PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

2002

Chapter 94: Wasteload Management Report

March 31st, 2003

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Section 1 - Introduction

This report is submitted pursuant to meeting the requirements of NPSDES Permits #'s 0026662, 0026671, and 0026689; Part C, Section D: Reporting Requirements, b. Annual CSO Status Report. This section requires that the permittee submit an Annual CSO Status Report as part of the Chapter 94 Municipal Wasteload Management Report. The purpose of this report is to document the status and changes made to programs implemented by the City of Philadelphia Water Department (PWD), during calendar year 2002, to manage and reduce the combined sewer overflows (CSO's) permitted to discharge to waters of the Commonwealth of Pennsylvania.

The report is organized as follows: Section 2 Citywide Programs discusses the operational status of the combined sewer system and includes summaries of the frequency and volume of overflows for the past calendar year. In addition, Section 2 provides a summary of any changes made to the programs required by the United States Environmental Protection Agencies (US EPA's) Nine Minimum Controls (NMC's) and as described in the Phase I section of the Long Term CSO Control Plan (LTCP) approved September 18, 1997 The section updates capital programs that are conducted on a City-Wide basis and as such have benefits to all receiving waters. In contract, Sections 3 through 9 are watershed-specific and describe the status of the watershed management planning and capital project implementation occurring within each respective watershed listed in the CSO LTCP. Monitoring of CSO discharges and other performance-related information for each CSO system is also summarized by watershed. Section 10 provides the status of activities completed to advance the concept of the Watershed Technology Center as described in the CSO LTCP.

Section 2 - Citywide Programs

1.0 Phase I – Continued Implementation of the Nine Minimum Controls

In the first phase of the PWD's CSO strategy, and in accordance with its NPDES permits, the PWD submitted to the Pennsylvania Department of Environmental Protection on September 27, 1995, *CSO Documentation: Implementation of Nine Minimum Controls*. The nine minimum controls are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame. In general, PWD's NMC program includes comprehensive, aggressive measures to maximize water quality improvements through the following measures:

1. Review and improvement of on-going operation and maintenance programs
2. Measures to maximize the use of the collection system for storage
3. Review and modification of PWD's industrial pretreatment program
4. Measures to maximize flow to the wastewater treatment facilities
5. Measures to detect and eliminate dry weather overflows
6. Control of the discharge of solid and floatable materials
7. Implementation of programs to prevent generation and discharge of pollutants at the source
8. Public Notification of CSO impacts
9. Comprehensive inspection and monitoring programs to characterize and report overflows and other conditions in the combined sewer system.

Changes made to any of the specific projects or programs put into place as a result of the NMC document are discussed in below.

1.1 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 sections below.

1.1.1 CSO Regulator Inspection & Maintenance Program

Annual summaries of the comprehensive and preventative maintenance activities completed in the combined sewer system over the past year are detailed in Appendix A and any changes are discussed below.

In response to the CSO compliance inspection performed by DEP in November 2002, PWD has committed to demonstrating an improved follow-up response to sites experiencing a DWO. PWD has instituted a policy of next day follow-up inspection at sites that experience a DWO. PWD will conduct an evaluation of the effectiveness of twice-weekly inspections.

Customized Regulator Inspection Forms

Start: 8/1/95 End: 12/31/2000 Status: Complete

A database has been developed to document the maintenance performed on each CSO site. This system will ensure that proper regulator settings are maintained and system changes are documented. This database can also store scanned plan view and profile view drawings of CSO regulator and hydraulic control point chambers for inclusion in the filed inspection report forms. 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 Pumping Station Maintenance

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

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

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 2002, 45 cubic yards of debris was removed from the two grit pockets.

WW Pumping Predictive Maintenance Program
Start: 8/1/1995 End: Status: Ongoing

Pump Station Emergency Backup Power
Start: 9/27/1995 End: 12/1/1999 Status: Complete
See pump station maintenance annual summaries in Appendix B for documentation of any pump station outages.

1.1.2 Sewer Cleaning Contracts
Start: 12/1/1995 End: Status: Complete

1.1.3 Inflow Prevention Program
Start: 8/1/1995 End: 6/4/1999 Status: Complete

Tide Gate Inspection and Maintenance Program
Summaries of the tide gate inspection and maintenance completed during calendar 2002 are found in Appendix A, which documents the locations where preventative maintenance was performed on the tide gates.

Emergency Overflow Weir Modification
Start: 11/7/1994 End: 6/4/1999 Status: Complete

1.2 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 that 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.

1.2.1 Evaluate Real Time Control in LTCP
Start: 2/1/1996 End: 1/27/1997 Status: Complete

See section 2 City Wide Programs

1.2.2 Install Diversion Dams
Start: 8/1/1995 End: 6/30/1997 Status: Complete

1.3 Modify Pretreatment Program

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

1.3.1 Phase I Implementation
Start: 8/1/1995 End: 2/1/1997 Status: Complete

Inventory Significant Non-Domestic
Start: 8/1/1995 End: 8/21/1995 Status: Complete

Guidance Memorandum
Start: 8/1/1995 End: 1/26/1996 Status: Complete

Develop Data Form for Annual Inspections
Start: 3/1/1996 End: 9/1/1997 Status: Complete

Pretreatment Inspections - 1st 50%
Start: 3/1/1996 End: 7/1/1996 Status: Complete

Asses SIU Wet Weather Monitoring
Start: 7/1/1996 End: 8/1/1997 Status: Complete

1st 50% of SIU's Reduce Discharge
Start: 10/1/1996 End: 1/1/1997 Status: Complete

Pretreatment Inspections - 2nd 50%
Start: 7/1/1996 End: 12/31/1996 Status: Complete

2nd 50% SIU's Reduce Discharge
Start: 1/1/1997 End: 12/31/1998 Status: Complete

1.3.2 Phase II Implementation
Start: 3/1/1997 End: Status: Ongoing

Report - Performance of Phase I Activities
Start: 3/1/1997 End: 3/31/1997 Status: Complete

Annual Pretreatment Inspections - Criteria
Start: 3/18/1997 End: Status: Ongoing

Inspections are now being conducted using guidance criteria on evaluating wet weather pollution prevention efforts for those industries that may have batch operations within a continuous discharge. For the upcoming calendar year, the Department's Industrial Waste Unit will be examining dry weather flow data collected from the trunk sewer at each CSO structure. The CSO's were sampled in 1997 for conventional pollutants and heavy metals. While this database was created for a consultant to model an expected loading to the stream from a particular CSO merging the data with Storet values for stormwater, the data is proving useful in identifying sewersheds that have a strong IW(non-domestic)character. With this as a screening basis IWU is will continue to investigate further up the trunk sewer to find the sources of the high strength wastes and then evaluate in detail the nature and timing of these particular discharges.

1.4 Maximize WPCP Flow

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

The basic strategy of flow maximization, or Modified Regulator Plan (MRP) was 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 additional modifications might be made in the future to prioritize certain overflows, or to reflect an improved understanding of the collection system dynamics as identified throughout the ongoing modeling work, but no additional capture is expected to result on a system wide basis.

1.4.1 POTW Stress Testing
Start: 9/1/1997 End: Status: Moved to Section 2.3 per CSO LTCP

1.4.2 Prelim Costs - NMC #4 Implementation
Start: 8/1/1995 End: 12/20/1995 Status: Complete

1.4.3 NE DD Modified Regulator Plan (MRP)
Start: 1/1/1996 End: 7/1/1998 Status: Complete

1.4.4 SW DD Modified Regulator Plan (MRP)
Start: 1/1/1996 End: 7/1/1998 Status: Complete

1.4.5 SE DD Modified Regulator Plan (MRP)
Start: 10/30/1995 End: 7/1/1998 Status: Complete

1.4.6 NMC 4 Implementation Costs (LTCP)
Start: 5/1/1996 End: 9/1/1996 Status: Complete

1.5 Eliminate Dry Weather Overflow (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). 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 by a combined sewer system user. 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 this report. The detailed inspection report summaries are included in Appendix A. The implementation of a comprehensive monitoring network is an ongoing project to enhance PWD's ability to ensure high levels of protection against dry weather overflow. Based upon peer review of other CSO communities the present combination of the physical inspection and maintenance with comprehensive monitoring, the present program far exceeds the level of effort employed in other communities.

1.5.1 CSO Monitoring Network
Start: 8/1/1995 End: 12/31/2002 Status: Ongoing

The Philadelphia Water Department's continues to implement the expansion to the CSO Monitoring network and temporary monitoring programs to support planning for further CSO control projects and to minimizing dry weather overflows and tidal inflows. The CSO monitoring network contract has been closed out and difficulties encountered with the contractor have been resolved through legal process with the bonding company of the contractor. PWD will continue to review, replace, and update network equipment in order to continue to support the above functions. The new software systems for the remote equipment and the central computer are 95% complete. A final software contract to finish this work has been approved and will be instituted shortly with an estimated completion date of August 2003. The remote site equipment is various stages of completion and is currently being repaired, calibrated and/or installed in-house. See table 1.5.1 for status of the remote sites.

Table 1.5.1 Site Status Report for CSO Monitoring Network Implementation

MONITORING NETWORK - MONTHLY OPERATIONAL STATUS REPORT **Month of:** Jan-2003
264 TOTAL of ALL NETWORK MONITORING SITES 104 SITES NOT INSTALLED 160 SITES INSTALLED
Status of the 160 Installed Sites 61% Of the Installed Sites are Operational 22 of 23 METERING CHAMBERS INSTALLED 94.9% Of the 22 Sites are Operational 19 of 24 RAIN GAUGE SITES INSTALLED 83.2% Of the 19 Sites are Operational 93 of 200 CSO SITES INSTALLED 27.7% Of the 93 Sites are Operational 26 of 39 MISC CHAMBERS INSTALLED 3.1% Of the 26 Sites are Operational
* Operational - The site data from all sensors is available on the server and is reasonably accurate

1.5.2 WTP Residuals Management
Start: 12/15/1994 End: 12/31/1997 Status: Complete

The Department will continue to monitor the effectiveness of the operational changes to residuals management strategies, monitor for any adverse impacts on downstream CSO's, and report any DWO's in the monthly status reports.

1.5.4 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.

During calendar 2002, the Somerset Grit Chamber was cleaned 7 times on the following dates:

Date	Tons Removed
April 05, 2002	70.7
June 22,2002	13.1
June 29,2002	17.3
July 06, 2002	13.4
July 13, 2002	6.77
July 18, 2002	51.9
September 23, 2002	64.5

1.6 Solids and 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 (T-4 Netting Facility below). 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.

1.6.1 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. The construction of the chamber was completed in March of 1997 and the netting system continues to operate. The quantity of material collected is weighed with each net change.

Since the installation of the netting device, 74 nets have been replaced (37 visits) with an approximate total of 6200 pounds of debris captured (Appendix A). The City has compared the floatables removed from the net with other floatables control technologies employed. More specifically, on an area weighted basis the inlet cleaning program data suggests that street surface litter dominates the volume of material that can enter the sewer system. The pilot in-line netting system installed at T_4 has been shown to capture debris on the same order as the WPCP influent screens indicating that effective floatables control needs to target street surface litter in order to effectively reduce the quantity of debris likely to cause aesthetic concerns in receiving streams.

1.6.2 Repair, Rehabilitation, and Expansion of Outfall Debris Grills

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

Debris grills are maintained regularly 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 2002:

- D-45 CSO Outfall: A 20ft x 20ft multi-section debris grill was fabricated.
- Sandy Run Outfall: Repair and modify debris grill to prevent unauthorized entry. This site was vandalized again several times in 2002 and needed extensive modification.
- F-05 CSO Outfall: Repairs were made to the debris grill at this site.
- D-05 CSO Outfall: Repairs were made to the debris grill at this site.

1.7 Pollution Prevention

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 the litter and stormwater inlets as part of its implementing this minimum control as well as continue to develop the following new programs.

1.7.1 Billstuffers

Billstuffers are regularly produced by the Water Department as an educational tool for disseminating information pertaining to customer service and environmental issues. Specific billstuffers are designed on an annual basis for the CSO, Stormwater and Watershed Management programs to address the associated educational issues. These billstuffers reach over 500,000 water and wastewater customers. The environmental bill stuffers distributed in 2002 include:

- Philadelphia's Watersheds
- Grasscycling – Recycling Your Grass Clipping
- Streets Department Curbside Recycling Program
- Every Drop of Water Comes from Our Watersheds (watersheds and CSO's)
- In's & Out's of Sewer Inlets
- PWD Drinking Water Week
- Yo! No Dumping! Drains to River (Inlet Stenciling Program)

1.7.2 Waterwheel Watershed Newsletters

The Water Department's watershed newsletters are usually published on 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. Newsletters issued in 2002 include:

Summer '02 Edition – This issue featured the first public meeting of the Tacony-Frankford River Conservation Plan at Edison-Fareira High School, in addition to public-private clean up of the BJ's stormwater detention basin in the Pennypack Creek Watershed (participants included Friends of Pennypack Park, PWD, Fairmount Park Commission and PWD. Over 300 tires were removed and No Dumping signs erected. In addition, the PWD/DELEP Clean Partners Program was announced – a program that educates businesses how to control stormwater runoff pollution by practicing "good housekeeping."

1.7.3 Comprehensive Education Materials

The following projects were initiated and/or completed in calendar year 2002:

- Watershed educational partnerships (continued from 1999) with Bodine High School, Edison-Faira High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, Lincoln High School, Turner Middle School, and the Schuylkill Center for Environmental Education.
- Development (continuing) of watershed self-guided tour booklets for the city's eight watersheds
- Final designs (revised from original) for watershed exhibits to be installed at the Fairmount Water Works Interpretive Center, slated to open in Fall 2003. Construction of the FWWIC, partially funded by a DCNR grant, began in late 2001.
- Research/development of the Technical Memos for water quality assessments (chemical, biological, physical) for the Tookany/Tacony-Frankford Watershed Partnership, facilitated by the Water Department and its consultant, the Pennsylvania Environmental Council.
- Recruitment of steering committee members for the Tacony-Frankford River Conservation Plan and the hosting of a number of public workshops, events and watershed walks.
- Award from DCNR for a River Conservation Plan for the Pennypack Creek watershed for Philadelphia and Montgomery counties. PWD and its partners began a visual assessment of the Pennypack Creek.
- The development and publication of a watershed survey for the Tacony-Frankford watershed.
- The development of a website (www.phillywater.org/Partnerships) for the Tookany/Tacony-Frankford Watershed Partnership.
- The creation of a watershed video – The Stream That Binds Us" as a project of the Darby-Cobbs Watershed Partnership, funded by Growing Greener and produced by Greenworks.

General Educational projects in calendar year 2002 - A great variety of public information materials concerning the CSO LTCP in relation to the watershed framework were developed as a result of the watershed partnerships and river conservation plans, including: fact sheets, press releases, tabletop exhibits, brochures, watershed surveys, websites, watershed walks, and presentation materials. Materials developed for a specific watershed are discussed in the Watershed Planning sections as appropriate.

1.7.4 Citizen Advisory Committee (CAC) and other Partnership Projects

Water Quality Citizens Advisory Council

In 2001, the Water Quality CAC was formed from a merger of the Stormwater and the Drinking Water Quality CACs. The Partnership for the Delaware Estuary facilitates CAC meetings. The committee consists of representatives from the following groups:

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

PWD "Clean Water for Life" Exhibit

The PWD opened an exhibit titled "Clean Water for Life" in October 2001 at the City's Municipal Services Building. The exhibit will remain on display through September 2003. The exhibit documents the PWD's technological, chemical and environmental efforts to provide the citizens of Philadelphia with clean water. In its earliest days, the department responded to the Yellow Fever epidemics of the 1790s. Although this disease was actually carried by mosquitoes, the public believed cleaner water would prevent the disease, so the City pumped water from the Schuylkill River. One hundred years later, when faced with a series of Typhoid Fever epidemics, the department responded with a filtration system to purify the City's water.

Since the passage of the Safe Drinking Water Act over 25 years ago, Philadelphia has an unblemished record in water quality. This display not only documents the rich heritage of the Water Department, but it also provides exhibit viewers with a keen sense of the processes involved in making our water safe and clean for human consumption. The exhibit also traces the development of the City's sewer collection system and illustrates the PWD's transition from a utility that focuses on infrastructure alone to one that treats infrastructure and water quality improvements on a watershed basis.

EPA Exhibit

In response to an invitation from The Environmental Protection Agency, Region III, the Philadelphia Water Department created an exhibit entitled, PWD Celebrates 201 Years of Watershed Protection for the EPA's Public Information Center in March and April, 2002. Display topics included education and outreach activities for school aged children, case studies of Land - Based Stormwater Best Management programs, an interactive macroinvertabrate station, information about PWD's Combined Sewer and Stormwater programs, and PWD's watershed partnership programs. Visitors to the site included environmental professionals, the general public and school-aged children.

Clean Water Partners

Clean Water Partners is a project designed to reduce non-point source pollution from retail and commercial businesses that will be implemented in several commercial districts in Philadelphia and Chester Counties. The two-year pilot project was funded through a $72,000 Growing Greener grant to the Partnership for the Delaware Estuary, Philadelphia Water Department, Philadelphia Chinatown Development Corporation, Roxborough Green Space, Brandywine Valley Association, Chester County Water Resources Authority, Downingtown Chamber of Commerce, Exton Region Chamber of Commerce, and West Whiteland Township. The kickoff for the Clean Water Partners project was held at the Hampton Inn on February 27, 2002. Howard Neukrug, Director of the Office of Watersheds, addressed the attendees on behalf of the Water Department.

Homeowner Outreach Project: Global Action Plan

The Philadelphia Water Department contracted with environmental outreach organization the Empowerment Institute to educate homeowners in Mill Creek, West Oak Lane, and North Philadelphia neighborhoods about stormwater runoff at their property, specifically addressing concerns related to housing conditions and deterioration caused by water infiltration and poor drainage. This project is geared toward preventative maintenance but addresses homes in need of repair as well.

Specifically, Global Action Plan staff is:

A) Teaching residents about preventative maintenance techniques to properly manage stormwater run-off and water infiltration at their properties through PWD's *Homeowner's Repair Manual.*

B) Providing residents' with information on financial aid and grant programs to implement preventative maintenance and home repair projects related to infiltration.

C) Directing residents to hands-on workshops relevant to homeowner repair maintenance responsibilities related to infiltration. The workshops are created by created by PWD staff.

Bio-Blitz:

One of our longest standing partnerships is with Fairmount Park who yearly holds an environmental fair in different neighborhood parks throughout the city. In 2002, the Cobbs Creek Community Environmental Education Center (CCCEEC) joined the Park and NLREEP in hosting Bio-Blitz in Cobbs Creek Park. Public Education staff had the opportunity to observe and talk to elementary, middle- and high-school student teams, as the teams assisted with the species count. The species collected will be used in the development of the CCCEEC's environmental education programming, opening in the Fall of 2002. Public Education is also assisting CCCEEC with the development of their summer water curriculum to include PWD water resources/stormwater issues. In addition, CCCEEC is very interested in assisting PWD with its Cobbs Creek streambank restoration project and adopting the watershed management plan's proposed watershed indicators.

Manayunk Dog Waste Collection Program:
The Stormwater CAC continues its dog waste collection program. The Water Department, Fairmount Park Commission, Friends of the Manayunk Canal, Manayunk Development Corporation, and the Partnership for the Delaware Estuary partner on the public outreach campaign to address this aspect of non-point source pollution. Signs and dog waste pick-up stations and bags are installed next to wastebaskets for disposals. In addition tip cards asking, "What's your doggy doo doing?" are distributed.

Annual Earth Day Service Project:
Community and watershed volunteers participated in the Water Department- and Stormwater CAC-sponsored annual Earth Day service project by installing storm drain curb markers throughout the City. Volunteers used the new curbmarkers developed by PWD and PA Coastal Zone Management Project to stencil the message "Yo!!! No Dumping! Drains to River!" beside a fish. By developing a more durable and easily applied curb marker, volunteers are able to cover more area.

Educational Publications:
On of the Water Department's most successful community publications is the recently released student activity book (grades 3 – 8) "Let's Learn About Water." This publication develops the concepts of definition of a watershed, impact of non-point source pollution, and personal responsibility for protecting our water supply. It is in great demand by schools, communities and government officials. This book was developed with the Partnership for the Delaware Estuary and was funded in part through DEP Coastal Zone Management funds. Future editions will include descriptions and activities for various city watersheds. The curriculum has already been used in a number of middle schools to meet state required science-based credits.

"Stormy Weather" *Video:*
The video focuses on individual responsibility as a critical success factor in improving storm water quality. The deleterious effects of storm water pollution on the physical and biological community in aquatic systems are addressed through various anti-litter messages, such as: litter control, responsible household and pet waste management, and the proper use of inlets. The video is distributed
To schools, watershed organizations and interested civics. The video has been distributed to over 300 environmental groups, various citizen groups, and schools, and has become a part of the environmental education curriculum for Delaware schools. The City's cable channel is showing the video twice a day.

"Clean Water Begins and Ends with You":
The Partnership for the Delaware Estuary, the PWD, and the PA Coastal Zone Management sponsored its third drawing contest for Philadelphia students grades K-12 in January. Students were required to draw an illustration that shows how Philadelphians can help prevent stormwater runoff pollution. First prize drawings were used to promote stormwater pollution prevention messages on SEPTA buses and in the creation of a "Clean Water Begins and Ends with You" calendar. The award ceremony was held April 16, 2002.

Tacony-Frankford Watershed Partnership:
The City is also supporting a number of public education initiatives suggested by the Public Participation committee of the Tacony-Frankford Watershed Partnership, formed in October 2000. Projects included watershed walks in Montgomery and Philadelphia counties along the streams and their tributaries. Walks were co-hosted by resident volunteers and partners this spring and summer. Projects completed include a creek clean up day, a pilot "self-guided" watershed walk, development of a newspaper series on the watershed, its history, challenges, amenities and future, and a logo design contest for watershed schools. The Partnership is also deeply immersed in the development of a River Conservation Plan for the Philadelphia County portion of the watershed.

Monoshone Watershed Appreciation Day:
On October 26, 2002, the Water Department participated in the third Annual "Monoshone Watershed Day". A full afternoon of activities included water quality testing, biological water quality assessments, watershed

bus tours, guided walks of the watershed taking off from the grounds of the Unitarian Society of Germantown, and tours of the planned wetland restoration at Saylor's Grove.

Senior Citizen Corps (SEC):
The Water Department continues to work with the Senior Citizen Corps to address stormwater pollution problems and water quality monitoring programs for the Monoshone Creek, a tributary to the Wissahickon Creek and to the Tookany Creek. The SEC performs biomonitoring, collects water samples, and conducts physical assessments of the stream. The Water Department assists SEC efforts through the provision of municipal services, education about stormwater runoff and the department's Defective Lateral Program, and mapping services such as GIS. Meetings are held monthly. The Corps is also partnering with PWD on its Saylor Grove Wetland Demonstration Project, assisting with public education and outreach.

Fairmount Water Works:
The City's Stormwater Management and Source Water Protection programs are inherently linked, as surface water is the source of the city's drinking water supply. Through programs offered at the Interpretive Center, the City provides public education about the urban water cycle and the role of environmental stewardship through tours of the department's drinking and wastewater treatment plants. Students in Philadelphia and surrounding communities learn about stormwater pollution prevention through a series of educational activities, most notably the Summer Water Camp and Urban Ecology programs.

With the receipt of its second million-dollar grant from The Delaware River Port Authority (DRPA), PWD was in the position to proceed with the construction planning. In support of the work, PWD also received a $240,000 grant from the state's Department of Conservation and Natural Resources (DCNR). Groundbreaking for the construction of the Interpretive Center took place in April 2001 and is the renovation is currently underway. The Center is scheduled for completion by Fall 2003.

PWD Summer Water Camp:
For more than 12 years, the Public Education Unit has offered a "water camp day" as a field trip for day camps throughout Philadelphia. Water themes include lessons on the urban water cycle, non-point source pollution, watershed protection, and water quality. During the summer of 2002, were often conducted at the Belmont Water Treatment Plant followed by an afternoon trip to the Southeast Water pollution Control Plant, due to ongoing construction at the Fairmount Water Works

Earth Force Youth Summit:
The PWD/Public Education was one of 11 community partners who took part in this annual program, which is an Educational "expedition" by students through Environmental displays and demonstrations.

Watershed Tours:
The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices. Self-guided tour booklets for each watershed are under development (actually ready to publication but lacking a printing budget). Virtual website tours have been developed for the Tacony-Frankford watershed and the Mill Creek Watershed as prototypes for web-based tours.

Community Outreach and the Captain Sewer Program:
The Water Department continues to organize and distribute information to the public about stormwater runoff and individual environmental stewardship for community groups and other civic and professional organizations. Literature and speakers are provided for community events, health fairs and city events.

Captain Sewer teaches young children in schools, camps, libraries and day care centers about the effects of dumping trash and pollutants into stormwater inlets.

1.8 Public Notification

As discussed in Section 7 of the above report, the Water Department had developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential affect on the receiving waters. The brochures provide phone contacts for additional information. Also, the opportunity to recruit citizen volunteers to check or adopt CSO outfalls in their watersheds (i.e., notifying the PWD of dry weather overflows, etc.) will be explored through the watershed partnership framework. Brochures and other educational materials discuss the detrimental affects of these overflows and request that the public report these incidences to the department. In addition, the Water Department has enlisted watershed organizations to assist it with this endeavor. PWD will continue with this focus in 2002 to continue to raise the level of awareness in its citizens about the function of combined and stormwater outfalls through a variety of educational mediums. The watershed partnerships will also continue to be used for this type of education.

In response to the compliance inspection performed by DEP in November 2002, PWD will review and revise our public notification program in areas that have a reasonable likelihood for primary contact recreation. As part of our watershed management program development, PWD has been examining recreational uses in the area waterways. As a result, the development and use of new notification practices are already underway for areas known to support contact recreation, namely the Upper Schuylkill River and in areas of Tacony Creek Park. Flyers were developed and directly distributed to people observed to be swimming in Tacony Creek. A new advisory is also under development for the Schuylkill River in conjunction with the Department's Water Quality Committee. In this respect, the PWD has also been working with other city agencies to devise a "Recreational River Rating System" for the Schuylkill River due to the number of recreational activities that take place on the river year around. This system's educational message will be similar to the marina programs as the advisories are based upon rainfall, CSO's and upstream influences on water quality.

PWD has also initiated an outreach, education, and notification program for marinas and personal watercraft that may be situated near CSO outfalls on the Delaware River. PWD will hold meetings with representatives from DEP's Coastal Non-Point Pollution program, the Partnership for the Delaware Estuary and administrators of similar programs in New Jersey to develop a host of educational and environmental management measures. Our proposed approach would entail conducting a survey of existing marinas and boat launches and their use profiles (personal, charter, open, closed craft, etc.). We would then initiate meetings with the individual marinas to implement site-specific notification mechanisms (brochure, flags, sign, etc.) that list precautions that should be exercised by those engaging in contact recreation within the marina and/or on the open water. In addition, these meetings would discus how the marina can adopt environmentally responsible operation and maintenance practices for personal and multi-purpose watercraft that are jointly supportive of safe contact recreation and the DEP Coastal Non-Point Pollution goals. Specifically, these would address the measures identified in the Marinas and Recreational Boating section of the DEP document titled *Deliverables for Results-Based Funding Coastal Non-point Pollution (CNP) Specialist.*

1.9 Monitoring and 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 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 2002 as required in the NPDES Permit. The table has been reorganized to present overflows by the specific receiving water into which the CSO's from a given interceptor system discharge. In order to be consistent, the column headings are presented in the same format found in the System Hydraulic Characterization (SHC) and NMC Documentation. These statistics are also summarized in the Watershed Planning Section along with waterbody-specific monitoring programs that occurred in 2002.

