including:

- CSO's
- Township Metering Stations
- Pump Stations
- Hydraulic Control Points (Miscellaneous points of interest)
- Raingauges

The following descriptors are provided to indicate the status of the major site components. Please refer to the enclosed table for information on the construction status of each remote site.

Conduit Complete -	Underground conduit system for sensor cabling.
Street Permit -	Street opening permit obtained.
Park -	Permit obtain for Fairmount Park Commission (where applicable).
Paved -	Initiation of closure of opened pavement with Streets Dept.
Sensor Installation -	# of sensors installed.
Enclosure -	Enclosure mounted on pole.
Instrument -	RTU and associated instrumentation installed.
Peco Service -	Electric service operational.
Bell Service -	Phone service operational.

5.1.1 Implement Event Notification Systems (ENS) for DWO's & Inflow

Start: 8/1/1995 End: 12/1/1998 Status: In Progress

The implementation of the CSO monitoring network is to include the use of an Event Notification System (ENS) to reduce the response time to abate dry weather discharges and wedged open tide gates. For the Northeast Drainage District which already has an automated monitoring system, this is common practice. In light of these improvements, it is expected that the frequency of visual inspections performed by the maintenance crews will decrease considerably, allowing for additional resources to be focused on

preventative, comprehensive, and specialize maintenance activities. The implementation of the ENS is ongoing as the new computer system is implemented and site specifics of new sites are incorporated.

The notification system breaks the sites down into specific algorithms which are dependent on the type of sites monitored. Each type of site will possess certain operating parameters which will indicate dry weather overflows or tidal inflows, controlled by the alarm algorithm implemented by site type. The Philadelphia CSO system has been categorized into the following site "types" which are dependent on the site architecture as well as the types of sensors installed.

1) CSO without a diversion dam and without a tidegate.
   a) Having a transit time flowmeter.
   b) Having only level measurement with no flowmeter.
2) CSO with a diversion dam and with a tidegate.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.
3) Computer controlled regulator and SWO gates.
   a) One SWO gate.
   b) Two SWO gates.
4) Regulator with tidegate, dam, and no overflow window.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.
5) Regulator with tidegate, dam, and overflow window.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.

To minimize the impact of wet weather on the accurate alarming and reporting of dry weather events, These algorithms, when implemented, will allow for fully automated reporting of dry weather events if and when they occur. A methodology to distinguish between wet weather and dry weather discharges, those due to storms and those due to other causes, has been developed to minimize improper reporting. This strategy involves the city's extensive rain gauge network and monitoring points to determine when the beginning and ending of storm events occurs.

Table 5.1 Site Status Report for CSO Monitoring Network

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
C-01	City Line Ave. & 73rd St.	32		Y	Y	3/25/97	P	8/15/97	P	A
C-02	City Line Ave 100' S. Of Creek	32		Y	Y	2/18/97	P	8/15/97	P	A
C-04	Malvern Ave. & 68th St.	32	A	Y	Y	3/26/97	P	8/15/97	P	A
C-04A	Mavern Ave. NW of 68th St.	32		Y	Y	3/26/97	p	8/15/97	P	A
C-05	Lebanon Ave. SW of 73rd St.	32				3/25/97	P			
C-06	Lebanon Ave. & 68th St.	32	A	Y	Y	4/11/97	P	8/15/97	P	A
C-07	Landsdowne Ave. & 69th St.	32	A	Y	Y	4/23/97	PAR	4/25/97	F	
C-09	64th St. & Cobbs Cr.	28	U	Y	Y	3/26/97	P	5/10/97	P	A
C-10	Gross St. & Cobbs Cr.	28	A	Y	Y	2/18/97	P	8/15/97	P	A
C-11	63rd St. S. Of Maret St.	28	A	Y	Y	10/2/96	I	8/15/97		A
C-12	Spruce St. @ Cobbs Cr.	23	U		Y	5/13/97	F			
C-13	62nd St. @ Cobbs Cr.	23	U		Y	4/11/97	P			
C-14	Baltimore Ave. & Cobbs Cr.	23	A	Y	Y	3/26/97	P	8/15/97	P	A
C-15	59th St. & Cobbs Cr. Parkway	18	U		Y	4/10/97	P			
C-16	Thomas Ave. & Cobb Cr.	18	U		Y?	4/10/97	P			
C-17	Beaumont St. & Cobbs Cr.	18	U		Y	5/13/97	F			
C-18	60th St. @ Cobbs Cr. Parkway	18	A	Y	Y	3/26/97	F			
C-19	Mount Moriah Cemetery & 62nd St.	18	A		Y	4/10/97	P			
C-20	65th St. & Cobbs Cr. Parkway	18		Y	Y	4/2/97	P			
C-21	68th St. & Cobbs Cr. Parkway	13	A	Y	Y	4/2/97	P	8/15/97	P	A
C-22	70th St. & Cobbs Cr. Parkway	13	LP-240V		Y	4/10/97	P			
C-23	Upland St. Cobbs. Cr. Parkway	13	U	Y	Y	4/2/97	P	8/15/97	P	A
C-24	Greenway Ave. & Cobbs Cr. Parkway	13	A	Y	Y	4/2/97	P	8/15/97	P	A
C-26	Saybrook Ave. & Island Ave.	13	A	Y	Y	4/29/97	I			
C-28A	Grays Ave. & Island Ave.	13	EXIST	Y		5/13/97	I			
C-29	Claymount St. & Grays Ave.	8	A	Y	Y	4/10/97	P			
C-30	77th St. W. Of Elmwood Ave.	8	U	Y	Y	4/10/97	P	8/15/97	P	A
C-31	Cobbs Cr. Park S. of City Line Ave.	27	A	Y	Y	2/18/97	P	3/10/97	P	A
C-32	Cobbs Creek Park & 77th St.	27	A	Y	Y	2/18/97	P	3/10/97	P	A
C-33	S. Of Brockton Rd. & Farrington Rd.	27	A	Y	Y	3/25/97	P	8/15/97	F	
C-34	Woodcrest Ave & Morris Park	32	A	Y	Y	2/25/97	P	8/15/97	P	A
C-35	Morris Park W. Of 72nd St. & Sherwood	32	A	Y	Y	2/18/97	P	8/15/97	P	A
C-36	69th St. & Woodbine Ave. S. Of brentwoo	32	A	Y	Y	2/18/97	P	8/15/97	P	A
C-37	Cobbs Cr. Park S. Of 67th St. & Callowhill	27	A	Y	Y	2/18/97	P	3/10/97	F	
D-02	Cottman St.-S.E. of Milnor St	73	EX	Y	Y					
D-03	Princeton Ave. SE of Milnor St.	73		Y	Y					
D-04	Disston St. SE of Wisinoming St.	73			Y					
D-05	Magee St. SE of Milnor St.	73		Y	Y					
D-06	Levick St. SE of Milnor St.	65	A		Y					
D-07	Lardner St. SE of Milnor St.	65		Y	Y					
D-08	Comly St. SE of Milnor St.	65	A		Y					
D-09	Dark Run La & Milnor St.	65		Y	Y					
D-11	Sanger St. SE of Milnor St.	65		Y	Y					

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
D-12	Bridge St. SE of Garden St.	56	A		Y					
D-13	Kirkbride St. & Delaware Ave.	56	A		Y					
D-15	Orthodox St. & Delaware Ave.	56		Y	Y					
D-17	Castor Ave. & Balfour St.	50	A		Y					
D-18	Venango St. W. of Casper St.	50	A		Y					
D-19	Tioga St. W. of Casper St.	50	A		Y					
D-20	Ontario St. W. of Casper St.	50	A		Y					
D-21	Westmoreland St. W. of Balfour St.	49	A		Y					
D-22	Allegheny Ave. SE of Bath St.	43			Y					
D-24	Cambria St. E of Melvale St.	43	U		Y					
D-25	Somerset St. E. of Richmond St.	43	A	Y	Y					
D-37	Cumberland St. & Richmond St.	43	A	Y	Y	1/30/97	P	3/10/97	P	A
D-38	Dyott St. & Delaware Ave.	43/37	A	Y	Y	1/23/97	P	8/15/97	P	A
D-39	Susquehanna Ave. E. Of Beach St.	37	A	Y	Y	1/30/97	P	3/10/97	P	A
D-40	Berks St. E. Of Beach St.	37	A	Y	Y	1/30/97	P	4/25/97	P	A
D-41	Palmer St. E. Of Beach St.	37	A	Y	Y	1/23/97	P	3/10/97	P	A
D-42	Columbia Ave. E. Of Beach St.	37	U			1/30/97	P			
D-43	Marlborough St. & Delaware Ave.	36/3	U			1/30/97	PAR			
D-44	Shackamaxon St. E of Delaware Ave.	36	A	Y	Y	1/30/97	PAR	3/10/97	PAR	A-P
D-45	Laurel St. & Delaware Ave.	36	A	Y	Y	1/30/97	PAR	3/10/97	PAR	A-P
D-46	Penn St. & Delaware Ave.	36	A	Y	Y	1/23/97	P	3/10/97	P	A
D-47	Fairmount Av. W. Of Delaware Ave.	36	A	Y	Y	1/30/97	P	3/10/97	P	A
D-48	Willow St. W. Of Delaware Ave.	36	A	Y	Y	1/30/97	P	3/10/97	P	A
D-49	Callowhill St. & Delaware Ave.	31	A		Y	1/30/97	P			
D-50	Delaware Ave. N. Of Vine St.	31	A		Y	1/29/97	P			
D-51	Race St. W. Of Delaware Ave.	31	A	Y	Y	1/29/97	P	4/25/97	F	
D-52	Delaware Ave. & Arch St. (Inside I-95 fe)	31	U			1/29/97	P			
D-53	Market St. & Front St.	31	U	Y	Y	1/29/97	P	3/10/97	P	A
D-54	Front St. S. Of Chestnut St.	31	U			1/29/97	P			
D-58	South St. & Delaware Ave.	26	U	Y		4/3/97	P			
D-61	Catherine St. E. Of Swanson St.	26	A	Y	Y?	1/29/97	P			
D-62	Queen St. E. Of Swanson St.	26	A	Y	Y	1/29/97	PAR	8/15/97	PAR	A-P
D-63	Christian St. W. Of Delaware Ave.	26	A	Y	Y	1/27/97	P	3/10/97	P	A
D-64	Washington Ave. E of Delaware Ave.	26	U	Y	Y	1/27/97	PAR	3/10/97	PAR	A-P
D-65	Reed St. E of Delaware Ave.	21	A	Y		1/27/97	P			
D-66	Tasker St. E. Of Delaware Ave.	21	A	Y	Y	1/27/97	P	3/10/97	P	A
D-67	Moore St. E. Of Delaware Ave.	21	U			1/27/97	P			
D-68	Snyder Ave. & Delaware Ave.	22	A	Y	Y	1/23/97	P	3/10/97	P	A
D-69	Delaware Ave. N of Porter St.	22	U		Y	1/23/97	P			
D-70	Oregon Ave. & Delaware Ave.	17	U			1/27/97	P			
D-71	Bigler St. & Delaware Ave.	17	A	Y		1/27/97	P			
D-72	Packer Ave. E. Of Delaware Ave.	17	A	Y		1/27/97	P			
D-73	Pattison Ave. & Swanson St.	11	A	Y	Y	4/29/97	F			
F-03	Castir Ave & Unity St.	63	A		Y					
F-04	Wingohocking St. E. of Adams Ave.	63	A		Y					
F-05	Bristol St. W. of Adams Ave	63	A		Y					
F-06	Worrel St. E of Frankford Cr.	55	A		Y					

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
F-07	Worrel St. W. of Frankford Cr.	55	A		Y					
F-08	Erie Ave. & Hunting Park Ave.	55	A		Y					
F-09	Frankford Ave N. of Frankford Cr.	55	A		Y					
F-10	Frankford Ave. S. of Frankford Cr.	55	A		Y					
F-12	Sepviva St. N. of Butler St.	55	A		Y					
F-13	Duncan St. Under I-95	56			Y					
F-14	Bristol St. in Cemetery	56			Y					
F-21	Wakeling St. NW of Creek Basin	56			Y					
F-23	Bridge St. NW of Creek Basin	64/56	A		Y					
F-24	Bridge St. SE of Creek Basin	56	A		Y					
F-25	Ash St. W. of Creek Basin	56	EX	Y	Y					
F-I-1	Gaul St. & Lebfevre (Future H-19)	56			Y					
H-01	Southwest WPCP	5	EXIST	Y						
H-02	Southeast WPCP (RG-12)	16	EXIST	Y	Y					
H-03	Northeast WPCP (W / RG-14)	50	EXIST	Y						
H-04	Jnc. of UDLL & Pennypack Interceptors (W / DI-1)	83			Y					
H-05	Jnc. of Pennypack & Sandy Run Interceptors	91								
H-06	Jnc. of Pennypack & Wooden Bridge Run Ints.	91								
H-07	Jnc. of UDLL & LFC Interceptors	56			Y?					
H-08	Jnc. Cresheim Valley Int. & Wissahickon Int.	67								
H-09	Jnc. of Poquessing & Byberry Interceptors	102			Y?					
H-10	Jnc. of Pauls's Run & Pennypack Int.	104								
H-11	Jnc. of Wissahickon Valley Int. & CSES Int.	52								
H-12	Oregon Ave. Interceptor	16	A	Y	Y					
H-13	Passyunk Ave. Overflow @ 16th St. & Snyder	20	A	Y	Y	10/2/96	P	3/10/97	P	A
H-15	Central Schuylkill Siphon @ North Shaft	25	EXIST		Y					
H-16	24th St. & Indiana (OC4)	47	A		Y					
H-17	SWMG at 43rd St. & Woodland	24			Y?	5/14/97	F			
H-18	Jnc. of CCHL & SWMG Interceptor	19	A	Y	Y					
H-20	Dispersion Chamber at 70th St. & Dicks	13	A	Y	Y	4/23/97	P	5/10/97	P	A
H-21	Main Relief Sewer @ 23rd St. & Parrish	35	A	Y		5/1/97				
MA-2	Pine Rd.		EXIST	Y	Y	8/6/96	P	8/8/96	F	
MB-1	Bucks County Pump Station		EXIST	Y	Y	8/1/96	P	4/25/97	P	A
MBE-2	Bensalem Shopping CTR Dunksferry)	115	EXIST	Y	Y	8/6/96	P	8/8/96	F	
MBE-3	Elmwood Apartments (Byberry)	118				8/6/96	P			
MBE-5	Grant & James	102	EXIST	Y	Y	5/3/96	P	7/31/96	F	
MBE-6	Gravel Pike	111	EXIST	Y	Y	8/6/96	P	8/8/96	F	
MBE-7	Townsend Rd.		EXIST	Y	Y	8/7/96	P	8/15/97	P	A
MC-1	Bouvier		EXIST	Y	Y	5/1/96	P	7/31/96	P	A
MC-2	Cheltenham		EXIST	Y	Y	4/25/97	p	5/7/97	P	A

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
MC-3	Fillmore & Shilmire		EXIST	Y	Y	8/2/96	P	8/8/96	P	A
ML-1	51st. St & City Line Ave.		EXIST	Y	Y	9/6/96	P		P	A
ML-3	63rd. St. & City Line Ave.		EXIST	Y	Y	9/6/96	P			
ML-4	66th St. & City Line Ave.		EXIST	Y	Y		P	5/10/97	F	
ML-5	73rd St. & City Line Ave.		EXIST	Y	Y	9/6/96	P			
ML-6	Conshoohocken		EXIST	Y	Y	4/11/96	P	7/31/96	P	A
ML-7	Presidential & City Line Ave.		EXIST	Y	Y	8/6/96	P	8/15/97	P	A
MLM-1	Philmont		EXIST	Y	Y	5/1/96	P	7/31/96	P	A
MLM-2	Welsh Rd. Pump House		EXIST	Y	Y		P	8/8/96	P	A
MS-2	Northwestern	94	EXIST	Y	Y	4/12/96	P	7/31/96	P	A
MS-3	Stenton & Erdenheim		EXIST	Y	Y		P	7/31/96	P	A
MS-6	Stenton & Woodbrook		EXIST	Y	Y	4/12/96	P	7/31/96	F	
MSH-1	Trevose Rd.		EXIST	Y	Y	4/4/96	P	7/31/96	F	
MUD-1	Upper Darby	18	EXIST	Y	Y	4/4/96	P	8/15/97	F	
P-01	Frankford Ave. & Ashburner St.	92	A		Y					
P-02	Frankford Ave. & Holmesburg Ave.	91			Y					
P-03	Torresdale Ae. NW of Pennypack Cr.	83	A		Y					
P-04	Cottage Ave. & Holmesburg Ave.	82	A		Y					
P-05	Holmesburg Ave SE of Hegerman St.	83	A		Y					
PS-01	Bank St. & Elbow La.	31	EXIST	Y	Y?	10/27/97				
PS-02	Belfry Dr. & Steeple Dr.	75	EXIST	Y		10/28/97				
PS-03	Central Schuylkill PS	24	EXIST	Y	Y?					
PS-04	Ford Rd. accross from W. Park Hospital	46	EXIST	Y	Y?	10/27/97				
PS-06	Hog Island Rd. E. of Airport Control Towe	2	EXIST	Y	Y?	10/27/97				
PS-07	Linden Ave. & Milnor St.	92	EXIST	Y	Y?	10/28/97				
PS-08	Lockart St. & Lockart La # DR RW	116	EXIST	Y	Y?	10/28/97				
PS-09	Milnor St. bet. Grant Ave. & Eden St.	93	EXIST	Y	Y?	10/28/97				
PS-10	Fairmount Park @ Neil Dr. & Falls Rd.	46	EXIST	Y	Y?	10/27/97				
PS-12	Philmount Shopping Center Grounds @ Re	116	EXIST	Y	Y?	10/28/97				
PS-13	42nd St. @ 43rd. St.	24	EXIST	Y	Y?	10/27/97				
PS-14	Broad St. @ Roosevelt Blvd. underpass	62	EXIST	Y	Y?	10/28/97				
PS-15	Mingo Creek: Schuylkill River @ Platt Br.	3	EXIST	Y	Y?	10/27/97				
PS-16	26th & Vare Ave. @ underpass	2	EXIST	Y	Y?	10/27/97				
PS-17	10th & Vine		EXIST	Y						
PS-18	22nd & Vine		EXIST	Y						
R-06	56th St. & Webster St.	23			Y?	5/13/97	F			
R-07	16th St. & Clearfield St.	47	A		Y					
R-12	Pennsylvania Ave. & Fairmount Ave.	35	LP			4/30/97	F			
R-13	Levick St. & Everett Ave.	81	A		Y					
R-14	Oakland St. & Benner St.	72	A		Y					
R-15	Nedro Ave. & 7th St.	70	A		Y					
R-18	Frankford High Level Relief Sewer	63	A		Y					
R-24	Arch St. & Cobbs Creek					5/1/97	I			
RG-02	Catherine-66th St. & Catherine St.		EXIST	Y	Y					

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
RG-03	Farrell - Castor Ave. & Fox Chase Rd.		EXIST	Y	Y					
RG-04	Baxter-9001 State Rd.		EXIST	Y	Y					
RG-05	Furness-3rd St. & Mifflin St.		EXIST	Y	Y					
RG-06	St. Josephs 54th St. & City Line Ave.		EXIST	Y	Y					
RG-07	Harrowgate - "G" St. & Ramona		EXIST	Y	Y					
RG-08	Heintz - 5500 N. Water St.		EXIST	Y	Y					
RG-09	Heston - 54th St. & Lancaster Ave.		EXIST	Y	Y					
RG-01	Atlantic - Essington Ave. bet. 63rd & 67th St.		EXIST	Y	Y					
RG-10	Medical Mission - 8400 Pine Rd.		EXIST	Y	Y					
RG-11	Naval Supply - 700 Robbins Ave.		EXIST	Y	Y					
RG-12	Southeast WPCP -25 N. Pattison Ave.		EXIST	Y	Y					
RG-13	Northeast H.S. - Frankford & Hunting Park Aves.		EXIST	Y	Y					
RG-14	Northeast WPCP-3900 Richmond St.		EXIST	Y	Y					
RG-15	Penn Treaty - Mongomery Ave. & Thompson St.		EXIST	Y	Y					
RG-16	9th Police District - 20th St. & Penna. Avw.		EXIST	Y	Y					
RG-17	Septa Depot - Comly St. & Penn Ave.		EXIST	Y	Y					
RG-18	Queen Lane -3500 N. Fox St. PTB Building		EXIST	Y	Y					
RG-19	Emlen - Chew St. & Upsal St.		EXIST	Y	Y					
RG-20	Shallcross-Knights Rd. & Woodhaven Ave.		EXIST	Y	Y					
RG-21	Shawnmont - Shawmont Ave. & Ridge Ave.		EXIST	Y	Y					
RG-22	Callowhill-67th & Callowhill St.		EXIST	Y	Y					
RG-23	Southwest WPCP-8200 Enterprise Ave.		EXIST	Y						
S-01	Mantua Ave. & West River Dr.	35	U							
S-02	Haverford Ave. & West River Dr.	35	U							
S-03	Spring Garden St. W. Of Schuylkill Exp.	35	LP							
S-04	Powelton Ave. W. Of Schuylkill Express	30	NO WAY							
S-05	24th St. 155' S. Of Park Towne Place	30	240V-LP			2/6/97	P			
S-06	24th St. 350' S. Of Park Towne Place	30	240V-LP			2/6/97	P			
S-07	24th St. E. Of Schuylkill R. (Vine St.)	30	240V-LP			2/6/97	P			
S-08	Race St. & Bonsall St.		A	Y	Y	2/6/97	P	3/10/97	P	A
S-09	Arch St. W. Of 23rd St.	30	A	Y	Y	2/6/97	PAR	3/10/97	PAR	A-P
S-10	Market St. 25' E of 24th St.	30	U		Y?	2/6/97	P			
S-11	Market St. (In PRR Baggage Room)	30	EXIST	Y	Y	2/10/97	P	3/10/97	P	A
S-12	24th St. N. Of Chestnut St. Bridge	30				2/6/97	P			
S-12A	24th St. Under Chestnut St. Bridge	30				2/6/97	P			
S-13	Samson St. W. Of 24th St.	30	U			2/10/97	P			
S-14	Schuylkill Expressway Under Walnut St.	30								
S-15	Walnut St. W. Of 24th St.	30	A			2/6/97	P			
S-16	Locust St. & 25th St.	30	U		Y?	2/6/97	PAR			
S-17	Spruce St. & 25th St.	25	U			2/6/97	P			
S-18	Pine St. W. Of Taney St.	25	U		Y	2/7/97	P			
S-19	Lombard St. W. Of 27th St.	25	U		Y					
S-20	440'NNW of South St. (Behind Penn St.)	25			Y					
S-21	South St. E. Of 27th St.	25	A	Y	Y	2/7/97	P	4/25/97	P	A
S-22	660'S. Of South St. E. Of Penn Field	25	A		Y	2/10/97	P			
S-23	Schuylkill Ave. & Bainbridge St.	25	A	Y	Y	2/23/97	P	3/10/97	P	A
S-24	1060' S of South St. E. Of Penn Field	25	U		Y?	4/3/97	P			

SITE NO.	SITE LOCATION	PLAT NO.	AERIAL UNDGRO SERVICE	PECO SERV	BELL SERV	DATE ONE DAY TEST	ONE DAY TEST P / F	DATE SEVEN DAY TEST	SEVEN DAY TEST P / F	SITE ACCEP
S-25	Shuylkill Ave. & Christian St.	25	A	Y	Y	2/7/97	P	3/10/97	P	A
S-26	Ellsworth St. E. Of Schylkill R.	25	A	Y	Y	2/7/97	PAR	4/25/97	PAR	A-P
S-27	43rd St. & Locust St.	29	A	Y	Y	5/14/97	F			
S-28	Chester Ave. W of 43rd St.	29	A		Y	2/10/97	F	4/25/97	F	
S-30	46th St. & Paschall Ave.	24	A	Y	Y	4/30/97	I			
S-31	Reed St. & Schuylkill Ave.	24		Y	Y	2/7/97	P	8/15/97	P	A
S-32	49th St. S. Of Botanic St.	19	A	Y	Y	4/30/97	I			
S-33	51st St. & Botanic St.	19	A	Y	Y	4/30/97	F			
S-34	52nd St. & Paschall Ave.	19	A	Y	Y	4/4/97	F			
S-35	35th St. & Mifflin St.	19	A	Y	Y	2/7/97	P			
S-36	36th St. & Mifflin St.	19	A	Y	Y	2/7/97	P			
S-36A	34th St. & Mifflin St.	19	A	Y	Y	2/7/97	F	8/15/97	F	
S-37	Vare Ave. & Jackson St.	20	A		Y	4/7/97	P			
S-38	56th St. E. Of P&R RR	19	A		Y	4/30/97	F			
S-39	57th St. & Grays Ave.	19	A	Y	Y	4/4/97	P	8/15/97	P	A
S-40	59th St. & Grays Ave.	19	A			4/11/97	P			
S-42	Pasyunk Ave. & 29th St.	15	U	Y		4/3/97	P			
S-42A	Passyunk Ave. & 28th St.	15	A	Y	Y	2/10/97	P	8/15/97	P	A
S-43	64th St. & Buist Ave.	14	A	Y	Y	4/3/97	REV			
S-44	26th St. 700'N off Hartranft St.	15	A		Y	4/11/97	P			
S-45	67th St. E of P&R RR	14	A	Y	Y	5/2/97	F			
S-46	Penrose Ave. & 26th St.	10	A	Y	Y	2/10/97	P	3/10/97	P	A
S-47	69th St. & Buist Ave.	13	A		Y	4/29/97	F			
S-50	43rd St. E. of Woodland Ave.	24	EXIST	Y	Y	5/14/97	F			
S-51	42nd St. SE of Woodland Ave.	24	A		Y?	5/14/97	F			
SYP-2	Garden & Reynolds (H-14)	64	A		Y					
T-01	Williams Ave. SE of Sedgwick St.		A		Y					
T-03	Champlost Ave. W of Tacony Cr.	79	A		Y					
T-04	Rising Sun Ave. E. of Tacony Cr.	71	A		Y					
T-05	Rising Sun Ave. W of Tacony Cr.	71	A		Y					
T-06	Bingham St. E. Of Tacony Cr.	71	A		Y					
T-07	Tabor Rd. W. of Tacony Cr.	71			Y					
T-08	Ashdale St W. of Tacpmu Cr/	71	A		Y					
T-09	Roosevelt Blvd. W. of Tacony Cr.	71			Y					
T-10	Roosevelt Blvd. E of Tacony Cr.	71			Y					
T-11	Ruscomb St. E. of Tacony Cr.	63	A		Y					
T-12	Whitaker Ave. E. of Tacony Cr.	63			Y					
T-13	Whitaker Ave. W of Tacony Cr.	63			Y					
T-14	I St. & Ramona St.	63	A		Y					
T-15	J St. & Juniata Park	63	A		Y					

5.2 Characterization of 3 New CSO Sites Identified in the SIAC

Start: 3/27/1995 End: 4/1/1996 Status: Completed

The System Inventory and Characterization (SIAC) identified three (3) sites which currently are not included in the NPDES permits. These sites are inspected on a regular basis and their potential for dry weather overflow has been minimized A plan of action for eliminating these discharges was developed as part of the LTCP. The annual status for the projects listed below in section 5.2.1 Main & Shurs (R_20) and 5.2.3 32nd & Thompson (R_19) will be moved to Section 10 Long Term CSO Control Plan in future reports to address their scheduling and progress consistent with the LTCP submitted on 1/27/97.

5.2.1 Main & Shurs (R-20)

Start: End: Status: Moved to LTCP (Section 10)

This site was added to the Flow Control Unit O & M schedules and the associated inspection data required by NPDES permits had been incorporated into monthly and annual reports (See Appendix A). Dry weather monitoring data and inspections continue to indicate no incidences of dry weather discharge excepting that attributed to illicit connection in the stormwater conduit leading to the point source. Resolution of Illicit connections in stormwater conduit has already been incorporated into the Illicit Connection Abatement Program. A project to eliminate this overflow structure was incorporated into the Long Term CSO Control Plan discussed in Section 10.

5.2.2 State Rd. & Grant Ave. (R_26)

Start: 3/27/1995 End: 3/27/1996 Status: Completed

As part of the System Inventory and Characterization, this site was discovered to have the ability to discharge combined sewage to the Poquessing Creek. Review of monitoring data collected from the period from 4/19/95 to present has not observed any incidences of dry weather overflow. Normal sanitary flow levels in the conduit are typically unaffected by storm flow. The site is continually monitored and no evidence of DWO had been observed.

In 1997 a backflow gate was installed to prevent the stormwater conduit from contributing flow to the combined sewer system. Monitoring is ongoing and a review of the available monitoring data shows that there were no wet or dry weather discharges from this site in 1997.

5.2.3 32nd & Thompson St. (R_19)

Start: End: Status: Moved to LTCP (Section 10)

This site was identified in the SIAC as an overflow not currently included in the NPDES, but as having the ability to discharge combined sewage into the Schuylkill River. The site has been added to the routine regulator inspection program and incidences of dry weather overflow would be reported in normal order as part of the monthly CSO status report. Annual summaries of these inspections are included in Appendix A. A project to reconstruct of this sewer to abate the grit accumulation was incorporated into the Long Term CSO Control Plan discussed in Section 10.

5.3 WTP Residuals Management

Start: 12/15/1994 End: 8/1/1996 Status: In Progress

In the past, aperiodic overflows have been observed at D_39 when certain filter backwash operations were conducted at the Queen Lane Water Treatment Plant; however, these overflows were not chronic or continuous. Further corrective source control flow reduction measures at D_39 were studied within the context of the Department's Water Treatment Plant Residuals Management Study. Regulator modifications and operational changes with respect to back washing have minimized the likelihood of dry weather overflow at this site.

Additionally, the wet-weather impacts were studied and the flow quantities associated with the discharge of backwash can reduce the capacity left for conveying combined sewer flows. On-site solids management facilities will be considered for future implementation, but are not a priority at this time. As part of the Long Term CSO Control Plan submitted on 1/27/97, it was anticipated that the proposed watershed management plans would define the level to which these facilities need to be constructed will be more clearly defined in terms of cost and size.

No discharges attributable to Queen Lane backwash were observed in the monitoring data during calendar 1997.

5.4 Somerset Grit Chamber Cleaning

Start: 8/1/1995 End: Status: Ongoing

p. 30 SIAC - PWD regularly monitors the sediment accumulation in the grit trap at the origin of the Somerset Intercepting Sewer and in locations downstream to determine appropriate cleaning intervals for the girt trap and downstream interceptor. Driven by the monitoring program, the grit basin is cleaned periodically and debris quantities tracked to further refine the frequency of cleaning so as to maintain adequate capacity in the Somerset Intercepting sewer.

The Somerset Grit Chamber was cleaned 4 times in 1997 on the following dates:

Date	Cu. Yards Removed
01/21/97	57
04/30/97	35
06/30/97	90
11/10/97	41

6.0 SOLIDS & FLOATABLES

Reference Philadelphia NMC Report, 9/27/95 Section 6 pp.1-12

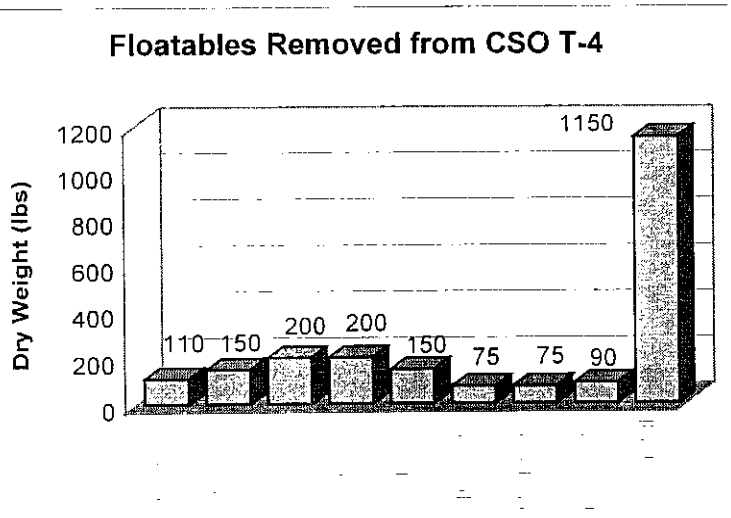
The control of floatables and solids in CSO discharges addresses aesthetic quality concerns of the receiving waters. The ultimate goal of NMC No. 6 is, where feasible, to reduce, if not eliminate, by relatively simple means, the discharge of floatables and coarse solids from combined sewer overflows to the receiving waters. The initial phase of the NMC process has and will continue to focus on the implementation of, at a minimum, technology-based, non-capital intensive control measures.

The effectiveness of this minimum control and the evaluation of the potential need for other methods to more effectively control the discharge of solids and floatables from CSO's has been incorporated into the floatables monitoring and pilot evaluation project. That is, the need to control the discharge of solids and floatables, the degrees of control that will be necessary, and the determination of the controls that may be required, are intended to be an ongoing process throughout the development stage and the early implementation phases of the Long Term Control Plan.

6.1 Pilot Netting Facility

Start: 3/1/1996 End: 4/1/1997 Status: Complete

A pilot, in-line, floatables netting chamber was constructed as part of a sewer reconstruction project at CSO T-4 Rising Sun Ave. E. of Tacony Creek. This chamber was built to collect floatable materials for subsequent weighing and disposal so that the relative quantity of floatable materials not captured in the catch basins and with the treatment plant screenings could be determined. Similarly, once this balance is determined, the floatables balance for other locations could be inferred from the pilot site. The construction of the chamber is complete and the netting system has been installed. The quantity of material collected is now being monitored and a floatables quantification study will be initiated to evaluate the feasibility of any further implementation of this type of control facility. The cost of the sewer reconstruction project was $738,991 and the netting installation required a marginal cost increase of $28,000 in addition to the original contract.



6.2 Repair, Rehabilitation, and Expansion of Outfall Debris Grills

Start: 9/27/95 End: Status: Ongoing

Debris grills are maintained at sites where the tide introduces large floating debris into the outfall conduit. This debris can then become lodged in a tide gate thus causing inflow to occur. Additionally, these debris grills provide entry restriction, and some degree of floatables control.

Repair, Rehabilitation, and / or expansion of debris grills was performed at the following sites during calendar year 1996:

D_2 Cottman Ave - Retrieved screen from River Channel, repaired headwall, and reinstalled 6" x 6" screen.
D_5 Magee Ave. - Remove, straightened, and reinstalled 4 screens
D_6 Levick St. - Fabricate and install new screen w/ 6" x 6" openings
D_7 Lardner St. - Remove straighten and reinstall 4 screens
D_46 Removed damaged screen and installed new screen w/ 6" x 6" openings
D_25 Somerset St. - Retrieved and reinstalled debris grill w/ 6" x 6" opening
D_37 Clean, straighten and reinstalled debris grill w/ 6" x 6" openings

Construction of new debris grills was completed at the following sites during calendar year 1997:

3/20/97 D-04. - Fabricated and install new screen w/ 6" x 6" openings
9/16/97 F_04 - Fabricated and install new screen w/ 6" x 6" openings
9/17/97 T_15 - Fabricated and install new screen w/ 6" x 6" openings
4/7/97 T_04 – Fabricated and install new screen w/ 6" x 6" openings

7.0 POLLUTION PREVENTION

Reference Philadelphia NMC Report, 9/27/95 Section 7 pp.1-8

Most of the city ordinances related to this minimum control are housekeeping practices that help to prohibit litter and debris from actually being deposited on the streets and within the watershed area. These include litter ordinances, hazardous waste collection, illegal dumping policies and enforcement, bulk refuse disposal practices, and recycling programs. If these pollutant parameters eventually accumulate within the watershed, practices such as street sweeping and regular maintenance of catch basins can help to reduce the amount of pollutants entering the combined system and ultimately, the receiving water. Examples of these programs are ongoing and were presented in the NMC document. The City will continue to provide public information about litter and stormwater inlets as part of its implementing this minimum control as well as continue to develop the following new programs.

7.1 Bill Stuffers

Bill stuffers are commonly produced by the Department as an educational medium for disseminating information pertaining to billing and environmental issues. Specific bill stuffers will continue to be

designed for the CSO, Stormwater, and Watershed Management Programs to address their associated educational issues over time. These bill stuffers reach 500,000 water and wastewater customers.

7.1.1 General Stormwater Education

Start: 6/1/1995 End: 8/1/1995 Status: Completed

7.1.2 General CSO Education

Start: 2/1/1996 End: 7/1/1997 Status: Completed

7.1.3 House Hazard Waste Program

Start: 8/1/1995 End: 10/1/1995 Status: Completed

7.1.4 Grass Clippings & Recycling

Start: 3/1/1997 End: 3/27/1997 Status: Completed

7.1.5 In's & Out's of Sewer Inlets

Start: 9/1/1997 End: 10/1/1997 Status: Completed

7.2 Waterwheel Watershed Newsletters

Start: 3/1/1996 End: Status: Ongoing

The Department's watershed newsletters are published on a bi-annual basis and target specific information to the residents living within a particular watershed. In this manner, citizens can be kept informed of Departmental water pollution control initiatives specific to the watershed they live in.

7.2.1 Fall Edition 1996

Start: 5/1/1996 End: 10/1/1996 Status: Completed

This newsletter introduced watershed concepts in a general fashion and outlined the Department's responsibilities for CSO compliance.

7.2.2 Spring Edition 1997

Start: 3/1/1997 End: 5/1/1997 Status: Completed

This newsletter promoted the watershed walks discussed in section 10.9.1 as a token of PWD's participation in National Clean-up Rivers Week. Additionally, this newsletter included specific information on PWD's implementation of the US EPA's Nine Minimum Controls and featured watershed specific maps of Philadelphia's waterways with CSO outfall locations designated in order to promote

public awareness of CSO issues. The media was invited to attend the watershed walks to introduce them to the CSO Program and to begin to develop the framework for project 7.6.2 Media Workshops.

7.2.3 Fall/Winter '97/'98 Issue - contents

Start: 3/1/1997 End: 10/1/1997 Status: Completed

Edition featured a capsule update on the PWD's LTCP which highlighted the pilot in-line netting system installed in a CSO outfall. The article detailed the types of trash and debris captured in the outfall, illustrated the "Anatomy of a Sewer System," showed how separate and combined systems work, how overflows occur, and publicized the upcoming spring dates for the Streets' Department Household Hazardours Waste Collection.

7.2.4 Spring '98 Issue

Start: 10/1/1997 End: 5/1/1998 Status: In-Progress

This edition will highlight the watershed tours hosted by the PWD and its Stormwater Pollution Prevention CAC held during National River Clean Up Week, May 9 - May 16). Walking tours will be featured in Philadelphia's eight watersheds. Tours will point out the relation between the urban sewer/stormwater collection system and the natural watershed. Participants will see CSO and Stormwater outfalls and will learn about how these outfalls affect the quality of water. This edition of the WaterWheel will also address the PWD's CSO Long Term Control Plan and how it is being implemented in specific watersheds.