1.9.1 Annual CSO Statistics (2002)

The estimated average annual frequency and volume statistics for calendar year 2000 are presented in the following Table.

COBBS CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Cobbs Creek High Level	26	32	0 - 57	10	395 - 451	66% - 68%	0 - 127
Cobbs Creek Low Level	9	12	0 - 37	9	28 - 32	86% - 88%	0 - 66

DELAWARE RIVER 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Upper Delaware Low Level	12	12	1 - 27	12	207 - 263	74% - 78%	1 - 54
Somerset	8	9	9 - 43	21	1107 - 1326	66% - 69%	12 - 96
Lower Delaware Low Level	27	27	40 - 78	57	681 - 828	77% - 80%	0 - 88
Oregon	5	6	0 - 31	18	397 - 436	53% - 54%	0 - 55
Lower Frankford Low Level	5	6	8 - 41	19	290 - 347	63% - 66%	9 - 76

PENNYPACK CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Pennypack	5	5	6 - 24	12	17 - 22	81% - 83%	7 - 46

SCHUYLKILL RIVER 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Central Schuylkill East Side	20	26	0 - 70	15	318 - 380	76% - 78%	0 - 200
Central Schuylkill West Side	10	10	0 - 37	18	155 - 194	68% - 72%	0 - 87
Lower Schuylkill East Side	7	9	1 - 31	19	173 - 212	73% - 76%	1 - 72
Lower Schuylkill West Side	4	4	2 - 41	24	318 - 404	33% - 38%	2 - 83
Southwest Main Gravity	2	2	0 - 33	17	474 - 588	80% - 83%	0 - 66

TACONY CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Tacony	16	16	0 - 49	19	1047 - 1314	59% - 64%	0 - 114
Upper Frankford Low Level	12	12	3 - 31	17	91 - 113	76% - 79%	3 - 66

2.0 Phase II – Capital Improvement Projects

The second phase of the PWD's CSO strategy is focused on technology-based capital improvements to the City's sewerage system that will further increase its ability to store and treat combined sewer flow, reduce inflow to the system, eliminate flooding due to system surcharging, decrease CSO volumes and improve receiving water quality. The recommended capital improvement program is the result of a detailed analysis of a broad range of technology-based control alternatives. The capital improvement plan encompasses the three major areas of the City that are affected by CSO's: the Northeast, Southeast and Southwest drainage districts. Table 2-1 provides a summary of the 17 capital projects described fully in *CSO Documentation – Long Term CSO Control Plan, January 1999*. A column has been added to this table that details the receiving water body that will benefit from the project. Lastly, the completion dates of the respective projects have been modified to be consistent with the Draft NPDES permits.

Table 2-1 Summary of Phase II Capital Projects

Watershed	Project Description	Capital Cost
City Wide Program	Establish Real Time Control (RTC) Center	$350,000
City Wide Program	Targeted Infiltration/Inflow Reduction Programs	$2,000,000
Schuylkill and Delaware	Solids & Floatables Control Program	$380,000
Pennypack	Integrate Water Quality Objectives into Flood Relief Programs	N/A
Pennypack	85% CSO Capture Pennypack Watershed (P-1 through P-5)	$230,000
Tacony - Frankford	RTC - Tacony Creek Park Storage (T-14)	$450,000
Tacony - Frankford	RTC - Rock Run Relief Sewer Storage (R-15)	$490,000
Delaware	Somerset Interceptor Sewer Conveyance Improvements	$300,000
Tacony - Frankford	Frankford Siphon Upgrade	$10,000
City Wide Program	RTC & Flow Optimization - Southwest Main Gravity Interceptor, Cobbs Creek Cut-off, and Lower Schuylkill West Side	$1,750,000
Schuylkill	RTC - Main Relief Sewer Storage (R-7 through R-12)	$650,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase I	$6,200,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase II	$7,000,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase III	$11,700,000
Schuylkill	Eliminate Main & Shurs Outfall (R-20)	$12,000,000
Schuylkill	Eliminate 32nd & Thompson Outfall (R-19)	$1,500,000
Darby - Cobbs	Cobbs Creek Low Level (CCLL) Conveyance Improvements	$440,000
Darby - Cobbs	Cobbs Creek Low Level (CCLL) Control Project	$2,500,000
City Wide Program	WPCP Wet Weather Treatment Maximization Program	$150,000
	Total Phase II Project Cost:	**$48,100,000**

This section presents the status of the capital improvement projects being implemented on a citywide basis.

2.1 I / I Reduction Projects

Start: 9/1/1998 End: Status: Ongoing – Annual

Reference Long Term CSO Control Plan p. 2-5.

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 methods enables CSO reduction by effectively 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. The estimated costs for the I/I reduction program as documented in the CSO LTCP 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 concentrated 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.

Status: This program consists of a combination of investigative and corrective efforts geared at reducing extraneous flows into the combined sewer system.

2.1.1 Infiltration and Inflow Investigation

The PWD temporary flow-monitoring program initiated in July 1999, deployed portable flow meters throughout targeted Philadelphia sewershed areas to quantify wastewater flow through sanitary sewers and characterize the tributary sewersheds. The identification and quantification of rainfall dependent inflow/infiltration (RDII) into sanitary sewers contributing to the City of Philadelphia's service area is a key component in assessing potential reductions in combined sewer overflow (CSO) impacts.

The PWD Flow Characterization Study of 2002 included the quantification of wet and dry weather flows in separate sanitary sewers based on temporary flow monitoring data collected from 18 sites over the period from October 2000 through October 2001. Flow monitoring data was subjected to rigorous QA/QC procedures resulting in consistently good data quality over the monitoring period. Further analysis of the flow monitoring data was performed using hydrograph separation techniques in order identify the primary flow components. The results of this study include the quantification of base wastewater flow rates (BWWF), ground water infiltration / direct surface stream inflow rates (GWI/SWI), and rainfall dependant infiltration and inflow (RDII) expressed as a percentage of rainfall volume over the sewershed area (R-value).

The PWD temporary sewer flow-monitoring program during 2002 continued with the deployment of 8 sanitary sewer flow monitoring sites providing data suitable for RDII analysis. RDII analysis and dry weather flow characterization was performed for these 8 sanitary sewer flow monitoring sites (5 in the NE sewer district, 2 in the SW sewer district, and 1 in the SE sewer district) with data collected over the period October 2001 through September 2002. Temporary flow monitors were removed during September 2002 from 3 sanitary sewer flow monitoring locations where sufficient data has been collected (2 in the NE sewer district, and 1 in the SE sewer district) and placed in 3 newly selected combined sewer locations within the SW sewer district.

Specific combined sewer project areas of Philadelphia will be the next major target area and will occur as monitors are transferred in the early months of 2003.

2.1.2 Corrective Actions – Tide Inflow

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. This program was completed in June of 1999 and protected all openings up to 1.5' City Datum and resulted in significant inflow reductions. These reductions were estimated in the 1999 annual status report.

After further review, additional sites were targeted for inflow protection measures. Although situated at elevations significantly higher than extreme high tides, these additional sites were modified in 2001. Table 2.1.1 summarized the number of sites corrected.

Table 2.1.1 Status tide inflow protection project.

Drainage District	Total # Sites	# Completed
Northeast	21	21
Southwest	7	7
Southeast	6	6
Total	34	34

2.2 Real-Time Control Program

2.2.1 Establish Real Time Control Center

Start: 4/1/1998 End: 12/1/2003 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-4.

Description: 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.

Status: The construction of the Real Time Control Center RTC building will be completed by April 2003. A contract to furnish the interior of the control room with computer displays, operator workstations, projection systems and large flat panel displays as well as all the associated hardware and networking is almost finished the design phase and is expected to be complete by December 2003.

The details for the Decision Support System (DSS), which will provide a means for an operator to obtain information relevant to making control decisions in the event that the system is being operated in supervisory mode, are continuing to be designed. The DSS will provide an interface to many different kinds of information that currently exist within PWD, but are not currently available from a single interface. The scope of the DSS will focus on the identification of these relevant data sources and the construction of a "proof-of-concept" prototype DSS.

2.2.1 RTC – SWMG, CC, LSWS

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

Reference Long Term CSO Control Plan p. 2-13.

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 interconnected 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, modifying the SWMG Triple Barrel sewer at 70th & Dicks St.; replacing the dry weather outlet (DWO) pipe and raising the dam at regulator C_17, 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 cost for these projects is $1,750,000.

Status: During the first year of the project, Reid Crowther Consulting, Inc. set up an RTC model using SewerCAT software developed by Reid Crowther. Existing Stormwater Management Model (SWMM) data for the SWDD was imported into this model. Hydraulic conditions of the SWDD were assessed, current systems and practices were reviewed, an RTC objective function was identified. Several technical approaches and operational modes were assessed, and an automatic system with the availability of supervisory control

constitutes the present operating strategy. A technical memorandum was completed describing the facilities required for the implementation of RTC in the SWDD; an implementation plan has been developed and preliminary budget estimates were produced.

During the calendar year 2001, the SWDD RTC strategy was further refined and analyzed and a draft conceptual design memorandum was completed describing the RTC facilities, system strategies and objectives, cost estimates for RTC implementation, analysis of alternative scenarios, and work plan for the development of an RTC decision support system. The proposed RTC scenarios were modeled using the EXtended TRANsport (EXTRAN) component of SWMM and were quantified in terms of CSO volume estimates, impact on wet weather hydraulic grade lines (HGLs) and flows at selected locations, and costs/benefits.

The SWDD RTC conceptual design memorandum outlines recommendations for the modifications to the SWDD collection system in three phases. Phase I includes enlarging of the DWO pipe and raising the diversion dam at the C_17 regulator, modifying the operation of CSPS based on the level in the CCLL interceptor, and regulating inflows from S_27 to the SWMG using a DWO sluice gate under RTC. In addition, installation of a side-overflow weir at the West Barrel at the 70th & Dicks Triple Barrel and opening the East and Center Barrels open for dry weather flow is encompassed in Phase I of the RTC project. Phase II concentrates on decreasing overflows in the LSWS by enlarging the S_45 DWO pipe and regulating inflows using a computer-controlled DWO sluice gate. The strategy for Phase II also incorporates closing of DWO shutter gates at S_43 and S_47. The 3rd phase of the RTC conceptual design is enlargement of the S38 DWO pipe and regulating flows using a computer-controlled DWO gate.

The facility plan was completed in August 2000 and Phase I is being designed. Design for Phase II is expected to take place in 2003.

2.3 WPCP Flow Optimization (Stress Testing)

Start: 1/1/1998 End: 5/1/2001 Status: Complete

Reference Long Term CSO Control Plan p. 2-17 – 2-21.

The plant stress-testing project established:

- 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 allow for a determination of existing and future optimum flows, loads, and operations of the various unit processes. The identification of choke points, deficiencies and unit process capacities are provided in the stress testing summary report that has been developed for each WPCP.

Specific WPCP Capital Improvement Projects (CIP) have been identified as potential projects resulting from the findings of the stress testing which were provided as part of the summary reports. The actual need for additional CIPs, and the resulting prioritization of the CIPs and the budgeting, appropriation of monies, scheduling and actual implementation of the CIPs was accomplished within the context of the overall watershed approach to CSO abatement defined in the LTCP.

CH2MHill submitted the Final Reports for each of the three WPCPs on May 1, 2001. The reports provided the following information: project objectives and methodology, current performance, maximum instantaneous flow, current sustainable treatment capacity and potential upgrades. The report also included hydraulic and treatment throughput capacities for each plant process, capacity limiting factors, and the potential operating modifications or capital projects whose purpose would be to increase plant throughput. Recommended modifications or upgrades were prioritized and categorized into those potential projects that could be considered for either immediate implementation, resulting in enhanced treatment, or capital improvement projects that could also increase treatment capability but would require PWD expenditures. The various CIPs were also categorized by four treatment objectives including: process improvements, peak primary treatment capacity, peak secondary treatment capacity, and wet weather treatment capacity. This second categorization provided anticipated combined CIP costs for each of the treatment objectives as well as the peak treatment capacities.

2.4 Specialized Sewer Cleaning Projects

The Philadelphia Water Department Procurement Department encountered delays in the development of the next sewer-cleaning contract. The contract will be issued for bidding by outside contractors in the early part of 2003.

Under this new contract, during calendar year 2003, the following sewers have been prioritized for cleaning.

- Columbia Avenue trunk sewer just west of Beach Street. This trunk sewer starts at the first manhole access just west of Beach Street and extends through Intercepting Chamber D-42, 310 feet to the Delaware River Outfall.

- Marlborough Street trunk sewer starts just upstream of Allen Street and extends 425 feet to Intercepting Chamber D-43 at the Delaware River.

- Frankford Avenue South of Frankford Creek. This trunk sewer starts at Intercepting Chamber F-10 and extends 425 feet upstream, through a junction chamber to 2nd access manhole located on Jasper Street.

- Bristol Street / Duncan Street under I-95. The first trunk sewer starts at Intercepting Chamber F-13 located on Duncan Street and the second trunk sewer starts at Intercepting Chamber F-14 located on Bristol Street. Both of these pipes meet at a junction chamber downstream. At the junction chamber, one pipe leaves the chamber and extends downstream along a drainage right-of-way to a tide gate located just upstream of the Frankford Creek outfall. The length of this section is 2,030 feet.

- Packer Avenue at Delaware Avenue twin trunk sewers start at Intercepting Chamber D-72 and extend 400 feet upstream to the first access manhole located just west of Delaware Avenue in the Port Authority parking lot.

2.5 Solids / Floatables Control Pilot Program

Start: 3/1/1996 End: 12/5/2003 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-6.

Description: This project involves the reduction in solids and floatable material 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. 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 debris 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.

Pilot Netting Facility Operational Summary: A pilot netting facility at the T-4 outfall has been collecting debris from CSO's since April of 1997. Since the installation of the netting device, 74 nets have been replaced (37 visits) with an approximate total of 6200 pounds of captured debris. The floatables removed from the net have been compared with other floatables control technologies employed by the City. More specifically, on an area weighted basis the inlet cleaning program data suggests that street surface litter dominates the volume of material that can enter the sewer system. The pilot in-line netting system installed at T_4 has been shown to capture debris on the same order as the WPCP influent screens indicating that effective floatables control in urban areas needs to control sources in addition to CSO's.

Skimming Vessel Status: During calendar year 2002, HydroQual, Inc., provided assistance in the evaluation of both skimmer vessel technologies and the individual vessels. The investigation identified available skimmer vessel technologies and the vendors able to provide equipment suitable for use on the Schuylkill and Delaware Rivers. A demonstration of one of the more promising technologies was conducted in the Philadelphia Navy Yard. The analysis looking at the following factors: material handling, vessel speed, mobile offloading, seaworthiness, operations and maintenance costs, quiet operation, service area flexibility, capital costs, and life-cycle costs. Through the investigation, the PWD has determined that there are only two vessel technologies, front-end loader and conveyor type vessels, that would have any applicability in recovering floatable material within the service area. During 2003, the PWD will select the most appropriate vessel technology, and initiate the design and procurement of the vessel.

3.0 Phase III – Watershed-Based Planning and Management

3.1 Introduction

The third component of the City's CSO strategy involves a substantial commitment by the City to watershed planning to identify long term improvements throughout the watershed, including additional future CSO controls, that will result in further improvements in water quality and, ultimately, the attainment of water quality standards. The need for this watershed initiative is rooted in the fact that insufficient physical, chemical and biological information currently exists on the nature and causes of water quality impairments, sources of pollution, and appropriate remedial measures. Because of this deficiency, it is currently impossible to determine what needs to be done for additional CSO control or control of other wet weather sources throughout the watershed. This deficiency, especially with respect to the effects of wet weather discharges and receiving water dynamics, is increasingly recognized nationwide and has led to a broader recognition of the need for watershed-based planning and management to properly define water quality standards and goals. The PWD believes that the National CSO Policy, state and federal permitting and water quality management authorities, cities, environmental groups, and industry, now recognize that effective long-term water quality management can be accomplished only through watershed-based planning.

Further, watershed planning is not only mandated by the CSO Policy and guidance documents, but also is consistent with the current Clean Water Act (CWA) and its regulations, as well as the priorities announced by EPA's Office of Water (See EPA's Watershed Approach Framework, Office of Water, June 1996). Therefore, as discussed in Section II and throughout this report, watershed-based planning and management must not only be fully embraced, but initiatives for development of watershed plans must be actively pursued by the City in cooperation with other stakeholders. This must be done not only to comply with the directions of the CWA, the CSO Policy, and other guidance, but more importantly, to define, prioritize and address the most important causes of non-attainment in the watersheds and to move toward attainment of water quality standards and achievement of beneficial uses.

At the same time, however, the City realizes that effective watershed planning is, even in its simplest form, quite difficult. Understanding the complex, interrelated chemical, biological, hydrologic and hydraulic processes that govern water quality is a very expensive, lengthy process that requires extensive, site-specific data and technical analyses. Establishing stakeholder groups, building consensus, articulating goals and objectives, assessing water quality and water quality impacts of point sources and a vast array of non-point sources, reviewing and possibly revising water quality standards to reflect wet weather processes in water bodies, establishing and implementing water quality based controls, evaluating their effectiveness and financing the cost of studies, design and implementation watershed-wide, requires extensive commitment and resources of a broad range of stakeholders. The process of watershed planning does not happen overnight. The City, nonetheless, is determined to reduce CSO discharges in the near term and undertake, in cooperation with other agencies and stakeholders, comprehensive watershed planning over the next several years.

In light of this commitment and consistent with the CSO LTCP, sections 3-9 describe the status of the various components of the initiative that PWD is undertake to initiate and support watershed-based planning in each of the watersheds within the PWD service area.

3.2 CSO Receiving Water Bodies and Their Watersheds

Water bodies receiving CSO discharges in the PWD service area include the Cobbs/Darby Creeks, the Pennypack Creek, the Tacony/Frankford Creeks, the Schuylkill River and the Delaware River. Although they

do not have CSO discharges, the Wissahickon and Poquessing Creeks are important waterways within the PWD service area. These water bodies and the drainage area of the tributary watersheds served by combined sewers are shown in Figure 3-1. There are 178 point sources of CSO discharge from the PWD sewer system to these waterways. Table 3-1 below indicates the number of CSO point sources and the number of major separate stormwater outfalls on each waterway, as identified in the City's NPDES permits.

Table 3.2.1 CSO and Stormwater Point Source Discharges to Tributaries

Waterway	Number of CSO Point Sources	Number of Major Stormwater Outfalls
Delaware/Schuylkill Rivers (tidal)	100	30
Cobbs/Darby Creeks	38	3
Tacony/Frankford Creeks	32	35
Pennypack Creek	5	130
Schuylkill River (non-tidal)	3	32
Poquessing Creek	0	141
Wissahickon	0	63

3.3 Overview of Watershed Management Planning Work Scope

To meet the regulatory requirements and long-term goals of its CSO, stormwater, and drinking water source protection programs, PWD has embraced a comprehensive watershed characterization, planning, and management program. Watershed management fosters the coordinated implementation of programs to control sources of pollution, reduce polluted runoff, and promote managed growth in the city and surrounding areas, while protecting the region's drinking water supplies, fishing and other recreational activities, and preserving sensitive natural resources such as parks and streams.

Coordination of these different programs has been greatly facilitated by PWD's creation of the Office of Watersheds (OOW). This organization is composed of staff from the PWD's planning and research, CSO, collector systems, laboratory services, and other key functional groups, allowing the organization to combine resources to realize the common goal of watershed protection. OOW is responsible for characterization and analysis of existing conditions in local watersheds to provide a basis for long-term watershed planning and management.

This section outlines the elements of the Phase III Watershed Planning Initiative as described in the PWD CSO 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 that generally describe the work elements in the watershed planning programs being developed.

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

The elements to be included for each watershed under the present permit cycle are summarized in Table 3.3.1.

Table 3.3.1 Planning Component to be completed as part of the Watershed Planning initiative

Watershed	Preliminary Reconnaissance	Watershed Work Plan & Assessment
Delaware-Schuylkill Rivers (tidal)	Monitoring Only	
Cobbs-Darby Creeks	X	X
Tacony-Frankford Creeks	X	X
Pennypack Creek	X	
Schuylkill River (non-tidal)	X	
Poquessing Creek	X	
Wissahickon	X	

Activities for calendar 2002 have focused on integrating efforts in five major regulatory programs that contain significant elements related to watershed management plans to be developed under Step 2 for the Darby-Cobbs and Tacony-Frankford Watersheds and continuation of monitoring and reconnaissance studies for the remaining basins included in the CSO LTCP. These include: (1) the TMDL process to improve water quality on impaired streams and water bodies; (2) the Phase I and Phase II Stormwater Regulations to control

pollution due to stormwater discharges from municipal stormwater systems; (3) PA Act 537 Sewage Facilities Planning to protect and prevent contamination of groundwater and surface water by developing proper sewage disposal plans; (4) the Storm Water Management PA Act 167 to address management of stormwater runoff quantity particularly in developing areas; and (5) EPA's Combined Sewer Overflow (CSO) Control Policy to minimize mixed sewage and stormwater overflowing directly into streams. Some of the data collection and analyses are common to more than one program; therefore, an integrated watershed management approach seeks to develop a cohesive single plan that effectively meets the requirements of each program.

Watershed planning includes various tasks, ranging from monitoring and resource assessment to technology evaluation and public participation. The scope and importance of each task varies for each watershed, depending on the site-specific factors such as the environmental features of the watershed, regulatory factors such as the need to revise permits or complete TMDLs, available funding, extent of previous work, land use, and the size and degree of urbanization of watershed. It is clear that significant savings can be achieved through coordination of the programs and the development of one comprehensive plan for a watershed that meets all five program needs. Sections 3-10 describe the status of the various components of the initiative that PWD has undertaken to advance watershed-specific capital program implementation and watershed-based planning in each of the watersheds within the PWD service area.

Section 3 - Darby-Cobbs Watershed

1.0 CSO Capital Improvement Projects

1.1 Cobbs Creek Low Level (CCLL) Control Project

Start: 6/1/1998 End: 5/1/2000 Status: Complete

1.2 Cobbs Creek Low Level (CCLL) Improvements

Start: 4/2/1998 End: 12/1/2000 Status: Complete

Reference Long Term CSO Control Plan p. 2-16.

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.

Status: The grit buildup in the Island Avenue sewer from 75th and Wheeler Streets to the Southwest WPCP was identified to impede the hydraulic capacity of the Cobbs Creek Low Level Interceptor and will continue to be cleaned as a part of this project. The disposal of debris from these sewers was handled under the BRC grit screening disposal contract with Waste Management, Inc., at a budget of $155,000. The cleaning work on the Cobbs Creek Low Level (CCLL) Interceptor started on 5/3/00. In this project, a 2000-ft section of the Island Avenue sewer is located under Septa's Trolley tracks between Dicks Street and Lindbergh Avenue. The project encountered considerable delays during the work coordination process with SEPTA. SEPTA then agreed to shuttle a bus on Island Avenue between the hours of 9:00 PM and 4:00 AM for a period of two weeks starting 6/19/2000 in order to allow Mobile Dredging to perform the work. The project was completed in calendar 2000.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Darby-Cobbs Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillywater.org/Darby-Cobbs

2.1 Preliminary Reconnaissance Survey

With the final addition of a comprehensive biologic study described in section 2.1.2 during calendar 2001, the technical aspect of the Step 1 - Preliminary Reconnaissance Survey has been completed. The partnership meets on a regular basis to discuss the integration of numerous Federal, State, and local programs into a more comprehensive watershed management plan. In addition to the formation of an initial stakeholder body, significant progress was made towards developing the technical tools that comprise the preliminary reconnaissance survey as described in the CSO LTCP. The following technical documents comprise the preliminary reconnaissance survey:

- Historical Water Quality for The Darby and Cobbs Creeks Watershed
- Analysis of 1999 Monitoring Data for The Darby and Cobbs Creeks Watershed
- A screening Level Contaminant Loading Assessment for the Darby and Cobbs Creek Watershed
- Documentation of the Biological Assessment of the Cobbs Creek Watershed.

2.2 Watershed Work Planning & Assessment

2.2.1 Watershed Partnership

The Darby-Cobbs Watershed Partnership was initiated in 1999 by the Philadelphia Water Department to create a framework for all stakeholders in the 75 square mile Darby-Cobbs watershed basin to provide environmentally sound solutions to improve the water quality of the Darby-Cobbs creeks. Permit holders, participating agencies, and community-based organizations are constructing this framework based upon regulatory and voluntary activities. To this end, the Partnership itself is a public participation mechanism, and acts as a forum for participating members to work together to develop a watershed strategy that meets state and federal regulatory requirements but that also embraces the environmental/public sensitive approach to improve stream water quality and quality of life in communities. Members of the Darby-Cobbs Watershed Partnership include, in addition to the municipalities and townships that reside in the watershed:

- The Philadelphia Water Department
- The Fairmount Park Commission
- The Pennsylvania Environmental Council
- The PA Department of Environmental Protection
- The US Fish and Wildlife Commission
- The Cobbs Creek Community Environmental Education Center
- The Delaware Creek Valley Association
- The Delaware County Planning Department
- The Academy of Natural Sciences
- Lower Merion Township
- The Environmental Protection Agency
- Natural Lands Restoration Environmental Education Project
- Sunoco – South Philadelphia Refinery

As one of the first steps in defining its framework, the Partnership developed a mission statement: "To improve the environmental health and safe enjoyment of the Darby-Cobbs Watershed by sharing resources through cooperation of the residents and other stakeholders in the Watershed."
The Partnership operates through three working committees. The committees include:

The Steering Committee serves as the coordinating body for various watershed projects and activities.

The Technical Committee role is to develop a common understanding of technical issues, share resources and information. This committee also evaluates alternatives for improving water quality and developing and promoting innovative management techniques. The Technical Committee also created a website for the Partnership that publicizes committee and partnership meeting dates, provides meeting minutes, and makes available all technical reports to interested public. The URL for the Partnership is reached at www.phillywater.org and clicking the "Watershed Partnerships" link.

The Public Participation and Education Committee's goal is to increase public understanding and encourage grassroots stewardship in the watershed.

2.2.2 Define Preliminary Goals and Objectives

Early in the planning process, a series of project goals and objectives was developed in conjunction with the stakeholders. In general, **goals** represent consensus on a series of "wishes" for the watershed. A series of 10 project goals were established that represent the full spectrum of goals from all the programs relevant to the watershed (e.g. River Conservation Plan, TMDL programs, Act 167 Stormwater Plans etc.) A significant effort was made to consolidate the various goals into a single, coherent set that avoided overlap and was organized into clear categories.

Once the preliminary set of goals was developed, a series of associated **objectives** was developed. Objectives translate the "wishes" into measurable quantities; **indicators** are the means of measuring progress toward those objectives. This relationship is the critical link between the more general project goals and the indicators developed to assess the watershed and to track future improvement.
The preliminary planning goals and objectives were presented to stakeholders for initial review. However, the final, prioritized goals and objectives were subjected to final review and approval only when the data analysis and modeling work were complete.

2.2.3 Data Analysis and Indicator Development

An important aspect of the WMP is to provide a basic description of existing conditions within the watershed and stream. To accomplish this, a series of indicators were developed that effectively represent the results of the data collection efforts and the extensive data analysis and modeling that took place as part of the planning effort. An indicator is a measurable quantity that characterizes the current state of one aspect of watershed health. Every indicator is directly linked to one or more project objectives. Thus, they monitor progress and achievement of objectives as management alternatives are implemented over time. This approach is modeled after the EFP2 program.
The indicators selected for their potential use both in assessing current conditions as well as assessing future progress in improving conditions are shown below:

The Land Use and Stream Health Relationship
Indicator 1: Land Use and Impervious Cover
Indicator 2: Streamflow
Indicator 3: Stream Channels and Aquatic Habitat
Indicator 5: Fish

Indicator 6: Benthos

Water Quality
Indicator 7: Effects on Public Health (Bacteria)
Indicator 8: Effects on Public Health (Metals and Fish Consumption)
Indicator 9: Effects on Aquatic Life (Dissolved Oxygen)

Pollutants and Their Sources
Indicator 10: Point Sources
Indicator 11: Non-point Sources

The Stream Corridor
Indicator 12: Riparian Corridor
Indicator 13: Wetlands and Woodlands
Indicator 14: Wildlife
Indicator 15: Flooding

Quality of Life
Indicator 16: Public Understanding and Community Stewardship
Indicator 17: School-Based Education
Indicator 18: Recreational Use and Aesthetics
Indicator 19: Local Government Stewardship
Indicator 20: Business and Institutional Stewardship
Indicator 21: Cultural and Historic Resources

2.2.4 Development and Screening of Management Options

Clear, measurable objectives also provided the guidance needed in developing **options** designed to meet the project goals. A management option is a technique, measure, or structural control that addresses one or more objectives (e.g., a detention basin that gets built, an ordinance that gets passed, an educational program that gets designed). The following example clarifies the difference between a goal, an objective, and a management option [think of a better one]:

Goal: Improve water quality

Objective: maintain dissolved oxygen levels above 5 mg/L

Management Option: decrease phosphorus loads from stormwater by infiltrating stormwater at specific locations

Lists of management options were developed to meet each of the goals and objectives established for the Cobbs Creek watershed. Some of the options could be eliminated as impractical for reasons of cost, space required, or other considerations. Only those options deemed feasible and practical were considered in the final list of management options. The list became the basis for assembling the complete Watershed Management Alternatives plan.

2.2.5 Monitoring and Field Data Collection

Watershed monitoring continued in 2002 to support the development of the watershed management plan. 2002 monitoring programs focused on developing a biologic and aquatic habitat baseline prior to the implementation of a stream habitat restoration and bank protection project in the Cobbs Creek. Additional biologic and chemical sampling will be completed in 2003 to support alternatives analysis for the management plan development.

In 2002, Biohabitats, Inc completed a geomorphologic survey of the Cobbs Watershed. The survey located the high priority (i.e., most degraded) reaches in the watershed that would benefit most from a stream bank restoration project. The highest priority reach was a section of Cobbs approximately 700ft in length. Reasons for degradation included low sinuosity, entrenched channel, very high bank erosion, sediment supply, and downcutting (Biohabitats 2002).

A Growing Greener Grant (Project # SEO1732; ME # 350492) has been awarded to PWD to implement a fluvial geomorphologic (FGM)-based restoration project along this portion of the creek. The restoration design and permits have been approved and construction will begin in August 2003. Goals of the restoration project are based upon the biological, chemical, habitat and geomorphologic assessment findings, and include stabilizing stream bank habitat, reducing erosion, restoring natural vegetation, mitigating the impacts of stormwater runoff and non-point pollution, increasing biotic integrity (e.g., fish and macroinvertebrate communities) by improving in-stream habitat, and improving overall aesthetics.

In order to monitor progress towards these goals, OOW and Bureau of Laboratory Services (BLS) conducted a baseline bioassessment of the Cobbs restoration area in April 2002. Habitat and Rapid Bioassessment Protocol III (RBP III) were completed at 2 sites, one upstream (DCC490) and an additional site downstream (DCC455) from the proposed restoration area. Future bioassessments at these same 2 locations will be conducted after restoration is completed. A comparison between the 2 assessments will determine the extent of improvement within Cobbs. This baseline was also compared to a high quality, unimpaired reference stream (e.g., French Creek). Because Cobbs is located in an urbanized setting, it is unlikely that it will ever reach a "best attainable" condition. But the current conditions can be improved, and the extent of improvement will be used to determine if the habitat restoration project is cost-effective.

2.2.6 Modeling

In most streams in the eastern US, stormwater flows can range from 30% of total annual streamflow in less-developed watersheds to over 70% in highly urbanized settings. Modeling of stormwater flows is, therefore, a critical component of a WMP. The model should, at a minimum, be built to provide storm-by-storm flows to the streams as well as estimates of pollutant loads carried by the stormwater reaching the streams. Working in partnership with PADEP's Act 167 Stormwater management Planning program, a Stormwater Management Model (SWMM) was built for the entire Cobbs Creek watershed. SWMM is a comprehensive set of mathematical models originally developed for the simulation of urban runoff quantity and quality in storm and combined sewer systems. The model splits the Cobbs creek watershed into 107 subwatersheds, and calculates flow and pollutant loading from each land use type within each of the subwatersheds. It simulates the hydraulics of combined sewers, the open channel of the creek itself, and the floodplain. Thus, the model is useful for simulation of stormwater runoff quantity and quality, combined sewer overflow, and streamflow. It is one tool for simulation and evaluation of watershed management alternatives. The model was calibrated by comparing stormwater runoff to estimated runoff, calculated through hydrograph separation at USGS gauge 01475550, on Cobbs Creek upstream of the confluence with Darby Creek. Model simulations included:

- A simulation of existing conditions in which annual average flows were provided for various key points along the stream.
- Storm specific flows for storms of various return periods (1-year, 2-year, 5-year, 10-year, 25-year) at various key points along the stream
- Annual average pollutant loads for key pollutants found in stormwater. The list of pollutants includes nutrients such as nitrate and phosphorus, total suspended solids, heavy metals, BOD, and DO.

The model results were also critical for identifying areas where stormwater runoff or pollutant loads are particularly high and in need of control. Model flow results, in combination with the results of the fluvial geomorphic assessment, provide excellent tools for identifying areas of the watershed that are undergoing stormwater related stress.

2.2.7 Development and Evaluation of Management Alternatives

Evaluation of Management Alternatives will take place in 2003

2.3 Public Involvement and Education

The Partnership formed a Public Participation Committee to ensure that the Partnership identifies and recruits representatives of the diverse array of stakeholders in this basin, including municipalities. Members of the Public Participation Committee include representatives of the following agencies/organizations: the Philadelphia Water Department, the Fairmount Park CAC, Fairmount Park Commission, Dove Communications, US Fish and Wildlife Service, Heinz National Wildlife Refuge Center, Pennsylvania Environmental Council (PEC), Cobbs Creek Community Environmental Education Center (CCCEEC), Delaware Creek Valley Association, DCNR, PA Department of Environmental Protection, Trail Boss Program, Delaware County Planning Department, EPA Region III, Delaware Riverkeeper Network, Academy of Natural Sciences, and the Men of Cobbs Creek.

The Water Department is supporting a number of public education initiatives in development by the Public Participation committee of the Darby-Cobbs Watershed Partnership, including: 1) the production and publicizing of the Watershed Status Report, 2) the development of a teachers training workshop funded by a Growing Greener grant, in which twenty middle- and high-school teachers participated in five Saturday workshops on lessons involving: watershed management, stormwater management, water quality, and ecological restoration. The final workshop was dedicated to the design of service-learning projects, 3) the development of a resident survey on watershed awareness and pollution-causing practices, and 4) the development in partnership with Green Works, of a video tour of the Darby-Cobbs Watershed, which became available in the Fall of 2002. In 2002, the Partnership also hosted a watershed workshop to determine the goals and objectives of the Cobbs Creek Watershed Management Plan. This plan will be used as a model for the entire Darby-Cobbs Basin and applicable portions applied to the Tacony Frankford watershed.

Cobbs Creek Community Environmental Education Program

PWD continues to work with the center in support of programs initiated by the Darby-Cobbs Watershed Partnership and stormwater pollution prevention programs sponsored by the PWD. Students participate in benthic macroinvertebrate assessment, fish collection techniques, and stream characterizations. The program, "home-based" at Turner Middle School in West Philadelphia, involves not only classroom education, but also service learning field work – stream study, trail development, butterfly garden – for Cobbs Creek and community. In addition, three students from Turner Middle school were chosen to perform a science project directed towards aquatic ecosystems and biological integrity of Cobbs Creek. The Philadelphia Water

Department's aquatic biologists assisted students in the development of projects for display at the Carver Science Fair at the Academy of Natural Sciences.

Watershed Tours:
The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices. Self-guided tour booklets for each watershed are under development (actually ready to publication but lacking a printing budget). Virtual website tours have been developed for the Tacony-Frankford watershed and the Mill Creek Watershed as prototypes for web-based tours.

3.0 Annual CSO Statistics

COBBS CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Cobbs Creek High Level	26	32	0 - 57	10	395 - 451	66% - 68%	0 - 127
Cobbs Creek Low Level	9	12	0 - 37	9	28 - 32	86% - 88%	0 - 66

Section 4 - Tacony-Frankford Watershed

1.0 CSO Capital Improvement Projects

1.1 Frankford Siphon Upgrade

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

1.2 RTC - Rock Run Relief Sewer (R_15)

Start: 10/16/1998 End: 9/3/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-9 – 2-10.

Description: The Rock Run Relief Sewer provides flood relief to combined sewer areas upstream of regulator T_08 in the Northeast Drainage District (NEDD). Currently, CSO's discharge into the Tacony Creek at the Rock Run Relief Sewer outfall – an 11' by 14' sewer - during periods of moderate or greater rainfall. Installation of an inflatable dam in the Rock Run Relief Sewer allows for utilization of approximately 2.3 million gallons (MG) of in-system storage to retain combined flows during a majority of these wet weather events. The inflatable dam stores combined flows in the relief sewer until storm inflows have subsided and capacity exists in the Tacony Interceptor for conveyance of combined flows to the Northeast Water Pollution Control Plant (NEWPCP). This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream areas. The estimated budget for this job is $490,000.

Environmental Benefits: This project will reduce the discharge of combined sewage into Tacony Creek, one of the more-sensitive water bodies exposed to CSO discharges in the City of Philadelphia. 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).

Status: A design memorandum was completed that documents the expected environmental benefits of the Rock Run Relief Project, quantifies the flooding risks associated with the project, and documents the recommended control logic for the inflatable dam's operation and drain-down control. In support of this memorandum, several alternative control logics for the inflatable dam operation and drain-down gate were investigated to develop a logic that minimized the risks of flooding, increased Rock Run Relief storage utilization and eliminated adverse affects of the project at other CSO regulators on the Tacony Creek. A 120 million gallon (13%) reduction in average annual CSO volumes to the Tacony Creek, from the T_08 & R15 outfalls is expected through the implementation of this capital project.

During 2002, engineering assignments were generated from this design memorandum. The PWD has decided to combine together the engineering work for both the Rock Run and Tacony Creek Park storage

projects. The engineering firm of O'Brien & Gere has been retained to complete the design. The preparation of the construction documents is scheduled to begin in March of 2003. A schedule of the engineering tasks will be completed by O'Brien & Gere and will be available shortly thereafter.

1.3 RTC – Tacony Creek Park (T_14)

Start: 10/16/1998 End: 9/3/2004 Status: In-Progress

Reference - Long Term CSO Control Plan p. 2-8 – 2-9.

Description: The T_14 trunk sewer system conveys combined sewage from the largest combined sewershed in the PWD collection system. Currently, CSO's discharge into the Tacony Creek at the T_14 outfall – a 21' by 24' sewer - during periods of moderate or greater rainfall. Installation of an inflatable dam in the T_14 trunk sewer allows for utilization of approximately 10 million gallons (MG) of in-system storage to retain combined flows during a majority of these wet weather events. The inflatable dam stores combined flows in the trunk sewer until storm inflows have subsided and capacity exists in the Tacony Interceptor for conveyance of combined flows to the Northeast Water Pollution Control Plant (NEWPCP). This control technology provides an additional margin of protection against dry weather overflows and Tacony Creek inflows to the combined system while still maintaining flood protection for upstream areas. The estimated budget for this job is $450,000.

Environmental Benefits: This project will reduce the discharge of combined sewage into Tacony Creek, one of the more-sensitive water bodies exposed to CSO discharges in the City of Philadelphia. An average annual reduction in CSO volume of 750 MG/year, from 2,500 to 1,750 MG/year, is 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, 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 siting, design, and construction of a new storage structure).

Status: See above. During 2002, engineering assignments were generated from this design memorandum. The PWD has decided to combine together the engineering work for both the Rock Run and Tacony Creek Park storage projects. The engineering firm of O'Brien & Gere has been retained. The preparation of the construction documents is scheduled to begin in March of 2003. A schedule of the engineering tasks will be completed by O'Brien & Gere and will be available shortly thereafter.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Tacony-Frankford Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillywater.org/Tacony-Frankford

2.1 Preliminary Reconnaissance Survey

The following components of the preliminary reconnaissance survey were produced in draft form in 2002:

- *Historical Flow and Water Quality for the Tookany-Tacony-Frankford Watershed*
- *Biologic Assessment of the Tookany-Tacony-Frankford Watershed*
- *Watershed Indicators for the Tookany-Tacony-Frankford Watershed*

2.2 Watershed Work Planning & Assessment

The watershed plan development process described for the Cobbs Creek watershed in the preceding section will be applied for the Tacony Frankford Creek during 2003. Watershed Goal Setting is proceeding concurrently with the to be completed in 2003 in conjunction with the concurrent River Conservation planning process.

2.2.1 Watershed Partnership

The PWD sponsored Tacony-Frankford Watershed kicked off with its first Partnership meeting on October 4th, 2000. The Tacony-Frankford Watershed drains 29 square miles, or 20,900 acres in Philadelphia and Montgomery counties. It is, for the most part, a highly urbanized watershed with a large diverse population that includes portions of the inner city as well as wealthy suburban communities. This partnership, geographically less diverse than the Darby-Cobbs Watershed, was able to tap into a number of organizations and groups that are already involved in neighborhood revitalization. Its members are anxious to tackle projects that will see immediate benefits. Members include:

- Philadelphia Water Department
- Fairmount Park Commission and the Natural Lands Restoration Project
- Pennsylvania Environmental Council
- Frankford Group Ministry
- Melrose Park Neighbors Association
- Friends of Tacony Park
- Edison High School
- Rohm and Haas Co.
- Senior Environmental Corps.
- Awbury Arboretum
- Frankford United Neighbors
- Frankford Style Community Arts
- PA Department of Environmental Protection
- US Environmental Protection Agency
- US Army Corps of Engineers
- Philadelphia Green
- Phila. Urban Resources Partnership
- Cheltenham Township

This Partnership has been modeled after the Darby-Cobbs Partnership in working structure and the technical documents generated. However, we envision that more "hands-on" type of projects will be encouraged and requested on a regular basis. To supplement the work of the Partnership and to further the development of a watershed management plan, the Water Department, Fairmount Park and the Frankford Group Ministry applied for a DCNR grant in October to develop a River Conservation Plan for the Philadelphia county portion of the Tacony-Frankford watershed. The Partnership will be working closely to coordinate this grant

with the River Conservation Plan in progress on the Tookany Watershed in Montgomery County. Cheltenham Township, a Partnership member, is developing this RCP.

The creation of a River Conservation Plan (RCP) for the Frankford-Tacony Watershed will enable the City to create an environmental and cultural planning inventory for a highly urbanized watershed with the ultimate goal to develop an holistic management plan that will facilitate restoration, enhancement and sustainable improvements in the designated watershed

2.2.1 Monitoring and Field Data Collection

Continuous Water Quality:
In accordance with the CSO program's Long-Term Control Plan (LTCP), PWD continued to deploy monitoring strategies directed at both the quality and quantity of water within our watersheds. During the reporting period, PWD completed a total of fifteen (n=15) continuous water quality-monitoring deployments in the Tacony-Frankford Watershed (Table 1).

Deployment Dates	Water Quality Monitoring Locations						
	TF-01	TF-02	TF-03	TF-04	TF-05	TF-06	TF-07
09/10/02 - 09/25/02			X			X	
09/25/02 - 10/08/02		X			X		
10/04/02 - 10/23/02			X			X	
10/23/02 - 11/05/02		X		X			
10/29/02 - 10/23/02			X		X		
11/19/02 - 12/06/02	X	X		X			
03/04/03 - 03/12/03	X						
03/18/03 - 03/21/03	X						

Table 1. Dates and locations of SONDE deployments in the Tacony-Frankford Watershed.

Continuous water quality-monitoring instruments were programmed to obtain chemical measurements of pH, conductivity, dissolved oxygen, turbidity, temperature and depth at 15-minute increments.

Wet-Weather Sampling
In addition to continuous monitoring, PWD continued its endeavors to capture water quality measurements during significant rainfall periods in the Tacony-Frankford Watershed. Sampling occurred on the following dates along the main stem locations of the Tacony-Frankford Creek: 10/15/02-10/18/02, 10/29/02-11/01/02, 11/12/02-11/14/02 and 03/04/03-03/06/03. A total of 23 chemical and microbial parameters were collected during each sampling period spanning the entire duration of each storm. Moreover, PWD has recently increased its efforts in profiling storm events with the integration of automated samplers (e.g., ISCO Model 6712 Standard). Plans of automated deployments combined with QA/QC grab samples are currently underway.

2.3 Public Involvement and Education

Watershed Tours:

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices. Self-guided tour booklets for each watershed are under development (actually ready to publication but lacking a printing budget). Virtual website tours have been developed for the Tacony-Frankford watershed and the Mill Creek Watershed as prototypes for web-based tours.

3.0 Annual CSO Statistics

TACONY CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Tacony	16	16	0	-	49	19	1047	-	1314	59%	-	64%	0	-	114
Upper Frankford Low Level	12	12	3	-	31	17	91	-	113	76%	-	79%	3	-	66

Section 5 - Pennypack Watershed

1.0 CSO Capital Improvement Projects

1.1 85% CSO Capture – Pennypack Watershed

Start: 2/1/1996 End: 9/7/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-8.

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 while maintaining existing overall system-wide CSO capture 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 3 of the Pennypack CSO regulators. In addition, the diversion dam height at four PP regulator locations will be raised. Lastly, modifications at twelve 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 58 MG. This represents a reduction of roughly 55% 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 surrounded by public parkland where recreational activities occur.

1.1.1 Regulator Modifications (P1-P4)

Start: 11/18/1998 End: 9/7/2004 Status: In-Progress

The hydrologic and hydraulic computer models developed by the PWD for the CSO Program were applied to determine new dry weather outlet (DWO) pipe diameters and diversion dam heights necessary to achieve 85% capture of combined flows in the Pennypack basins. A preliminary site plan for the CSO regulator modifications necessary to achieve 85% capture of Pennypack combined flows was completed. Additional monitoring was performed to verify model representations of wet weather inflows in the Pennypack interceptor.

Status: A preliminary site plan was developed for the construction of new CSO regulator chambers at P_1, P_2 and P_4. Model analyses in 1999 refined initial estimates of regulator modifications including new DWO pies and diversion dam heights at these three chambers. In 2000, PWD staff finalized the project's design memorandum and site plans documenting chamber modification specifics that allow for 85% capture of combined flows in the Pennypack basins while maintaining existing levels of CSO capture in the Northeast Low Level System.

The conceptual designs for the new CSO regulator chambers and DWO pipes were completed in 2002 and the project has moved into the final design phase. The design plans and specifications are complete except for details for a utility crossing. It is expected that this project will be advertised, awarded and under construction within the calendar year of 2003.

1.1.2 Integrate Water Quality Programs with Storm Flood Relief (WQ & SRF) - Sheffield Ave.
Start: 2/1/1996 End: 6/31/2000 Status: Complete

Reference Long Term Control Plan on page 2-6.

Description: There are several flood relief projects defined and currently in various stages of implementation. However, these projects have been developed to better manage the relatively high flows associated with larger, less frequent events. CSO control is primarily concerned with lower, more frequent flows. There is a potential opportunity to realize multiple benefits from the flood relief projects by expanding the scope of these projects to address both storm flood relief and CSO control objectives. Generally this will require adjusting the design of the individual projects to manage both low and high flows, resulting in the dual benefit of CSO control and flood relief. For example, it may be possible to use a new flood relief sewer to provide storage of low flows for CSO control and conveyance of high flows for flood control. The costs for implementing CSO controls in flood relief projects will be defined on a case-by-case basis.

Environmental Benefits: The specific benefits that accrue will be defined on a case-by-case basis.

Status: The Sheffield Ave. Relief sewer project was undertaken as a demonstration project to examine the process by which the Department could utilize the existing flood relief sewer planning process to gain increased CSO benefit. Design level modeling of the Sheffield and Cottman Avenue sewershed was undertaken from the period from 2/1/1996 to 12/13/1996. The storage and treatment requirements to achieve the 85% capture objective were determined in conjunction with the DWO conduit re-sizing to be completed as part of project 10.3.2 Regulator Modifications (P_1 – P_4) from 12/16/1996 to 3/7/1997. The treatment rates and storage volumes required to achieve 85% capture were used to evaluate diversion structure and regulator alternatives from 3/10/1997 to 7/11/1997. Design specifications were developed from 7/14/1997 to 6/1/1998. The contract was awarded to Lisbon Contractor Inc., at a cost of $5,630,462. This project is now complete.

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

Most elements of the preliminary reconnaissance survey for the Pennypack Creek have been completed. Specifically the physical, chemical, and biologic assessment was completed in calendar year 2002 with a comprehensive report scheduled for development in 2002. The scope of these studies is summarized below.

During 4/2/02 to 4/9/02, the Philadelphia Water Department (PWD) conducted Rapid Bioassessment Protocols (RBP III) at all twenty (n=20) locations within the Pennypack Watershed per the 5 year bio-monitoring program. Habitat assessments were also completed at the twenty sites based on the *Stream Classification Guidelines for Wisconsin* (Ball, 1982) and *Methods of Evaluating Stream, Riparian, and Biotic Conditions* (Platts et al., 1983). In July and August 2002, PWD conducted fish assessments at eleven locations within Pennypack Creek Watershed as defined in the 5-year bio-monitoring cycling program. Fish were collected by electrofishing as described in EPA's Rapid Bioassessment Protocol V (RBP V) (Barbour et al., 1999).

Office of Watersheds and Bureau of Laboratory Services staff also collected water quality samples at thirteen locations within Pennypack Creek Watershed for chemical and microbial analysis. Samples were taken from each site at weekly intervals for one month during three separate seasons as follows: "spring" samples collected 04/25/02, 05/02/02, 05/09/02, and 05/16/02; "summer" samples collected 08/29/02, 09/05/02,

09/12/02, and 09/19/02; "winter" samples collected 1/16/03, 1/23/03, 1/30/03 and 2/6/03. A total of 156 discrete, or "grab" samples were taken. Results from these monitoring efforts will be documented in a report making an initial characterization of the Pennypack Creek containing all of the elements of the preliminary reconnaissance survey.

2.2 Public Involvement and Education

River Conservation Plan

The PWD and its partners – the Fairmount Park Commission, the Friends of Pennypack Park, the Friends of Fox Chase Farms, the Pennypack Ecological Trust and the Montgomery County Planning Commission – received notice in Summer 2002 that it was awarded a grant from DCNR to develop a river conservation plan for the Pennypack Creek Watershed – Philadelphia, Montgomery and Bucks Counties. In the Fall 2002, team members toured various sections of the watershed to gain a better understanding of its current physical topography and condition. Also, the team began working on an Request for Proposals for a consultant to lead the data collection and public outreach components of the plan, under the guidance of the RCP team.

BJs Clean Up Day:

The Friends of the Pennypack Creek joined the Water Depart- ment and the BJs Wholesalers of Northeast Philadelphia in a major clean up of portions of Pennypack Creek and BJ's stormwater detention basin area - a magnet site for the illegal dumping of tires and other large debris on Saturday, March 23, 2002. This clean up represented the first, large-scale public and private venture designed to inspire businesses and industries to adopt and protect their own backyard watersheds. Water Department crews pumped the basin dry to facilitate the removal of approximately 300 tires,
logs and enough trash to fill a dumpster.

Big Brother Big Sister Assn. of Philadelphia:

During the reporting period, City representatives met with individuals from the Northeast Branch of the Big Brother/Big Sister Association of Philadelphia during a day-long hike in the Pennypack Watershed (this is an annual event now as a result of its success). During the day, children were educated on various aspects of the watershed which included terrestrial flora and fauna, aquatic life, and the effects of human intervention on the health of the aquatic communities. In addition, children and adults participated in a demonstration concerning rapid biological assessment protocols (RBPs) and its use regarding cumulative effects of pollution on resident biota and the detection of anthropogenic impacts to the aquatic community. During the program children and their mentors learned about the methodology of biomonitoring, identification of macroinvertebrates, and the various metrics used to evaluate the biological integrity of aquatic systems. Habitat evaluations were also incorporated into the program to educate the participants on the deleterious effects of stormwater runoff and point source pollution on the benthic community. The department plans to continue its work with the Northeast Branch of the Big Brother/Big Sister Association of Philadelphia to further their involvement in the Pennypack Watershed.

Watershed Tours:

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices. Self-guided tour booklets for each watershed are under development (actually ready to publication but lacking a printing budget). Virtual website tours have been developed for the Tacony-Frankford watershed and the Mill Creek Watershed as prototypes for web-based tours.

3.0 Annual CSO Statistics

PENNYPACK CREEK 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Pennypack	5	5	6 - 24	12	17 - 22	81% - 83%	7 - 46

Section 6 – Wissahickon Creek Watershed

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

During the reporting period, the Office of Watersheds finalized the Baseline Biological Assessment Of the Wissahickon Watershed. Biological, physical and chemical assessment locations within the Wissahickon Watershed were chosen according to three criteria: 1) proximity to Pennsylvania Department of Environmental Protection bio-assessment locations (1997 Un-assessed Waters Program); 2) appropriate habitat heterogeneity (e.g., pools, riffles and runs), and 3) accessibility to stream. In total, fifteen (n=15) sites were chosen for benthic (RBP III, Barbour et. al., 1999) and habitat analyses. Spatial trend analysis of chemical parameters was also assessed during March 20th, 2001 and June 20th 2001. The completed report addresses all requirements as delineated in Chapter 3 of the Long-Term Control Plan (LTCP). Furthermore, biological, physical and chemical data from the report was provided to the Pennsylvania Department of Environmental Protection (Southeastern Regional Office) as supplemental data for the current Total Maximum Daily Load (TMDL) program in the Wissahickon Creek Watershed.