7.3 Comprehensive Education Materials

Start: 1/1/1996 End: 9/27/1997 Status: Ongoing

The following material were developed during calendar 1997:

- General Information on City's Combined and Separate Sewer Systems
- Maps of CSO locations
- Tips on What Citizens can do

The following tasks are in progress for calendar 1998:

- Basic Summary of National CSO Policy and NMCs (Spring '98)
- CSO City Council Package (Spring '98)
- CSO Slide and Video Show (Fall '98)
- Focus Groups for CSO Educational Messages (Summer '98)
- Comprehensive History of City's sewer system (Fall '98)
- Watershed Educational Partnerships w/Bodine High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, and the Schuylkill Center for Environmental Education
- Fairmount Water Works Interpretive Center Watershed Exhibits development

7.4 Citizen Advisory Committee (CAC)

Start: 8/1/1995 End: 9/27/1998 Status: Ongoing

The Pennsylvania Environmental Council is currently facilitating the bi-monthly citizen advisory committee meetings held at the Water Department. The council is comprised of the following partners:

Frankford United Neighbors
Schuylkill River Development Corp.
Friends of the Wissahickon
Philadelphia Canoe Club
Collaborations
PMBC
Bridesburg Civic Association
Friends of the Manyunk Canal
Fairmount Rowing Association
Friends of the Poquessing Watershed
Fairmount Water Works
School District of Philadelphia
Delaware Estuary Program
PA Horticultural Society
Friends of Tacony Cr. Park
Greenspace Alliance
PhilaPride
Wawa Inc.
Delaware Valley Regional Planning Commission
AAA Mid-Atlantic
Academy of Natural Sciences
Friends of Pennypack Creek
Riverkeeper Network
Clean Water Action
Turner Construction
PA Gasoline Retailers & Allied Trades
Greater Philadelphia Chamber of Commerce
TruGreen-Chemlawn
Riverway Environmental Education Association
Cobbs Creek Community Environmental Education Center
Public Works Studio
New Manayunk Corp.

The following is a summary of the calendar 1997 projects coordinated through the CAC:

- Watershed Forum - February 1997
- Watershed Tours - May 1997
- Philadelphia Cares Day - May 1997
- Mobile Watershed Exhibit - June 1997
- Schuylkill River Festival - June 1997

CAC Government Education Committee - 1998 Projects

Target audiences - city agencies, local governments, PennDOT, EACs
Goals/Objectives - To get the target audience more aware of how their actions impact water quality and what they can do to prevent pollution (BMPs)
Issues to address - snow removal, trash collection, licensing/permitting
Techniques/Tools - surveys, conferences, tip cards, seminars/workshops, mailings to municipal officials

School/Youth Education Committee - 1998 Projects

Target Audiences: Schools (Bodine), Recreation Dept., Girl Scouts/Boy Scouts, Churches that run schools, community private schools, charter schools, cluster leaders
Goals/Objectives - Opportunities to experience the rivers (field trips), sense of awareness of where we have come from and where we are going, career opportunities, reach out to adults through kids, get kids involved in planning
Existing Outreach tools - "What's With Water" curriculum, estuary poster for kids, t-shirts, Ms. Drizzle character
Possible Outreach tools/techniques - curriculum, field trips, poster contest, calendar design contest, SEPTA car-card design contest, do seasonal shows on Kid's Corner (WXPN), create a youth advisory board to help develop and implement programs

Public Education Committee - 1998 Projects

Target audience - general public
Goals/objectives - reach mass audience - people who live, work, or both in Philadelphia
Existing outreach tools - tip cards, posters, magnets, t-shirts
Possible outreach techniques/tools - using seasonal themes to design programmatic pieces, publicity - launch of documentary video (kick-off press event around Earth Day - April 1998, using footage from video for TV PSAs and potential distribution though local movie theaters as a trailer, advertising at large public events (Flower Show, Auto Show), having a presence at citywide and community events, watershed tours

Business Education Committee - 1998 Projects

Target Audience - landscapers, construction companies, plumbers, auto repair operations, private waste haulers, trade associations
Goals/objectives - litter prevention, reduce soil erosin, reduce improperly disposed of oil and substances
Existing outreach tools - tip cards, magnets, t-shirts, posters
Possible outreach techniques/tools - ads in trade publications, educational brochures for specific constituencies, workshops/presentations, articles in trade and corporate newsletters, EarthMate coupons for landscapers

Projects that the CAC has committed to accomplish by June 30, 1998:

- Watershed Video
- Displays
- Estuary Map
- Outreach Program to Landscapers and Construction Companies
- Bodine School Pilot Project

7.5 News Articles

Start: 5/119/96 End: 9/27/1997 Status: Ongoing

Local newspapers have been solicited to cover major aspects of the public involvement program. The goal of which is to develop articles to raise general awareness of watershed based issues including CSO's and their potential impacts on local receiving waters as well as the potential impact within the regional receiving waters.

Calendar 1997 Press releases featuring PWD watershed education:

- PWD/CAC watershed tours - May 1997 (picked up by neighborhood papers)
- CAC participation in Schuylkill River Festival - June 1997 (picked up by broadcast news)
- 25th Anniversary Celebration of Clean Water Act - October 1997 (picked up by Inquirer and broadcast news stations)

Activities for calendar 1998 include working with Daily News on regular basis to develop a comprehensive watershed article. A preliminary release date has been targeted for the spring / summer of 1998 in order to coincide with the Cobbs Darby watershed planning initiative.

7.6 Public Acceptance Program

Start: 1/1/1996 End: 9/27/1998 Status: Planned

The following programs are outlined in the NMC documentation and comprise the public outreach program.

7.6.1 City Council Briefings

Start: 2/2/1996 End: 11/1/1998 Status: Planned

7.6.2 Media Workshops

Start: 7/1/1998 End: 7/1/1999 Status: Planned

Project to coincide with Cobbs Darby watershed planning initiative.

7.6.3 Community Workshops

Start: 9/1/1996 End: 9/27/1997 Status: Ongoing

Project function incorporated into 7.4 Community Advisory Committee

7.6.4 Meeting with Friends Groups

Start: 6/1/1996 End: 9/1/1997 Status: Ongoing

Project function incorporated into 7.4 Community Advisory Committee

7.6.5 Meeting with Environmental Groups

Start: 9/1/1996 End: 12/1/1997 Status: Ongoing

Project function incorporated into 7.4 Community Advisory Committee

7.7 Watershed Planning - Educational Support Initiatives

Moved to Section 10.9 to associate with watershed planning section.

8.0 PUBLIC NOTIFICATION

Reference Phialdelphia NMC Report, 9/27/95 Section 8 pp. 1-3

As discussed in Section 7, the Department has developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential receiving water impacts. The brochures provide contacts for additional information. The brochures, educational materials, and activities discuss potential direct receiving water impacts (such as fish kills, floatables, etc.) and request that the public report these incidences as part of the City's CSO documentation and NMC effectiveness monitoring program. In addition, the PWD has recruited and solicited the support of watershed groups. Through the citizen advisory committee and watershed tours, the Department has enlisted volunteers as our watchdogs of each waterways.

The City's Public Notification Program for 1998 will continue to consist primarily of public education about CSO discharges and their impacts. The City will rely on a general education program to keep the public aware of any potential public health risks and will concentrate its energies and resources on the pollution prevention aspects of CSO remediation through education and the requisite changes in lifestyle. The public information and education program detailed in Section 7 will be used to carry the message of this issue to the public. In other words, the PWD is using materials and watershed tours developed under Section 7.0 to educate the public about the existence of CSOs and what to do if they see an overflow. The Spring 1997 edition of the WaterWheel newsletter contained a map showing the city's CSO outfalls by number. Residents are urged to call the PWD's hotline if they notice an overflow occurring during dry weather. In addition, CSO outfalls are pointed out during the watershed tours hosted by the PWD and its CAC. Future plans include partnering with local schools in the various watersheds to recruit students to be environmental stewards - helping to keep their local watersheds clean, educating their friends and adults, and conducting clean ups and tours.

9.0 MONITORING & REPORTING

Reference Philadelphia NMC Report, 9/27/95 Section 9 pp. 1-3 and System Hydraulic Characterization Report, 6/27/95 Section 5, pp. 5-3.

Monitoring and characterization of CSO impacts from a combined wastewater collection and treatment system are necessary to document existing conditions and to identify any water quality benefits achievable by CSO mitigation measures. The tables included in the following section represent the average annual CSO overflow statistics for calendar year 1997 as required in the NPDES Permit and are presented in the same tabular format found in the System Hydraulic Characterization (SHC) and NMC Documentation.

9.1 Annual CSO Statistics (1997)

The average annual frequency and volume statistics for calendar year 1997 are presented in Tables 9.1 and 9.2.

Table 9.1 Estimated Annual Combined Sewer Overflow Statistics For 1997
(Based on model simulations of 15-minute rainfall/runoff/overflow volumes using City Of Philadelphia 1997 Rain Gage Data)

Philadelphia Interceptor System	Number of Point Sources	Number of Structures (1)	Frequency: Range per subsystem	Frequency: Average per subsystem	Overflow Volume (MG): Range per Subsystem	Overflow Volume (MG): Annual CSO Capture (%)	Average Duration (hrs): Range per subsystem
Northeast Drainage District							
Lower Frankford Low Level	7	8	2 - 89	51	920 - 1,020	63% - 67%	157 - 191
Upper Frankford Low Level	10	10	21 - 98	50	310 - 340	42% - 46%	132 - 161
Pennypack	5	5	14 - 62	36	50 - 60	64% - 68%	67 - 81
Somerset	8	9	29 - 92	56	1,390 - 1,540	64% - 68%	180 - 220
Tacony High Level	16	16	5 - 97	51	2,810 - 3,110	32% - 36%	160 - 196
Upper Delaware Low Level	13	13	4 - 79	37	820 - 1,000	31% - 35%	78 - 96
Southeast Drainage District							
Lower Delaware Low Level	27	27	1 - 97	42	2,070 - 2,290	67% - 71%	156 - 191
Oregon Avenue	6	6	40 - 64	53	400 - 440	34% - 38%	188 - 230

Table 9.1 (con't.) Estimated Annual Combined Sewer Overflow Statistics For 1997

(Based on model simulations of 15-minute rainfall/runoff/overflow volumes using City Of Philadelphia 1997 Rain Gage Data)

Philadelphia Interceptor System	Number of Point Sources	Number of Structures (1)	Frequency: Range per subsystem	Frequency: Average per Subsystem	Overflow Volume (MG): Range per Subsystem	Overflow Volume (MG): Annual CSO Capture (%)	Average Duration (hrs): Range per subsystem
Southwest Drainage District							
Central Schuylkill East Side	22 (2)	27	1 - 96	38	750 - 830	83% - 87%	137 - 167
Central Schuylkill West Side	9	9	1 - 95	45	400 - 440	30% - 34%	137 - 167
Cobbs Creek High Level	27	31	1 - 75	27	770 - 850	59% - 63%	55 - 67
Cobbs Creek Low Level	12	12	1 - 66	21	70 - 80	88% - 92%	43 - 53
Lower Schuylkill East Side	9	9	3 - 84	37	410 - 450	37% - 41%	146 - 178
Lower Schuylkill West Side	4	4	1 - 81	47	360 - 400	59% - 63%	193 - 236
Southwest Main Gravity	3	3	2 - 109	39	3,100 - 3,430	31% - 35%	285 - 349

(1) - Number of structures includes overflows from CSO diversion chambers and storm relief diversion chambers within the combined sewer system. In some cases, multiple structures discharge to a common overflow point.

(2) - The Main Relief Sewer is assigned to the Central Schuylkill East Side system as a single overflow point source.

10.0 LONG TERM CSO CONTROL PLAN IMPLEMENTATION

The long-term CSO control plan strategy proposes a combination of technology-based and water quality-based programs staged to ultimately achieve water quality standards. After realizing reductions in combined sewage discharges from the Nine Minimum Control Programs, the Department has continued to examine opportunities for further reducing pollutant loads through the use of technology-based controls. The Long Term CSO Control Plan was submitted to PA DEP on January 27th, 1997. This section provides updates on the implementation and scheduling of the Long Term CSO Control Plan capital projects and watershed based planning activities.

The focus in meeting the LTCP goals is enhancing the use of the City's existing wastewater collection and treatment facilities to minimize CSO impacts while PWD and the stakeholder group complete the vital watershed planning process. The Nine Minimum Control implementation sought to reduce CSO impacts through low-cost measures that did not require significant engineering studies, major construction projects, and could be implemented within a relatively short time. In contrast, the system enhancement projects proposed in this section are innovative, require significant facility planning and design, and require significant capital expenditures.

10.1 Conveyance Improvements

10.1.1 Frankford Siphon Upgrade

Start: 10/1/1997 End: 7/30/1997 Status: Complete

Description: A four-barrel siphon conveys flow under Frankford Creek in the Upper Delaware Low Level Interceptor. One of the control valves is not functioning properly, reducing the wet-weather conveyance capacity of the siphon. PWD will repair the control valve in the siphon chamber to restore full capacity and function of the siphon. (Additional repairs to the other valves may be required also.)

Environmental Benefits: Restoring the capacity of the siphon will increase the volume of combined wastewater captured from the combined areas along the upper Delaware River and Pennypack Creek. Additionally, this will allow the increase of flows resulting from the *85% Capture: Pennypack Watershed* project to be conveyed.

On 8/1/97 the upstream 48" siphon gate valve was opened and the dropped disc was removed from the body. The valve bonnet was replaced and the siphon placed back in service. Dye tests confirmed that the 48" was conveying full flow as the collector rose with the peak daily flow. The three remaining siphons were similarly tested and appear to be flowing full.

10.1.2 Somerset Interceptor Cleaning

Start: 11/1/1997 End: 1/21/1998 Status: Completed

The Somerset Interceptor conveys wastewater and combined flows from Somerset Street East of Richmond Street north to the Northeast Water Pollution Control Plant (NEWPCP) for treatment. Historically, this interceptor has been susceptible to solids accumulation over time. Removal of grit,

sediment and debris from the Somerset Interceptor enables the hydraulic capacity of the interceptor to be utilize fully . Maximum utilization of the interceptor allows for increased CSO capture for Somerset Interceptor regulators.

This project was completed on 1/21/1998 by Mobile Dredging and Pumping Co. Inc., of Chester, PA at a cost of $273,867. The cleaning of this 8,800 lineal foot sewer extending from Richmond and Somerset Streets to the NEWPCP at Castor and Balfour Streets, was completed in ninety-four calendar days. The Somerset Interceptor comprises of sewer sections with sizes varying from 48 to 66 inches in diameter. An estimated 460 tons of grit, sediment and debris were removed from the Somerset Interceptor and transported by the contractor to the Southwest Water Pollution Control Plant (SWWPCP) for combination with existing grit disposal methods. Prior to disposal, contractor trucks were weighed at the Biosolids Recycling Center (BRC). The disposal was handled under the BRC Grit / Screenings disposal contract with Waste Management, Inc. The disposal costs were approximately $16,000.00 ($35.00 per ton).

It is estimated that an average annual reduction in CSO volume of 210 MG/year, from 2290 to 2080 MG/year, will be achieved as a result of the completion of this project. In addition, this represents an estimated 10% reduction in the average annual volume of CSO from this interceptor system.

10.1.3 Cobbs Creek Low Level (CCLL) Control Project

Start: 6/1/1998 End: 9/30/1998 Status: In-Progress

This project is scheduled to be bid on 3/18/98.

Description: Control pipes, located in the CCLL interceptor near Glenmore Avenue, are two 18-inch orifice openings in an interceptor manhole bulkhead. The control pipes were installed to prevent chronic flooding occurring at the 75th and Grays Avenue chamber downstream. The 75th and Grays chamber is a former regulator (C-28), whose outfall to Cobbs Creek was sealed but still contained a 12-inch by 18-inch orifice opening to the interceptor. Grit accumulation has reduced the capacity of this orifice. The orifice opening at the 75th and Gray's chamber was the limiting hydraulic element in the interceptor. The opening restricted flow to the 30-inch interceptor that conveys flow from the 75th and Gray's Avenue chamber to the SWWPCP low level pumping station. The maximum flow through this opening was 11.8 mgd, assuming the 30-inch interceptor downstream of the 75th and Gray's Avenue has been cleaned (*Cobbs Creek Low Level Interceptor Conveyance Improvements.*) Flow was recently rerouted the flow past the orifice in the 75th and Gray's chamber with a new 30-inch pipe, increasing the capacity to 15 mgd. The hydraulic limit of the 30-inch CCLL interceptor can now be realized. This project was completed at a cost of $200,000.

Additionally, the upstream interceptor will be cleaned and lined and a smooth transition between the brick sewer and the new 30-inch RCP bypass will be constructed. The two 18-inch orifices will be reconfigured in order to facilitate cleaning. While these orifices will control flooding problems at the 75th and Grays Avenue, they will not reduce the flow delivered to the interceptor below the interceptor capacity of 15 mgd. The projected cost for this project is $2,500,000.

Environmental Benefits: These projects reduce the frequency and volume of overflows to Cobbs Creek, one of the smaller receiving streams. Interceptor capacity increases from 11.8 to 15 mgd due to the new 30-inch bypass line in conjunction with grit removal in the downstream interceptor (*Cobbs Creek Low Level Interceptor Conveyance Improvements).* The reduction in overflow volume is 10 MG on an average annual basis.

10.1.4 Cobbs Creek Low Level (CCLL) Improvements

Start: 4/2/1998 End: 1/5/2000 Status: Planned

Description: Inspections have revealed that grit has accumulated in the 30-inch Cobbs Creek Low-Level (CCLL) interceptor to a depth of approximately 12 inches. Grit buildup reduces the hydraulic capacity of the interceptor both by constricting its cross sectional area, and by increasing its frictional resistance. This project entails the removal of grit and debris along the entire 30-inch interceptor. The estimated cost for the project is $440,000.

Environmental Benefits: This project will reduce the frequency and volume of overflows to Cobbs Creek by restoring the conveyance capacity of the 30-inch Cobbs Creek interceptor between the 75th and Gray's Avenue chamber and the SWWPCP low level pumping station. When grit is removed from this interceptor segment, the model indicates that the capacity nearly doubles from 5.9 mgd to 15 mgd. This project results in a 50 MG volume reduction on an average annual basis.

10.2 WPCP Flow Optimization

Start: 1/1/1998 End: 1/1/2000 Status: Planned

NMC4 requires a determination of the ability of a POTW to operate acceptably at incremental increases in wet weather flows and to estimate the effect on POTW's compliance with its permit requirements. The most effective way to accomplish the requirements of this task is to perform stress testing of the plant and plant's unit processes.

The plant stress testing project will establish:

- Maximum and average flows that should be treated in various unit processes for current and future operations;
- Ranges of hydraulic, solids and BOD_5 loads that could be applied to the various unit processes and yet obtain maximum removal efficiencies in each unit process;
- Changes in plant processes and operations (such as increased loads, MLSS levels, changes in sludge wasting, return activated sludge (RAS) ratios, detention times, etc.) that would increase removal efficiencies; and
- Magnitudes of excess capacity, if any, in each unit operation of the plant (increased flow through plant process units) that could be achieved and still meet the discharge permit requirements for each plant.

The results of stress testing will allow a determination of existing and future optimum flows, loads, and operations of the various unit processes. It can be expected that the actual field stress testing would take about eight to twelve weeks before conclusive results could be obtained from changed/adjusted operations.

From LTCP: The identification of choke points, deficiencies and unit process capacities will be provided in the stress testing summary report that will be developed for each WPCP. The identification of WPCP specific Capital Improvement Projects (CIP) will also be provided as part of the summary reports. The prioritization of the CIPs and the budgeting, appropriation of monies, scheduling and actual implementation of the CIPs will be accomplished within the context of the overall watershed approach to CSO abatement defined in this LTCP.

PWD will develop an initial five-year optimization/CIP program for the WPCPs, with specific projects identified from stress testing results to be implemented during the upcoming permit cycle. The ultimate decision on project prioritization will be based on a cost benefit ratio vs. other CSO prioritization projects as discussed in this section.

10.2.1 Develop Work Scope for Each Plant

Start: 2/1/96 End: 3/31/98 Status: Complete

A Request for Proposals (RFP) is now complete for procuring a consultant to develop the specific test procedure for each plant.