Section 7 – Poquessing Creek Watershed

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

During 2001-2002, PWD completed physical, chemical and biological monitoring of the Poquessing-Byberry Creek. During winter 2001, Rapid Bioassessment Protocols (RBP III) were conducted at thirteen locations (n=13) within the Poquessing-Byberry Watershed. Field collections were preserved and assessed during spring of 2002. All monitoring locations were also assessed based on physical/habitat parameters as outlined in the Environmental Protection Agency's Manual Rapid Bioassessment Protocols For Use In Wadeable Streams And Rivers (Barbour et al., 1999). In addition to benthic assessments, PWD completed fish assessments (RBP V/IBI) at seven locations (n=7) during the June 2002 as defined in the 5-year bio-monitoring cycling program. Furthermore, a spatial and temporal analysis of water quality was assessed by Office of Watershed's and Bureau of Laboratory Service's staff. Samples were taken from each site at weekly intervals for one month during three separate seasons as follows: spring samples collected 04/24/02, 05/01/02, 05/08/02, and 05/15/02; summer samples collected 08/28/02, 09/04/02, 09/11/02, and 09/18/02; winter samples collected 11/08/01, 11/15/01, 11/29/01, and 12/13/01. Results from the monitoring efforts are documented in a comprehensive report, providing all of the elements of the preliminary reconnaissance survey of the Poquessing-Byberry Creek.

Section 8 – Delaware River Watershed

1.0 CSO Capital Improvement Projects

1.1 Somerset Interceptor Cleaning

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

1.2 Inflow Reduction

An analysis of tidal inflows at CSO regulators was performed to quantify the frequency of river inflows across regulator emergency overflow weirs due to tidal-influenced river levels. Emergency overflow weirs are designed at CSO regulators to prevent flooding of upstream trunk sewer systems during tide gate malfunction. However, during extreme high tides, flow reversals may occur across these weirs resulting in an inflow of river water to the CSO regulator chamber and combined sewer system. To free up capacity taken up by this flow during high tide periods, the PWD has installed tide gates at CSO regulators with low-lying emergency overflow weirs. A list of regulators for installation of overflow weir tide gates was developed through review of PWD's CSO regulator level monitoring data and review of PWD's CSO regulator databases.

Model analyses and review of PWD CSO level monitoring regulator data were performed to estimate the reduction in inflow frequency due to installation of overflow weir gates. Model analyses were performed to quantify the expected decrease in inflow volumes and frequencies in the SEDD for a one-year period, 1998. Table 1 lists the expected decreases in tidal inflow frequencies and volumes in the SEDD, due to the installation of overflow weir tide gates.

Table 1-1 Tidal Inflow Reductions in the SEDD Due to Installation of Overflow Weir Gates

CSO regulator	Reduced inflow frequency	Reduced inflow volume (MG)
D_39	2	0.03
D_44	5	0.38
D_45	103	23.34
D_47	11	1.77
D_51	1	0.36
D_62	1	0.16
D_63	6	1.36
D_64	1	0.13
D_66	6	1.22
D_73	39	24.12

2.0 Watershed Management Planning

PWD continues to support the development of the PCB TMDL in the Delaware Estuary by participating in committee meetings, sampling, and contributing to the development of source track down and various monitoring programs.

Past reports from the DRBC regarding general water quality monitoring and specific monitoring for wet weather impacts suggest that fecal coliform standards are being met in the main stem estuary in the Philadelphia region most of the time. [1] DRBC indicated that further work on Bacteria Total Maximum Daily loads that might be required would occur in 2005. Past studies have shown dissolved oxygen concentrations in the Estuary are largely unaffected by CSO contributions. [2] As a result, monitoring and planning priorities continue to focus on the tributaries.

3.0 Annual CSO Statistics

DELAWARE RIVER 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Upper Delaware Low Level	12	12	1	-	27	12	207	-	263	74%	-	78%	1	-	54
Somerset	8	9	9	-	43	21	1107	-	1326	66%	-	69%	12	-	96
Lower Delaware Low Level	27	27	40	-	78	57	681	-	828	77%	-	80%	0	-	88
Oregon	5	6	0	-	31	18	397	-	436	53%	-	54%	0	-	55
Lower Frankford Low Level	5	6	8	-	41	19	290	-	347	63%	-	66%	9	-	76

[1] Santoro, E., Draft Delaware Estuary Monitoring Report, November 1999.
[2] Hydroqual, Inc., Task 3.0 Evaluation of Wet Weather Impacts, 1999

Section 9 – Schuylkill River

1.0 CSO Capital Improvement Projects

1.1 RTC – Main Relief Sewer

Start: 8/1/1999 End: 6/15/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-13 – 2-14.

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 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 4.0 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 4.0 MG of storage, an inflatable dam is required in the box sewer just above the Main Relief Sewer outfalls to the Schuylkill River. This dam will reduce CSO discharges to the Schuylkill River by utilizing the relief sewer's 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 inflatable dam 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 50 MG/year is expected at the Main Relief Sewer outfalls through use of the available in-system storage volume. This represents a reduction of approximately 70% 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).

Status: A design memorandum was produced that lists the expected environmental benefits of the Main Relief Project, quantifies the flooding risks associated with the project, and documents the designed control logic for the inflatable dam's operation and drain-down control. In support of this memorandum, several alternative control logics for the inflatable dam operation and drain-down gate were investigated to develop a logic that minimized the risks of flooding, increased Main Relief storage utilization and eliminated adverse affects of the project at other CSO regulators on the Schuylkill River.

During 2002, the plans and specs were completed. These documents must still undergo final review by PWD and Fairmount Park. In preparation for this construction project, meetings will be held with Fairmount Park representatives in early 2003. The Park has responsibility to coordinate access to this site, which serves as public access and parking to anyone who is visiting the Philadelphia Museum of Art, the Fairmount Waterworks and other public and private buildings. It is expected that this project will be advertised, awarded and under construction within the calendar year of 2003.

1.2 Elimination / Consolidation of Outfalls - Main & Shurs

Start: 9/4/1998 End: 12/24/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-15.

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 of storage would be required under current conditions to eliminate 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*) and available sewer capacity is required in order 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.

Status: During 2002, work has focused on evaluating several scenarios to eliminate the overflow without adversely impacting current sewer hydraulics, as well as for future development conditions. Several scenarios for eliminating the overflow have been investigated and evaluated using the EPA's Stormwater Management Model (SWMM). These scenarios have included reconstructing the existing interceptor to provide sufficient capacity, constructing a parallel interceptor for additional capacity, constructing off-line storage to retain flows during times when there is insufficient capacity, or various combinations of the three.

1) off-line storage at the upper end of the interceptor
2) off-line storage at the lower end of interceptor
3) Parallel interceptor by itself
4) Parallel interceptor and off-line storage at the upper end of interceptor
5) Parallel interceptor and off-line storage at the lower end of interceptor

Currently, the second scenario of only constructing off-line storage at the lower end of the interceptor best achieves the goal of eliminating the interceptor without adversely impacting sewer hydraulics. Site investigations are currently underway to identify a suitable location and configuration of the off-line storage facility. A design memorandum will be developed in early 2003 summarizing all analyses to date, including the final design scenario recommended for elimination of the Main & Shurs overflow.

1.3 Elimination / Consolidation of Outfalls - 32nd & Thompson

Start: 4/1/1998 End: 9/15/2003 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-15.

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 might 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.

Status: The design plans for the sewer reconstruction were completed in 1998. The new design allows for an increased grade to be achieved and therefore the reoccurrence of grit deposition is expected to be eliminated. The contract development was coordinated with CSX and MCI who have track and duct bank facilities that coincide with the sewer alignment. This project was re-bid and awarded at cost of $2.4 million. This project was initially bid several months earlier, but at $2.8 million this bid was significantly higher than the engineering estimate. It was subsequently re-bid after additional soil investigation was performed and integrated into the drawings and specification. The construction work is expected to commence in April of 2003.

1.4 Elimination / Consolidation of Outfalls - Stokely & Roberts (R_ 22)

1.4.1 Stokely & Roberts (R_ 22) - Dobson's Run Phase I
Start: 5/1/1996 End: 10/4/1998 Status: Complete

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

Description: Temporary dams were installed in the Dobson's run storm sewer. Flow was diverted to the Wissahickon High Level interceptor at Stokely 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.
Status: This project entails the reconstruction of the storm and sanitary sewer from Wissahickon Ave. to Roberts Ave. and elimination of the overflow chamber located at Stokely & Roberts (R_22). The contract was awarded to A.P. Construction and construction commenced on 7/18/1996. The construction, including the elimination of the R_22 chamber, was completed on 10/4/1998 at a total cost of $7,040,000. (The estimated construction cost was $ 5.8 million).

1.4.2 Kelly Drive (S_01T) - Dobson's Run Phase II
Start: 6/1/1997 End: 1/8/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

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. In order to take advantage of economies of scale, design work for Phase II and III of Dobson's Run has been combined into one project because both phases involve tunneling.

During 2002, permits were secured from the Army Corps of Engineers. The PWD are still waiting on the permits from the PADEP. The PWD forwarded the last outstanding requirement which was to obtain a letter from Fairmount Park that provided consent to cross public property with the proposed storm water conduit and outlet. Some of the Right-of-Ways necessary to cross various private properties have either already been obtained or will be obtained in early 2003. The design plans and specifications will be finalized

in mid-2003. Increased effort is being applied to finish all outstanding design details and coordination issues. It is expected that this project will be advertised, awarded and under construction within the calendar year of 2003.

1.4.3 Kelly Drive (S_01T) - Dobson's Run Phase III
Start: 7/1/2001 End: 1/8/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

Phase III will eliminate all CSO discharge from occurring at S_01T and has been combined with Phase II for contract development and bid purposes. See Above.

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

A comprehensive, watershed-based, Source Water Assessment was complete by PWD in conjunction with PA DEP and other watershed stakeholders for the Schuylkill River Basin above Fairmount Dam. The information generated satisfies the elements of the Step 1 - Preliminary Reconnaissance Survey outline. Even though Step 2 Watershed Planning and Assessment is not specifically called for in the CSO long term control plan, the integrated programs philosophy allowed for progress to be made towards a comprehensive watershed plan through the Source Water Assessment program efforts. The following elements of the Step 2 process were included in the Source Water Assessment for the Schuylkill River:

- Monitoring, sampling and bioassessment
- QA/QC and data evaluation
- Watershed modeling
- Problem definition and water quality goal setting
- Technology evaluation
- Public Involvement

The Source Water Assessment Program reports, information, and updates can be accessed at http://www.schuylkillswa.org/

2.2 Watershed Work Planning & Assessment

Protocol Development Support - Biologic Assessments in Tidal Waters

During spring and summer months of calendar year 2002, PWD scientists conducted biological assessments along tidal and non-tidal portions of the Schuylkill River. Studies were focused on assessing the biotic integrity of anadromous, catadromous and resident fish species and to provide qualitative information on the efficiency of the existing fish passage structure located at Fairmount Dam. Using a boat electrofisher, biologists collected fish species during 20-minute interval passes (4 passes per assessment). Lengths, weights, presence of DELTA (i.e., deformities, lesions, tumors and anomalies),

and catch-per-unit-effort (CPUE) were recorded. A total of 25 days (i.e., 480 man-hours) were recorded over the course of the two seasons. Results from the initial bioassessment will serve as a baseline for future monitoring projects along the tidal and non-tidal portions of the Schuylkill and other waterways.

Manayunk Canal Baseline Assessment

The first comprehensive (i.e., biological, chemical and physical) assessment of the Manayunk Canal was performed during 2002 and will serve as a baseline for all future assessments. PWD scientists performed benthic, algal, ichthyofaunal and chemical analyses at four locations along the 1.6-mile stretch of the canal. Four Hester-Dendy samplers, designed to collect macroinvertebrates, were collected after residing in the sediment of the canal from 8/26/02 to 9/20/02. Upon collection, benthic invertebrates were preserved and identified to genus in laboratory. Chemical and microbial analytes, such as nutrients, metals, fecal coliform and *E. coli* were also collected and analyzed during 8/14/02, 8/21/02, 9/25/02 and 10/09/02.

During this period (8/14/02-9/05/02), periphyton samplers were deployed at the four locations in attempt to associate primary productivity with the chemical profile of the canal. In addition, scientists from PWD's Office of Watersheds and Bureau Of Laboratory Services completed a fish assessment on the Manayunk Canal on October 4th, 2002. An electrofishing boat was used to temporarily stun the fish for easy collection. Once collected, the fish were identified, measured, and weighed. Any abnormalities, such as tumors, anchor worms, or deformities were also recorded. Results from these monitoring efforts are currently be analyzed and a report is scheduled for completion in June, 2003.

2.3 Public Involvement and Education

The following Public Outreach Activities were conducted in calendar 2002 in the Schuylkill River Watershed:

Manayunk Canal Clean Up

The Friends of the Manayunk Canal, local citizens and the Water Department teamed up in the early evening of July 10, 2002 to assist with the removal of debris that had collected in the Lock Street Dam since Hurricane Floyd. Volunteers removed logs, construction lumber, and other debris, transforming a public eyesore into the charming vista it was meant to be. The project was a component of the ongoing partnership among the Friends Group, the Manayunk Development Corporation, and local schools to teach students and citizens the -importance of non-point source pollution control.

In addition, members of the Philadelphia Water Department's Office of Watersheds and Sewer Maintenance met with officials from the Manayunk Development Corporation in July 2002 to discuss potential group strategies to control floatables/debris entering and collecting in the Manayunk Canal. The agreed plan called for the installation of a trash collection boom in the Manayunk Canal under the Lock St. bridge. The boom is 50 ft. in length and extends across the width of the canal to collect floating trash and debris for easy removal. Boom installation was completed on November 8th, 2002. Floatables have been assessed based on type and density and data sheets describing the types of collected trash are filled out after each cleaning. In addition, Sewer Maintenance crews are currently conducting an inlet study of the sewersheds along Manayunk Canal in attempt to identify the point(s) of origin whether land-based or infrastructure-based in nature. The responsibility for routine trash collection has been transferred to maintenance employees of the Manayunk Development Corporation with assistance from PWD employees.

The Water Department also hosted fish shocking demonstrations for local schools as a means to educate on the impacts of urban runoff on fish communities.

Schuylkill Center for Environmental Education (SCEE)

The PWD's long-term relationship with SCEE involves a state Growing Greener Grant. SCEE has developed, with the support of PWD and the nationally acclaimed Earthforce, a children's environmental program, a water curriculum for the children of the Shawmont School in Roxborough. The Growing Greener grant provides for the expansion of water messages, specifically around stormwater runoff, to the wider community surrounding the school. The PWD's Public Education Unit, who will be supporting the grant with publications, tours, and community presentations, will also have the opportunity to assess the effectiveness of our outreach and messages with a "control" group of approximately 30,000 citizens. In addition, SCEE is also a participating member of PWD's Schuylkill River Source Water Protection Implementation Advisory Committee, specifically assisting with public education and outreach regarding watersheds and land-based best management practices for stormwater.

Mill Creek Community:

PWD's Office of Watersheds and Public Education Unit has continued its relationship with the Sulzberger Middle School and the Mill Creek Coalition, through a Growing Greener Grant,to plan and discuss the redevelopment of vacant land for stormwater BMP implementation. Curriculum, activities and materials developed for this important PWD outreach are replicable by the department for communities and watersheds throughout the city. In addition, PWD has continued to work with students and teachers at the school to refine the educational function of the outdoor classroom constructed in the summer of 2001. A rain gauge was installed in the vegetative drainage swale to allow the students to measure the porosity of the swale in addition to measuring rainfall via a rain barrel on the site. With two more land-based redevelopment projects in the queue, PWD will continue its outreach and education to this community.

Sulzberger Middle School Teacher Training:

In January 2002, the Philadelphia Water Department Office of Watersheds contracted with Earth Force, a national Environmental Education organization to provide a teacher training workshop for ten teachers at Sulzberger Middle School. Earth Force helped teachers plan how they could integrate watershed education into their existing courses.

Teachers were also given a written script describing the Best Stormwater Management Practices at the Outdoor Classroom and a Site Maintenance manual for teachers to use to maintain the plantings at the site. The students have given tours of the classroom to the community and to staff from PWD's wastewater treatment facilities. A tour for the DEPs' Watershed Specialists was conducted on September 19, 2002.

Overbrook High School Service Learning Center (SLC)

The Overbrook SLC was funded by a grant to establish a youth-driven SLC, where the students are trained to manage the center and to train partners on issues related to the human condition and their environment. PWD has been working with the Center Director on environmental education program development, and a grant application to continue funding for an additional 3 years. Project deliverables will include an environmental education curriculum for high school students that address the impact of a poorly managed environment on area economics.

In March 2002 the project team reviewed the draft scope of work and schedule, and in April 2002 reached consensus on the deliverables. PWD and the community partner, JASTECH Development Services, surveyed the project demonstration sites and other potential demonstration sites. To aid the survey, GIS maps were prepared of the Overbrook neighborhood identifying water features, land use, and vacant properties. Project meetings have followed the site visits with the SLC Director.

Contracts have been signed between the prime and subcontractors for the development of the History Lesson and Website. The SLC Director is purchasing the supplies needed for the environmental curriculum. These developments should exhaust FY02 funding. FY03 funding is pending grant approvals.

Overbrook High School Environmental Symposium

The youth-driven Service Learning Center at Overbrook High School hosted its 1st annual Environmental Symposium on May 28th, 2002. Councilman Michael Nutter spoke to the students about the importance of our land, air and water environments. PWD continued the presentation with an overview of the planned environmental education curriculum and the concepts for demonstration projects.

Overbrook High School Parking Lot Demonstration Project

Cost estimates for the 'green' parking lot and flea market concept range from $7500 to $10,000. PWD received these estimates based on the parking lot design made by the City Planning Commissions. Marginal costs have been added to incorporate the greening elements. Other concepts for a demonstration project also are being reviewed.

Watershed Tours:

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices. Self-guided tour booklets for each watershed are under development (actually ready to publication but lacking a printing budget). Virtual website tours have been developed for the Tacony-Frankford watershed and the Mill Creek Watershed as prototypes for web-based tours.

3.0 Annual CSO Statistics

SCHUYLKILL RIVER 2002 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Central Schuylkill East Side	20	26	0	-	70	15	318	-	380	76%	-	78%	0	-	200
Central Schuylkill West Side	10	10	0	-	37	18	155	-	194	68%	-	72%	0	-	87
Lower Schuylkill East Side	7	9	1	-	31	19	173	-	212	73%	-	76%	1	-	72
Lower Schuylkill West Side	4	4	2	-	41	24	318	-	404	33%	-	38%	2	-	83
Southwest Main Gravity	2	2	0	-	33	17	474	-	588	80%	-	83%	0	-	66

Section 10 - Watershed Technology Center

During 2002, PWD continued to explore funding opportunities and institutional arrangements pursuant to advancing the concept of a sustainable watershed technology center as described in the CSO LTCP. Funding has been secured to implement the Urban Watershed Institute at the Fairmount Water Works Interpretive Center. During the watershed planning studies for each of the above watersheds, PWD has and will continue to supply technical resources towards completing watershed management plans and creating virtual versions of these and other resources on the World Wide Web. Web pages are up and running for the Darby-Cobbs Creek, Tacony-Frankford Creek, and Schuylkill River watersheds. Technical reports, event calendars, discussion forums, water quality data, photo libraries, GIS maps, and other technical resources are available for these watersheds via the following link http://phillywater.org/owp/

Appendix A – Flow Control CSO Maintenance Summaries

PWD FLOW CONTROL

COMBINED SEWER OVERFLOW MAINTENANCE

CALENDAR YEAR 2002

PART 1 | **PHILADELPHIA WATER DEPARTMENT** | **Section 1**

DRY WEATHER STATUS | **WASTE AND STORM WATER COLLECTION**

REPORT | **FLOW CONTROL UNIT** | **June 2002**

COLLECTOR	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	22	13	18	10	24	21	38	21	30	34	37	18	286
DISCHARGES	0	0	0	1	1	0	0	0	0	0	0	0	2
BLOCKS CLEARED	0	0	0	0	6	4	2	4	2	0	0	0	18
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	28	53	48	51	35	50	69	58	58	79	68	66	663
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	2	6	4	4	8	9	4	8	5	5	15	12	82
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	18	18	15	20	17	16	30	18	24	26	22	22	246
DISCHARGES	0	1	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	2	1	1	1	1	4	0	0	2	3	6	2	23
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	25	45	37	50	36	35	53	56	43	54	57	48	539
DISCHARGES	1	1	0	0	0	0	0	0	0	0	2	0	4
BLOCKS CLEARED	1	2	1	0	2	3	2	1	1	3	5	4	25
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	40	94	96	87	100	89	125	118	160	159	134	125	1327
DISCHARGES	0	2	0	1	1	0	1	0	2	1	0	0	8
BLOCKS CLEARED	0	4	1	4	1	3	2	1	4	2	4	3	29
SOMERSET - 9 UNITS													
INSPECTIONS	16	31	25	31	23	32	29	35	32	41	27	38	360
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	2	2	2	5	20	2	4	5	5	3	0	5	55
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	148	149	112	144	140	153	169	138	175	173	177	158	1836
DISCHARGES	0	0	0	0	0	0	1	0	0	0	0	0	1
BLOCKS CLEARED	8	8	19	20	11	24	36	12	17	16	21	27	219
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	97	76	90	82	70	116	96	96	123	127	106	104	1183
DISCHARGES	0	0	0	1	2	1	0	0	0	0	0	0	4
BLOCKS CLEARED	6	10	19	11	15	29	23	22	10	21	9	7	182
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	42	21	19	23	20	25	23	27	18	29	21	24	292
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	1	1
BLOCKS CLEARED	0	1	1	4	1	3	3	8	0	1	9	8	39
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	36	45	13	38	28	27	40	36	45	51	38	36	433
DISCHARGES	0	1	0	0	0	0	1	0	0	0	0	0	2
BLOCKS CLEARED	0	1	0	4	4	3	3	6	1	2	3	4	31
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	53	59	33	44	47	47	56	56	49	43	51	73	611
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	12	20	18	21	26	8	23	24	28	13	11	26	230
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	20	14	20	20	22	27	24	20	19	21	23	27	257
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	1	0	6	11	3	6	8	11	2	7	10	11	76
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	74	70	69	74	54	56	94	107	109	142	112	77	1038
DISCHARGES	0	0	0	2	0	0	1	0	4	0	0	1	8
BLOCKS CLEARED	1	0	0	4	5	9	4	5	10	10	7	7	62
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	39	39	31	39	19	27	39	53	37	62	43	22	450
DISCHARGES	1	0	0	0	0	0	0	0	0	1	0	2	4
BLOCKS CLEARED	2	2	1	2	2	1	1	0	1	2	1	2	17
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	50	59	45	61	52	54	65	50	53	90	51	44	674
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	0	0	1	0	0	0	1	1	0	0	0	0	3
TOTALS / MONTH for 201 REGULATOR UNITS													Totals
TOTAL INSPECTIONS	708	786	671	774	687	775	950	889	975	1131	967	882	10195
TOTAL DISCHARGES	2	5	0	5	4	1	4	0	6	2	2	4	35
TOTAL BLOCKS CLEARED	37	57	74	91	105	108	116	108	88	88	101	118	1091
AVER. # of INSP. / BC	19	14	9	9	7	7	8	8	11	13	10	7	10
DISC / 100 INSPECTIONS	0.3	0.6	0.0	0.6	0.6	0.1	0.4	0.0	0.6	0.2	0.2	0.5	0.3