10.2.2 NE WPCP Stress Testing

Start: 7/1/98 End: 1/1/2000 Status: Planned

10.2.3 SE WPCP Stress Testing

Start: 7/1/1998 End: 1/1/2000 Status: Planned

10.2.4 SW WPCP Stress Testing

Start: 7/1/1998 End: 1/1/2000 Status: Planned

10.3 Pennypack Watershed – 85% Capture

Start: 2/1/1996 End: 11/30/1999 Status: In-Progress

Description: Addressing CSO discharges to Pennypack Creek is a high priority for the CSO Program and is mainly a result of the proximity of the CSO to a smaller receiving stream which enters the Delaware just below the Baxter WTP intake structure. This project will enable capture of 85% of the combined sewer flow in all five Pennypack (PP) CSO basin areas on an average annual basis by modifying the PP, UDLL and LFLL regulators. It was determined that an increase in capacity of approximately 20 cfs was required for the PP interceptor to achieve 85% capture (consistent with the "presumptive" CSO control target defined in national CSO policy). The construction project entails construction of new dry weather outlet (DWO) conduit at four of the Pennypack CSO regulators. In addition, the diversion dam height at three PP regulator locations will be raised. Lastly, modifications at five Brown & Brown type and automated regulators along the UDLL and LFLL interceptors will be completed in order to provide the required capacity in the UDLL interceptor. These actions will result in 85% CSO capture in the Pennypack watershed. The projected budget for this project is $230,000.

Environmental Benefits: This project will significantly reduce the CSO discharge into Pennypack Creek. The average annual volume of CSO is reduced by 91 MG, from 130 to 39 MG. This represents a reduction of roughly 70% in the average annual volume of CSO and the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Pennypack Creek between Frankford Avenue and the Delaware River. Additionally, this project protects a small stream surrou ded by public parkland where recreational activities occur.

10.3.1 WQ & SRF - Sheffield Ave.

Start: 2/1/96 End: 11/30/99 Status: In-Progress

Design specification for the relief sewer and new regulator chamber are scheduled to be complete by 6/1/98.

10.3.2 Regulator Modifications (P1-P4)

Start: 11/18/98 End: 11/30/99 Status: Planned

10.4 I / I Reduction Projects

Start: 7/1/1999 End: 12/1/2002 Status: Planned

Description: Opportunities exist to reduce CSO impacts by means of reducing the entry of stormwater runoff, rainfall-derived I/I, and groundwater infiltration into the sewer system. Appropriate measures will be identified, evaluated, and implemented, where appropriate and cost-effective. There are four basic approaches to CSO control through I/I reduction:

1) Reduce the entry of stormwater runoff (including perennial stream baseflow) into the combined sewer system by diverting streamflow directly to a receiving stream.

2) Reduce the entry of groundwater infiltration to the combined sewers, interceptor sewers, and/or upstream separate sanitary sewers.

3) Reduce the entry of rainfall-derived I/I from upstream sanitary sewer systems.

4) Monitor and study the tidal inflows from river levels exceeding emergency overflow weir elevations at tide gates.

Each of the above approaches enables CSO reduction effectively by increasing the capacity in the intercepting sewers and WPCPs available for the capture and treatment of combined wastewater. Several opportunities have already been identified and are currently being evaluated. For example, upon completion of the $6,500,000 CSO monitoring project, PWD will target the Southeast drainage district collector system. Comparisons will be made between the cumulative dry weather flows and the flow at the plant. Temporary monitors will be used to compare flows at intermittent points along the interceptor. Using this method, the infiltration will be narrowed to specific sewer reaches. A sampling program will be developed and implemented to establish relative differences in trunk sewer flow concentrations. Corrective actions, including regulator reconfiguration, will then be evaluated on a pollution-load basis. Other targeted I/I studies being evaluated include: redirection of runoff from the sports complex, redirection of subway pumping, and reduction of I/I impacts at the Main & Shurs (R_20) overflow structure. The estimated costs for I/I reduction projects is $2,000,000.

Environmental Benefits: Since I/I is relatively clean water that occupies conveyance and treatment capacity, eliminating it from the system frees up capacity for the relatively more polluted combined wastewater. This reduces CSO discharges and enables greater pollutant capture throughout the combined sewer system. An additional benefit of reduced infiltration (and diversion of any perennial streamflow) is the reduction in the operating costs associated with continuously pumping and treating these flows.

10.5 Real Time Control Program

10.5.1 Establish Real Time Control Center

Start: 7/1/2000 End: 8/30/2001 Status: In-Progress

A Real Time Control center (RTC) will be established at the Fox Street facility over the next 3 years. The ultimate goal for this center is to house a centralized RTC system that will allow telemetered commands to be sent to site-specific, automated controls located throughout the collection and treatment facilities. These signals may be transmitted based upon an optimized response to rainfall patterns and are intended to further enhance capture of CSO volume. Establishing a RTC center will enable PWD to provide 24-hr monitoring and, eventually, control of key collection system facilities including automated CSO regulators, pump stations and inter-district diversions.

An RTC facility also will provide the basis for improved management of many aspects of collector system operations, by centralizing collection and processing of data provided by the various automated functions (e.g., CSO monitoring, automated regulators, etc.). By use of RTC, flows are diverted or stored where capacity exists in the system. This function prevents wet-weather overflows prior to maximum use of available conveyance and/or storage capacities, thus allowing for prioritization of overflow locations based on hydraulic or pollutant load characteristics.

In the upcoming year, PWD CSO Program staff will provide assistance in planning and design of the Real Time Control Center, including developing space, physical feature and equipment requirements as appropriate for the initial phase of the Center's operation. Future projected use and needs will be considered. A series of design meetings will be held to discuss issues.

The estimated capital cost for establishing an RTC center is $350,000.

10.5.2 RTC – Main Relief Sewer

Start: 8/1/1999 End: 1/30/2001 Status: In-Progress

An RFP is currently under development to retain a specialty Engineering firm to complete the Design work for this project. The contract is expected to be awarded by 7/1/98 with a 6-9 month Design period. The contract for construction is expected to be bid by 7/1/99 with construction completed by 11/1/99.

Description: The Main Relief Sewer provides flood relief to combined sewer areas in all three of PWD's drainage districts (Northeast, Southeast and Southwest). The Main Relief Sewer discharges to the Schuylkill River at Fairmount Park, a highly visible recreational area. Currently CSO is released into the river at the Main Relief Sewer outfalls, a set of five large (4' to 11.5') sewers, during periods of moderate or greater rainfall. There exists within the single large (13.5' by 13.5' box) sewer above these outfalls a potential storage volume of approximately 6.2 million gallons (MG), and during all but the largest rainfalls most or all of this volume is available to store the overflow that otherwise discharges to the river. However, in order to use this 6.2 MG of storage, a computer-controlled sluice gate is required in the box sewer just above the Main Relief Sewer outfalls to the Schuylkill River. This gate will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The automated gate maintains the stored flow in the relief sewer and a new connecting sewer drains the stored flow to an existing nearby interceptor. The projected cost for this project is $650,000.

Environmental Benefits: This project will reduce the discharge of combined sewer overflow (CSO) into the Schuylkill River. An average annual reduction in CSO volume of 185 MG/year, from 520 to 335 MG/year, is achieved at the Main Relief Sewer outfalls through use of the available in-system storage volume. This represents a reduction of more than 35% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into the Schuylkill River at this location, within Fairmount Park, at the historic Fairmount Water Works. Since this project modifies an existing structure (the Main Relief Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.10/gal versus roughly $6/gal for siting, designing, and constructing a new storage structure).

10.5.3 RTC – Rock Run Relief Sewer (R_15)

Start: 2/1/2001 End: 9/1/2001 Status: Planned

Description: The Rock Run Relief Sewer provides flood relief to combined sewer areas upstream of regulator T_08 in the Northeast Drainage District. Currently CSO discharges into Tacony Creek at the Rock Run Relief Sewer outfall (11' by 14' sewer), during periods of moderate or greater rainfall. There exists within this large sewer a potential storage volume of approximately 3.4 million gallons (MG), and during all but the largest rainfalls most or all of this volume is available to store the overflow that otherwise discharges to the creek. However, in order to use this 3.4 MG of storage, a computer controlled sluice gate is required in the box sewer just above the Rock Run Relief outfall to the Tacony Creek. This gate will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The automated gate maintains the stored flow in the relief sewer and a new connector sewer drains the stored flow to an existing nearby interceptor. The estimated budget for this job is $490,000.

Environmental Benefits: This project will reduce the discharge of CSO into Tacony Creek, one of the smaller receiving streams. An average annual reduction in CSO volume of 190 MG/year, from 1040 to 850 MG/year, is achieved at the Rock Run Relief Sewer outfall through use of the available in-system storage volume. This represents a reduction of roughly 20% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Tacony Creek at this location, near Nedro Avenue and Hammond Street in Tacony Creek Park, an area where golfing and other recreational activities may occur. Since this project modifies an existing structure (the Rock Run Relief Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.14/gal versus roughly $6/gal for siting, design, and construction of a new storage structure).

10.5.4 RTC – Tacony Creek Park (T_14)

Start: 9/1/2001 End: 2/28/2002 Status: Planned

Description: Currently CSO discharges into the Tacony Creek at the T_14 outfall, a very large (21' by 24') sewer, during periods of moderate or greater rainfall. There exists within this large sewer a volume of approximately 17.6 million gallons (MG), and during all but the largest rainfalls, most or all of this volume is available to store the overflow that otherwise discharges to the creek. However, in order to use this 17.6 MG of storage, a control structure is required in the sewer just above the outfall to Tacony Creek. Due to the large size of this outfall an inflatable rubber dam is proposed to retain flow within the sewer. This automated dam will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream

communities. The dam maintains the stored flow in the relief sewer and a new connector sewer drains the stored flow to an existing nearby interceptor. The projected budget for this project is $450,000.

Environmental Benefits: This project will reduce the discharge of CSO into Tacony Creek, one of the smaller receiving streams. An average annual reduction in CSO volume of 750 MG/year, from 2,500 to 1,750 MG/year, will be achieved at the T-14 outfall through use of the available in-system storage volume. This represents a reduction of roughly 30% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Tacony Creek at this location, near Juniata Park and Tacony Creek Park, in an area where golfing and other recreational activities may occur. Since this project modifies an existing structure (the T_14 Trunk Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.03/gal versus roughly $6/gal for a new storage structure).

10.5.5 RTC – SWMG, CC, LSWS

Start: 7/1/1998 End: 1/30/2001 Status: In-Progress

Description: A number of interrelated projects in the Southwest Drainage District (SWDD) were determined to enhance the operation of the high-level and low-level collection systems and consequently maximize capture and treatment of wet-weather flows at the SWWPCP. Each of the high-level interceptor systems that discharge to the SWWPCP can influence the hydraulic capacity and treatment rate of the other high-level interceptor systems, as they compete for capacity in the Southwest Main Gravity (SWMG) into the plant. Therefore, several integrated projects were proposed together to establish a protocol for prioritizing flow from each interceptor system. These projects will be defined and implemented in conjunction with a centralized real-time control (RTC) system (see 10.5.1 *Real Time Control Center*). In addition, the RTC system will control the Triple Barrel reach of the SWMG, and will control the diversion from the SWMG to the Lower Schuylkill West Side Interceptor (LSWS), thereby enabling use of the full capacities of these inter-connected conduits during wet-weather.

The individual projects that constitute the SWMG optimization program are: adding a RTC system with monitoring at approximately six locations and automated gate structures at seven locations, including the gate chamber above the SWMG Triple Gravity sewer at 70th & Dick's St.; replacing the DWO pipe and raising the dam at regulator C_17; cleaning the interceptor and modifying the regulators along the LSWS interceptor; and modifying the hydraulic control point regulators along the SWMG to pass more flow to the LSWS. The total estimated costs for these projects is $1,750,000.

The first task in project 10.5.5 entails the cleaning of the Lower Schuylkill West Side Interceptor to ensure that capacity is available to convey the additional flow resulting from the automated controls to be implemented in later tasks. The Lower Schuylkill West Side Interceptor cleaning project started on 1/7/98 and is currently in progress. This interceptor will be cleaned from 51st Street and Botanic Avenue to the SWWPCP (approximately 18,000 lineal feet) at an estimated cost of $1,000,000. The Lower Schuylkill West Side Interceptor comprises of sewer sections with sizes varying from 21 to 50 inch in diameter. Grit and debris removed from this interceptor will be transported to the SWWPCP for disposal by the BRC under its existing disposal contract with Waste Management Inc.

Also during this next year, PWD will review the requirements and opportunities for RTC within the Southwest WPCP sewershed. A memorandum will be prepared recommending appropriate technical and modeling approaches for the Southwest system. A ranking of techniques and a recommendation for a preferred technical approach will be developed. The selected methodology will be incorporated into a RTC Required Scope of Services document for the Southwest system. This Scope of Services will be

sent to two RTC modeling specialty firms, who will be asked to submit proposals to assist the CSO Program staff in implementing the selected approach. The Scope of Services for the subcontractor will provide specialized modeling and RTC software development and implementation services including, at a minimum, the following four elements.

- ***Real Time Control Model Development:*** The Subcontractor will work with the CSO Program staff to develop a detailed model of the Southwest Drainage District capable of resolving the effects of in-system storage on the upstream HGL, gate movements and physical system controls and other specific hydraulic transient phenomenon critical to real time control simulation. The new impervious cover data generated as part of the Department's GIS Program will be used in the hydrologic simulations.

- ***Real Time Control Model Calibration and Verification:*** The subcontractor will be develop and implement a model calibration and verification methodology that includes an evaluation of the current status of the Department's monitoring network and make a recommendation on any additional monitoring sites needed for model calibration and verification. When calibration and verification data sets become available, model applications will be performed and model parameter adjustments performed to yield models that demonstrate repeatable correlation between the monitored level and flow data, and model outputs at representative locations in the SWDD system. Repeatable correlation will be defined as that which is encountered in current standard engineering methods and will be properly referenced to the applied standard in task report deliverable.

- ***Detailed Assessment of Collection System RTC Opportunities:*** Use the verified models developed to assess the preliminary control alternatives identified in the Long Term CSO Control Plan. Gate movements and physical system control actions necessary to achieve CSO reduction in a given alternative scenario will be simulated. An assessment of potential localized flooding that may occur upstream of any of the simulated sewerage regulating and / or control structures. The CSO reduction benefits for a typical hydrologic year, and for a design event, will be estimated.

- ***Software Development for a Logic-Based Control System:*** Use the full nonlinear high-order primitive equation model formulation, or build and train an expert system based upon model simulations, or develop a linearized model; or employ some combination of these approaches, to develop a RTC formulation suitable for coding into an RTU or PLC.

It is expected that a contractor will be selected and work begun by mid-1999.

10.6 Elimination / Consolidation of Outfalls

10.6.1 Main & Shurs

Start: 7/1/2001 End: 12/30/2002 Status: Planned

Description: The relief overflow at R_20 (Main Street and Shurs Lane) was constructed due to chronic flooding during wet weather. High flow in the Upper Schuylkill East Side (USES) Interceptor, caused by infiltration and inflow from separate sanitary areas, reduces the available capacity at R_20. Currently, overflows occur during periods of relative high rainfall. Preliminary estimates indicate that a 2.0 MG storage facility at this location will allow elimination of R_20. However, given the sensitivity of the project design to inflow and infiltration (I/I), further evaluation of I/I (see *Targeted Infiltration and Inflow Studies*) is required to refine the indicated facility size. The estimated cost (prior to design and land acquisition) for this project is $12,000,000.

Environmental Benefits: An average annual reduction in CSO volume of 10 MG is achieved by eliminating the R_20 overflow.

10.6.2 32nd & Thomspon

Start: 4/1/1999 End: 1/30/2000 Status: Planned

Description: Structure R_19 (32nd and Thompson) is a storm relief chamber located on a trunk sewer chamber that flows to structure R_12 (Pennsylvania Ave. & Fairmount Ave). Due to flat conduit slopes and resulting low flow velocities, the trunk has experienced sediment and grit accumulation across 75% to 90% of its cross-section between R_19 and R_12. Flow Control Unit has operated a temporary monitor in the overflow conduit at R_19 for approximately one year. In this time, there have been six recorded wet-weather overflows. Inspections indicated this sewer is difficult to clean and the historical records indicated there may be structural deficiencies. Therefore this sewer will be reconstructed at a steeper grade.

Once the sewer is reconstructed, it will be monitored. Model runs currently indicate that a reconstructed sewer will have sufficient capacity to eliminate all overflows from this site. Grit accumulation will be monitored at this location and cleaning will be scheduled as needed. Subsequently R_19 will be bulkhead and removed from service. The estimated cost for this project is $1,500,000.

Environmental benefits: This project will eliminate one of the City's CSO overflows, resulting in 0.5 MG reduction of overflow volume on an average annual basis.

10.6.3 Stokely & Roberts (R_ 22) - Dobson's Run Phase I

Start: 5/1/1996 End: 6/30/1998 Status: In Progress

Description: Temporary dams were installed in the Dobson's run storm sewer. Flow was diverted to the Wissahickon High Level interceptor at Stokley St. & Roberts Ave. through hydraulic control point R_22, and to the Upper Schuylkill East Side interceptor at South Ferry Road and Kelly Drive through CSO S_01T. The LTCP includes a $6,500,000 program of sewer construction in the upper reaches that will allow R_22 to be removed from service. Two additional phases of the project will eliminate S_01T from service with an estimated cost of $18,700,000.

Environmental Benefits: This project will eliminate two of the City's intercepting chambers and will completely eliminate CSO overflows, resulting in a 173-MG reduction of overflow volume on an average annual basis. This project entails the reconstruction of the storm and sanitary sewer from Wissahickon Ave. to Roberts Ave. and eliminate the overflow chamber located at Stokely & Roberts (R_22). Final design is complete. Contract has been bid and awarded. Construction is underway. The estimated construction cost is $ 5.8 million.

10.6.4 Kelly Drive (S_01T) - Dobson's Run Phase II

Start: 6/1/1997 End: 4/1/1999 Status: In-Progress

Phase II of the Dobson's Run Reconstruction consists of the sewer reach from Henry Ave. to Kelly Drive and eliminates temporary CSO S_01T. The design for reach 1 is anticipated to be completed by 10/98 and the design for reach 2 is scheduled to be completed by 4/98. The estimated cost is $ 16.0 million.

10.6.5 Kelly Drive (S_01T) - Dobson's Run Phase III

Start: 7/1/2001 End: 7/30/2003 Status: Planned

Phase III will eliminate all CSO discharge from occuring at S_01T.

10.7 Solids / Floatables Skimming Vessel Pilot Program

Start: 7/1/2001 End: 7/30/2003 Status: Planned

Description: This project involves the reduction in floatables to receiving waters, most notably the Delaware and Schuylkill Rivers, to improve water quality and aesthetics of surrounding parks and recreational areas. Although the NMCs and the projects contained herein increase system-wide capture of solids and floatables, implementation of additional measures will be examined in pilot projects. For example, the outfall at regulator T-4 was recently equipped with a floatables net trap which will capture floatables at this location. This installation will reduce the quantity of discharge at this location as well as provide data to support the floatables monitoring effort.

Additionally, PWD will pilot the use of a floatables skimming vessel to remove debris from targeted reaches of the Delaware and Schuylkill Rivers. New York City and Baltimore CSO control programs have deployed a number of vessels of various sizes equipped for removal of floatables. It is proposed that a relatively small (20 to 30 foot) vessel be used for this pilot study at an estimated cost of up to $380,000.

Environmental Benefits: Reduction in floatables improves both water quality and aesthetics of receiving streams. The use of a skimmer vessel also allows for a mobile control program capable of managing discharges at various

locations, increasing the effectiveness of this control measure. In addition, the boat will be a visible control, and will increase the public awareness and education of floatables' impacts.

10.8 Watershed Planning

PWD's PHASE III WATERSHED PLANNING INITIATIVE

The uncertainty regarding water quality conditions in the City's tributary creeks & streams dictates that CSO controls beyond technology-based measures implemented during Phases I and II be developed in conjunction with comprehensive watershed planning, that includes the development of TMDLs, wasteload allocations, use-attainability analyses where necessary, and site-specific water quality standards as determined appropriate. The sources, impacts and control of non-CSO pollution sources require a watershed-wide evaluation.

During the last five years there has been national recognition of the need for watershed planning as a basis for water resource management in virtually every sector, from small stormwater management plans for suburban development to comprehensive basin planning for water supply, low flow mitigation and numerous other purposes. In no sector has this need been recognized more clearly than in the area of water quality management, and, particularly in the area of combined sewer overflow control. For CSO planning, this realization is the result of a wide array of factors that uniformly dictate that CSO Long-Term Control Plans be developed in close conjunction with comprehensive watershed planning and analysis.