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK 5 NEWPC UNITS															
P01	5	3	3	2	6	5	8	5	6	8	7	4	62	5.2	5.9
P02	4	3	4	2	4	2	6	4	6	6	7	3	51	4.3	7.2
P03	6	2	4	2	7	5	9	5	6	7	8	4	65	5.4	5.6
P04	3	3	4	2	4	5	9	4	6	7	7	3	57	4.8	6.4
P05	4	2	3	2	3	4	6	3	6	6	8	4	51	4.3	7.2
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS															
D02	4	6	4	5	4	5	6	7	6	7	5	8	67	5.6	5.4
D03	4	9	4	4	4	6	8	5	5	8	7	8	72	6.0	5.1
D04	2	6	5	4	3	6	8	6	5	8	8	8	69	5.8	5.3
D05	2	7	5	4	3	5	6	5	5	7	7	6	62	5.2	5.9
D06	2	6	6	4	3	5	7	6	5	7	6	6	63	5.3	5.8
D07	2	4	4	4	2	4	4	4	5	7	6	4	50	4.2	7.3
D08	2	4	4	6	3	5	8	8	5	7	5	5	62	5.2	5.9
D09	2	3	3	4	3	4	5	4	5	6	4	4	47	3.9	7.8
D11	2	2	4	4	3	3	5	3	5	6	5	5	47	3.9	7.8
D12	2	2	3	4	1	3	4	4	5	6	5	5	44	3.7	8.3
D13	2	2	3	4	2	2	4	3	4	6	5	4	41	3.4	8.9
D15	2	2	3	4	4	2	4	3	3	4	5	3	39	3.3	9.4
LOWER FRANKFORD CREEK 6 NEWPC UNITS															
F13	4	2	3	3	3	1	6	3	3	5	3	4	40	3.3	9.1
F14	4	4	3	3	3	1	6	3	3	5	3	5	43	3.6	8.5
F21	2	2	2	3	2	2	4	3	3	3	3	3	32	2.7	11.4
F23	3	4	3	4	3	7	5	3	7	5	4	3	51	4.3	7.2
F24	3	4	2	4	3	3	5	3	5	5	4	4	45	3.8	8.1
F25	2	2	2	3	3	2	4	3	3	3	5	3	35	2.9	10.4
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS															
F03	2	7	3	4	3	2	5	5	5	5	6	5	52	4.3	7.0
F04	3	7	4	4	4	2	5	5	4	5	6	6	55	4.6	6.6
F05	3	5	3	5	5	5	6	7	5	5	7	6	62	5.2	5.9
F06	3	5	4	7	4	3	6	5	4	5	7	5	58	4.8	6.3
F07	2	4	4	7	4	3	6	5	4	5	5	6	55	4.6	6.6
F08	2	4	4	7	3	4	6	7	5	6	6	5	59	4.9	6.2
F09	3	4	4	5	4	5	6	7	5	6	7	4	60	5.0	6.1
F10	2	4	4	5	4	4	6	6	3	6	5	4	53	4.4	6.9
F11	3	2	3	2	2	3	2	3	3	5	2	3	33	2.8	11.1
F12	2	3	4	4	3	4	5	6	5	6	6	4	52	4.3	7.0
FRANKFORD HIGH LEVEL 14 NEWPC UNITS															
T01	2	1	4	2	3	1	3	4	11	7	6	9	53	4.4	6.9
T03	4	4	6	6	5	8	8	6	12	10	8	9	86	7.2	4.2
T04	4	5	6	8	7	6	9	9	9	8	9	8	88	7.3	4.1
T05	2	4	6	7	5	5	8	7	8	8	8	7	75	6.3	4.9
T06	2	4	5	6	4	5	7	7	8	8	8	6	70	5.8	5.2
T07	2	4	6	6	4	5	7	7	8	7	8	7	71	5.9	5.1
T08	3	7	6	6	8	6	9	10	10	14	9	9	97	8.1	3.8
T09	2	9	10	6	11	9	12	11	14	16	12	12	124	10.3	2.9
T10	3	11	10	7	12	9	12	12	14	16	12	12	130	10.8	2.8
T11	3	12	9	7	12	8	11	10	15	15	12	11	125	10.4	2.9
T12	3	9	7	7	10	8	11	10	15	15	12	10	117	9.8	3.1
T13	4	9	7	7	10	8	11	10	16	16	12	10	120	10.0	3.0
T14	3	8	7	6	5	6	8	8	10	10	9	8	88	7.3	4.1
T15	3	7	7	6	4	5	9	7	10	9	9	7	83	6.9	4.4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL 9 NEWPC UNITS															
D17	2	4	3	4	3	4	3	4	4	4	4	3	42	3.5	8.7
D18	2	4	3	3	3	4	3	4	3	6	5	4	44	3.7	8.3
D19	1	4	2	3	3	5	3	4	3	5	3	4	40	3.3	9.1
D20	1	4	3	3	3	4	4	4	4	4	3	5	42	3.5	8.7
D21	2	2	3	2	3	3	3	4	2	5	2	3	34	2.8	10.7
D22	1	3	3	3	2	3	3	3	3	4	2	3	33	2.8	11.1
D23	2	3	2	6	2	3	3	3	4	3	3	3	37	3.1	9.9
D24	2	3	2	3	2	3	3	3	4	4	3	4	36	3.0	10.1
D25	3	4	4	4	2	3	4	6	5	6	2	9	52	4.3	7.0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS															
D37	3	5	4	6	6	5	7	5	9	10	6	9	75	6.3	4.9
D38	4	3	3	7	5	5	8	5	5	9	9	9	72	6.0	5.1
D39	3	4	3	6	5	7	6	4	7	9	6	6	66	5.5	5.5
D40	3	4	3	6	3	6	4	5	7	6	7	4	58	4.8	6.3
D41	3	4	3	5	3	4	2	5	5	5	6	5	50	4.2	7.3
D42	3	5	3	6	3	4	3	4	4	4	5	4	48	4.0	7.6
D43	3	5	2	7	3	4	3	4	4	4	6	3	48	4.0	7.6
D44	3	5	3	6	3	6	4	4	8	7	6	8	63	5.3	5.8
D45	6	4	2	6	5	5	5	4	5	4	4	5	55	4.6	6.6
D46	7	7	5	6	5	7	6	5	6	4	6	6	70	5.8	5.2
D47	7	4	2	5	5	6	6	5	6	4	6	5	61	5.1	6.0
D48	6	5	4	4	6	7	7	4	7	8	8	10	76	6.3	4.8
D49	5	4	2	3	5	6	5	4	4	4	3	4	49	4.1	7.4
D50	5	4	3	2	6	8	4	4	7	5	7	5	60	5.0	6.1
D51	5	5	3	3	3	4	5	3	5	5	5	7	53	4.4	6.9
D52	4	4	3	3	4	3	5	3	3	5	5	3	45	3.8	8.1
D53	6	4	3	2	3	3	3	3	2	2	4	2	37	3.1	9.9
D54	5	4	3	2	3	3	4	3	2	2	4	2	37	3.1	9.9
D58	4	6	3	3	4	4	6	4	6	6	6	4	56	4.7	6.5
D61	4	5	2	3	3	4	7	4	4	5	3	2	46	3.8	7.9
D62	4	5	2	3	4	5	6	6	7	7	7	5	61	5.1	6.0
D63	4	4	2	3	4	4	4	5	7	9	6	6	58	4.8	6.3
D64	4	4	4	3	5	4	6	6	4	4	5	4	53	4.4	6.9
D65	5	4	4	3	4	3	8	4	7	5	6	5	58	4.8	6.3
D66	5	4	5	4	6	4	6	6	7	5	7	6	65	5.4	5.6
D67	6	5	8	6	4	4	6	6	7	5	4	5	66	5.5	5.5
D68	6	8	6	7	5	6	7	4	7	9	5	6	76	6.3	4.8
D69	6	4	4	4	5	5	5	4	4	4	5	3	53	4.4	6.9
D70	6	5	5	4	5	3	5	3	4	5	5	3	53	4.4	6.9
D71	3	5	4	5	6	6	5	3	5	5	5	3	55	4.6	6.6
D72	3	3	4	4	4	4	5	3	3	3	5	4	45	3.8	8.1
D73	3	3	2	6	5	1	5	3	4	4	4	4	44	3.7	8.3
D75	4	4	3	1	0	3	1	3	3	0	1	1	24	2.0	15.2
TOTAL	297	403	351	393	375	396	513	444	522	566	522	475	5257		
I /D/C	4.9	6.6	5.8	6.5	6.2	6.5	8.4	7.3	8.6	9.3	8.6	7.8			
UP	22	13	18	10	24	21	38	21	30	34	37	18	286	4.8	6.4
UDLL	28	53	48	51	35	50	69	58	58	79	68	66	663	4.6	6.9
LFC	18	18	15	20	17	16	30	18	24	26	22	22	246	3.4	9.1
LFLL	25	45	37	50	36	35	53	56	43	54	57	48	539	4.5	7.0
FHL	40	94	96	87	100	89	125	118	160	159	134	125	1327	7.9	4.1
SLL	16	31	25	31	23	32	29	35	32	41	27	38	360	3.3	9.3
LDLL	148	149	112	144	140	153	169	138	175	173	177	158	1836	4.6	6.9

16 TOTAL DISCHARGES FOR NE & SE DISTRICTS
1.3 AVERAGE DISCHARGES PER MONTH
6.7 AVER. DAYS BEFORE RETURNING TO SITE
7.2 AVER. INSPECTIONS PER DAY PER CREW

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

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

	NO OF DISCHARGES IN DISTRICT												TOTAL
UP	0	0	0	1	1	0	0	0	0	0	0	0	2
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	1	0	0	0	0	0	0	0	0	0	0	1
LFLL	1	1	0	0	0	0	0	0	0	0	2	0	4
FHL	0	2	0	1	1	0	1	0	2	1	0	0	8
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	0	0	1	0	0	0	0	0	1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17													0
D18													0
D19													0
D20													0
D21													0
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
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							1						1
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
D75													0
													TOTAL DISC
	1	4	0	2	2	0	2	0	2	1	2	0	16

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	0	1	1	0	0	0	0	0	0	0	2
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	1	0	0	0	0	0	0	0	0	0	0	1
LFLL	1	1	0	0	0	0	0	0	0	0	2	0	4
FHL	0	2	0	1	1	0	1	0	2	1	0	0	8
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	0	0	1	0	0	0	0	0	1

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01					3		1	1	1				6
P02					1				1				2
P03					1	1		2					4
P04					1			1					2
P05						3	1						4
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02				1				1		1		2	5
D03	1	3			3		1				4	3	15
D04				2	2	3	1	2	2	2	2	2	18
D05		3			1	1	1	1			2	2	11
D06			1			2		2	1		2		8
D07			1							2	1	1	5
D08	1		2	1		3	1	2	1		2	1	14
D09													0
D11					1							1	2
D12									1				1
D13											1		1
D15					1						1		2
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13						1			1	1	1	1	5
F14	1	1		1	1					1	1	1	7
F21													0
F23						1			1	1	2		5
F24	1		1			2					1		5
F25											1		1
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03											1		1
F04													0
F05			1			1				1	1	2	6
F06													0
F07												1	1
F08									1		1		2
F09	1					1					1		3
F10					1		1			1			3
F11					1						1		2
F12		2				1	1	1		1		1	7
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01				1		1						1	3
T03				2		2			1				5
T04		2		1			1	1		1	1	1	8
T05													0
T06													0
T07													0
T08													0
T09										1			1
T10		1			1				1				3
T11		1									1		2
T12									1				1
T13							1		1			1	3
T14			1								1		2
T15											1		1

37.58 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17		2			3		1						6
D18					3			1					4
D19					1		1	1				1	4
D20			1		1	2	2	1				2	9
D21	1		1	1	12			1	1				17
D22										1			1
D23				3					1				4
D24									1	1			2
D25	1			1				1	2	1		2	8
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	1	2	1		1		3		2	2	2	1	15
D38			1			2	1		1	1	1	2	9
D39			2	1		2	12		1			1	19
D40			1			2	1	2	2	1	2	2	13
D41				1						1	1		3
D42													0
D43			1								1		2
D44			1	12		1	1	1	2	1	2	2	23
D45	1		1	1	1		1			1	2	3	11
D46		1	1	1							1	2	6
D47						1			1			2	4
D48			1			2	1	1	3	1	1	2	12
D49			1			2	2		1			1	7
D50		1				2				1	1	1	6
D51						1	2	2		1		1	7
D52							1				1	1	3
D53													0
D54							1						1
D58			1			1	2					1	5
D61							1						1
D62					1		2	2		1	1		7
D63			1		1	1		1	1	3	3	2	13
D64			1		1					1		1	4
D65					1		1		1			1	4
D66	1		1		1	1	1					1	6
D67	1	1	3				1	1	1		1		9
D68	1	1		2	1	2	1			1	1		10
D69	1					1		1					3
D70	1							1					2
D71	1			1	1	2							5
D72		1	1										2
D73		1		1	2	1			1				6
D75							1						1
													TOTAL
	15	23	28	34	49	49	50	31	36	32	51	53	451

UP	0	0	0	0	6	4	2	4	2	0	0	0	18
UDLL	2	6	4	4	8	9	4	8	5	5	15	12	82
LFC	2	1	1	1	1	4	0	0	2	3	6	2	23
LFLL	1	2	1	0	2	3	2	1	1	3	5	4	25
FHL	0	4	1	4	1	3	2	1	4	2	4	3	29
SLL	2	2	2	5	20	2	4	5	5	3	0	5	55
LDLL	8	8	19	20	11	24	36	12	17	16	21	27	219

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS															
S05	6	5	5	5	2	6	5	5	8	8	8	6	69	5.8	5.3
S06	6	5	5	5	3	5	5	5	8	7	8	6	68	5.7	5.4
S07	6	5	5	5	3	6	5	5	8	8	8	6	70	5.8	5.2
S08	7	5	5	5	4	6	5	5	8	6	7	7	70	5.8	5.2
S09	6	5	5	5	4	5	6	6	7	7	5	7	68	5.7	5.4
S10	7	4	4	5	4	5	5	5	7	7	6	6	65	5.4	5.6
S12	6	4	7	5	6	15	12	10	13	9	7	7	101	8.4	3.6
S12A	6	4	6	5	6	13	11	9	12	9	7	6	94	7.8	3.9
S13	6	3	7	4	4	6	7	5	8	8	5	6	69	5.8	5.3
S15	5	5	6	6	6	10	6	6	7	7	5	7	76	6.3	4.8
S16	5	5	4	4	4	4	4	5	7	7	5	6	60	5.0	6.1
S17	4	5	4	4	3	4	4	5	7	7	4	5	56	4.7	6.5
S18	4	5	4	4	4	5	4	5	6	6	6	7	60	5.0	6.1
S19	5	2	5	4	5	7	4	5	5	8	6	3	59	4.9	6.2
S21	4	4	6	4	3	6	4	4	4	7	7	4	57	4.8	6.4
S23	4	4	4	4	3	5	3	3	3	5	4	5	47	3.9	7.8
S25	5	3	4	4	3	3	3	4	2	6	4	5	46	3.8	7.9
S26	5	3	4	4	3	5	3	4	3	5	4	5	48	4.0	7.6
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS															
S31	5	3	2	3	3	4	4	5	3	3	4	5	44	3.7	8.3
S35	5	3	3	3	4	4	4	5	3	3	4	2	43	3.6	8.5
S36	4	2	2	2	2	2	1	1	1	12	1	1	31	2.6	11.8
S36A	5	2	2	2	2	4	3	5	2	3	2	1	33	2.8	11.1
S37	4	2	2	2	2	1	1	1	2	2	1	6	26	2.2	14.0
S42	5	2	2	3	2	3	3	3	2	2	4	4	35	2.9	10.4
S42A	5	3	2	3	1	4	3	3	2	1	3	2	32	2.7	11.4
S44	4	2	2	2	2	1	1	1	1	1	1	1	19	1.6	19.2
S46	5	2	2	3	2	2	3	3	2	2	1	2	29	2.4	12.6
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS															
S01	4	5	2	4	3	4	4	4	5	6	6	5	52	4.3	7.0
S02	4	5	2	4	3	4	4	4	5	6	6	5	52	4.3	7.0
S03	4	5	1	4	3	3	4	4	5	6	4	2	45	3.8	8.1
S04	4	5	1	5	4	4	4	4	7	6	4	6	54	4.5	6.8
S11	4	5	1	5	3	2	4	4	5	6	4	3	46	3.8	7.9
S14	4	5	1	4	3	2	4	4	5	6	4	3	45	3.8	8.1
S20	4	5	1	4	3	2	4	4	5	5	4	4	45	3.8	8.1
S22	4	5	2	4	3	3	6	4	4	5	3	4	47	3.9	7.8
S24	4	5	2	4	3	3	6	4	4	5	3	4	47	3.9	7.8
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS															
S27	4	5	2	3	3	4	4	5	4	6	5	6	51	4.3	7.2
S28	4	5	2	3	3	4	4	4	4	4	5	6	48	4.0	7.6
S30	4	5	2	3	3	4	4	4	3	4	5	6	47	3.9	7.8
S34	4	5	2	3	4	3	4	4	2	5	3	6	45	3.8	8.1
S39	4	5	1	3	3	2	4	4	2	4	5	6	43	3.6	8.5
S40	4	5	3	3	2	2	4	4	3	4	5	6	45	3.8	8.1
S43	4	3	1	3	2	0	4	4	2	3	5	6	37	3.1	9.9
S47	4	3	1	3	2	0	4	4	2	3	6	6	38	3.2	9.6
S50	14	17	16	17	20	20	16	17	18	6	6	15	182	15.2	2.0
S51	7	6	3	3	5	8	8	6	9	4	6	10	75	6.3	4.9
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS															
S32	5	4	8	9	7	7	6	5	5	5	6	6	73	6.1	5.0
S33	5	4	4	4	5	8	8	5	6	5	5	9	68	5.7	5.4
S38	5	3	4	3	5	7	5	5	4	5	4	6	56	4.7	6.5
S45	5	3	4	4	5	5	5	5	4	6	8	6	60	5.0	6.1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS															
C01	3	3	3	3	2	3	4	5	5	5	4	3	43	3.6	8.5
C02	3	3	3	3	3	3	4	5	5	5	4	3	44	3.7	8.3
C04	3	3	3	3	2	2	4	5	4	6	5	4	44	3.7	8.3
C04A	3	3	3	3	2	2	4	5	4	6	5	5	45	3.8	8.1
C05	3	3	3	3	2	7	4	5	4	8	4	4	50	4.2	7.3
C06	3	3	3	4	5	2	4	5	5	8	4	7	53	4.4	6.9
C07	3	3	3	4	3	2	4	5	5	8	4	5	49	4.1	7.4
C09	4	3	3	2	4	2	5	5	8	10	5	4	55	4.6	6.6
C10	3	3	3	2	2	2	5	4	8	9	5	4	50	4.2	7.3
C11	3	4	3	2	2	2	4	4	2	4	3	3	36	3.0	10.1
C12	3	3	3	2	2	1	4	4	2	4	3	3	34	2.8	10.7
C13	4	3	3	2	2	1	4	4	2	4	3	2	34	2.8	10.7
C14	3	3	3	3	2	3	4	5	3	6	6	3	44	3.7	8.3
C15	3	3	3	3	2	2	4	4	4	7	6	2	43	3.6	8.5
C16	3	3	3	3	2	2	4	4	4	8	6	3	45	3.8	8.1
C17	3	3	3	3	1	2	4	4	4	6	6	2	41	3.4	8.9
C31	5	3	3	4	2	2	4	5	5	5	6	4	48	4.0	7.6
C32	2	3	3	4	2	2	4	5	7	6	6	4	48	4.0	7.6
C33	4	3	3	4	4	3	4	5	6	6	5	3	50	4.2	7.3
C34	4	3	3	4	2	2	4	5	6	6	5	2	46	3.8	7.9
C35	3	3	3	5	2	2	4	5	6	6	6	2	47	3.9	7.8
C36	3	3	3	4	2	5	4	4	5	4	5	2	44	3.7	8.3
C37	3	3	3	4	2	2	4	5	5	5	6	3	45	3.8	8.1
COBBS CREEK LOW LEVEL 13 SWWPC UNITS															
C18	3	3	3	3	3	2	3	4	3	4	6	2	39	3.3	9.4
C19	3	3	3	3	2	2	3	4	2	5	6	2	38	3.2	9.6
C20	3	3	3	3	2	2	3	4	4	5	6	2	40	3.3	9.1
C21	3	3	2	3	2	2	3	4	4	6	5	2	39	3.3	9.4
C22	3	3	2	3	1	2	3	5	2	4	3	2	33	2.8	11.1
C23	3	3	2	3	2	2	3	4	3	4	3	1	33	2.8	11.1
C24	3	3	2	3	1	3	3	4	3	6	4	2	37	3.1	9.9
C25	3	3	2	3	1	2	3	4	3	5	2	2	33	2.8	11.1
C26	3	3	2	3	1	2	3	4	3	5	2	2	33	2.8	11.1
C27	3	3	5	3	1	2	3	4	3	5	1	2	35	2.9	10.4
C28A	4	3	2	3	1	2	3	4	3	5	3	1	34	2.8	10.7
C29	3	3	2	3	1	2	3	4	2	4	1	1	29	2.4	12.6
C30	2	3	1	3	1	2	3	4	2	4	1	1	27	2.3	13.5
TOTAL	361	324	275	320	260	325	372	395	400	475	394	363	4264		
I /D/C	4.0	3.6	3.0	3.5	2.8	3.6	4.1	4.3	4.4	5.2	4.3	4.0			
CSES	97	76	90	82	70	116	96	96	123	127	106	104	1183	5.5	5.8
LSES	42	21	19	23	20	25	23	27	18	29	21	24	292	2.7	11.9
CSW	36	45	13	38	28	27	40	36	45	51	38	36	433	4.0	7.6
SWMG	53	59	33	44	47	47	56	56	49	43	51	73	611	5.1	7.4
LSW	20	14	20	20	22	27	24	20	19	21	23	27	257	5.4	5.7
CCHL	74	70	69	74	54	56	94	107	109	142	112	77	1038	3.8	8.2
CCLL	39	39	31	39	19	27	39	53	37	62	43	22	450	2.9	10.7

19 TOTAL DISCHARGES IN SW DISTRICT

1.6 AVERAGE DISCHARGES PER MONTH

8.2 AVER. DAYS BEFORE RETURNING TO SITE

3.9 AVER. INSPECTIONS PER DAY PER CREW

DTR = DAYS TO RETURN TO SITE

I/D/C = INSPECTIONS PER DAY PER CREW

I/D = INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05													0
S06													0
S07													0
S08													0
S09													0
S10													0
S12				1	1	1							3
S12A													0
S13													0
S15													0
S16													0
S17													0
S18													0
S19					1								1
S21													0
S23													0
S25													0
S26													0
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31													0
S35													0
S36													0
S36A													0
S37												1	1
S42													0
S42A													0
S44													0
S46													0
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01		1											1
S02													0
S03							1						1
S04													0
S11													0
S14													0
S20													0
S22													0
S24													0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50													0
S51													0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
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 SWWPC UNITS													
C01													0
C02													0
C04													0
C04A													0
C05													0
C06				2								1	3
C07									1				1
C09							1		1				2
C10													0
C11													0
C12													0
C13													0
C14													0
C15													0
C16													0
C17													0
C31													0
C32									2				2
C33													0
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18										1			1
C19	1												1
C20													0
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27												2	2
C28A													0
C29													0
C30													0
													TOTAL DISC
	1	1	0	3	2	1	2	0	4	1	0	4	19

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
CSE	0	0	0	1	2	1	0	0	0	0	0	0	4
LSE	0	0	0	0	0	0	0	0	0	0	0	1	1
CSW	0	1	0	0	0	0	1	0	0	0	0	0	2
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	1	0	0	1	0	3	0	0	1	6
CCLL	1	0	0	0	0	0	0	0	0	1	0	1	3

	NO OF DISCHARGES IN DISTRICT												TOTAL
CSE	0	0	0	1	2	1	0	0	0	0	0	0	4
LSE	0	0	0	0	0	0	0	0	0	0	0	1	1
CSW	0	1	0	0	0	0	1	0	0	0	0	0	2
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	2	0	0	1	0	4	0	0	1	8
CCLL	1	0	0	0	0	0	0	0	0	1	0	2	4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05			2	1	1	1	1	1			2		9
S06				1	1	3	1	1		1	2		10
S07			1	1		1	1						4
S08	1	1	2	1	1	3	1				1	1	12
S09			1		1	1		1		1	1		6
S10													0
S12			2	1	1	2	3	6	3	3			21
S12A			1		2	5	3	5	3	3			22
S13			6			1	1		1	3			12
S15	1	1			2	4	2	2	2	2	1	2	19
S16	1	1			1	1	2	2					8
S17		1				1	1	1		2			6
S18		2	1			3	2				1	1	10
S19	1	1	2		3	1	2	1		2	1	1	15
S21			1		2	1	1	1		1			7
S23	2	1		4		1	1	1	1	2		1	14
S25		1		1			1			1			4
S26		1		1								1	3
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31			1	2		2	1	3			2	2	13
S35												1	1
S36												1	1
S36A				1		1	1	3		1	2		9
S37												1	1
S42											1	1	2
S42A				1							3	2	6
S44													0
S46		1			1		1	2			1		6
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01		1			1	2							4
S02													0
S03							1						1
S04				1			1	1	1	1	1	2	8
S11							1						1
S14				1	1			3			1		6
S20													0
S22				1	2	1		1		1		1	7
S24				1				1			1	1	4
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27					2	1							3
S28					1				1		1		3
S30						1					1		2
S34	1	1		1		1	1			1		1	7
S39				1			1		1	1		1	5
S40	1	1	1				1	1				2	7
S43		1			1		1	1	1	1		2	8
S47					1		1	1			2	2	7
S50	10	15	15	16	17	2	15	17	18	6	5	15	151
S51		2	2	3	4	3	3	4	7	4	2	3	37
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32			5	5	1		2				1	2	16
S33				3	1	3	3	3	2	3	1	5	24
S38			1	1		1	1	4		2		2	12
S45	1			2	1	2	2	4		2	8	2	24

53.08 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01						1							1
C02						1	1						2
C04													0
C04A													0
C05						1							1
C06				3								2	5
C07					1	1			1	1		1	5
C09					1		1		1				3
C10									1			1	2
C11													0
C12													0
C13													0
C14							1				1	1	3
C15									1				1
C16													0
C17	1												1
C31				1		1		1	1	2		1	7
C32									2	2			4
C33					2	1		1	1	2	5	1	13
C34													0
C35					1	1	1	1	2	2	1		9
C36						1				1			2
C37						1		2					3
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	1			1						1			3
C19	1						1				1		3
C20				1	1								2
C21					1								1
C22													0
C23													0
C24		1				1							2
C25													0
C26													0
C27		1	1									2	4
C28A									1	1			2
C29													0
C30													0
													TOTAL
	22	34	45	57	56	59	65	76	52	56	50	65	637

CSE	6	10	19	11	15	29	23	22	10	21	9	7	182
LSE	0	1	1	4	1	3	3	8	0	1	9	8	39
CSW	0	1	0	4	4	3	3	6	1	2	3	4	31
SWG	12	20	18	21	26	8	23	24	28	13	11	26	230
LSW	1	0	6	11	3	6	8	11	2	7	10	11	76
CCHL	1	0	0	4	5	9	4	5	10	10	7	7	62
CCLL	2	2	1	2	2	1	1	0	1	2	1	2	17

June 2002 **RELIEF SEWER MONTHLY INSPECTION**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	2	2	2	2	2	2	3	2	2	3	3	2	27
R2	2	2	2	2	2	2	3	2	2	3	3	1	26
R3	2	2	2	2	2	2	3	2	2	3	3	2	27
R4	2	2	2	2	2	2	3	2	2	3	3	2	27
R5	2	2	2	2	2	2	3	2	2	3	3	2	27
R6	2	2	2	2	2	2	3	2	2	3	2	2	26
MAIN RELIEF SEWER													
R7	2	2	2	2	2	2	3	2	3	2	2	1	25
R8	2	2	1	2	2	2	3	2	2	2	2	1	23
R9	2	2	1	2	2	2	3	2	2	2	2	1	23
R10	2	2	1	2	2	2	3	2	2	23	2	1	44
R11	2	2	1	2	2	2	3	2	2	2	2	1	23
R11A	2	2	1	2	2	2	3	2	2	2	2	1	23
R12	2	2	1	2	2	2	2	2	2	2	1	1	21
WAKLING RELIEF SEWER													
R13	1	2	1	3	1	2	2	1	2	3	1	2	21
R14	1	2	1	3	1	2	2	1	2	3	1	2	21
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	5	9	5	3	3	4	2	2	2	3	1	2	41
OREGON AVE RELIEF SEWER													
R16	3	2	3	5	3	3	3	4	3	4	3	3	39
R17	3	2	3	5	3	3	3	4	3	4	3	3	39
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	1	2	2	2	3	2	1	2	2	3	1	2	23
32ND ST RELIEF SEWER													
R19	1	2	1	2	2	2	2	1	2	3	1	1	20
MAIN STREET RELIEF SEWER													
R20	1	2	1	2	1	2	2	1	2	2	1	1	18
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	1	2	1	2	2	2	2	1	2	3	1	2	21
TEMPORARY REGULATOR CHAMBER													
R22													
R23	1	2	1	2	2	2	2	1	2	3	1	2	21
ARCH ST RELIEF SEWER													
R24	2	2	2	2	2	2	2	2	1	2	3	2	24
16TH & SNYDER													
R25	2	2	2	2	2	1	2	3	2	2	3	2	25
GRANT & STATE RD. RELIEF													
R26	2	2	2	2	1	1	2	1	1	2	1	2	19
TOTAL	50	59	45	61	52	54	65	50	53	90	51	44	674
AVER	1.9	2.2	1.7	2.3	1.9	2.0	2.4	1.9	2.0	3.3	1.9	1.6	2.1

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1											0		0
R2											0		0
R3											0		0
R4											0		0
R5											0		0
R6											0		0
MAIN RELIEF SEWER													
R7											0		0
R8											0		0
R9											0		0
R10											0		0
R11											0		0
R11A											0		0
R12											0		0
WAKLING RELIEF SEWER													
R13											0		0
R14											0		0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15											0		0
OREGON AVE RELIEF SEWER													
R16											0		0
R17											0		0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18											0		0
32ND ST RELIEF SEWER													
R19											0		0
MAIN STREET RELIEF SEWER													
R20											0		0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21											0		0
TEMPORARY REGULATOR CHAMBER													
R22											0		0
R23											0		0
ARCH ST RELIEF SEWER													
R24											0		0
16TH & SNYDER													
R25											0		0
GRANT & STATE RD. RELIEF													
R26											0		0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
UNITS	0	0	0	0	0	0	0	0	0	0	27	0	

June 2002 **RELIEF SEWER MONTHLY BLOCKS CLEARED** PAGE 7

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1											0		0
R2											0		0
R3											0		0
R4											0		0
R5								1			0		1
R6											0		0
MAIN RELIEF SEWER													
R7											0		0
R8							1				0		1
R9											0		0
R10											0		0
R11											0		0
R11A											0		0
R12											0		0
WAKLING RELIEF SEWER													
R13											0		0
R14											0		0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15											0		0
OREGON AVE RELIEF SEWER													
R16											0		0
R17											0		0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18			1								0		1
32ND ST RELIEF SEWER													
R19											0		0
MAIN STREET RELIEF SEWER													
R20											0		0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21											0		0
TEMPORARY REGULATOR CHAMBER													
R22											0		0
R23											0		0
ARCH ST RELIEF SEWER													
R24											0		0
16TH & SNYDER													
R25											0		0
GRANT & STATE RD. RELIEF													
R26											0		0
TOTAL	0	0	1	0	0	0	1	1	0	0	0	0	3
AVER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