Overview of Watershed Planning Requirements

This section outlines the elements of the Phase III Watershed Planning Initiative of the City's LTCP. Watershed planning includes various task ranging from monitoring and resources assessment to technology evaluation and public participation. The following is a list of typical tasks and subtasks included in most watershed planning programs. It is provided here for purposes of defining the PWD's proposed program in the following pages:

General Activities

- Management and facilitation
- Public Participation and Information
- Funding Support

Step 1 Preliminary Reconnaissance Survey

- Data collection and assessment
- Preliminary water quality assessment
- Land use and resource mapping
- Inventory of point and non-point sources
- Definition of regulatory issues and requirements
- Preliminary biological habitat assessment
- Reconnaissance stream survey
- Preliminary problem assessment

Step 2 Watershed Work Plan and Assessment

- Monitoring, sampling and bioassessment
- QA/QC and data evaluation
- Watershed modeling
- Waterbody modeling
- Problem definition and water quality goal setting
- Technology evaluation
- Economic assessment and funding requirements
- Public Involvement
- Development of *Watershed Management Plan*

Step 3 Watershed Plan Implementation

- Institutional arrangements
- Implementation programs
- Monitoring and measures of success

PWD's Anticipated Involvement

Comprehensive watershed planning and management will include a very wide array of skills and resources including water and land use policy, communications, natural sciences, engineering, administration, management, public education, laboratory and analytical services, computer science, mapping and information systems. The PWD realizes that it is beyond the capabilities of any single stakeholder to house and supply all or most of the required elements. Thus, each stakeholder will bring to the process one or more of the capabilities needed by the planning team.

This initiative entails providing staff resources, technology (e.g. computers, GIS, modeling, etc.) and/or funding support for one or more of the various tasks associated with watershed planning, as outlined above, in each of the following planning area watersheds within the PWD service area:

- Cobbs/Darby Creek
- Tacony/Frankford Creeks
- Pennypack Creek
- Schuylkill River (non-tidal segment)
- Delaware River and Schuylkill River (tidal segment)
- Poquessing Creek
- Wissahickon Creek

10.8.1 Wissahickon Watershed

Start: 5/21/97 End: Ongoing Status: In Progress

The Wissahickon Watershed Partnership (WWP) was first formed in May, 1997 to develop a comprehensive watershed management plan among the many stakeholders and special interest groups involved in the Wissahickon Creek. The WWP has evolved in it's first year of existence into a more cohesive and dynamic organizational structure. The WWP has decided to hold regular quarterly meetings

involving the entire large stakeholder membership to identify the issues and develop goals within the watershed and has created various smaller work groups, or sub-committees, to actually work on completing certain tasks towards meeting these goals. These sub-committees include a Steering Committee, Technical Committee, Education Committee, and a Regulatory Committee. It is expected that each of the sub-committees will be making presentations on their tasks and their progress-to-date to the entire WWP at the quarterly meetings.

The WWP and each sub-committee is currently completing a mission statement to further define each groups role in the overall watershed management plan. The WWP's consensus mission is to work toward an environmentally healthy watershed while maintaining the economic vitality of the communities throughout the watershed.

The WWP Steering Committee has met twice and is still in the process of determining it's membership. The Steering Committee's draft mission statement asserts that the sub-committee is to provide direction and focus to the WWP including coordinating activities of the Partnership sub-committees and other watershed protection projects to ensure that time and resources are well spent and the issues and concerns of all partners are addressed.

The WWP Technical Committee has met three times since being formed. The sub-committee's draft mission is to develop a common understanding of the technical issues to ensure a timely resolution of technical questions using sound science and decision support, and implementation of innovative management techniques using, whenever possible, expertise and resources within the watershed. The Technical Committee is currently still collecting and evaluating available data to help define the issues for further study. The major issues being pursued currently include protozoa, bacteria, nutrients, metals, sediment, and flow.

The WWP Education Committee has met one time. The Education Committee's draft mission statement asserts that the sub-committee will identify and implement strategies that support the objectives of the WWP within a lifelong public education context. The sub-committee has already begun work on assembling information from the various groups within the WWP to be available on a soon-to-be-developed web-site for the WWP. The sub-committee is also developing an article giving a historic perspective to the watershed.

The WWP Regulatory Committee has not met, as yet, and, therefore, has not had time to work out a draft mission statement among it's membership. The first meeting is scheduled for April 13, 1998. The sub-committee is expected to work on identifying and assembling the pertinent regulatory and legislative requirements from the state, counties, and various municipalities within the watershed that can effect the implementation of the watershed management plan.

The CSO Program staff has provided preliminary GIS map coverages to support the initial planning stages of this effort. The costs incurred by PWD's consultant CDM, in developing these preliminary map products amounted to $18,000 for calendar 1997. PWD also provided the services of Water Resources Associates to assist DEP with program organization and development at a cost of $6,400 during calendar 1997. PWD staff have allocated significant hour by attending meetings, commenting on program materials, and directing the consultant resources mentioned previously. An estimate hours & costs incurred by PWD is not yet available.

10.8.2 Cobbs Darby Cr. Watershed

Start: 9/18/97 End: Ongoing Status: In-Progress

PWD is currently developing a work scope to procede with the Cobbs/Darby, the Tacony and Pennypack watersheds. This work scope will be broken into a public involvement scope and a technical scope.

10.8.3 Tacony Frankford Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.8.4 Pennypack Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.8.6 Schuylkill River Watershed (Non-tidal)

Start: TBD End: Ongoing Status: Planned

10.8.5 Poquessing Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.9 Watershed Planning - Educational Support Initiatives

Formerly Section 7.7. The following programs were developed to support watershed-based educational initiatives.

10.9.1 Watershed Tours

Start: 3/1/1997 End: 5/3/1997 Status: Completed

PWD's activities this spring were focused on the development of "watershed walks" in conjunction with Fairmount Park, on eight Philadelphia neighborhood watersheds. The walks featured the function and life of a watershed in an urban environment, combining natural and sewer shed infomration in a guided tour. The tours will emphasize the individual's power to make a difference in the health and quality of their local watershed.

Additional tours have been scheduled for May 1998.

10.9.2 Watershed Informational Exchange Forum

Start: 1/1/1997 End: 2/28/1997 Status: Completed

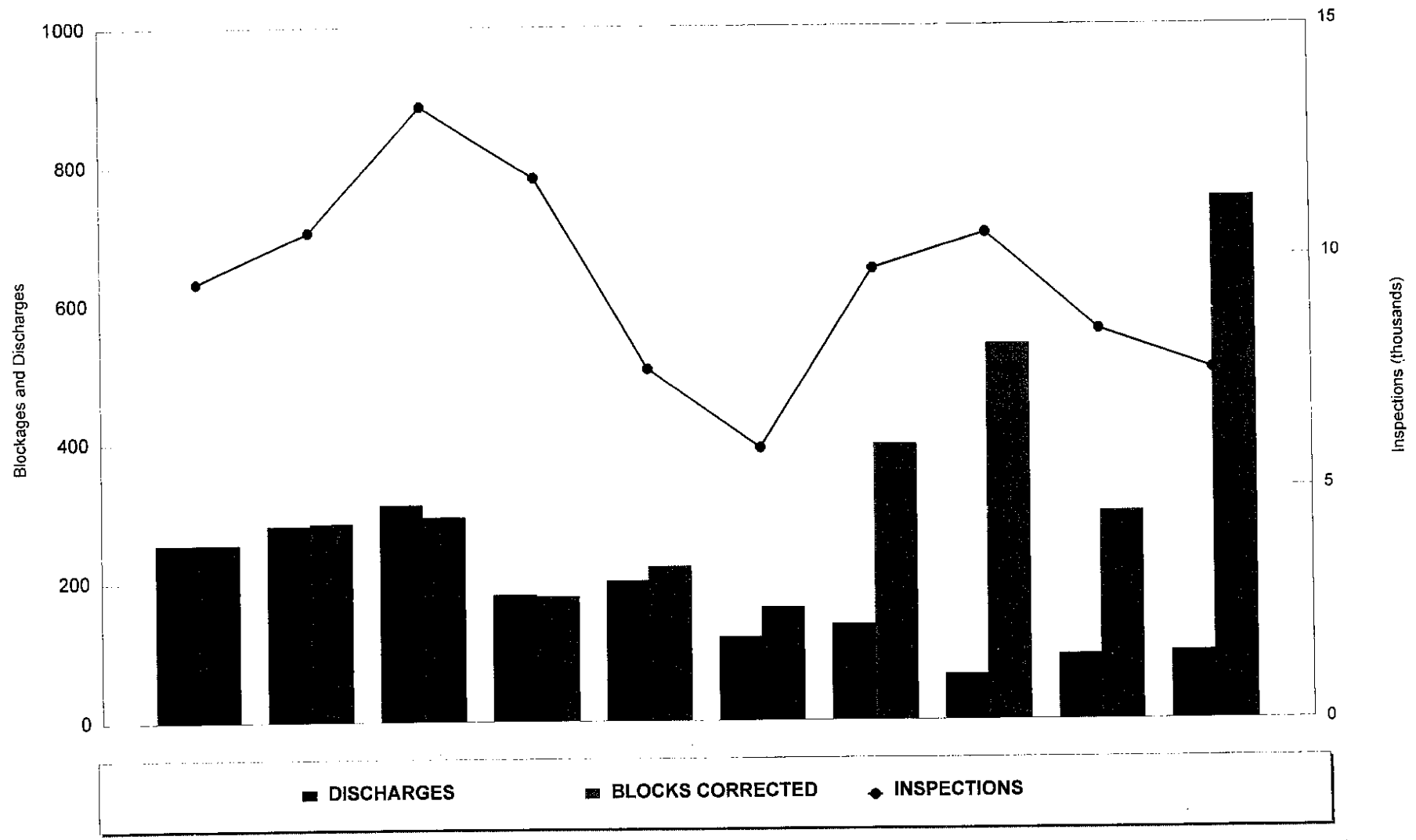
PWD conducted a watershed-based information exchange seminar. Collector support staff participated in this seminar to provide information about the CSO Program's watershed planning components.

Appendix A

Flow Control Unit - CSO Inspection & Maintenance Summaries

FY97 Annual Report - Flow Control CSO Chamber Maintenance

CSO Regulator Inspections - Discharges and Blocks Cleared Before Discharge



FY97 FLOW CONTROL CSO INSPECTION / DISCHARGE TOTALS

COLLECTOR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK - 5 UNITS															
INSPECTIONS	19	8	21	18	19	14	15	15	5	5	9	23	171	2.9	10.7
DISCHARGES	1	0	0	1	0	0	0	0	0	0	0	0	2		
UPPER DELAWARE LOW LEVEL - 12 UNITS															
INSPECTIONS	47	37	51	40	20	38	40	27	40	24	44	56	464	3.2	10.9
DISCHARGES	0	2	0	0	0	1	1	0	1	1	1	1	8		
LOWER FRANKFORD CREEK - 6 UNITS															
INSPECTIONS	11	8	34	22	8	8	6	12	12	16	17	12	166	2.3	13.6
DISCHARGES	0	1	0	0	0	0	0	0	0	0	1	0	2		
LOWER FRANKFORD LOW LEVEL - 10 UNITS															
INSPECTIONS	37	25	53	44	18	45	22	32	14	33	17	19	359	3.0	10.3
DISCHARGES	0	1	0	0	0	0	1	1	0	0	0	0	3		
FRANKFORD HIGH LEVEL - 14 UNITS															
INSPECTIONS	22	43	84	32	17	59	33	50	44	49	30	40	503	3.0	10.3
DISCHARGES	0	0	0	0	1	2	0	0	0	0	0	0	3		
SOMERSET - 9 UNITS															
INSPECTIONS	24	24	43	17	25	27	25	26	15	18	18	35	297	2.8	11.8
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0		
LOWER DELAWARE LOW LEVEL - 32 UNITS															
INSPECTIONS	135	133	138	152	96	169	109	79	130	137	109	130	1517	4.0	7.7
DISCHARGES	0	0	1	0	0	1	1	0	0	2	0	0	5		
CENTRAL SCHUYLKILL EAST - 18 UNITS															
INSPECTIONS	83	65	89	92	105	109	75	59	63	59	39	66	904	4.2	7.4
DISCHARGES	0	2	2	4	0	0	0	0	0	0	1	3	12		
LOWER SCHUYLKILL EAST - 9 UNITS															
INSPECTIONS	45	35	32	29	36	22	33	28	26	14	19	24	343	3.2	9.7
DISCHARGES	0	1	1	0	0	0	1	0	0	0	0	1	4		
CENTRAL SCHUYLKILL WEST - 9 UNITS															
INSPECTIONS	41	71	33	54	55	64	43	42	50	38	15	29	535	5.0	6.4
DISCHARGES	8	10	1	0	1	0	0	0	0	1	0	0	21		
SOUTHWEST MAIN GRAVITY - 10 UNITS															
INSPECTIONS	48	51	37	35	48	67	58	51	53	26	30	41	545	4.5	8.1
DISCHARGES	0	1	0	0	0	2	0	2	0	0	0	1	6		
LOWER SCHUYLKILL WEST - 4 UNITS															
INSPECTIONS	38	48	19	19	25	23	30	26	24	12	15	18	297	6.2	5.0
DISCHARGES	3	12	2	0	0	0	0	0	0	0	0	1	18		
COBBS CREEK HIGH LEVEL - 23 UNITS															
INSPECTIONS	97	57	71	48	78	36	52	35	46	68	44	29	661	2.4	12.8
DISCHARGES	2	2	0	0	0	2	0	1	0	2	0	0	9		
COBBS CREEK LOW LEVEL - 13 UNITS															
INSPECTIONS	69	21	42	32	28	14	30	18	33	28	22	18	355	2.3	13.6
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	1	1		
RELIEF SEWERS - 25 UNITS															
INSPECTIONS	31	36	35	45	27	35	51	41	48	39	27	24	439	1.5	
DISCHARGES	1	0	1	0	0	1	0	0	1	0	0	0	3		
TOTALS - 199 UNITS														GOALS	
														MONTH	YEAR
INSPECTIONS	747	662	782	679	605	730	622	541	603	566	455	564	7556	> 875	> 10500
DISCHARGES	15	32	8	5	2	9	4	4	2	6	3	8	97	< 7	< 84
DISC / 100 INSPECTIONS	2.01	4.83	1.02	0.74	0.33	1.23	0.64	0.74	0.33	1.06	0.66	1.42	1.3	<1.5	<1.5

FY97 REGULATING CHAMBER MONTHLY INSPECTION TOTALS NEWPC & SEWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK												5 UNITS			
TOTAL	19	8	21	18	19	14	15	15	5	5	9	23	171	2.9	10.7
P01	5	2	4	4	4	3	3	3	1	1	1	4	35	2.9	10.4
P02	4	2	4	4	4	4	3	3	1	1	1	4	35	2.9	10.4
P03	3	2	5	3	4	2	4	4	1	1	3	5	37	3.1	9.9
P04	3	1	5	4	4	3	2	3	1	1	2	4	33	2.8	11.1
P05	4	1	3	3	3	2	3	2	1	1	2	6	31	2.6	11.8
UPPER DELAWARE LOW LEVEL												12 UNITS			
TOTAL	47	37	51	40	20	38	40	27	40	24	44	56	464	3.2	10.9
D02	3	6	6	5	1	5	4	3	2	4	7	8	54	4.5	6.8
D03	7	5	6	7	2	4	5	3	4	1	11	10	65	5.4	5.6
D04	6	7	7	2	5	5	6	4	4	4	7	7	64	5.3	5.7
D05	4	4	4	2	1	3	4	1	3	5	3	5	39	3.3	9.4
D06	5	4	5	3	1	4	3	2	4	2	2	7	42	3.5	8.7
D07	6	3	6	6	1	4	4	2	3	2	2	3	42	3.5	8.7
D08	4	2	3	2	1	2	2	2	4	1	3	3	29	2.4	12.6
D09	5	2	3	1	1	1	2	2	4	1	2	2	26	2.2	14.0
D11	3	1	3	6	4	4	4	2	4	1	2	3	37	3.1	9.9
D12	1	1	2	2	1	3	3	2	4	1	2	2	24	2.0	15.2
D13	2	1	3	1	1	2	2	2	2	1	1	3	21	1.8	17.4
D15	1	1	3	3	1	1	1	2	2	1	2	3	21	1.8	17.4
LOWER FRANKFORD CREEK												6 UNITS			
TOTAL	11	8	34	22	8	8	6	12	12	16	17	12	166	2.3	13.6
F13	2	1	4	3	1	1	1	2	2	2	3	2	24	2.0	15.2
F14	2	1	6	3	1	3	1	2	2	3	3	2	29	2.4	12.6
F21	1	1	5	3	1	1	1	2	1	2	2	2	22	1.8	16.6
F23	2	1	7	5	2	1	1	2	4	3	3	3	34	2.8	10.7
F24	3	1	7	5	2	1	1	2	2	3	5	2	34	2.8	10.7
F25	1	3	5	3	1	1	1	2	1	3	1	1	23	1.9	15.9
LOWER FRANKFORD LOW LEVEL												10 UNITS			
TOTAL	37	25	53	44	18	45	22	32	14	33	17	19	359	3.0	10.3
F03	3	2	6	4	3	4	3	2	2	3	1	2	35	2.9	10.4
F04	3	2	7	4	2	4	2	2	1	3	1	3	34	2.8	10.7
F05	3	2	6	4	1	3	2	2	1	4	1	3	32	2.7	11.4
F06	4	2	5	4	2	5	2	2	1	5	2	2	36	3.0	10.1
F07	4	2	6	4	3	5	3	3	1	4	2	2	39	3.3	9.4
F08	4	2	5	5	1	6	2	3	1	3	2	1	35	2.9	10.4
F09	5	5	4	5	2	6	4	6	3	3	2	2	47	3.9	7.9
F10	4	2	5	6	1	6	2	4	2	3	2	2	39	3.3	9.4
F11	3	1	4	4	1	3	1	4	1	3	2	1	28	2.3	13.0
F12	4	5	5	4	2	3	1	4	1	2	2	1	34	2.8	10.7
FRANKFORD HIGH LEVEL												14 UNITS			
TOTAL	22	43	84	32	17	59	33	50	44	49	30	40	503	3.0	10.3
T01	4	2	6	2	1	3	2	2	3	4	1	3	33	2.8	11.1
T03	1	2	5	2	1	3	3	3	3	4	2	3	32	2.7	11.4
T04	1	2	6	4	2	4	3	4	5	5	2	5	43	3.6	8.5
T05	1	2	5	2	1	4	3	4	3	4	2	3	34	2.8	10.7
T06	3	2	6	4	1	4	3	4	3	4	1	3	38	3.2	9.6
T07	2	2	5	2	2	4	3	5	4	4	2	3	38	3.2	9.6
T08	2	4	6	2	1	5	4	5	4	3	3	4	44	3.7	8.3
T09	1	5	7	2	1	5	2	4	4	3	2	3	38	3.2	9.5
T10	1	5	7	2	1	5	2	4	3	3	3	4	40	3.3	9.1
T11	2	5	7	2	1	4	2	4	3	3	2	1	36	3.0	10.1
T12	1	4	6	2	1	4	2	3	3	3	2	1	32	2.7	11.4
T13	1	4	7	2	1	5	1	2	3	3	2	1	32	2.7	11.4
T14	1	2	4	2	1	6	2	3	3	3	2	3	32	2.7	11.4
T15	1	2	7	2	2	2	1	3	2	3	4	4	33	2.8	11.1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL												9 UNITS			
TOTAL	24	24	43	17	25	27	25	26	15	18	18	35	297	2.8	11.8
D17	2	1	4	2	3	1	2	3	2	2	1	3	26	2.2	14.0
D18	2	1	3	2	3	1	1	3	1	2	1	6	26	2.2	14.0
D19	2	1	3	2	3	2	2	3	1	1	2	7	29	2.4	12.6
D20	3	4	3	1	3	7	3	3	3	1	3	4	38	3.2	9.6
D21	5	4	6	2	3	5	5	3	3	1	3	6	46	3.8	7.9
D22	4	5	4	2	3	2	3	2	1	1	2	1	30	2.5	12.2
D23	2	2	4	1	2	2	4	3	1	2	1	1	25	2.1	14.6
D24	2	2	5	1	2	3	2	3	1	2	2	1	26	2.2	14.0
D25	2	4	11	4	3	4	3	3	2	6	3	6	51	4.3	7.2
LOWER DELAWARE LOW LEVEL												32 UNITS			
TOTAL	135	133	138	152	96	169	109	79	130	137	109	130	1517	4.0	7.7
D37	5	3	7	5	4	5	4	2	2	4	3	3	47	3.9	7.8
D38	5	4	5	5	4	4	3	2	2	4	3	4	45	3.8	8.1
D39	4	3	6	4	3	4	4	2	2	4	3	4	43	3.6	8.5
D40	4	3	4	4	3	5	5	2	2	5	3	5	45	3.8	8.1
D41	4	3	4	4	3	5	4	2	3	4	3	4	43	3.6	8.5
D42	4	3	5	5	3	6	4	2	3	3	3	3	44	3.7	8.3
D43	4	2	5	4	3	6	4	2	3	3	3	3	42	3.5	8.7
D44	4	2	5	4	3	6	3	2	3	3	3	3	41	3.4	8.9
D45	5	3	[illegible]	6	3	5	5	2	4	5	3	3	49	4.1	7.4
D46	3	6	4	6	3	4	4	2	4	5	4	3	48	4.0	7.6
D47	4	6	3	6	3	5	4	2	4	5	3	3	48	4.0	7.6
D48	1	6	3	6	1	3	3	2	4	6	5	4	44	3.7	8.3
D49	5	5	5	6	2	4	4	2	4	5	4	4	50	4.2	7.3
D50	4	4	5	6	2	5	3	2	4	4	4	4	47	3.9	7.8
D51	3	4	4	6	2	7	2	3	4	4	2	5	46	3.8	7.9
D52	5	3	4	6	3	7	3	5	4	5	3	5	53	4.4	6.9
D53	5	5	3	5	4	2	3	2	4	4	3	4	44	3.7	8.3
D54	4	5	4	4	4	5	3	3	4	4	3	5	48	4.0	7.6
D58	6	6	4	6	4	5	5	4	5	4	3	6	58	4.8	6.3
D61	3	7	3	5	4	7	4	3	5	4	5	3	53	4.4	6.9
D62	3	6	4	5	3	7	3	3	5	4	3	3	49	4.1	7.4
D63	[illegible]	6	4	5	3	4	3	3	5	4	3	3	46	3.8	7.9
D64	3	4	4	4	3	5	3	2	5	4	3	4	44	3.7	8.3
D65	3	4	4	4	3	5	3	2	5	4	4	5	45	3.8	8.1
D66	3	4	4	4	3	5	3	2	5	6	5	5	49	4.1	7.4
D67	5	5	3	4	3	6	3	2	5	4	4	4	48	4.0	7.6
D68	5	5	4	4	2	6	4	2	5	4	5	4	51	4.3	7.2
D69	4	4	4	4	3	6	3	3	5	4	5	5	53	4.4	6.9
D70	4	3	5	4	4	6	3	3	5	5	2	5	49	4.1	7.4
D71	3	3	5	4	3	6	2	3	5	4	2	5	50	4.2	7.3
D72	5	3	5	4	3	5	2	3	5	5	4	5	52	4.3	7.0
D73	5	3	4	3	2	5	3	3	5	4	2	4	43	3.6	8.5
[illegible]	235	278	424	325	203	360	250	241	260	282	244	315	3477		
[illegible]	4.6	4.6	7.0	5.3	3.3	5.9	4.1	4.0	4.3	4.6	4.0	5.2			
[illegible]	2	2	2	2	[illegible]										