June 2002 **MISCELLANEOUS SITE INSPECTIONS**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	1	2	1	1	1	2	2	1	2	2	1	2	18
SOMERSET GRIT LEVEL	1	1	0	3	1	2	0	3	1	4	2	7	25
(H-20) 70th & Dicks	2	3	2	2	2	3	3	2	2	2	3	2	28
CCLL CONTROL PIPE @ ISLAND AVE.	3	3	4	3	1	2	3	4	3	6	3	1	36
RHOM & HAAS FLAP GATE	0	2	2	4	2	2	3	3	4	5	3	3	33
DROP SWIRL ON CSE COLLECTOR											2	2	4
UPPER DARBY OVERFLOW	2	3	2	2	2	3	3	1	2	1	2	2	25
SANDY RUN CREEK DIVERSION REGULATOR	9	8	12	10	12	13	13	15	20	20	12	17	161
O & ERIE DIVERSION GATE	1	2	1	1	1	2	1	1	2	2	1	2	17
T-04 NET REPLACEMENTS		8/23		10/4			1/3	2/13		4/18	5/17	2002	7
CFD-01 PLYMOUTH ST. WEST OF PITTVILLE												20	
CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.												13	
CFD-03 ELSTON ST. E. OF BOUVIER ST.												13	
CFD-04 ASHLEY ST. W. OF BOUVIER ST.												13	
CFD-05 CHELTENHAM AVE. E. OF 19TH ST.												13	
CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.												13	

June 2002 **MISCELLANEOUS SITE DISCHARGES**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
CCLL CONTROL PIPE @ ISLAND AVE.													0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR													0
UPPER DARBY OVERFLOW													
SANDY RUN CREEK DIVERSION REGULATOR		1	1								1		3
O & ERIE DIVERSION GATE													
T-04 NET WEIGHT										150	325 LB	375 LBS.	
CFD-01 PLYMOUTH ST. WEST OF PITTVILLE												2	
CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.												2	
CFD-03 ELSTON ST. E. OF BOUVIER ST.													
CFD-04 ASHLEY ST. W. OF BOUVIER ST.												1	
CFD-05 CHELTENHAM AVE. E. OF 19TH ST.													
CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.												1	

June 2002 **MISCELLANEOUS SITE BLOCKAGES CLEARED**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
CCLL CONTROL PIPE @ ISLAND AVE.													0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR													0
UPPER DARBY OVERFLOW													
SANDY RUN CREEK DIVERSION REGULATOR		1	1								3	1	6
O & ERIE DIVERSION GATE													
T-04 NET ****													
CFD-01 PLYMOUTH ST. WEST OF PITTVILLE												3	
CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.												3	
CFD-03 ELSTON ST. E. OF BOUVIER ST.													
CFD-04 ASHLEY ST. W. OF BOUVIER ST.												5	
CFD-05 CHELTENHAM AVE. E. OF 19TH ST.												1	
CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.												1	

FY2002 Dry Weather Discharges

Discharge Observed		Discharge Stopped		Last Inspection					
DateDO	TimeDO	DateDS	TimeDS	DateLI	TimeLI	SiteID	Collector	TypeUnit	Location
07/11/01	10:50 AM	07/11/01	11:45 AM	--------	--------	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek
07/11/01	11:00 AM	07/11/01	11:30 AM	--------	--------	C-19	CCLL	SLOT	Mount Moriah Cemetery & 62nd St.
08/13/01	10:45 AM	08/13/01	11:40 AM	--------	--------	T-11	FHL	SLOT	Ruscomb St. E of Tacony Creek
08/13/01	11:15 AM	08/13/01	11:30 AM	--------	--------	F-14	LFC	B & B	Bristol St. in Cemetery
08/13/01	11:40 AM	08/13/01	06:38 PM	--------	--------	F-12	LFLL	SLOT	Sepviva St. N of Butler St.
08/16/01	01:50 PM	08/16/01	07:25 PM	--------	--------	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Creek
08/24/01	09:00 AM	08/24/01	01:15 PM	--------	--------	S-01	CSW	B & B	Mantua Ave. & West River Dr.
10/13/01	08:55 AM	10/13/01	09:35 AM	10/05/01	-------	C-06	CCHL	SLOT	Lebanon Ave. & 68th St.
10/22/01	12:11 PM	10/22/01	01:00 PM	10/15/01	-------	S-12	CSES	SLOT	24th St. N of Chestnut St. Bridge
10/22/01	02:15 PM	10/22/01	02:40 PM	10/13/01	-------	C-06	CCHL	SLOT	Lebanon Ave. & 68th St.
10/29/01	11:35 AM	10/29/01	12:30 PM	10/19/01	-------	T-03	FHL	SLOT	Champlost Ave. W of Tacony Creek
10/31/01	09:00 AM	10/31/01	10:10 AM	10/29/01	-------	D-02	UDLL	CC-S	Cottman St. SE of Milnor St.
11/01/01	11:30 AM	11/01/01	12:10 PM	10/19/01	########	P-03	PP	SLOT	Torresdale Ave., NW of Pennypack St.
11/06/01	11:16 AM	11/06/01	12:27 PM	10/26/01	########	S-12	CSES	SLOT	24th St. N of Chestnut St. Bridge
11/07/01	12:45 PM	11/07/01	03:00 PM	10/29/01	########	S-19	CSES	B & B	Lombard St. W of 27th St.
11/10/01	11:15 AM	11/10/01	12:25 PM	10/08/01	########	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Creek
12/03/01	01:35 PM	12/03/01	02:15 PM	11/26/01	########	S-12	CSES	SLOT	24th St. N of Chestnut St. Bridge
01/10/02	02:38 PM	01/10/02	03:50 PM	01/09/02	########	D-58	LDLL	B & B	South St. & Delaware Ave.
01/17/02	11:40 AM	01/17/02	01:00 PM	01/09/02	########	C-09	CCHL	SLOT	64th St. & Cobbs Creek
01/28/02	11:30 AM	01/28/02	12:30 PM	01/23/02	########	S-03	CSW	SLOT	Spring Garden St. W of Schuylkill Exp.
01/28/02	01:40 PM	01/28/02	02:30 PM	01/25/02	########	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek
03/04/02	09:05 AM	03/04/02	10:15 AM	03/01/02	########	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek
03/11/02	09:00 AM	03/11/02	10:00 AM	03/06/02	########	C-32	CCHL	SLOT	Cobbs Creek Park & 77th St.
03/11/02	10:30 AM	03/11/02	01:30 PM	03/09/02	########	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Creek
03/12/02	02:30 PM	03/12/02	03:05 PM	03/07/02	########	C-07	CCHL	SLOT	Lansdowne Ave. & 69th St.
03/23/02	10:45 AM	03/23/02	02:30 AM	03/20/02	########	C-09	CCHL	SLOT	64th St. & Cobbs Creek
03/26/02	11:55 AM	03/26/02	12:20 PM	03/20/02	########	C-32	CCHL	SLOT	Cobbs Creek Park & 77th St.
04/01/02	11:55 AM	04/01/02	12:15 PM	03/25/02	########	C-18	CCHL	SLOT	60th St. @ Cobbs Creek Parkway
04/02/02	10:05 AM	04/02/02	10:45 AM	04/01/02	########	T-09	FHL	SLOT	Roosevelt Blvd. W of Tacony Creek
05/03/02	02:25 PM	05/03/02	02:50 PM	04/30/02	########	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek.
05/07/02	10:50 AM	05/07/02	11:50 AM	04/30/02	########	F-03	LFLL	SLOT	Castor Ave. & Unity St.
06/03/02	10:35 AM	06/03/02	11:58 AM	05/08/02	########	C-27	CCLL	SLOT	Paschall Ave. & Island Ave.
06/06/02	09:30 AM	06/06/02	10:32 AM	06/05/02	########	S-37	LSES	B & B	Vare Ave. & Jackson St.
06/24/02	03:58 PM	06/24/02	06:20 PM	06/18/02	########	C-06	CCHL	SLOT	Lebanon Ave. & 68th St.
06/26/02	11:40 AM	06/26/02	12:25 PM	06/03/02	########	C-27	CCLL	SLOT	Paschall Ave. & Island Ave.

Comment
The DWO connecting pipe was blocked with debris.
The slot opening was partially blocked with wood and other debris.
Hub cap and debris blocked the slot opening.
A large bottle jammed the shutter gate closed from behind the gate.
Grit accumulated in the DWO line caused a blockage.
Vandals threw large boulders, rocks and debris in slot opening.
The shutter gate shut after the linkage broke. Site will receive comprehensive preventative maintenance in October.
Connecting pipe became blocked with grit.
The connecting pipe was blocked with debris and waste.
Slot box was blocked with trash and rags.
Slot box was blocked with grit and debris.
A car tire and tree limbs were jammed in the SWO gate preventing it from closing fully.
Mouth of the slot regulator was blocked with grit and debris.
Grease accumulation in slot and connecting pipe caused a backup. PWD Ind. Waste Unit is investigating the source.
DWO connecting pipe was blocked with unknown debris.
12" connecting pipe was blocked with Styrofoam.
Accumulation of grease in DWO connecting pipe caused a blockage. IWU is still investigating source of this grease. PWD has scheduled line flushing once a week until problem is rectified.
Connecting pipe was blocked with grease and debris.
A broom stick and rags accumulated in the slot causing a discharge.
The slot mouth became blocked with debris.
Leaves and tree branched were blocking slot.
Branches, leaves and lumber were blocking the connecting pipe.
Paper, leaves and other debris blocked the mouth of the slot opening.
A brick and grit in the connecting pipe blocked the flow.
Leaves, rags and paper blocked the slot opening.
Branches and grit blocked the connecting pipe.
Unknown debris blocked the mouth of the slot opening.
A plastic board 10" x 11" partially blocked slot opening.
A small piece of carpet blocked the slot opening.
Debris / trash blocked mouth of gate.
A piece of terra cotta pipe (12"x12") was stuck in slot opening.
Blockage In Connecting Pipe At The Interceptor Connection.
Trunk Side Opening Blocked With Grit And Large Rock.
Referred To Location By Iwu. Rags And Other Debris Were Blocking The Slot
Connecting Pipe Blocked Where It Connects To Interceptor

PART 1 | **PHILADELPHIA WATER DEPARTMENT** | **Section 1**

DRY WEATHER STATUS | **WASTE AND STORM WATER COLLECTION**

REPORT | **FLOW CONTROL UNIT** | **January 2003**

COLLECTOR	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	15	17	22	44	37	35	30	0	0	0	0	0	200
DISCHARGES	0	1	0	1	0	0	0	0	0	0	0	0	2
BLOCKS CLEARED	1	1	1	3	0	1	1	0	0	0	0	0	8
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	58	61	42	63	61	60	70	0	0	0	0	0	415
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	5	2	0	0	1	1	2	0	0	0	0	0	11
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	36	12	15	26	22	29	33	0	0	0	0	0	173
DISCHARGES	0	0	0	0	0	1	0	0	0	0	0	0	1
BLOCKS CLEARED	1	1	1	0	0	3	1	0	0	0	0	0	7
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	48	25	42	49	62	58	68	0	0	0	0	0	352
DISCHARGES	0	0	0	1	1	0	0	0	0	0	0	0	2
BLOCKS CLEARED	2	3	4	3	3	1	1	0	0	0	0	0	17
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	85	116	102	139	117	122	121	0	0	0	0	0	802
DISCHARGES	2	2	0	0	0	2	0	0	0	0	0	0	6
BLOCKS CLEARED	4	2	1	1	0	3	0	0	0	0	0	0	11
SOMERSET - 9 UNITS													
INSPECTIONS	40	33	35	45	30	31	57	0	0	0	0	0	271
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	5	2	6	2	0	4	4	0	0	0	0	0	23
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	173	169	165	204	217	209	200	0	0	0	0	0	1337
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
BLOCKS CLEARED	23	32	18	19	20	5	21	0	0	0	0	0	138
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	111	103	111	158	112	127	81	0	0	0	0	0	803
DISCHARGES	0	0	0	1	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	7	10	8	16	9	11	11	0	0	0	0	0	72
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	24	37	33	36	33	18	29	0	0	0	0	0	210
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	4	5	4	3	10	6	5	0	0	0	0	0	37
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	32	25	39	47	51	62	22	0	0	0	0	0	278
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	5	2	5	10	6	4	0	0	0	0	0	0	32
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	44	59	54	60	57	40	50	0	0	0	0	0	364
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	20	14	7	5	5	2	1	0	0	0	0	0	54
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	28	619	20	33	33	18	27	0	0	0	0	0	778
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	5	4	2	1	7	0	0	0	0	0	0	0	19
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	74	90	118	142	122	126	111	0	0	0	0	0	783
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	7	3	2	3	0	7	5	0	0	0	0	0	27
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	41	59	76	41	53	68	75	0	0	0	0	0	413
DISCHARGES	1	2	0	0	0	0	0	0	0	0	0	0	3
BLOCKS CLEARED	1	2	1	0	0	1	2	0	0	0	0	0	7
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	43	34	50	23	65	64	114	0	0	0	0	0	393
DISCHARGES	0	0	0	0	0	1	0	0	0	0	0	0	1
BLOCKS CLEARED	0	0	0	1	9	1	3	0	0	0	0	0	14
TOTALS / MONTH for 201 REGULATOR UNITS													Totals
TOTAL INSPECTIONS	852	1459	924	1110	1072	1067	1088	0	0	0	0	0	7572
TOTAL DISCHARGES	5	5	0	3	2	4	0	0	0	0	0	0	19
TOTAL BLOCKS CLEARED	90	83	60	67	70	50	57	0	0	0	0	0	477
AVER. # of INSP. / BC	9	18	15	17	15	21	19	n/a	n/a	n/a	n/a	n/a	16
DISC / 100 INSPECTIONS	0.6	0.3	0.0	0.3	0.2	0.4	0.0						0.3

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK 5 NEWPC UNITS															
P01	3	3	4	9	7	7	6						39	5.6	5.5
P02	3	3	4	7	7	6	6						36	5.1	5.9
P03	3	3	4	9	8	9	6						42	6.0	5.1
P04	3	4	5	12	8	7	6						45	6.4	4.7
P05	3	4	5	7	7	6	6						38	5.4	5.6
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS															
D02	5	5	6	8	8	7	6						45	6.4	4.7
D03	6	5	5	7	7	8	6						44	6.3	4.8
D04	8	6	4	7	6	7	6						44	6.3	4.8
D05	6	5	3	6	7	6	6						39	5.6	5.5
D06	7	5	3	5	7	7	7						41	5.9	5.2
D07	5	5	3	5	6	4	6						34	4.9	6.3
D08	5	5	3	5	6	4	7						35	5.0	6.1
D09	4	5	3	4	5	4	7						32	4.6	6.7
D11	3	5	3	4	3	4	6						28	4.0	7.6
D12	3	5	3	4	2	3	4						24	3.4	8.9
D13	3	5	3	4	2	3	4						24	3.4	8.9
D15	3	5	3	4	2	3	5						25	3.6	8.5
LOWER FRANKFORD CREEK 6 NEWPC UNITS															
F13	6	2	2	6	4	4	5						29	4.1	7.3
F14	6	2	2	6	4	4	5						29	4.1	7.3
F21	5	2	2	2	3	2	5						21	3.0	10.1
F23	7	2	3	5	4	7	5						33	4.7	6.4
F24	7	2	4	5	4	10	7						39	5.6	5.5
F25	5	2	2	2	3	2	6						22	3.1	9.7
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS															
F03	5	3	4	4	6	5	5						32	4.6	6.7
F04	5	2	4	6	6	5	7						35	5.0	6.1
F05	5	2	6	7	7	5	7						39	5.6	5.5
F06	4	2	4	5	6	5	7						33	4.7	6.4
F07	4	2	4	5	6	5	8						34	4.9	6.3
F08	5	3	4	4	6	5	6						33	4.7	6.4
F09	5	4	5	8	10	9	7						48	6.9	4.4
F10	6	4	4	4	6	6	8						38	5.4	5.6
F11	3	1	2	3	3	6	5						23	3.3	9.3
F12	6	2	5	3	6	7	8						37	5.3	5.8
FRANKFORD HIGH LEVEL 14 NEWPC UNITS															
T01	6	6	6	9	7	7	9						50	7.1	4.3
T03	8	7	7	10	9	9	8						58	8.3	3.7
T04	5	7	9	9	11	7	7						55	7.9	3.9
T05	4	5	7	9	9	7	7						48	6.9	4.4
T06	6	5	7	9	8	7	6						48	6.9	4.4
T07	6	5	7	9	8	7	6						48	6.9	4.4
T08	7	5	7	10	8	7	9						53	7.6	4.0
T09	7	13	8	11	8	9	12						68	9.7	3.1
T10	7	14	8	11	9	11	12						72	10.3	3.0
T11	6	13	8	13	9	11	12						72	10.3	3.0
T12	7	10	8	11	9	12	11						68	9.7	3.1
T13	7	10	8	11	9	12	11						68	9.7	3.1
T14	4	8	6	9	7	8	6						48	6.9	4.4
T15	5	8	6	8	6	8	5						46	6.6	4.6

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL 9 NEWPC UNITS															
D17	7	6	6	6	3	3	7						38	5.4	5.6
D18	7	4	4	6	3	3	7						34	4.9	6.3
D19	7	3	4	6	3	3	7						33	4.7	6.4
D20	4	4	5	4	3	3	6						29	4.1	7.3
D21	2	3	3	4	4	4	6						26	3.7	8.2
D22	3	3	4	4	3	2	6						25	3.6	8.5
D23	2	3	2	5	4	5	6						27	3.9	7.9
D24	2	3	3	5	2	4	7						26	3.7	8.2
D25	6	4	4	5	5	4	5						33	4.7	6.4
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS															
D37	7	7	8	10	8	8	7						55	7.9	3.9
D38	8	7	8	11	8	8	7						57	8.1	3.7
D39	6	6	5	4	7	7	6						41	5.9	5.2
D40	5	6	6	3	6	7	6						39	5.6	5.5
D41	5	6	6	4	7	7	5						40	5.7	5.3
D42	6	5	4	4	5	7	5						36	5.1	5.9
D43	7	4	3	4	5	7	4						34	4.9	6.3
D44	6	5	7	10	9	11	5						53	7.6	4.0
D45	8	6	8	12	8	6	7						55	7.9	3.9
D46	4	5	4	5	7	7	6						38	5.4	5.6
D47	7	6	4	7	9	8	6						47	6.7	4.5
D48	9	6	6	11	7	7	7						53	7.6	4.0
D49	4	6	3	3	4	6	5						31	4.4	6.9
D50	4	7	4	6	6	5	5						37	5.3	5.8
D51	5	5	6	6	6	8	6						42	6.0	5.1
D52	3	4	3	5	4	6	5						30	4.3	7.1
D53	3	3	2	3	4	5	5						25	3.6	8.5
D54	3	4	2	4	4	5	5						27	3.9	7.9
D58	6	4	7	8	8	9	7						49	7.0	4.3
D61	4	5	6	7	7	7	7						43	6.1	4.9
D62	6	5	8	11	8	9	7						54	7.7	3.9
D63	6	6	6	11	8	9	7						53	7.6	4.0
D64	4	7	5	4	8	7	6						41	5.9	5.2
D65	5	5	4	3	6	6	8						37	5.3	5.8
D66	7	5	4	3	5	5	6						35	5.0	6.1
D67	6	4	6	5	6	3	6						36	5.1	5.9
D68	8	7	7	9	11	8	7						57	8.1	3.7
D69	3	5	4	8	13	14	8						55	7.9	3.9
D70	5	6	5	7	9	4	6						42	6.0	5.1
D71	4	4	5	6	5	1	9						34	4.9	6.3
D72	4	4	5	5	5	1	7						31	4.4	6.9
D73	5	4	4	5	4	1	7						30	4.3	7.1
D75	0	0	0	0	0	0							0	0.0	#####
TOTAL	455	433	423	570	546	544	579	0	0	0	0	0	3550		
I /D/C	7.5	7.1	7.0	9.4	9.0	8.9	9.5	0.0	0.0	0.0	0.0	0.0			
UP	15	17	22	44	37	35	30	0	0	0	0	0	200	5.7	5.4
UDLL	58	61	42	63	61	60	70	0	0	0	0	0	415	4.9	6.5
LFC	36	12	15	26	22	29	33	0	0	0	0	0	173	4.1	7.7
LFLL	48	25	42	49	62	58	68	0	0	0	0	0	352	5.0	6.2
FHL	85	116	102	139	117	122	121	0	0	0	0	0	802	8.2	3.8
SLL	40	33	35	45	30	31	57	0	0	0	0	0	271	4.3	7.2
LDLL	173	169	165	204	217	209	200	0	0	0	0	0	1337	5.8	#####

12 TOTAL DISCHARGES FOR NE & SE DISTRICTS — DTR = DAYS TO RETURN TO SITE

1.7 AVERAGE DISCHARGES PER MONTH — I/D/C = INSPECTIONS PER DAY PER CREW

#DIV/0! AVER. DAYS BEFORE RETURNING TO SITE — I/D = INSPECTIONS PER DISCHARGE

8.3 AVER. INSPECTIONS PER DAY PER CREW

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

	NO OF DISCHARGES IN DISTRICT												TOTAL
UP	0	1	0	1	0	0	0	0	0	0	0	0	2
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	0	0	0	0	1	0	0	0	0	0	0	1
LFLL	0	0	0	1	1	0	0	0	0	0	0	0	2
FHL	2	2	0	0	0	2	0	0	0	0	0	0	6
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	1	0	0	0	0	0	0	0	1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	0	0		0	0	0	0						0
D18	0	0		0	0	0	0						0
D19	0	0		0	0	0	0						0
D20	0	0		0	0	0	0						0
D21	0	0		0	0	0	0						0
D22	0	0		0	0	0	0						0
D23	0	0		0	0	0	0						0
D24	0	0		0	0	0	0						0
D25	0	0		0	0	0	0						0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	0	0		0	0	0	0						0
D38	0	0		0	0	0	0						0
D39	0	0		0	0	0	0						0
D40	0	0		0	0	0	0						0
D41	0	0		0	0	0	0						0
D42	0	0		0	0	0	0						0
D43	0	0		0	0	0	0						0
D44	0	0		0	0	0	0						0
D45	0	0		0	0	0	0						0
D46	0	0		0	0	0	0						0
D47	0	0		0	0	0	0						0
D48	0	0		0	0	0	0						0
D49	0	0		0	0	0	0						0
D50	0	0		0	0	0	0						0
D51	0	0		0	0	0	0						0
D52	0	0		0	0	0	0						0
D53	0	0		0	0	0	0						0
D54	0	0		0	0	0	0						0
D58	0	0		0	0	0	0						0
D61	0	0		0	0	0	0						0
D62	0	0		0	0	0	0						0
D63	0	0		0	0	0	0						0
D64	0	0		0	0	0	0						0
D65	0	0		0	0	0	0						0
D66	0	0		0	0	0	0						0
D67	0	0		0	0	0	0						0
D68	0	0		0	0	0	0						0
D69	0	0		0	1	0	0						1
D70	0	0		0	0	0	0						0
D71	0	0		0	0	0	0						0
D72	0	0		0	0	0	0						0
D73	0	0		0	0	0	0						0
D75	0	0				0							0

													TOTAL DISC
	2	3	0	2	2	3	0	0	0	0	0	0	12

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	5	5	0	5	5	5	5	0	0	0	0	0	30
UDLL	12	12	0	12	12	12	12	0	0	0	0	0	72
LFC	6	6	0	6	6	6	6	0	0	0	0	0	36
LFLL	10	10	0	10	10	10	10	0	0	0	0	0	60
FHL	14	14	0	14	14	14	14	0	0	0	0	0	84
SLL	9	9	0	9	9	9	9	0	0	0	0	0	54
LDLL	33	33	0	32	32	33	32	0	0	0	0	0	195

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

30.71 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	1	0		1	0	1	0						3
D18	0	1		0	0	0	2						3
D19	1	0	2	0	0	2	0						5
D20	0	0	2	0	0	1	0						3
D21	0	0		0	0	0	0						0
D22	0	0		0	0	0	0						0
D23	0	0	1	1	0	0	1						3
D24	0	0		0	0	0	0						0
D25	3	1	1	0	0	0	1						6
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	1	2		1	3	0	1						8
D38	1	0	1	0	1	0	0						3
D39	0	2	1	1	1	0	0						5
D40	1	1	2	1	0	0	1						6
D41	1	1	1	0	0	0	1						4
D42	0	1		0	0	0	0						1
D43	0	0		0	0	0	0						0
D44	0	1		1	3	0	1						6
D45	2	3	2	2	0	0	4						13
D46	0'		2		0	0	0	0					2
D47	3	0	2	1	1	0	2						9
D48	3	0		1	1	0	1						6
D49	1	1		0	0	0	0						2
D50	0	1		0	0	0	0						1
D51	1	0	1	0	0	0	1						3
D52	0	0		0	0	0	0						0
D53	0	0		0	0	0	0						0
D54	0	0		0	0	0	0						0
D58	1	0		0	0	0	1						2
D61	0	1		0	0	0	0						1
D62	0	1	1	3	0	1	2						8
D63	0	1		0	1	0	1						3
D64	1	1	2	1	0	0	0						5
D65	0	3	2	1	0	0	1						7
D66	1	1		1	2	0	0						5
D67	2	1		1	0	0	0						4
D68	3	3	2	0	2	1	0						11
D69	0	2		3	3	3	1						12
D70	0	0	1	1	0	0	0						2
D71	0	1		0	1	0	1						3
D72	1	1		0	0	0	1						3
D73	0	1		0	1	0	1						3
D75	0	0		0		0							0
													TOTAL
	41	43	31	28	24	18	30	0	0	0	0	0	215

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UP	1	1	1	3	0	1	1	0	0	0	0	0	8
UDLL	5	2	0	0	1	1	2	0	0	0	0	0	11
LFC	1	1	1	0	0	3	1	0	0	0	0	0	7
LFLL	2	3	4	3	3	1	1	0	0	0	0	0	17
FHL	4	2	1	1	0	3	0	0	0	0	0	0	11
SLL	5	2	6	2	0	4	4	0	0	0	0	0	23
LDLL	23	32	18	19	20	5	21	0	0	0	0	0	138