23 TOTAL DISCHARGES TO DATE IN NE & SE DISTRICTS

[illegible] AVERAGE DISCHARGES PER MONTH

[illegible] AVER. DAYS BEFORE RETURNING TO SITE

4.8 AVER. INSPECTIONS PER DAY PER CREW

IDC = INSPECTIONS PER DAY PER CREW DTR = DAYS TO RETURN TO SITE

[illegible] = INSPECTIONS PER DISCHARGE

FY97 REGULATING CHAMBER YEARLY DISCHARGE TOTALS NEWPC & SEWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK												5 UNITS	
TOTAL	1	0	0	1	0	0	0	0	0	0	0	0	2
P01													0
P02	1												1
P03													0
P04				1									1
P05													0
UPPER DELAWARE LOW LEVEL												12 UNITS	
TOTAL	0	2	0	0	0	1	1	0	1	1	1	1	8
D02		1					1		1	1			4
D03												1	1
D04		1									1		2
D05													0
D06													0
D07						1							1
D08													0
D09													0
D11													0
D12													0
D13													0
D15													0
LOWER FRANKFORD CREEK												6 UNITS	
TOTAL	0	1	0	0	0	0	0	0	0	0	1	0	2
F13													0
F14													0
F21													0
F23													0
F24											1		1
F25		1											1
LOWER FRANKFORD LOW LEVEL												10 UNITS	
TOTAL	0	1	0	0	0	0	1	1	0	0	0	0	3
F03													0
F04													0
F05													0
F06													0
F07													0
F08													0
F09							1	1					2
F10													0
F11													0
F12		1											1
FRANKFORD HIGH LEVEL												14 UNITS	
TOTAL	0	0	0	0	1	2	0	0	0	0	0	0	3
T01													0
T03													0
T04													0
T05													0
T06													0
T07													0
T08													0
T09													0
T10					1	1							2
T11						1							1
T12													0
T13													0
T14													0
T15													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL												9 UNITS	
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
D17													0
D18													0
D19													0
D20													0
D21													0
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL												32 UNITS	
TOTAL	0	0	1	0	0	1	1	0	0	2	0	0	5
D37													0
D38													0
D39													0
D40													0
D41													0
D42													0
D43													0
D44													0
D45													0
D46													0
D47													0
D48													0
D49													0
D50													0
D51			1				1	1			1		4
D52													0
D53													0
D54													0
D58													0
D61													0
D62													0
D63													0
D64													0
D65													0
D66											1		1
D67													0
D68													0
D69													0
D70													0
D71													0
D72													0
D73													0
TOTAL	1	4	1	1	1	4	3	1	1	3	2	1	23

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	1	0	0	1	0	0	0	0	0	0	0	0	2
UDLL	0	2	0	0	0	1	1	0	1	1	1	1	8
LFC	0	1	0	0	0	0	0	0	0	0	1	0	2
LFLL	0	1	0	0	0	0	1	1	0	0	0	0	3
FHL	0	0	0	0	1	2	0	0	0	0	0	0	3
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
DLL	0	0	1	0	0	1	1	0	0	2	0	0	5

FY97 REGULATING CHAMBER MONTHLY INSPECTION TOTALS SWWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE										18 UNITS					
TOTAL	83	65	89	92	105	109	75	59	63	59	39	66	904	4.2	7.4
S05	6	3	6	7	7	6	4	5	5	3	3	7	62	5.2	5.9
S06	6	3	6	5	6	5	4	4	4	3	2	7	55	4.6	6.6
S07	7	3	5	5	6	5	4	4	4	3	2	6	54	4.5	6.8
S08	6	3	5	6	6	6	4	4	4	3	2	6	55	4.6	6.6
S09	5	3	5	6	6	6	4	4	4	3	2	6	54	4.5	6.8
S10	4	4	5	5	6	6	4	3	2	3	2	3	47	3.9	7.8
S12	4	4	5	5	6	5	4	3	4	3	4	5	52	4.3	7.0
S12A	4	4	5	5	6	7	4	3	4	3	2	5	52	4.3	7.0
S13	4	3	3	4	5	6	4	3	3	3	1	5	44	3.7	8.3
S15	4	4	5	5	7	7	4	3	3	3	2	3	50	4.2	7.3
S16	4	4	6	5	8	8	4	3	3	3	2	3	53	4.4	6.9
S17	5	4	5	4	7	7	4	3	4	3	2	2	50	4.2	7.3
S18	6	4	8	5	6	7	4	4	3	3	2	2	54	4.5	6.8
S19	6	4	6	5	6	7	6	3	3	3	2	2	53	4.4	6.9
S21	3	3	4	4	5	6	5	3	2	3	2	1	41	3.4	8.9
S23	3	4	4	5	4	6	4	3	2	3	2	1	41	3.4	8.9
S25	3	4	3	5	4	4	4	2	7	9	3	1	49	4.1	7.4
S26	3	4	3	6	4	5	4	2	2	2	2	1	38	3.2	9.6
LOWER SCHUYLKILL EAST SIDE										9 UNITS					
TOTAL	45	35	32	29	36	22	33	28	26	14	19	24	343	3.2	9.7
S31	5	5	3	4	5	3	3	3	4	2	2	5	44	3.7	8.3
S35	5	4	3	3	5	3	5	4	4	2	2	4	44	3.7	8.3
S36	6	3	3	3	4	3	4	3	3	3	4	3	42	3.5	8.7
S36A	4	4	3	3	4	3	4	3	3	1	2	3	37	3.1	9.9
S37	5	4	4	4	4	2	3	3	1	1	2	3	36	3.0	10.1
S42	5	3	4	3	3	2	3	3	3	1	2	1	33	2.8	11.1
S42A	5	4	5	3	3	2	5	3	3	1	2	1	37	3.1	9.9
S44	7	5	4	4	4	2	3	3	1	2	2	3	40	3.3	9.1
S46	3	3	3	2	4	2	3	3	4	1	1	1	30	2.5	12.2
CENTRAL SCHUYLKILL WEST										9 UNITS					
TOTAL	41	71	33	54	55	64	43	42	50	38	15	29	535	5.0	6.4
S01	5	8	3	9	9	8	5	5	5	4	2	4	67	5.6	5.4
S02	8	14	3	9	7	8	5	5	5	4	2	4	74	6.2	4.9
S03	6	15	4	7	7	8	6	5	5	5	3	4	73	6.1	5.0
S04	8	9	6	7	7	8	6	5	5	5	3	4	73	6.1	5.0
S11	2	5	4	4	6	6	4	4	8	9	1	4	57	4.8	6.4
S14	2	5	3	5	5	7	5	4	5	3	2	3	49	4.1	7.4
S20	2	3	3	5	5	5	3	4	5	3	1	2	41	3.4	8.9
S22	4	5	3	4	5	7	4	5	6	3	1	2	49	4.1	7.4
S24	4	7	4	4	4	7	6	5	6	3	1	2	53	4.4	6.9
SOUTHWEST MAIN GRAVITY										10 UNITS					
TOTAL	48	51	37	35	48	67	58	51	53	26	30	41	545	4.5	8.1
S27	3	4	5	1	5	7	5	6	6	3	2	3	50	4.2	7.3
S28	3	3	4	1	5	6	4	6	4	2	2	3	43	3.6	8.5
S30	3	4	3	1	3	5	5	4	5	2	3	3	41	3.4	8.9
S34	4	4	3	1	5	5	6	5	4	2	2	3	44	3.7	9.3
S39	7	4	3	2	4	4	6	3	4	2	2	2	43	3.6	8.5
S40	2	0	2	0	0	4	6	2	5	1	1	4	27	2.3	13.5
S43	3	4	3	3	4	4	5	3	4	1	1	3	38	3.2	9.6
S47	3	4	5	2	4	4	5	3	4	1	1	3	39	3.3	9.4
S50	11	13	5	12	9	14	8	10	10	8	11	11	122	10.2	3.0
S51	9	11	4	12	9	14	8	9	7	4	5	6	98	8.2	3.7
LOWER SCHUYLKILL WEST SIDE										4 UNITS					
TOTAL	38	48	19	19	25	23	30	26	24	12	15	18	297	6.2	5.0
S32	9	11	4	5	5	7	8	8	7	3	3	6	76	6.3	4.8
S33	9	10	5	5	8	6	8	8	7	3	2	6	77	6.4	4.7
S38	11	18	6	5	6	5	8	5	4	3	7	5	83	6.9	4.4
S45	9	9	4	4	6	5	6	5	6	3	3	1	61	5.1	6.0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL										23 UNITS					
TOTAL	97	57	71	48	78	36	52	35	46	68	44	29	661	2.4	12.8
C01	6	4	3	3	4	2	2	1	2	4	2	1	34	2.8	10.7
C02	4	4	3	3	4	2	2	1	2	4	2	1	32	2.7	11.4
C04	3	2	2	2	4	2	2	2	2	5	1	1	28	2.3	13.0
C04A	3	2	2	2	4	2	2	1	2	3	3	3	28	2.3	13.0
C05	2	2	2	2	4	2	2	1	2	5	1	1	26	2.2	14.0
C06	3	2	2	2	4	2	2	2	2	5	1	1	28	2.3	13.0
C07	3	2	2	1	4	1	2	1	2	4	3	1	26	2.2	14.0
C09	6	4	3	1	4	1	2	1	2	4	3	1	32	2.7	11.4
C10	4	3	2	1	4	1	2	1	2	3	1	1	25	2.1	14.6
C11	4	3	2	1	4	1	2	1	2	2	1	1	24	2.0	15.2
C12	4	2	2	1	4	1	2	1	2	3	1	1	24	2.0	15.2
C13	4	2	3	1	4	1	2	2	2	4	1	3	29	2.4	12.6
C14	8	3	4	2	3	1	3	2	2	1	2	1	32	2.7	11.4
C15	6	2	4	2	2	1	3	2	2	1	2	1	28	2.3	13.0
C16	6	2	4	2	2	1	3	2	2	2	2	1	29	2.4	12.6
C17	4	1	3	1	2	1	3	2	2	1	2	2	24	2.0	15.2
C31	4	2	4	3	3	2	3	2	2	2	1	1	29	2.4	12.6
C32	4	2	3	3	3	2	3	1	2	2	4	2	31	2.6	11.8
C33	4	2	5	3	3	2	2	2	2	2	1	1	29	2.4	12.6
C34	4	2	5	3	3	2	2	2	2	3	2	1	31	2.6	11.8
C35	6	4	4	3	3	2	2	2	2	3	1	1	33	2.8	11.1
C36	2	2	4	3	3	2	2	2	2	3	4	1	30	2.5	12.2
C37	4	3	3	3	3	2	2	1	2	2	3	1	29	2.4	12.6
COBBS CREEK LOW LEVEL										13 UNITS					
TOTAL	69	21	42	32	28	14	30	18	33	28	22	18	355	2.3	13.6
C18	6	2	3	4	3	1	2	2	2	1	2	1	29	2.4	12.6
C19	7	2	4	4	2	1	3	1	3	3	1	2	33	2.8	11.1
C20	5	2	4	3	2	1	3	1	3	4	1	2	31	2.6	11.8
C21	4	2	4	3	2	1	3	1	3	3	1	1	28	2.3	13.0
C22	4	2	4	2	2	1	2	1	3	1	1	1	24	2.0	15.2
C23	6	2	3	2	2	1	2	1	2	2	1	1	25	2.1	14.6
C24	6	2	3	2	2	1	2	1	3	3	2	1	28	2.3	13.0
C25	7	2	4	2	2	1	2	1	3	1	4	1	30	2.5	12.2
C26	6	1	4	2	2	1	2	1	3	3	2	1	28	2.3	13.0
C27	5	1	3	2	3	1	2	1	2	2	2	2	26	2.2	14.0
C28A	4	1	1	2	2	2	3	3	2	3	3	3	29	2.4	12.6
C29	4	1	2	2	2	1	2	2	2	1	1	1	21	1.8	17.4
C30	5	1	3	2	2	1	2	2	2	1	1	1	23	1.9	15.9
TOTAL	421	348	323	309	375	335	321	259	295	245	184	225	3640		
D/C	4.6	3.8	3.5	3.4	4.1	3.7	3.5	2.8	3.2	2.7	2.0	2.5			
	3	3	3	3	3	3	3								

71 TOTAL DISCHARGES TO DATE IN SW DISTRICT

5.9 AVERAGE DISCHARGES PER MONTH

10.6 AVER DAYS BEFORE RETURNING TO SITE

3.3 AVER INSPECTIONS PER DAY PER CREW

D/C = INSPECTIONS PER DAY PER CREW DTR = DAYS TO RETURN TO SITE

FY97 REGULATING CHAMBER YEARLY DISCHARGE TOTALS SWWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS													
TOTAL	0	2	2	4	0	0	0	0	0	0	1	3	12
S05		1	1	2							1	1	6
S06												1	1
S07													0
S08		1										1	2
S09													0
S10													0
S12				1									1
S12A				1									1
S13													0
S15													0
S16													0
S17													0
S18													0
S19													0
S21													0
S23			1										1
S25													0
S26													0
LOWER SCHUYLKILL EAST SIDE — 9 UNITS													
TOTAL	0	1	1	0	0	0	1	0	0	0	0	1	4
S31												1	1
S35													0
S36													0
S36A													0
S37							1						1
S42													0
S42A		1	1										2
S44													0
S46													0
CENTRAL SCHUYLKILL WEST — 9 UNITS													
TOTAL	8	10	1	0	1	0	0	0	0	1	0	0	21
S01													0
S02	7	9											16
S03		1											1
S04	1		1		1								3
S11													0
S14													0
S20										1			1
S22													0
S24													0
SOUTHWEST MAIN GRAVITY — 10 UNITS													
TOTAL	0	1	0	0	0	2	0	2	0	0	0	1	6
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50		1				2		2				1	6
S51													0
LOWER SCHUYLKILL WEST SIDE — 4 UNITS													
TOTAL	3	12	2	0	0	0	0	0	0	0	0	1	18
S32													0
S33	2	1											3
S38	1	10	2										13
S45		1										1	2

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL — 23 UNITS													
TOTAL	2	2	0	0	0	2	0	1	0	2	0	0	9
C01													0
C02													0
C04													0
C04A													0
C05													0
C06								1					1
C07													0
C09	1												1
C10													0
C11													0
C12													0
C13		1								2			3
C14	1	1											2
C15													0
C16						1							1
C17													0
C31													0
C32						1							1
C33													0
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL — 13 UNITS													
TOTAL	0	0	0	0	0	0	0	0	0	0	0	1	1
C18													0
C19												1	1
C20													0
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	13	28	6	4	1	4	1	3	0	3	1	7	71

NO OF UNITS IN DISTRICT BLOCKED

CSE	0	2	2	3	0	0	0	0	0	0	1	3	11
LSE	0	1	1	0	0	0	1	0	0	0	0	1	4
CSW	2	2	1	0	1	0	0	0	0	1	0	0	7
SWG	0	1	0	0	0	1	0	1	0	0	0	1	4
LSW	2	3	1	0	0	0	0	0	0	0	0	1	7
CCHL	2	2	0	0	0	2	0	1	0	1	0	0	8
CCLL	0	0	0	0	0	0	0	0	0	0	0	1	1

FY97 RELIEF SEWER MONTHLY INSPECTION TOTALS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER 6 UNITS													
R1	1	1	2	2	1	1	2	2	1	1	1	1	16
R2	1	1	1	2	1	1	2	2	1	1	1	1	15
R3	1	1	1	2	1	1	2	2	1	1	1	1	15
R4	1	1	1	2	1	1	2	2	1	1	1	1	15
R5	1	1	1	2	1	1	2	2	1	1	1	1	15
R6	1	1	1	2	1	1	2	2	1	1	1	1	15
MAIN RELIEF SEWER 6 UNITS													
R7	1	1	1	2	1	1	2	2	1	1	1	1	15
R8	1	1	1	2	1	1	2	2	1	1	1	1	15
R9	1	1	1	2	1	1	2	2	1	1	1	1	15
R10	1	1	1	2	1	1	2	2	1	1	1	1	15
R11	1	1	1	2	1	1	2	2	1	1	1	1	15
R12	1	1	1	2	1	1	2	2	1	1	1	1	15
WAKLING RELIEF SEWER 2 UNITS													
R13	1	1	1	1	1	1	2	1	3	2	1	1	16
R14	1	1	1	2	1	1	2	1	3	2	1	1	17
ROCK RUN STORM FLOOD RELIEF SEWER 1 UNITS													
R15	1	4	1	1	1	2	2	1	3	1	1	1	19
OREGON AVE RELIEF SEWER 2 UNITS													
R16	1	1	1	1	1	1	1	1	2	1	1	0	12
R17	3	4	5	4	3	3	3	4	4	4	3	1	41
FRANKFORD HIGH LEVEL RELIEF SEWER 1 UNITS													
R18	1	1	1	1	1	3	2	1	2	4	1	1	19
32ND ST RELIEF SEWER 1 UNITS													
R19	2	1	1	1	1	1	2	1	1	2	1	1	15
MAIN STREET RELIEF SEWER 1 UNITS													
R20	2	1	1	1	1	1	2	1	4	1	1	1	17
SOMERSET SYSTEM DIVERSION CHAMBE 1 UNITS													
R21	2	1	1	1	1	2	2	1	2	2	1	1	17
TEMPORARY REGULATOR CHAMBER 2 UNITS													
R22	2	1	1	1	1	2	2	1	4	1	1	1	18
R23	2	1	1	1	1	2	2	1	4	2	1	1	19
ARCH ST RELIEF SEWER 1 UNITS													
R24	0	1	1	2	1	1	2	2	1	1	1	1	14
GRANT & STATE RD. RELIEF 1 UNITS													
R26	1	6	6	4	1	3	3	1	3	4	1	1	34
TOTAL	31	36	35	45	27	35	51	41	48	39	27	24	439
AVER	1.2	1.4	1.4	1.8	1.1	1.4	2.0	1.6	1.9	1.6	1.1	1.0	1.5

FY97 RELIEF SEWER MONTHLY DISCHARGE TOTALS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER 6 UNITS													
R1													0
R2													0
R3	1												1
R4													0
R5													0
R6													0
MAIN RELIEF SEWER 6 UNITS													
R7													0
R8													0
R9													0
R10													0
R11													0
R12													0
WAKLING RELIEF SEWER 2 UNITS													
R13													0
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER 1 UNITS													
R15													0
OREGON AVE RELIEF SEWER 2 UNITS													
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER 1 UNITS													
R18								1					1
32ND ST RELIEF SEWER 1 UNITS													
R19													0
MAIN STREET RELIEF SEWER 1 UNITS													
R20													0
SOMERSET SYSTEM DIVERSION CHAMBE 1 UNITS													
R21													0
TEMPORARY REGULATOR CHAMBER 2 UNITS													
R22								1					1
R23													0
ARCH ST RELIEF SEWER 2 UNITS													
R24													0
GRANT & STATE RD. RELIEF 1 UNITS													
R26													0
TOTAL	1	0	0	0	0	1	0	0	1	0	0	0	3
UNITS	1	0	0	0	0	1	0	0	1	0	0	0	

FY97 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
	6	7	6	4	2	3	3	1	3	3	3	1	42
SOMERSET GRIT LEVEL													
	2	3	11	2	3	1	3	3	1	5	1	5	40
16TH & SNYDER													
	1	1	2	3	1	1	2	2	1	1	1	1	17

FY97 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NANDINA ST													
	4	7	7	4	3	3	3	1	3	3	3	1	42
UPPER DARBY OVERFLOW													
	2	3	1	3	1	1	2	2	1	1	1	1	19
O & ERIE diversion gate													
	-	-	-	-	-	-	-	4	1	-	-	-	5

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JANUARY 1998

COLLECTOR	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	Apr-98	May-98	Jun-98	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	23	15	35	24	30	38	28	0	0	0	0	0	193
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	60	33	30	44	63	70	79	0	0	0	0	0	379
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	18	6	18	12	24	37	35	0	0	0	0	0	150
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	21	23	36	26	42	61	58	0	0	0	0	0	267
DISCHARGES	0	1	0	0	0	0	0	0	0	0	0	0	1
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	51	32	47	50	53	84	108	0	0	0	0	0	425
DISCHARGES	2	0	1	0	0	0	2	0	0	0	0	0	5
SOMERSET - 9 UNITS													
INSPECTIONS	29	20	27	26	48	76	59	0	0	0	0	0	285
DISCHARGES	2	0	0	0	0	0	0	0	0	0	0	0	2
LOWER DELAWARE LOW LEVEL - 32 UNITS													
INSPECTIONS	140	99	135	157	146	212	178	0	0	0	0	0	1067
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	67	85	83	89	88	102	143	0	0	0	0	0	657
DISCHARGES	0	0	2	0	1	0	0	0	0	0	0	0	3
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	21	31	46	21	31	77	41	0	0	0	0	0	268
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	27	46	43	42	42	34	54	0	0	0	0	0	288
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	30	45	56	50	54	85	92	0	0	0	0	0	412
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	18	26	28	17	41	55	38	0	0	0	0	0	223
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	46	26	45	89	50	155	134	0	0	0	0	0	545
DISCHARGES	2	0	0	0	0	0	0	0	0	0	0	0	2
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	33	26	23	58	17	73	85	0	0	0	0	0	315
DISCHARGES	1	0	0	0	1	1	0	0	0	0	0	0	3
RELIEF SEWERS - 25 UNITS													
INSPECTIONS	50	34	28	56	70	77	78	0	0	0	0	0	393
DISCHARGES	0	0	1	0	0	0	1	0	0	0	0	0	2
199 CSO UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	634	547	680	761	799	1236	1210	0	0	0	0	0	5867
DISCHARGES	8	1	4	0	4	1	3	0	0	0	0	0	21
DISC / 100 INSPECTIONS	1.3	0.2	0.6	0.0	0.5	0.1	0.2						

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK												**5 UNITS**			
TOTAL	23	15	35	24	30	38	28	0	0	0	0	0	193	5.5	5.5
P01	5	3	6	5	6	7	4						36	5.1	5.9
P02	4	3	8	5	6	8	4						38	5.4	5.6
P03	6	4	7	5	6	7	7						42	6.0	5.1
P04	5	2	8	5	6	8	7						41	5.9	5.2
P05	3	3	6	4	6	8	6						36	5.1	5.9
UPPER DELAWARE LOW LEVEL												**12 UNITS**			
TOTAL	60	33	30	44	63	70	79	0	0	0	0	0	379	4.5	7.2
D02	4	2	3	4	4	7	6						30	4.3	7.1
D03	5	3	4	6	4	7	7						36	5.1	5.9
D04	4	6	6	6	8	8	8						46	6.6	4.6
D05	7	3	1	4	5	7	6						33	4.7	6.4
D06	8	3	2	4	7	7	8						39	5.6	5.5
D07	5	4	2	3	5	5	7						31	4.4	6.9
D08	7	2	2	4	5	5	9						34	4.9	6.3
D09	3	2	3	3	5	6	5						27	3.9	7.9
D11	6	2	2	3	5	7	7						32	4.6	6.7
D12	5	2	1	3	5	3	7						26	3.7	8.2
D13	3	1	1	2	5	1	3						16	2.3	13.3
D15	3	3	3	2	5	7	6						29	4.1	7.3
LOWER FRANKFORD CREEK												**6 UNITS**			
TOTAL	18	6	18	12	24	37	35	0	0	0	0	0	150	3.6	8.6
F13	3	1	4	2	4	7	5						26	3.7	8.2
F14	3	1	4	2	4	7	6						27	3.9	7.9
F21	3	1	2	2	4	4	4						20	2.9	10.6
F23	3	1	4	2	4	7	7						28	4.0	7.6
F24	3	1	3	2	4	7	7						27	3.9	7.9
F25	3	1	1	2	4	5	6						22	3.1	9.7
LOWER FRANKFORD LOW LEVEL												**10 UNITS**			
TOTAL	21	23	36	26	42	61	58	0	0	0	0	0	267	3.8	8.1
F03	3	2	1	3	6	8	6						29	4.1	7.3
F04	3	2	1	3	5	6	6						26	3.7	8.2
F05	2	1	2	3	4	6	5						23	3.3	9.3
F06	2	4	5	2	4	5	6						28	4.0	7.6
F07	2	3	4	2	2	6	6						25	3.6	8.5
F08	2	3	4	2	5	7	7						30	4.3	7.1
F09	2	2	6	3	3	8	6						30	4.3	7.1
F10	2	2	4	3	5	7	6						29	4.1	7.3
F11	1	2	4	3	3	2	4						19	2.7	11.2
F12	2	2	5	2	5	6	6						28	4.0	7.6
FRANKFORD HIGH LEVEL												**14 UNITS**			
TOTAL	51	32	47	50	53	84	108	0	0	0	0	0	425	4.3	7.1
T01	4	3	1	4	5	5	6						28	4.0	7.6
T03	4	3	4	3	3	6	7						30	4.3	7.1
T04	5	4	3	4	6	7	7						36	5.1	5.9
T05	3	1	5	3	3	7	7						29	4.1	7.3
T06	3	1	4	4	4	7	7						30	4.3	7.1
T07	4	2	4	3	3	8	7						31	4.4	6.9
T08	4	1	3	3	4	8	6						29	4.1	7.3
T09	4	3	3	3	3	6	7						29	4.1	7.3
T10	2	3	4	3	3	4	8						27	3.9	7.9
T11	5	3	5	4	3	5	10						35	5.0	6.1
T12	3	2	3	3	5	6	9						31	4.4	6.9
T13	4	2	1	5	3	2	12						29	4.1	7.3
T14	3	2	4	5	5	6	8						33	4.7	6.4
T15	3	2	3	3	3	7	7						28	4.0	7.6

I/D/C = INSPECTIONS PER DAY PER CREW DTR = DAYS TO RETURN TO SITE

I/D =INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL												**9 UNITS**			
TOTAL	29	20	27	26	48	76	59	0	0	0	0	0	285	4.5	7.0
D17	3	1	2	4	5	9	8						32	4.6	6.7
D18	3	1	2	5	5	4	9						29	4.1	7.3
D19	3	1	3	3	5	11	7						33	4.7	6.4
D20	5	3	4	4	5	11	7						40	5.7	5.3
D21	4	4	4	3	4	10	6						35	5.0	6.1
D22	3	2	3	1	4	9	5						28	4.0	7.6
D23	2	2	2	2	6	3	2						19	2.7	11.2
D24	2	2	3	2	6	8	6						29	4.1	7.3
D25	3	4	4	2	8	11	8						40	5.7	5.3
LOWER DELAWARE LOW LEVEL												**32 UNITS**			
TOTAL	140	99	135	157	146	212	178	0	0	0	0	0	1067	4.8	6.5
D37	6	3	6	5	7	10	7						44	6.3	4.8
D38	5	1	4	4	5	8	8						36	5.1	5.9
D39	7	2	4	4	5	8	7						37	5.3	5.8
D40	6	2	4	4	4	8	7						35	5.0	6.1
D41	6	2	3	5	5	8	6						35	5.0	6.1
D42	6	2	4	5	2	3	5						27	3.9	7.9
D43	6	2	4	5	2	3	6						28	4.0	7.6
D44	6	2	4	6	3	7	7						35	5.0	6.1
D45	6	2	4	7	6	10	6						41	5.9	5.2
D46	5	1	5	6	4	9	5						35	5.0	6.1
D47	4	1	5	6	6	9	6						37	5.3	5.8
D48	4	2	3	8	5	9	6						37	5.3	5.8
D49	4	2	5	9	5	6	3						34	4.9	6.3
D50	4	2	5	6	5	5	3						30	4.3	7.1
D51	4	3	6	5	3	8	8						37	5.3	5.8
D52	3	6	7	6	4	5	4						35	5.0	6.1
D53	4	3	5	4	5	12	7						40	5.7	5.3
D54	3	4	5	4	5	3	5						29	4.1	7.3
D58	2	3	4	5	5	2	3						24	3.4	8.9
D61	2	5	4	5	8	9	7						40	5.7	5.3
D62	2	4	3	4	5	9	7						34	4.9	6.3
D63	3	3	4	4	5	8	6						33	4.7	6.4
D64	3	5	4	4	4	9	6						35	5.0	6.1
D65	3	4	6	4	3	2	5						27	3.9	7.9
D66	4	3	4	6	5	8	7						37	5.3	5.8
D67	4	5	2	4	6	4	5						30	4.3	7.1
D68	4	4	3	3	5	7	7						33	4.7	6.4
D69	5	4	2	3	3	3	3						23	3.3	9.3
D70	6	4	3	4	4	4	3						28	4.0	7.6
D71	4	4	4	3	4	4	3						26	3.7	8.2
D72	4	4	4	5	5	3	4						29	4.1	7.3
D73	4	5	5	4	3	9	6						36	5.1	5.9
TOTAL	342	228	328	339	406	578	545	0	0	0	0	0	2766		
I/D/C	5.6	3.7	5.4	5.6	6.7	9.5	9.0	0.0	0.0	0.0	0.0	0.0			

9 TOTAL DISCHARGES FOR PRIOR YEAR IN NE & SE DISTRICTS

1.3 AVERAGE DISCHARGES PER MONTH

11.7 AVER. DAYS BEFORE RETURNING TO SITE

6.5 AVER. INSPECTIONS PER DAY PER CREW

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK												**5 UNITS**	
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
P01													0
P02													0
P03													0
P04													0
P05													0
UPPER DELAWARE LOW LEVEL												**12 UNITS**	
TOTAL	1	0	0	0	0	0	0	0	0	0	0	0	1
D02													0
D03													0
D04													0
D05													0
D06													0
D07													0
D08													0
D09													0
D11													0
D12	1												1
D13													0
D15													0
LOWER FRANKFORD CREEK												**6 UNITS**	
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
F13													0
F14													0
F21													0
F23													0
F24													0
F25													0
LOWER FRANKFORD LOW LEVEL												**10 UNITS**	
TOTAL	0	1	0	0	0	0	0	0	0	0	0	0	1
F03													0
F04													0
F05													0
F06													0
F07													0
F08													0
F09													0
F10													0
F11		1											1
F12													0
FRANKFORD HIGH LEVEL												**14 UNITS**	
TOTAL	2	0	1	0	0	0	2	0	0	0	0	0	5
T01													0
T03													0
T04													0
T05													0
T06													0
T07													0
T08													0
T09													0
T10													0
T11	1						1						2
T12													0
T13	1		1				1						3
T14													0
T15													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL												**9 UNITS**	
TOTAL	2	0	0	0	0	0	0	0	0	0	0	0	2
D17													0
D18													0
D19													0
D20	1												1
D21	1												1
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL												**32 UNITS**	
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
D37													0
D38													0
D39													0
D40													0
D41													0
D42													0
D43													0
D44													0
D45													0
D46													0
D47													0
D48													0
D49													0
D50													0
D51													0
D52													0
D53													0
D54													0
D58													0
D61													0
D62													0
D63													0
D64													0
D65													0
D66													0
D67													0
D68													0
D69													0
D70													0
D71													0
D72													0
D73													0
TOTAL	5	1	1	0	0	0	2	0	0	0	0	0	9

NO OF UNITS IN DISTRICT BLOCKED													TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	0	0
UDLL	1	0	0	0	0	0	0	0	0	0	0	0	1
LFC	0	0	0	0	0	0	0	0	0	0	0	0	0
LFLL	0	1	0	0	0	0	0	0	0	0	0	0	1
FHL	2	0	1	0	0	0	2	0	0	0	0	0	5
SLL	2	0	0	0	0	0	0	0	0	0	0	0	2
LDLL	0	0	0	0	0	0	0	0	0	0	0	0	0

CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
TOTAL	67	85	83	89	88	102	143	0	0	0	0	0	657	5.2	6.0
S05	5	8	7	6	8	6	9						49	7.0	4.3
S06	5	8	7	6	6	8	9						49	7.0	4.3
S07	5	8	6	6	6	6	9						46	6.6	4.6
S08	5	7	6	5	4	4	8						39	5.6	5.5
S09	5	6	5	5	6	5	8						40	5.7	5.3
S10	4	4	5	5	6	4	8						36	5.1	5.9
S12	4	6	5	5	6	4	8						38	5.4	5.6
S12A	4	6	4	4	6	4	8						36	5.1	5.9
S13	4	4	4	4	5	4	7						32	4.6	6.7
S15	3	4	4	5	5	4	9						34	4.9	6.3
S16	3	4	4	5	3	3	8						30	4.3	7.1
S17	3	3	4	5	3	4	6						28	4.0	7.6
S18	3	2	4	5	4	5	5						28	4.0	7.6
S19	3	4	4	6	4	4	8						33	4.7	6.4
S21	3	2	4	5	4	10	9						37	5.3	5.8
S23	3	2	3	4	4	9	8						33	4.7	6.4
S25	3	4	4	4	4	10	8						37	5.3	5.8
S26	2	3	3	4	4	8	8						32	4.6	6.7

LOWER SCHUYLKILL EAST SIDE — 9 UNITS

TOTAL	21	31	46	21	31	77	41	0	0	0	0	0	268	4.3	7.3
S31	3	6	6	3	4	10	6						38	5.4	5.6
S35	4	3	6	2	4	9	6						34	4.9	6.3
S36	2	2	5	2	4	6	5						26	3.7	8.2
S36A	2	3	5	2	4	7	5						28	4.0	7.6
S37	2	3	5	2	3	5	4						24	3.4	8.9
S42	2	4	5	3	3	12	3						32	4.6	6.7
S42A	2	4	4	3	3	12	4						32	4.6	6.7
S44	2	3	5	2	3	6	3						24	3.4	8.9
S46	2	3	5	2	3	10	5						30	4.3	7.1

CENTRAL SCHUYLKILL WEST — 9 UNITS

TOTAL	27	46	43	42	42	34	54	0	0	0	0	0	288	4.6	6.7
S01	3	5	5	5	5	3	5						31	4.4	6.9
S02	3	5	5	5	5	3	5						31	4.4	6.9
S03	3	5	5	5	5	3	5						31	4.4	6.9
S04	3	7	5	6	6	4	8						39	5.6	5.5
S11	3	5	4	5	5	7	8						37	5.3	5.8
S14	3	7	4	4	5	4	5						32	4.6	6.7
S20	3	4	4	4	3	4	6						28	4.0	7.6
S22	3	4	5	4	4	3	6						29	4.1	7.3
S24	3	4	6	4	4	3	6						30	4.3	7.1

SOUTHWEST MAIN GRAVITY — 10 UNITS

TOTAL	30	45	56	50	54	85	92	0	0	0	0	0	412	5.9	6.2
S27	1	4	5	5	5	10	9						39	5.6	5.5
S28	1	3	4	5	4	9	9						35	5.0	6.1
S30	1	3	4	4	3	9	8						32	4.6	6.7
S34	1	2	4	3	3	8	8						29	4.1	7.3
S39	2	2	4	3	3	8	10						32	4.6	6.7
S40	2	3	3	4	3	2	6						23	3.3	9.3
S43	2	3	3	3	2	8	7						28	4.0	7.6
S47	1	2	3	3	2	7	8						26	3.7	8.2
S50	11	15	16	10	15	13	15						95	13.6	2.2
S51	8	8	10	10	14	11	12						73	10.4	2.9

LOWER SCHUYLKILL WEST SIDE — 4 UNITS

TOTAL	18	26	28	17	41	55	38	0	0	0	0	0	223	8.0	3.8
S32	5	6	7	5	10	14	10						57	8.1	3.7
S33	5	6	8	5	10	14	10						58	8.3	3.7
S38	4	8	6	5	11	15	11						60	8.6	3.5
S45	4	6	7	2	10	12	7						48	6.9	4.4