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS															
S05	9	6	8	11	6	9	6						55	7.9	3.9
S06	8	6	8	11	6	8	5						52	7.4	4.1
S07	9	6	8	11	6	8	6						54	7.7	3.9
S08	7	6	7	9	7	11	5						52	7.4	4.1
S09	8	6	7	11	7	7	5						51	7.3	4.2
S10	7	6	7	10	7	5	5						47	6.7	4.5
S12	8	6	7	10	7	7	5						50	7.1	4.3
S12A	8	7	7	10	7	8	5						52	7.4	4.1
S13	5	6	6	8	7	5	4						41	5.9	5.2
S15	6	6	7	9	7	7	5						47	6.7	4.5
S16	6	6	7	8	6	7	5						45	6.4	4.7
S17	5	5	6	5	7	4	4						36	5.1	5.9
S18	5	5	5	8	7	9	3						42	6.0	5.1
S19	5	5	5	6	5	5	4						35	5.0	6.1
S21	4	6	4	6	6	7	4						37	5.3	5.8
S23	5	5	3	8	6	8	4						39	5.6	5.5
S25	3	5	4	9	4	6	3						34	4.9	6.3
S26	3	5	5	8	4	6	3						34	4.9	6.3
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS															
S31	4	5	5	6	5	4	5						34	4.9	6.3
S35	4	5	5	6	3	4	5						32	4.6	6.7
S36	2	3	2	2	1	1	1						12	1.7	17.7
S36A	4	5	5	5	4	3	3						29	4.1	7.3
S37	3	2	2	2	1	1	2						13	1.9	16.4
S42	1	5	4	5	9	2	5						31	4.4	6.9
S42A	1	6	4	5	5	1	3						25	3.6	8.5
S44	2	3	2	2	1	1	3						14	2.0	15.2
S46	3	3	4	3	4	1	2						20	2.9	10.6
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS															
S01	4	2	6	3	6	6	2						29	4.1	7.3
S02	4	2	6	4	6	7	3						32	4.6	6.7
S03	4	2	4	3	6	7	2						28	4.0	7.6
S04	4	3	4	11	7	9	3						41	5.9	5.2
S11	4	2	2	5	4	2	2						21	3.0	10.1
S14	2	3	4	5	6	9	2						31	4.4	6.9
S20	1	3	4	6	4	6	2						26	3.7	8.2
S22	6	4	5	5	6	8	3						37	5.3	5.8
S24	3	4	4	5	6	8	3						33	4.7	6.4
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS															
S27	2	5	6	5	4	5	4						31	4.4	6.9
S28	3	5	4	6	4	5	4						31	4.4	6.9
S30	2	4	4	8	4	5	5						32	4.6	6.7
S34	3	4	4	5	5	4	6						31	4.4	6.9
S39	2	4	4	5	5	2	5						27	3.9	7.9
S40	2	4	6	6	4	1	3						26	3.7	8.2
S43	2	4	4	3	4	1	4						22	3.1	9.7
S47	2	4	4	3	4	2	4						23	3.3	9.3
S50	16	16	12	11	13	9	8						85	12.1	2.5
S51	10	9	6	8	10	6	7						56	8.0	3.8
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS															
S32	7	601	5	11	10	5	7						646	92.3	0.3
S33	7	7	5	11	8	5	7						50	7.1	4.3
S38	7	5	5	4	9	4	7						41	5.9	5.2
S45	7	6	5	7	6	4	6						41	5.9	5.2

6	TOTAL DISCHARGES IN SW DISTRICT	DTR	= DAYS TO RETURN TO SITE
0.9	AVERAGE DISCHARGES PER MONTH	I/D/C	= INSPECTIONS PER DAY PER CREW
6.6	AVER. DAYS BEFORE RETURNING TO SITE	I/D	= INSPECTIONS PER DISCHARGE
5.7	AVER. INSPECTIONS PER DAY PER CREW		

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS															
C01	2	4	3	6	6	3	4						28	4.0	7.6
C02	3	4	3	6	5	3	4						28	4.0	7.6
C04	2	4	5	8	6	4	5						34	4.9	6.3
C04A	3	4	5	8	6	4	5						35	5.0	6.1
C05	4	5	7	7	6	7	5						41	5.9	5.2
C06	6	4	7	6	7	9	5						44	6.3	4.8
C07	5	4	6	8	6	8	5						42	6.0	5.1
C09	5	4	7	6	5	9	5						41	5.9	5.2
C10	5	4	7	7	5	8	5						41	5.9	5.2
C11	2	3	3	3	4	5	4						24	3.4	8.9
C12	2	3	4	3	4	4	4						24	3.4	8.9
C13	2	3	5	3	5	5	4						27	3.9	7.9
C14	2	3	6	3	3	5	6						28	4.0	7.6
C15	2	4	6	3	3	5	6						29	4.1	7.3
C16	3	4	6	4	3	6	6						32	4.6	6.7
C17	2	3	6	3	3	2	6						25	3.6	8.5
C31	3	4	3	9	6	5	4						34	4.9	6.3
C32	4	5	6	9	9	6	6						45	6.4	4.7
C33	3	5	4	8	5	6	5						36	5.1	5.9
C34	3	5	4	8	5	5	5						35	5.0	6.1
C35	4	4	4	8	8	6	4						38	5.4	5.6
C36	4	3	6	9	7	6	4						39	5.6	5.5
C37	3	4	5	7	5	5	4						33	4.7	6.4
COBBS CREEK LOW LEVEL 13 SWWPC UNITS															
C18	4	5	7	3	4	5	6						34	4.9	6.3
C19	3	5	6	3	5	6	6						34	4.9	6.3
C20	5	5	6	3	5	5	6						35	5.0	6.1
C21	5	5	6	3	5	5	6						35	5.0	6.1
C22	3	4	5	3	5	3	6						29	4.1	7.3
C23	2	4	4	3	4	5	6						28	4.0	7.6
C24	4	5	7	4	4	6	6						36	5.1	5.9
C25	2	4	7	3	4	6	6						32	4.6	6.7
C26	3	5	8	3	4	7	6						36	5.1	5.9
C27	3	5	8	4	4	5	6						35	5.0	6.1
C28A	3	4	4	3	3	5	5						27	3.9	7.9
C29	2	4	4	3	3	5	5						26	3.7	8.2
C30	2	4	4	3	3	5	5						26	3.7	8.2
TOTAL	354	992	451	517	461	459	395	0	0	0	0	0	3629		
I /D/C	3.9	10.9	4.9	5.7	5.1	5.0	4.3	0.0	0.0	0.0	0.0	0.0			
CSES	111	103	111	158	112	127	81	0	0	0	0	0	803	6.4	4.9
LSES	24	37	33	36	33	18	29	0	0	0	0	0	210	3.3	10.6
CSW	32	25	39	47	51	62	22	0	0	0	0	0	278	4.4	7.1
SWMG	44	59	54	60	57	40	50	0	0	0	0	0	364	5.2	6.9
LSW	28	619	20	33	33	18	27	0	0	0	0	0	778	27.8	3.7
CCHL	74	90	118	142	122	126	111	0	0	0	0	0	783	4.9	6.5
CCLL	41	59	76	41	53	68	75	0	0	0	0	0	413	4.5	6.8

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

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

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
CSE	18	18	0	18	18	18	18	0	0	0	0	0	108
LSE	9	9	0	9	9	9	9	0	0	0	0	0	54
CSW	9	9	0	9	9	9	9	0	0	0	0	0	54
SWG	10	10	0	10	10	10	10	0	0	0	0	0	60
LSW	4	3	0	4	4	4	4	0	0	0	0	0	23
CCHL	23	23	0	23	23	23	23	0	0	0	0	0	138
CCLL	13	13	0	13	13	13	13	0	0	0	0	0	78

	NO OF DISCHARGES IN DISTRICT												TOTAL
CSE	0	0	0	1	0	0	0	0	0	0	0	0	1
LSE	1	0	0	0	0	0	0	0	0	0	0	0	1
CSW	1	0	0	0	0	0	0	0	0	0	0	0	1
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	0	0	0	0	0	0	0	0	0	0
CCLL	1	2	0	0	0	0	0	0	0	0	0	0	3

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05	0	0	2	3	0	0	1						6
S06	0	0	1	1	1	1	1						5
S07	0	0		2	1	1	1						5
S08	1	0		1	1	2	1						6
S09	0	0		1	1	0	1						3
S10	0	0		0	0	0	0						0
S12	1	2		1	1	0	1						6
S12A	1	2		1	1	0	1						6
S13	0	0		1	1	0	1						3
S15	1	1		2	1	0	1						6
S16	0	1		1	0	0	1						3
S17	0	0		0	0	0	1						1
S18	1	0	1	0	1	2	0						5
S19	0	1	1	0	0	1	0						3
S21	0	2	2	0	0	1	0						5
S23	2	1	1	1	0	1	0						6
S25	0	0		0	0	1	0						1
S26	0	0		1	0	1	0						2
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31	0	1		0	1	0	0						2
S35	0	0	1	0	1	0	1						3
S36	0	1		0	0	0	0						1
S36A	1	1	1	2	1	0	0						6
S37	1	1	1	0	0	0	0						3
S42	0	0		1	3	0	1						5
S42A	0	1	1	0	2	0	1						5
S44	0	0		0	0	0	2						2
S46	2	0		0	2	6	0						10
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01	0	0		0	0	0	0						0
S02	0	0		0	0	0	0						0
S03	1	0		1	1	1	0						4
S04	1	0	1	4	1	1	0						8
S11	1	0		0	0	0	0						1
S14	0	1	1	2	2	1	0						7
S20	0	0		0	0	0	0						0
S22	2	0	2	2	1	1	0						8
S24	0	1	1	1	1	0	0						4
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27	1	0		1	0	0	0						2
S28	0	0		1	0	0	0						1
S30	0	0		0	0	0	0						0
S34	1	0	1	0	1	0	1						4
S39	1	1		0	2	0	0						4
S40	0	0	1	1	0	0	0						2
S43	0	0	2	1	0	0	0						3
S47	0	1	1	1	0	0	0						3
S50	14	11	2	0	0	2	0						29
S51	3	1		0	2	0	0						6
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32	1		1	0	2	0	0						4
S33	2	1		0	2	0	0						5
S38	1	3	1	0	3	0	0						8
S45	1	0		1	0	0	0						2

35.43 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01	1	0		0	0	0	0						1
C02	0	0		0	0	0	0						0
C04	0	0		0	0	0	0						0
C04A	0	0		0	0	0	0						0
C05	0	1		0	0	1	0						2
C06	1	0	1	0	0	1	1						4
C07	0	0		0	0	2	1						3
C09	1	0		0	0	0	0						1
C10	0	0		0	0	0	0						0
C11	0	0		0	0	0	0						0
C12	0	0		0	0	0	0						0
C13	0	0		0	0	0	0						0
C14	1	0		0	0	0	1						2
C15	0	0		0	0	0	0						0
C16	0	0		0	0	0	0						0
C17	0	0		0	0	0	0						0
C31	0	0		0	0	0	0						0
C32	0	2		0	0	0	0						2
C33	1	0		2	0	0	1						4
C34	0	0		0	0	1	0						1
C35	2	0		1	0	1	1						5
C36	0	0	1	0	0	1	0						2
C37	0	0		0	0	0	0						0
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	0	0		0	0	0	0						0
C19	0	0	1	0	0	0	2						3
C20	0	0		0	0	0	0						0
C21	0	0		0	0	0	0						0
C22	1	0		0	0	0	0						1
C23	0	0		0	0	0	0						0
C24	0	0		0	0	0	0						0
C25	0	1		0	0	0	0						1
C26	0	1		0	0	1	0						2
C27	0	0		0	0	0	0						0
C28A	0	0		0	0	0	0						0
C29	0	0		0	0	0	0						0
C30	0	0		0	0	0	0						0
													TOTAL
	49	40	29	38	37	31	24	0	0	0	0	0	248

CSE	7	10	8	16	9	11	11	0	0	0	0	0	72
LSE	4	5	4	3	10	6	5	0	0	0	0	0	37
CSW	5	2	5	10	6	4	0	0	0	0	0	0	32
SWG	20	14	7	5	5	2	1	0	0	0	0	0	54
LSW	5	4	2	1	7	0	0	0	0	0	0	0	19
CCHL	7	3	2	3	0	7	5	0	0	0	0	0	27
CCLL	1	2	1	0	0	1	2	0	0	0	0	0	7

January 2003 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	2	1	3		3	4	5						18
R2	2	1	3		3	4	5						18
R3	2	1	3		3	6	5						20
R4	2	1	3		3	4	5						18
R5	2	1	3		2	4	5						17
R6	2	1	3		2	4	5						17
MAIN RELIEF SEWER													
R7	1	1	1		1	2	5						11
R8	1	1	2		2	2	5						13
R9	1	1	2		2	2	4						12
R10	1	1	2		2	2	5						13
R11	1	1	2		2	2	5						13
R11A	1	1	2		2	2	5						13
R12	1	1	1		2	2	4						11
WAKLING RELIEF SEWER													
R13	1	1	1	1	2	1	3						10
R14	1	1	1	1	2	1	3						10
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	1	1	1	1	2	2	3						11
OREGON AVE RELIEF SEWER													
R16	5	5	3	4	6	4	7						34
R17	5	5	3	4	5	4	7						33
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	3	1	2	2	2	2	5						17
32ND ST RELIEF SEWER													
R19	1	1	1	1	2	1	3						10
MAIN STREET RELIEF SEWER													
R20	1	1	1	1	2	1	3						10
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	1	1	1	1	3	1	3						11
TEMPORARY REGULATOR CHAMBER													
R22													
R23	1	1	1	1	3	1	3						11
ARCH ST RELIEF SEWER													
R24	1	1	2	1	2	3	4						14
16TH & SNYDER													
R25	1	1	2	3	3	3	4						17
GRANT & STATE RD. RELIEF													
R26	2	1	1	2	2	0	3						11
TOTAL	43	34	50	23	65	64	114	0	0	0	0	0	393
AVER	1.6	1.3	1.9	0.9	2.4	2.4	4.2	0.0	0.0	0.0	0.0	0.0	1.2

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	0	0			0	0	0						0
R2	0	0			0	0	0						0
R3	0	0			0	1	0						1
R4	0	0			0	0	0						0
R5	0	0			0	0	0						0
R6	0	0			0	0	0						0
MAIN RELIEF SEWER													
R7	0	0			0	0	0						0
R8	0	0			0	0	0						0
R9	0	0			0	0	0						0
R10	0	0			0	0	0						0
R11	0	0			0	0	0						0
R11A	0	0			0	0	0						0
R12	0	0			0	0	0						0
WAKLING RELIEF SEWER													
R13	0	0		0	0	0	0						0
R14	0	0		0	0	0	0						0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0		0	0	0	0						0
OREGON AVE RELIEF SEWER													
R16	0	0		0	0	0	0						0
R17	0	0		0	0	0	0						0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0		0	0	0	0						0
32ND ST RELIEF SEWER													
R19	0	0		0	0	0	'0						0
MAIN STREET RELIEF SEWER													
R20	0	0		0	0	0	0						0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0		0	0	0	0						0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0		0	0	0	0						0
ARCH ST RELIEF SEWER													
R24	0	0		0	0	0	0						0
16TH & SNYDER													
R25	0	0		0	0	0	0						0
GRANT & STATE RD. RELIEF													
R26	0	0		0	0	0	0						0
TOTAL	0	0	0	0	0	1	0	0	0	0	0	0	1
UNITS	26	26	0	13	26	26	26	0	0	0	0	0	

January 2003 RELIEF SEWER MONTHLY BLOCKS CLEARED PAGE 7

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	0	0			0	0	0						0
R2	0	0			0	0	1						1
R3	0	0			0	1	2						3
R4	0	0			0	0	0						0
R5	0	0			0	0	0						0
R6	0	0			0	0	0						0
MAIN RELIEF SEWER													
R7	0	0			0	0	0						0
R8	0	0			0	0	0						0
R9	0	0			0	0	0						0
R10	0	0			0	0	0						0
R11	0	0			0	0	0						0
R11A	0	0			0	0	0						0
R12	0	0			0	0	0						0
WAKLING RELIEF SEWER													
R13	0	0		0	0	0	0						0
R14	0	0		0	9	0	0						9
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0		0	0	0	0						0
OREGON AVE RELIEF SEWER													
R16	0	0		0	0	0	0						0
R17	0	0		0	0	0	0						0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0		0	0	0	0						0
32ND ST RELIEF SEWER													
R19	0	0		0	0	0	0						0
MAIN STREET RELIEF SEWER													
R20	0	0		0	0	0	0						0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0		0	0	0	0						0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0		0	0	0	0						0
ARCH ST RELIEF SEWER													
R24	0	0		0	0	0	0						0
16TH & SNYDER													
R25	0	0		1	0	0	0						1
GRANT & STATE RD. RELIEF													
R26	0	0		0	0	0	0						0
TOTAL	0	0	0	1	9	1	3	0	0	0	0	0	14
AVER	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

January 2003 MISCELLANEOUS SITE INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	1	1	2	1	4	0	5						14
SOMERSET GRIT LEVEL	6	2	3	4	3	4	3						25
(H-20) 70th & Dicks	1	2	2	2	2	2	5						16
CCLL CONTROL PIPE @ ISLAND AVE.	3	4	4	3	3	5	5						27
RHOM & HAAS FLAP GATE	2	5	3	4	2	3	5						24
DROP SWIRL ON CSE COLLECTOR	1	3	2	2	4	2	1						15
UPPER DARBY OVERFLOW	1	5	4	3	3	3	5						24
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	13	16	15	15	16	14	14						103
O & ERIE DIVERSION GATE	1	1	2	1	1	1	6						13
T-04 NET REPLACEMENTS	7/8	N/A), 2002	N/A	N/A), 2002	n/a								7
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	14	14	12	14	11	13	12						90
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	14	13	12	13	9	10	12						83
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	13	14	11	14	11	14	11						88
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	8	10	11	15	11	14	9						78
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	13	14	12	15	11	13	10						88
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	13	14	11	14	11	12	11						86
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	3	9	8	7	7	10	10						54
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	3	9	8	7	6	9	10						52

January 2003 MISCELLANEOUS SITE DISCHARGES

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
CCLL CONTROL PIPE @ ISLAND AVE.	0	0	0	0	0	0	0						0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR	0	0	0	0	0	0	0						0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	0	0	0	0	0	0	1						1
O & ERIE DIVERSION GATE													
T-04 NET WEIGHT	115 LB	N/A	210 lb	N/A	N/A	235 LB	n/a						
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	1	1	0	0	0	0	0						2
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	1	3	2	0	1	1	0						8
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	0	1	0	0	0	0	0						1
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	0	2	2	0	1	0	0						5
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	0	0	0	0	0	0	0						0
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	0	0	0	0	0	0	0						0
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	0	0	0	0	0	0	0						0
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	0	0	0	0	0	0	0						0

January 2003 MISCELLANEOUS SITE BLOCKAGES CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST							0						
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks							0						
CCLL CONTROL PIPE @ ISLAND AVE.	0	0	0	0	0	0	0						0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR	0	0	0	0	0	0	0						0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	3	1	0	0	0	1	0						5
O & ERIE DIVERSION GATE							0						
T-04 NET ****													
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	2	1	0	0	1	1	0						5
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	4	4	5	1	3	2	1						20
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	2	1	1	0	1	0	0						5
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	2	4	3	2	3	1	0						15
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	1	0	1	1	2	0	0						5
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	0	0	0	0	0	1	0						1
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	0	1	0	0	1	0	0						2
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	0	0	0	0	0	0	0						0

FY2003 Dry Weather Discharges To Date

Discharge Observed		Discharge Stopped		Last Inspection						
DateDO	TimeDO	DateDS	TimeDS	DateLI	TimeLI	SiteID	Collector	TypeUnit	Location	Comment
07/10/02	11:10 AM	07/10/02	11:55 AM	07/05/02	02:13 PM	T-03	FHL	SLOT	Champlost Ave. W of Tacony Creek.	Debris - sticks and rags blocked slot.
07/11/02	11:20 AM	07/11/02	11:25 AM	07/08/02	11:48 AM	C-26	CCLL	SLOT	Saybrook Ave. & Island Ave.	Island ave. recreation ctr. turned on too many pumps. they were told to limit the pumping to two units.
07/16/02	01:41 PM	07/16/02	05:38 PM	07/10/02	02:15 PM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek.	Tree limbs and branches blocked the connecting pipe and slot opening.
07/24/02	09:40 AM	07/24/02	10:20 AM	07/23/02	10:40 AM	S-37	LSES	B & B	Vare Ave. & Jackson St.	Unit blocked at the orifice plate opening.
07/29/02	12:00 PM	07/29/02	01:10 PM	07/26/02	12:00 PM	S-22	CSW	B & B	660' S of South St E of Penn Field	Shutter gate stuck in closed position.
08/05/02	11:50 AM	08/05/02	01:50 PM	08/03/02	08:17 AM	T-09	FHL	SLOT	Roosevelt Blvd. W of Tacony Creek.	A stick with tree branches, leaves and plastic food bags blocked the slot opening.
08/13/02	09:45 AM	08/13/02	10:10 AM	07/11/02	12:00 PM	C-25	CCLL	SLOT	Woodland Ave. E of Island Ave.	Plastic bottle and Styrofoam food container blocked slot.
08/17/02	08:15 AM	08/17/02	10:00 AM	08/14/02	09:05 AM	P-04	PP	SLOT	Cottage Ave. & Holmesburg Ave.	Unknown debris blocked the slot opening
08/22/02	12:26 PM	08/22/02	12:45 PM	08/13/02	12:00 PM	C-26	CCLL	SLOT	Saybrook Ave. & Island Ave.	Pumps at Island Ave. Recreation Ctr. Pumped too much flow. Their discharge valve has been mechanically restricted.
08/26/02	10:30 AM	08/26/02	01:50 PM	08/21/02	01:10 PM	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Creek.	Connecting pipe blocked with grit, brick and other debris.
10/01/02	01:00 PM	10/01/02	02:00 PM	09/28/02	10:45 AM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek.	A fish net and other debris blocked the regulator opening.
10/02/02	03:55 PM	10/02/02	09:00 PM	09/27/02	10:00 AM	P-04	PP	SLOT	Cottage Ave. & Holmesburg Ave.	The connecting pipe was blocked with unknown debris.
10/17/02	01:25 PM	10/17/02	01:50 PM	10/11/02	09:05 AM	S-23	CSES	B & B	Schuylkill Ave. & Bainbridge St.	A 3' x 10' piece of wood jammed behind shutter gate causing it to shut.
11/18/02	01:40 PM	11/18/02	08:45 PM	11/15/02	09:45 AM	D-69	LDLL	B & B	Delaware Ave. N of Porter St.	Debris including 5 gal. bucket and pieces of styrofoam in the trunk blocked the opening to the regulator chamber.
11/18/02	09:00 AM	11/18/02	10:30 AM	11/13/02	12:30 PM	F-12	LFLL	SLOT	Sepviva St. N of Butler St.	Grit build up in connecting pipe between slot and cleanout blocked the flow. Monthly flushing is scheduled for this line.
12/02/02	02:05 PM	12/02/02	02:16 PM	11/21/02	01:10 PM	R-03	THOMAS RUN	DAM	56th St. & Spruce St. (South)	A stick with a ball of rags blocked the dwo pipe.
12/12/02	11:00 AM	12/12/02	03:05 PM	12/11/02	12:35 PM	T-12	FHL	SLOT	Whitaker Ave. E of Tacony Creek.	The connecting line was blocked with unknown debris.
12/18/02	09:35 AM	12/18/02	10:30 AM	12/14/02	09:10 AM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek.	Tree branches, trash & other debris blocked the slot box.
12/23/02	12:15 PM	12/23/02	12:50 PM	12/18/02	01:00 PM	F-24	LFC	WH-S	Bridge St. SE of Creek Basin	A trash bag & debris in trunk blocked the flow to the regulating chamber.

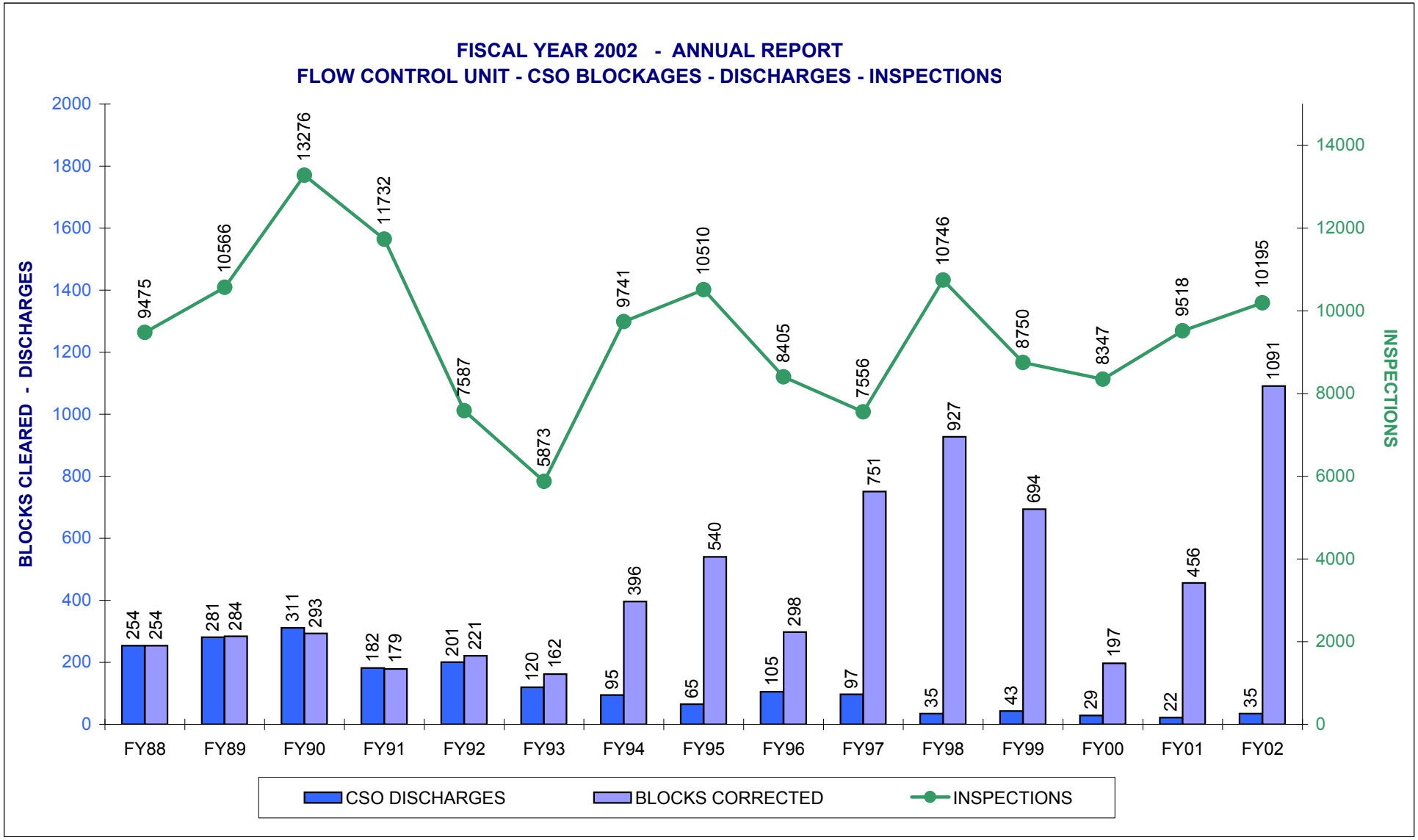
2002 - CSO Regulator and Tide Gate - Comprehensive Maintenance Completion Dates