COBBS CREEK HIGH LEVEL — 23 UNITS

TOTAL	46	26	45	89	50	155	134	0	0	0	0	0	545	3.4	9.5
C01	2	2	2	4	2	6	5						23	3.3	9.3
C02	2	2	2	3	2	6	5						22	3.1	9.7
C04	2	1	2	3	2	5	5						20	2.9	10.6
C04A	2	1	2	3	2	5	4						19	2.7	11.2
C05	2	1	2	3	2	4	4						18	2.6	11.8
C06	2	1	2	3	2	4	4						18	2.6	11.8
C07	2	1	3	3	2	4	4						19	2.7	11.2
C09	2	1	2	3	2	4	4						18	2.6	11.8
C10	2	1	2	3	2	9	5						24	3.4	8.9
C11	2	1	1	3	2	8	6						23	3.3	9.3
C12	2	1	1	3	1	4	4						16	2.3	13.3
C13	2	1	1	3	2	4	4						17	2.4	12.5
C14	4	1	1	4	1	8	9						28	4.0	7.6
C15	2	1	1	4	2	4	6						20	2.9	10.6
C16	2	1	1	4	2	4	7						21	3.0	10.1
C17	1	1	1	4	2	4	7						20	2.9	10.6
C31	2	1	3	5	3	9	8						31	4.4	6.9
C32	2	1	2	6	2	10	6						29	4.1	7.3
C33	2	1	3	5	3	11	8						33	4.7	6.4
C34	2	1	3	5	3	11	8						33	4.7	6.4
C35	2	2	3	5	3	11	8						34	4.9	6.3
C36	1	1	3	5	3	10	6						29	4.1	7.3
C37	2	1	2	5	3	10	7						30	4.3	7.1

COBBS CREEK LOW LEVEL — 13 UNITS

TOTAL	33	26	23	58	17	73	85	0	0	0	0	0	315	3.5	9.3
C18	4	2	2	5	1	3	8						25	3.6	8.5
C19	4	4	3	5	3	5	8						32	4.6	6.7
C20	2	2	2	4	1	5	6						22	3.1	9.7
C21	2	2	2	4	1	8	7						26	3.7	8.2
C22	1	2	2	4	1	4	5						19	2.7	11.2
C23	2	2	1	4	1	8	6						24	3.4	8.9
C24	4	2	2	5	2	9	9						33	4.7	6.4
C25	3	1	1	4	1	3	5						18	2.6	11.8
C26	3	1	1	5	1	6	7						24	3.4	8.9
C27	2	2	1	4	1	3	5						18	2.6	11.8
C28A	4	2	4	8	2	9	7						36	5.1	5.9
C29	1	2	1	3	1	3	5						16	2.3	13.3
C30	1	2	1	3	1	7	7						22	3.1	9.7
TOTAL	242	285	324	366	323	581	587	0	0	0	0	0	2708		
I/D/C	2.7	3.1	3.6	4.0	3.5	6.4	6.4	0.0	0.0	0.0	0.0	0.0			

10 TOTAL DISCHARGES FOR PRIOR YEAR IN SW DISTRICT

1.4 AVERAGE DISCHARGES PER MONTH

8.0 AVER. DAYS BEFORE RETURNING TO SITE

4.2 AVER. INSPECTIONS PER DAY PER CREW

I/D/C = INSPECTIONS PER DAY PER CREW DTR = DAYS TO RETURN TO SITE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS													
TOTAL	0	0	2	0	1	0	0	0	0	0	0	0	3
S05													0
S06													0
S07			1										1
S08			1										1
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18													0
S19													0
S21													0
S23													0
S25													0
S26					1								1
LOWER SCHUYLKILL EAST SIDE — 9 UNITS													
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
S31													0
S35													0
S36													0
S36A													0
S37													0
S42													0
S42A													0
S44													0
S46													0
CENTRAL SCHUYLKILL WEST — 9 UNITS													
TOTAL	0	0	0	0	1	0	0	0	0	0	0	0	1
S01													0
S02													0
S03													0
S04													0
S11					1								1
S14													0
S20													0
S22													0
S24													0
SOUTHWEST MAIN GRAVITY — 10 UNITS													
TOTAL	0	0	0	0	1	0	0	0	0	0	0	0	1
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50					1								1
S51													0
LOWER SCHUYLKILL WEST SIDE — 4 UNITS													
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
S32													0
S33													0
S38													0
S45													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL — 23 UNITS													
TOTAL	2	0	0	0	0	0	0	0	0	0	0	0	2
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07	1												1
C09													0
C10													0
C11													0
C12													0
C13													0
C14	1												1
C15													0
C16													0
C17													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL — 13 UNITS													
TOTAL	1	0	0	0	1	1	0	0	0	0	0	0	3
C18													0
C19	1					1							2
C20							1						1
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	3	0	2	0	4	1	0	0	0	0	0	0	10

NO OF UNITS IN DISTRICT BLOCKED

CSE	0	0	2	0	1	0	0	0	0	0	0	0	3
LSE	0	0	0	0	0	0	0	0	0	0	0	0	0
CSW	0	0	0	0	1	0	0	0	0	0	0	0	1
SWG	0	0	0	0	1	0	0	0	0	0	0	0	1
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	2	0	0	0	0	0	0	0	0	0	0	0	2
CCLL	1	0	0	0	1	1	0	0	0	0	0	0	3

JANUARY 1998 RELIEF SEWER MONTHLY INSPECTION HISTORY

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NORTHEAST	THOMAS RUN RELIEF SEWER							6 UNITS					
R1	2	1	1	2	3	3	3						15
R2	2	1	1	2	3	3	3						15
R3	2	1	1	2	3	3	3						15
R4	2	1	1	2	3	3	3						15
R5	2	1	1	2	3	3	3						15
R6	2	1	1	2	3	3	3						15
	MAIN RELIEF SEWER							6 UNITS					
R7	2	1	1	2	3	5	4						18
R8	2	1	1	2	3	3	3						15
R9	2	1	1	2	3	3	3						15
R10	2	1	1	2	3	3	3						15
R11	2	1	1	2	3	3	3						15
R12	2	1	1	2	3	3	3						15
	WAKLING RELIEF SEWER							2 UNITS					
R13	2	1	1	3	1	3	4						15
R14	2	1	1	3	2	3	4						16
	ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS					
R15	2	2	1	2	2	4	3						16
	OREGON AVE RELIEF SEWER							2 UNITS					
R16	2	1	1	2	2	2	3						13
R17	3	4	4	2	5	3	4						25
	FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS					
R18	1	2	1	2	2	3	3						14
	32ND ST RELIEF SEWER							1 UNITS					
R19	2	2	1	2	3	4	3						17
	MAIN STREET RELIEF SEWER							1 UNITS					
R20	2	1	1	2	2	3	3						14
	SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS					
R21	2	3	1	3	3	2	3						17
	TEMPORARY REGULATOR CHAMBER							2 UNITS					
R22	2	2	1	3	3	2	3						16
R23	2	1	1	3	4	3	2						16
	ARCH ST RELIEF SEWER							1 UNITS					
R24	1	1	1	2	3	3	3						14
	GRANT & STATE RD RELIEF							1 UNITS					
R26	3	1	1	3	2	4	3						17
TOTAL	50	34	28	56	70	77	78	0	0	0	0	0	393
AVER	2.0	1.4	1.1	2.2	2.8	3.1	3.1	0.0	0.0	0.0	0.0	0.0	2.2

RELIEF SEWER MONTHLY DISCHARGE HISTORY

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NORTHEAST	THOMAS RUN RELIEF SEWER							6 UNITS					
R1													0
R2													0
R3							1						1
R4							1						1
R5													0
R6													0
	MAIN RELIEF SEWER							6 UNITS					
R7													0
R8													0
R9													0
R10													0
R11													0
R12													0
	WAKLING RELIEF SEWER							2 UNITS					
R13													0
R14													0
	ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS					
R15													0
	OREGON AVE RELIEF SEWER							2 UNITS					
R16													0
R17													0
	FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS					
R18													0
	32ND ST RELIEF SEWER							1 UNITS					
R19													0
	MAIN STREET RELIEF SEWER							1 UNITS					
R20													0
	SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS					
R21													0
	TEMPORARY REGULATOR CHAMBER							2 UNITS					
R22													0
R23													0
	ARCH ST RELIEF SEWER							2 UNITS					
R24													0
	GRANT & STATE RD RELIEF							1 UNITS					
R26													0
TOTAL	0	0	1	0	0	0	1	0	0	0	0	0	2
UNITS	0	0	1	0	0	0	1	0	0	0	0	0	

JANUARY 1998 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	CASMIER ST												
	2	1	1	3	3	1	3						14
	SOMERSET GRIT LEVEL												
	1	4	4	7	8	3	4						31
	16TH & SNYDER												
	1	1	1	1	2	3	3						12

JANUARY 1998 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	NANDINA ST												
	2	1	1	3	3	4	3						17
	UPPER DARBY OVERFLOW												
	1	4	2	4	4	2	8						25
	O & ERIE diversion gate												
							1						1

Appendix B

Flow Control Unit - Wastewater Pumping Station Maintenance Summaries

CALENDAR YEAR 1997
MUNICIPAL WASTELOAD MANAGEMENT REPORT
FLOW CONTROL - WASTEWATER PUMPING UNIT

OUTLYING PUMPING STATION - CAPACITIES

There are twelve outlying wastewater pumping stations that pump to the three Water Pollution Control Plants. Listed below are the station capacities, maximum flows and general condition.

WASTEWATER PUMPING STATION LOCATION	NO. PUMPS IN STATION	RATED CAPACITY PER PUMP GPM	ACTUAL STATION CAPACITY GPM	MAXIMUM INFLOW PERIOD GPM	WPC PLANT FLOW DESTINATION	GENERAL CONDITION
BANK STREET	2	250	496	49	SEWPC	Good, new pumps, controls and electric gear installed in 1994
BELFRY DRIVE	2	150	389	71	SWWPC	Good, built 1978 One pump rebuilt in 1994 One pump rebuilt in 1993
C.S.P.S. VARIABLE SPEED UNIT CONSTANT SPEED UNIT	 4 2	 29,000 29,000	135,417	128,472	SWWPC	Good, station was fully automated in oct. 1996. Two pums rebuilt in 1994 Two pums rebuilt in 1996 Two pumps rebuilt in 1997
FORD ROAD	2	900	1,467	148	SWWPC	Excellent, station completely rehabilitated in 1981 Two pumps rebuilt in 1997
HOG ISLAND ROAD	2	500	927	450	SWWPC	Excellent, new facility built in 1989
LINDEN AVENUE	2	1,400	2,378	179	NEWPC	Good, built in 1967 One pump rebuilt in 1991 One pump rebuilt in 1993
LOCKART STREET	2	600	1,243	148	NEWPC	Good, built in 1967 One pump rebuilt in 1991 One pump rebuilt in 1996
MILNOR STREET	3	300	1,096	479	NEWPC	Good, built in 1947 One pump rebuilt in 1992 One in 1995, one in 1997
NEILL DRIVE	3	1,800	5,568	3,712	SWWPC	Good, completely rehabilitated in 1982 Three pumps rebuilt since 1996
POLICE ACADEMY	2	100	53	22	NEWPC	Good, new pumps, controls and electric gear installed in 1993
RENNARD STREET	2	400	329	49	NEWPC	Good, built in 1968 One pump rebuilt in 1993 One pump rebuilt in 1996
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 1984 One pump rebuilt in 1995 One pump rebuilt in 1996 One pump rebuilt in 1997

FLOW CONTROL UNIT
1997 PUMPING STATION FLOW REPORT

WASTEWATER STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	TOTAL FLOW (MG)
BANK ST.	4.410	4.147					8.557
BELFRY DR.	5.544	6.165					11.709
CENT. SCH.	(new flow metering equipment installed - totalized estimate)						26145.000
FORD RD.	44.545	41.329					85.874
FORT MIFFLIN	0.032	0.078	0.051	0.034			0.085
HOG ISLAND	3.900	4.134					8.034
LINDEN AVE.	49.548	44.932					94.480
LOCKHART ST.	32.269	35.596					67.866
MILNOR ST.	1.850	2.197	2.483				6.530
NEILL DR.	278.195	153.374	170.916				602.485
POLICE ACA.	4.810	3.849					8.659
RENNARD ST.	5.211	5.468					10.680
42ND ST.	1040.073	639.929	16.859				1696.861
STORMWATER PUMPING STATIONS							
BROAD & BLVD.	0.000	0.018	3.047	15.182			18.247
MINGO CREEK	0.000	0.000	168.224	487.445	892.468	888.414	2436.551
26TH & VARE	0.443	0.490					0.934

WASTEWATER PUMPING UNIT

1997 STATION OUTAGES AND DRY WEATHER DISCHARGES

DATE	LOCATION	STATION OUT TIME OUT	STATION OUT TIME IN	DISCHARGE START	DISCHARGE STOP	DURATION HRS	INFLOW GAL/MIN	DISCHARGE TOTAL GAL	REASON
04/26/97	NEILL DR	-------	-------	05:00 AM	05:15 AM	0.25	1,249.1	18,737	#3 OOS FOR VALVE GATES, #1 SHAFT BROKE, #2 LOW PUMPING FLOW
04/26/97	NEILL DR	08:00 AM	09:30 AM	08:00 AM	09:30 AM	1.50	1,249.1	112,422	WHILE REPLACING #1 PUMP, SHORT IN #2 ROTOVALVE. REPLACED #3 DISC.
04/16/97	BELFRY DR	09:00 PM	02:00 AM	09:30 PM	02:15 AM	4.75	23.5	6,698	PECO LOST C PHASE
08/17/97	LOCKHART ST	08:45 PM	09:30 PM	08:55 PM	09:45 PM	0.83	157.6	7,879	PECO POWER FAILURE IN AREA
12/28/97	BELFRY DRIVE	06:00 AM	01:00 PM	06:20 AM	01:05 PM	6.75	23.5	9,518	PECO LOST TRANSFORMER
1997	TOTAL HOURS OUT					14.08		155252	3 PECO OUTAGES
1997	AVERAGE HOURS OUT					2.82		31050	2 STATION EQUIP PROBLEMS

8-YEAR PUMPING STATION OUTAGE /DISCHARGE HISTORY			
TOTALS	121.78 HRS	77%	PECO OUTAGES
	36.07 HRS	23%	STATION EQUIP PROBLEMS

WASTEWATER PUMPING
FY97 OVERHAUL SCHEDULE

REPORT FOR Feb-98

COMPLETED 16
PROGRESSING 0

28 AVERAGE NO. OOS DAYS TO OVERHAUL

START	FINISH	MAIN PUMPING UNITS		STATUS	OOS DAYS
09/03/96	09/13/96	42ND STREET	1	COMPLETE	10 DAYS
09/05/96	10/28/96	NEILL DRIVE	1	COMPLETE	53 DAYS
10/12/96	01/10/97	CSPS	6	COMPLETE	90 DAYS
11/05/96	11/26/96	RENNARD ST	1	COMPLETE	21 DAYS
01/15/97	03/19/97	NEILL DRIVE	2	COMPLETE	63 DAYS
03/19/97	05/09/97	NEILL DRIVE	3	COMPLETE	51 DAYS
06/25/97	06/27/97	42ND STREET	3	COMPLETE	2 DAYS
05/20/97	06/07/97	FORD ROAD	1	COMPLETE	18 DAYS
06/10/97	06/20/97	FORD ROAD	2	COMPLETE	10 DAYS
06/10/97	06/23/97	MILNOR STREET	1	COMPLETE	13 DAYS

START	FINISH	AUXILIARY EQUIPMENT	STATUS	OOS DAYS
09/05/96	10/28/96	NEILL DR. #1 ROTOVALVE	COMPLETE	53 DAYS
01/15/97	03/19/97	NEILL DR. #2 ROTOVALVE	COMPLETE	63 DAYS
02/27/97	03/03/97	LOCKHART COMMINUTOR	COMPLETE	4 DAYS
02/28/97	03/05/97	FORD RD COMMINUTOR	COMPLETE	5 DAYS
03/21/97	04/09/97	NEILL DR. COMMINUTOR	COMPLETE	19 DAYS
03/19/97	05/09/97	NEILL DR. ROTOVALVE #3	COMPLETE	51 DAYS

FLOW CONTROL - SERVICE LEVEL GOAL - MAIN PUMP AVAILABILITY HISTORY

FOR : JAN 1998

AVAILABILITY FY90		AVAILABILITY FY91		AVAILABILITY FY92		AVAILABILITY FY93		AVAILABILITY FY94		AVAILABILITY FY95		AVAILABILITY FY96		AVAILABILITY FY97		AVAILABILITY FY98	
JUL89	87.3 %	JUL90	89.1 %	JUL91	91.4 %	JUL92	93.3 %	JUL93	97.2 %	JUL94	92.2 %	JUL95	96.5 %	JUL96	90.3 %	Jul-97	95.7 %
AUG89	88.8 %	AUG90	90.5 %	AUG91	78.7 %	AUG92	94.3 %	AUG93	100.0 %	AUG94	91.5 %	AUG95	99.6 %	AUG96	91.5 %	Aug-97	94.0 %
SEP89	86.5 %	SEP90	89.1 %	SEP91	91.6 %	SEP92	93.0 %	SEP93	96.8 %	SEP94	94.9 %	SEP95	100.0 %	SEP96	89.5 %	Sep-97	93.6 %
OCT89	83.5 %	OCT90	93.1 %	OCT91	88.2 %	OCT92	95.6 %	OCT93	97.9 %	OCT94	96.4 %	OCT95	100.0 %	OCT96	89.3 %	Oct-97	95.0 %
NOV89	88.0 %	NOV90	90.9 %	NOV91	93.1 %	NOV92	95.8 %	NOV93	100.0 %	NOV94	98.4 %	NOV95	96.6 %	NOV96	90.5 %	Nov-97	97.9 %
DEC89	86.4 %	DEC90	90.8 %	DEC91	94.0 %	DEC92	97.1 %	DEC93	99.6 %	DEC94	100.0 %	DEC95	96.8 %	DEC96	91.1 %	Dec-97	97.9 %
JAN90	80.4 %	JAN91	88.0 %	JAN92	94.3 %	JAN93	96.0 %	JAN94	100.0 %	JAN95	98.4 %	JAN96	93.3 %	JAN97	91.2 %	Jan-98	96.7 %
FEB90	85.1 %	FEB91	90.4 %	FEB92	91.6 %	FEB93	97.9 %	FEB94	97.9 %	FEB95	99.9 %	FEB96	96.9 %	FEB97	91.7 %	Feb-98	%
MAR90	88.9 %	MAR91	92.6 %	MAR92	93.3 %	MAR93	97.1 %	MAR94	99.6 %	MAR95	98.7 %	MAR96	91.1 %	MAR97	92.2 %	Mar-98	%
APR90	86.9 %	APR91	91.3 %	APR92	88.2 %	APR93	94.8 %	APR94	96.2 %	APR95	97.9 %	APR96	89.2 %	APR97	93.4 %	Apr-98	%
MAY90	87.0 %	MAY91	90.0 %	MAY92	90.6 %	MAY93	92.0 %	MAY94	93.9 %	MAY95	97.8 %	MAY96	89.7 %	MAY97	93.9 %	May-98	%
JUN90	88.0 %	JUN91	91.2 %	JUN92	93.0 %	JUN93	94.0 %	JUN94	95.0 %	JUN95	97.2 %	JUN96	91.1 %	JUN97	92.8 %	Jun-98	%
YEAR AVE	86.4 %	YEAR AVE	90.6 %	YEAR AVE	90.7 %	YEAR AVE	95.1 %	YEAR AVE	97.9 %	YEAR AVE	97.0 %	YEAR AVE	95.2 %	YEAR AVE	91.5 %	YEAR AVE	95.8 %
FY90 AVERAGE TO JAN:	85.8 %	FY91 AVERAGE TO JAN:	90.2 %	FY92 AVERAGE TO JAN:	90.2 %	FY93 AVERAGE TO JAN:	95.0 %	FY94 AVERAGE TO JAN:	98.8 %	FY95 AVERAGE TO JAN:	96.1 %	FY96 AVERAGE TO JAN.	97.8 %	FY97 AVERAGE TO JAN:	90.5 %	FY98 AVERAGE TO JAN:	95.8 %
MAX	88.9 %	MAX	93.1 %	MAX	94.3 %	MAX	97.9 %	MAX	100 %	MAX	100 %	MAX	100 %	MAX	93.9 %	MAX	97.9 %
MIN	80.4 %	MIN	88.0 %	MIN	78.7 %	MIN	92.0 %	MIN	93.9 %	MIN	91.5 %	MIN	89.2 %	MIN	89.3 %	MIN	93.6 %