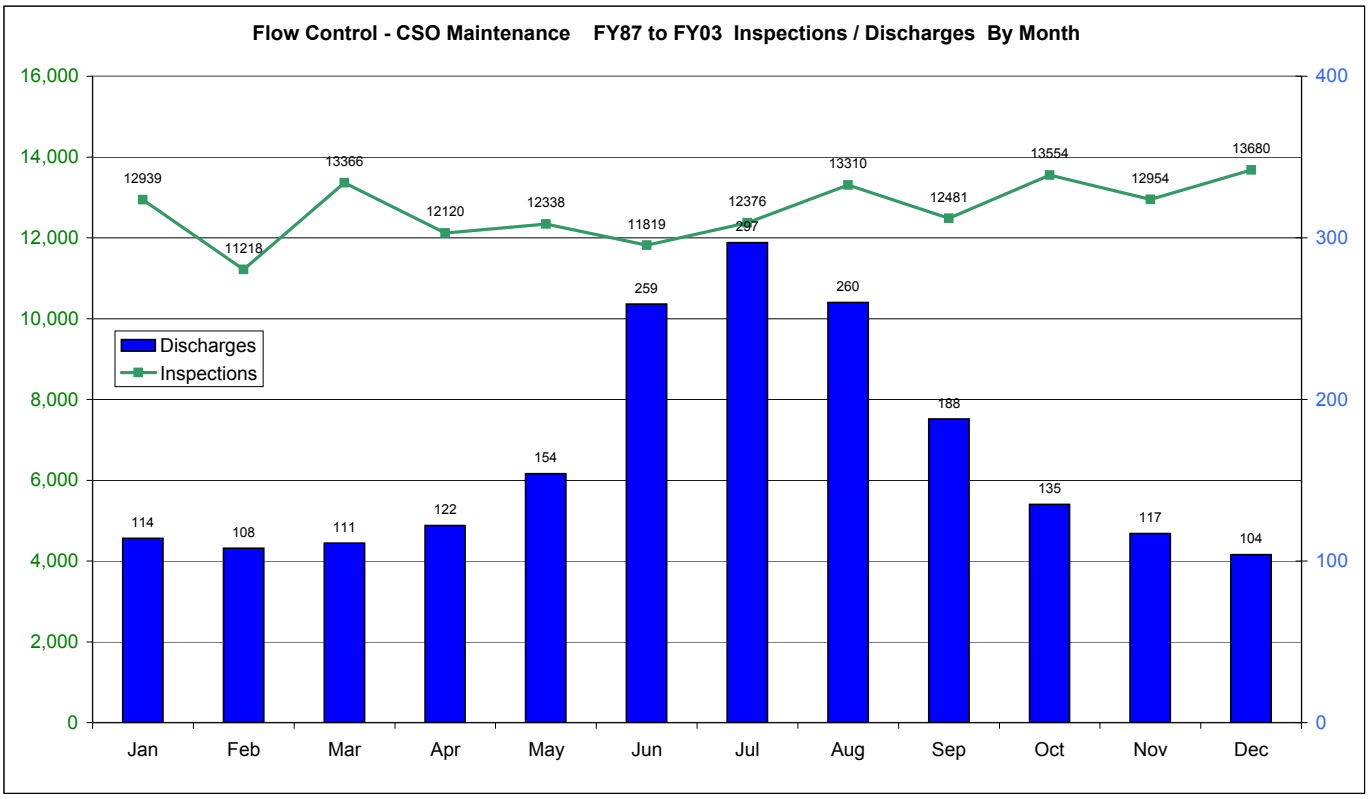
SITE ID	REG PM DATE	TG PM DATE
	UPPER PENNYPACK	
P01		
P02		
P03		
P04		
P05		
	UPPER DELAWARE LOW LEVEL	
D02	09/26/02	
D03	09/26/02	
D04		
D05	09/25/02	
D06		
D07	09/30/02	
D08		
D09	09/30/02	
D11	09/30/02	
D12		
D13		
D15	09/30/02	
	LOWER FRANKFORD CREEK	
F13		
F14		
F21		
F23		
F24		
F25		
	LOWER FRANKFORD LOW LEVEL	
F03		
F04		
F05		
F06		
F07		
F08		
F09		
F10		
F11		
F12		
	FRANKFORD HIGH LEVEL	
T01		
T03		
T04		
T05		
T06		
T07		
T08		
T09		
T10		
T11		
T12		
T13		
T14		
T15		

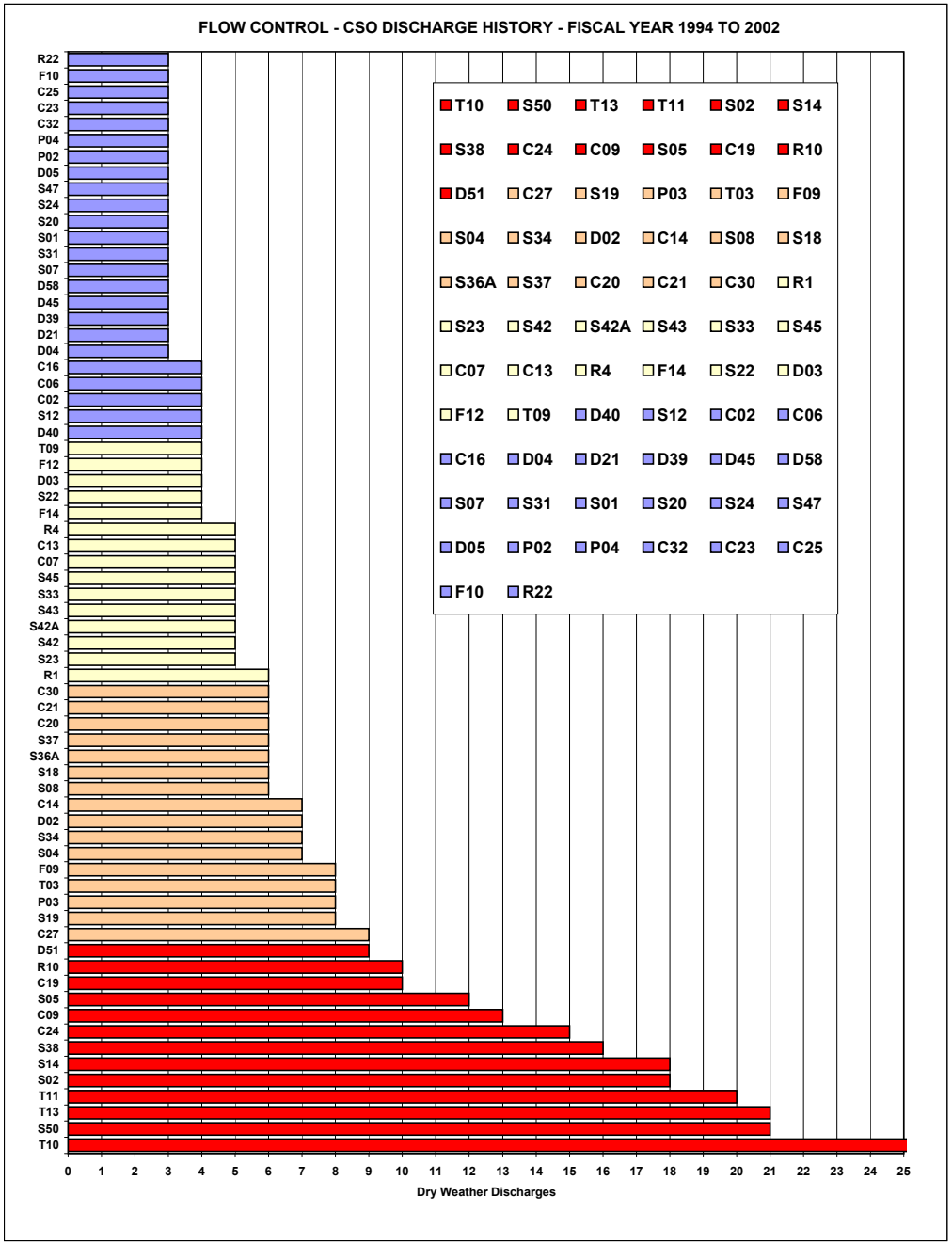
SITE ID	REG PM DATE	TG PM DATE
	SOMERSET LOW LEVEL	
D17	07/31/02	
D18		
D19	07/31/02	
D20		
D21		
D22		
D23		
D24		
D25		
	LOWER DELAWARE LOW LEVEL	
D37	07/31/02	01/04/02
D38	07/31/02	
D39		
D40		
D41		
D42		
D43		
D44	01/03/02	01/03/02
D45	01/03/02	01/03/02
D46		
D47		
D48		
D49		
D50		
D51		
D52		
D53		
D54		
D58	01/11/02	
D61	01/19/02	
D62	10/02/02	10/01/02
D63		
D64		
D65		
D66		
D67		
D68		01/05/02
D69		
D70		
D71		
D72		
D73		

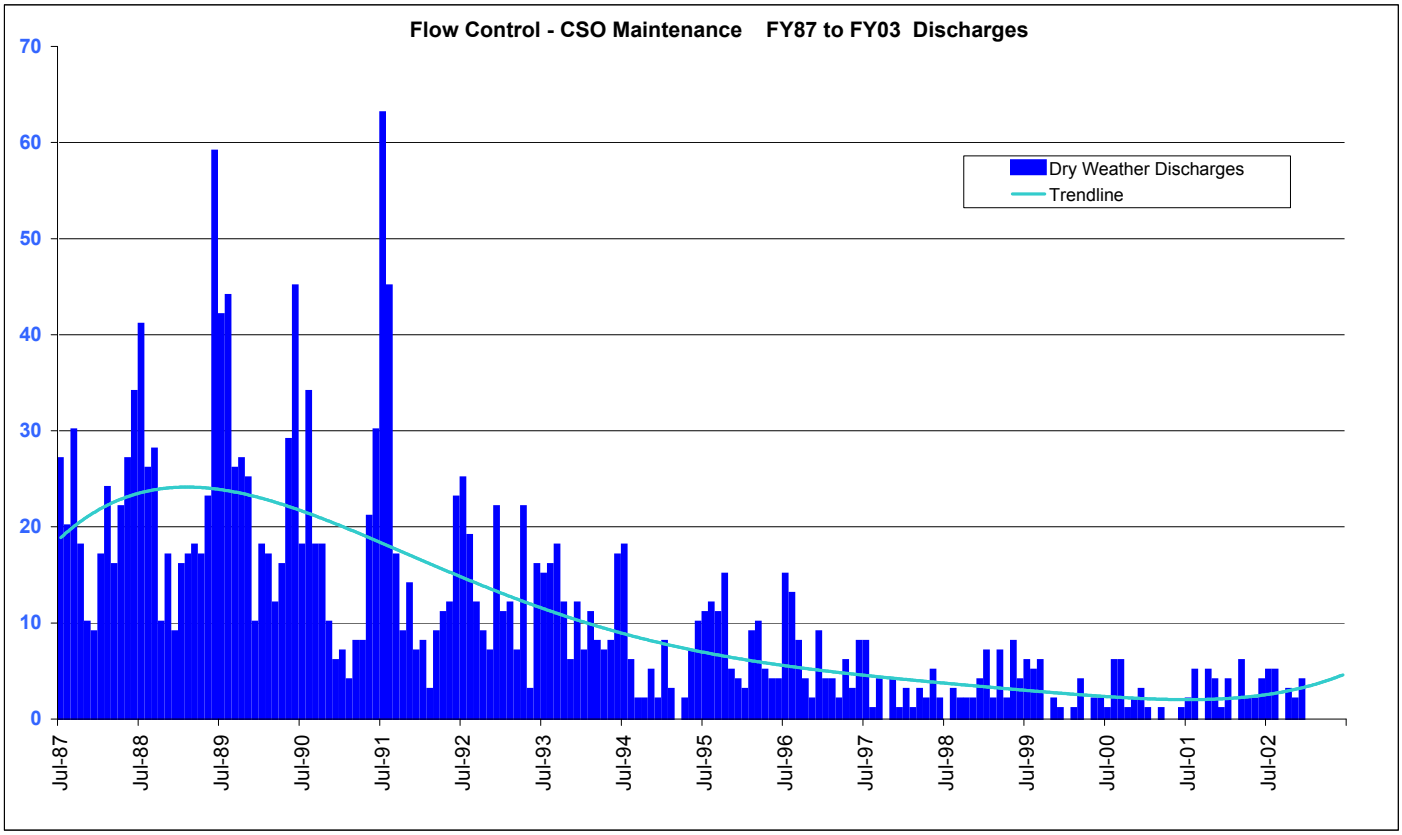
SITE ID	REG PM DATE	TG PM DATE
	CENTRAL SCHUYLKILL EAST SIDE	
S05	09/02/02	
S06		
S07		
S08		
S09		
S10		
S12		
S12A		
S13		
S15	07/27/02	
S16		
S17		
S18		
S19		01/15/02
S21		
S23	02/13/02	
S25	02/13/02	
S26	10/02/02	
	LOWER SCHUYLKILL EAST SIDE	
S31		
S35		
S36		
S36A		
S37		
S42		
S42A		
S44		
S46		
	CENTRAL SCHUYLKILL WEST	
S01		
S02		
S03		
S04		
S11		
S14		
S20		
S22	07/31/02	
S24		03/04/02
	SOUTHWEST MAIN GRAVITY	
S27		
S28		
S30		
S34		
S39		
S40		
S43		
S47		
S50		
S51		
	LOWER SCHUYLKILL WEST SIDE	
S32		
S33		
S38		
S45		

SITE ID	REG PM DATE	TG PM DATE
	COBBS CREEK HIGH LEVEL	
C01		
C02		
C04		
C04A		
C05		
C06		
C07		
C09		
C10		
C11		
C12		
C13		
C14		
C15		
C16		
C17		
C31		
C32		
C33		
C34		
C35		
C36		
C37		
	COBBS CREEK LOW LEVEL	
C18		
C19		
C20		
C21		
C22		
C23		
C24		
C25		
C26		
C27		
C28A		
C29		
C30		


FISCAL YEAR 2002 - ANNUAL REPORT
FLOW CONTROL UNIT - CSO BLOCKAGES - DISCHARGES - INSPECTIONS
BLOCKS CLEARED - DISCHARGES
INSPECTIONS
0
200
400
600
800
1000
1200
1400
1600
1800
2000
0
2000
4000
6000
8000
10000
12000
14000
FY88 254 254 9475
FY89 281 284 10566
FY90 311 293 13276
FY91 182 179 11732
FY92 201 221 7587
FY93 120 162 5873
FY94 95 396 9741
FY95 65 540 10510
FY96 105 298 8405
FY97 97 751 7556
FY98 35 927 10746
FY99 43 694 8750
FY00 29 197 8347
FY01 22 456 9518
FY02 35 1091 10195
CSO DISCHARGES
BLOCKS CORRECTED
INSPECTIONS


Flow Control - CSO Maintenance FY87 to FY03 Inspections / Discharges By Month
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
400
300
200
100
0
Discharges
Inspections
12939
11218
13366
12120
12338
11819
12376
13310
12481
13554
12954
13680
114
108
111
122
154
259
297
260
188
135
117
104
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


FLOW CONTROL - CSO DISCHARGE HISTORY - FISCAL YEAR 1994 TO 2002
R22
F10
C25
C23
C32
P04
P02
D05
S47
S24
S20
S01
S31
S07
D58
D45
D39
D21
D04
C16
C06
C02
S12
D40
T09
F12
D03
S22
F14
R4
C13
C07
S45
S33
S43
S42A
S42
S23
R1
C30
C21
C20
S37
S36A
S18
S08
C14
D02
S34
S04
F09
T03
P03
S19
C27
D51
R10
C19
S05
C09
C24
S38
S14
S02
T11
T13
S50
T10
T10 S50 T13 T11 S02 S14
S38 C24 C09 S05 C19 R10
D51 C27 S19 P03 T03 F09
S04 S34 D02 C14 S08 S18
S36A S37 C20 C21 C30 R1
S23 S42 S42A S43 S33 S45
C07 C13 R4 F14 S22 D03
F12 T09 D40 S12 C02 C06
C16 D04 D21 D39 D45 D58
S07 S31 S01 S20 S24 S47
D05 P02 P04 C32 C23 C25
F10 R22
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Dry Weather Discharges


Flow Control - CSO Maintenance FY87 to FY03 Discharges
70
60
50
40
30
20
10
0
Dry Weather Discharges
Trendline
Jul-87
Jul-88
Jul-89
Jul-90
Jul-91
Jul-92
Jul-93
Jul-94
Jul-95
Jul-96
Jul-97
Jul-98
Jul-99
Jul-00
Jul-01
Jul-02

T-04 FLOATABLES CONTROL - MAINTENANCE COST - 1997 / 2002

Servicing of the debris net at the T-04 regulator is approximately 1 hours work.
This includes a 2 man crew from Inlet Cleaning to remove the bags and dump the debris
and a 2 man crew from Flow Control to install new nets. Each replacement costs roughly $395.54

Net cost for 2 nets	$110.00
Crew cost	$281.30
Disposal cost	$4.24
Total per Job	$395.54
Roughly 7 times per Yr.	$2,768.81

Total Crew Cost	**$281.30**
Combo, hourly cost	$31.95
Utility Large, hourly cost	$15.38
Total cost	$47.33
* from Unified Indirect Cost Plan 1996	
Flow Control labor / Hr.	$15.97
x's 2 workers	$31.95
Inlet Cleaning labor / Hr.	$13.64
x's 2 workers	$27.28
Total Man Hour cost	$59.23
Man Hour cost	$59.23
Unified Indirect cost percent markup	295.00%
Total Labor cost	$233.97

Disposal cost	**$4.24**
Debris disposal cost / ton	$53.40
Debris disposal cost / lb.	$0.03
average weight lbs.	158.97

REPLACEMENT HISTORY	
Date Replaced	Total weight 2 bags
04/24/97	75
05/08/97	150
06/06/97	200
07/18/97	200
08/19/97	150
10/02/97	75
11/19/97	75
12/27/97	90
03/06/98	100
07/08/98	125
08/13/98	150
09/04/98	150
11/18/98	150
01/20/99	225
04/07/99	175
06/02/99	100
06/15/99	75
03/08/00	150
04/06/00	250
06/09/00	130
07/05/00	Net lost
08/10/00	265
09/11/00	115
10/12/00	160
11/01/00	100
02/21/01	275
03/13/01	Net lost
04/05/01	135
06/05/01	235
07/20/01	105
08/23/01	185
10/04/01	155
01/03/02	240
02/13/02	140
04/18/02	150
05/17/02	325
06/21/02	375
09/05/02	210
12/18/02	235
TOTAL	**6200**
COUNT	**37**

Appendix B – Flow Control Pumping Station Maintenance Summaries

PWD FLOW CONTROL

PUMPING STATION MAINTENANCE

CALENDAR YEAR 2002

OUTLYING PUMPING STATION - CAPACITIES

There are sixteen 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 2000 One pump rebuilt in 1998
C.S.P.S. VARIABLE SPEED UNIT CONSTANT SPEED UNIT	 4 2	 29,000 29,000	135,417	135,417	SWWPC	Good, station was fully automated in oct. 1996. One pump rebuilt in 1996 Two pumps rebuilt in 1997 One pump rebuilt in 1998 Two pumps rebuilt in 1999
FORD ROAD	2	900	1,467	148	SWWPC	Excellent, station completely One pump rebuilt in 2000 One pump rebuilt in 1999
HOG ISLAND ROAD	2	500	927	450	SWWPC	Excellent, new facility in 1989 One pump rebuilt in 2000 One pump rebuilt in 1998
LINDEN AVENUE	2	1,400	2,378	179	NEWPC	Good, built in 1967 One pump rebuilt in 2001 One pump rebuilt in 2000
LOCKART STREET	2	600	1,243	148	NEWPC	Good, built in 1967 One pump rebuilt in 1998 One pump rebuilt in 1999
MILNOR STREET	3	300	1,096	479	NEWPC	Good, built in 1947 One pump rebuilt in 2000 One in 1998, one in 1997
NEILL DRIVE	3	1,800	5,568	3,712	SWWPC	Good, completely rehabilitated in 1982 Three pumps rebuilt since 1998
POLICE ACADEMY	2	100	53	22	NEWPC	Good, new pumps, controls and electric gear installed in 1993
PHILA NAVAL BUSINESS CTR PS796	3	2,250	6,750	1,110	SEWPC	Good, new pumps, controls and electric gear installed in 2000
PHILA NAVAL BUSINESS CTR PS120	2	700	1,400	939	SEWPC	Good, built in 2000
PHILA NAVAL BUSINESS CTR PS542	2	300	600	113	SEWPC	Good, built in 2000
RENNARD STREET	2	400	329	49	NEWPC	Good, built in 1968 Two pumps rebuilt in 1999
SPRING LANE	2	122	242	20	SWWPC	Good, built in 2000
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 2002

WASTEWATER PUMPING
FY2002 OVERHAUL SCHEDULE

REPORT FOR: FY2002

COMPLETED	11	10	AVERAGE DAYS TO OVERHAUL IN FY2002
PROGRESSING	0	44	AVERAGE DAYS TO OVERHAUL PAST YRS

START	FINISH	MAIN PUMPING UNITS		STATUS	OOS DAYS
01/07/02	02/14/02	CSPS	# 3	COMPLETE	38 DAYS
10/09/01	10/18/01	LOCKART ST.	# 1	COMPLETE	9 DAYS
07/27/01	08/01/01	LOCKART ST.	# 2	COMPLETE	5 DAYS
11/13/01	11/17/01	FORD RD.	# 2	COMPLETE	4 DAYS
10/30/01	11/04/01	FORD RD.	# 1	COMPLETE	5 DAYS
11/06/01	11/16/01	HOG IS.	# 1	COMPLETE	10 DAYS
10/24/01	10/29/01	MILNOR ST.	# 1	COMPLETE	5 DAYS
10/19/01	10/29/01	MILNOR ST.	# 2	COMPLETE	10 DAYS
08/22/01	08/24/01	NEILL DR.	# 2	COMPLETE	2 DAYS
09/14/01	09/26/01	Navy Yard P120	# 2	COMPLETE	12 DAYS

START	FINISH	AUXILIARY EQUIPMENT	STATUS	OOS DAYS
03/22/01	07/30/01	26th & VARE (VENT)	COMPLETE	130 DAYS

FLOW CONTROL UNIT
PUMP STATION 2002 FLOW REPORT

WASTEWATER PUMP STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	STATION FLOW (MG)
BANK STREET	3.455	3.368					6.824
BELFRY DRIVE	3.935	4.018					7.953
CENTRAL SCHUYLKILL	3,903.068	4,842.055	547.267	1,159.399	4,721.893	5,137.941	20,311.623
FORD ROAD	34.351	39.125					73.476
HOG ISLAND	4.120	4.381					8.501
LINDEN AVENUE	28.993	22.952					51.945
LOCKHART STREET	29.787	27.917					57.703
MILNOR STREET	2.160	2.072	2.423				6.654
NEILL DRIVE	77.647	252.585	201.349				531.582
POLICE ACADEMY	1.875	1.791					3.666
RENNARD STREET	5.173	4.951					10.124
SPRING LANE	2.370	2.680					5.050
42ND STREET	821.444	700.765	986.931				2,509.139
STORMWATER PUMP STATIONS							
BROAD & BOULEVARD	112.403	18.199	0.623	0.335			131.560
MINGO CREEK	0.676	26.686	469.542	282.739	248.959	247.607	1,276.208
26TH & VARE	0.463	0.439					0.902

PHILADELPHIA WATER DEPARTMENT	FISCAL YEAR 2002 ACTUAL	SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

OPERATIONS	BY GEORGE COLLIER	RESPONSIBILITY CENTER COLLECTOR SYSTEM - FLOW CONTROL	NO. 28	FUND WATER	DATE PREPARED **FOR: 2002**

MAJOR SERVICE ACTIVITIES PERFORMED BY THIS DIVISION / RESPONSIBILITY CENTER

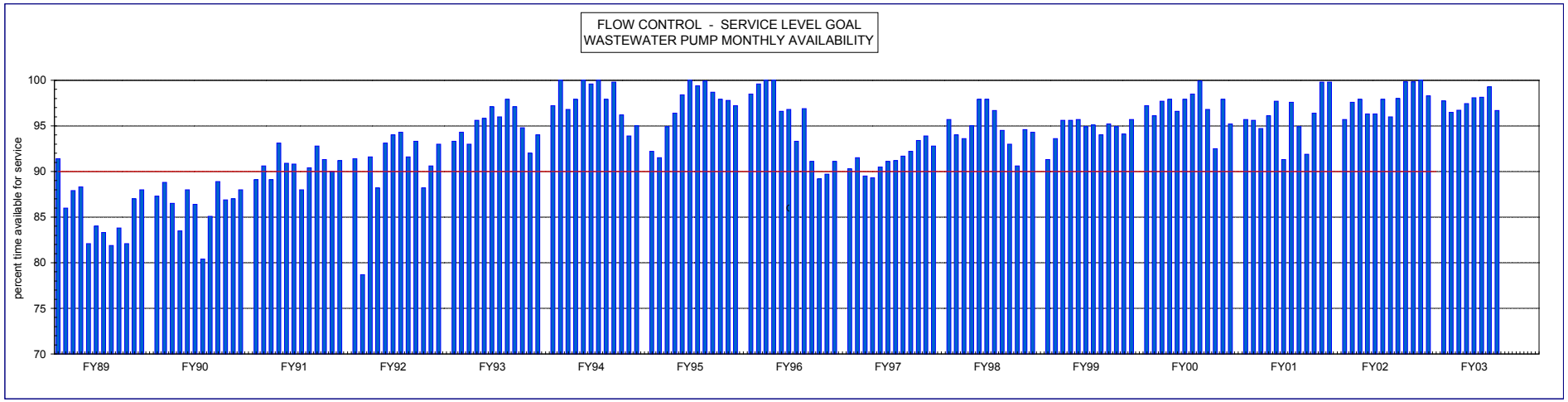
NAME/DESCRIPTION OF SERVICE	UNIT OF MEASUREMENT (1)	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL OR MTHLY. AVG.
Main Wastewater Pump Availability (goal is 95% or higher)	Percent	95.7%	97.6%	97.9%	96.3%	96.3%	97.9%	96.0%	98.0%	100.0%	99.8%	100.0%	98.3%	98%
CSO Dry Weather Discharges (goal is zero discharges)	CSO Discharges / 100 Inspections	0.4	0.6	0.0	0.6	0.6	0.1	0.4	0.0	0.6	0.2	0.2	0.5	Avg. 0.4
CCTV Inspections of Sewer Infrastructure (goal - greater than 30,000 ft or 5.8 mi.)	Feet Miles	25,033 4.7	31,445 6.0	16,137 3.1	21,400 4.1	25,936 4.9	25,625 4.9	24,981 4.7	18,066 3.4	19,439 3.7	24,804 4.7	22,961 4.3	17,262 3.3	Total 273,089 51.7
Metering Chamber Meters Operational (goal is 95% or higher)	% of 23 Meters / mo.	44%	46%	49%	47%	43%	62%	63%	68%	67%	81%	73%	71%	Avg. 0.6
CSO Level/Flow Meters Operational (goal is 90% or higher)	% of 142 Sites / mo.	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	42%	

WASTEWATER PUMPING - MAIN PUMPING UNITS

OUT OF SERVICE

365	**DAYS IN THE PERIOD Jan-01-02 TO Dec-31-02**
473040	TOTAL POSSIBLE IN SERVICE HOURS
8184	TOTAL PUMP OOS HOURS
10.3%	OOS FOR BREAKDOWN
61.9%	OOS FOR PREVENTATIVE MAINTENANCE
27.9%	OOS FOR OVERHAUL
98.3%	**OVERALL AVAILABILITY FOR SELECTED PERIOD**

DATE OUT	TIME OUT	DATE IN	TIME IN	UNIT	STATION	TYPE	REASON
11/15/02	9:00 AM	11/16/02	2:00 PM	3	NEILL DR	OV	OVERHAUL - COMPLETE UNIT
10/26/02	11:00 AM	10/28/02	6:00 PM	4	CSPS	BD	INSTRUMENTATION CONTROL PROBLEM
10/15/02	8:30 AM	10/25/02	1:00 PM	1	RENNARD ST	OV	OVERHAUL - COMPLETE UNIT
08/12/02	8:00 AM	09/24/02	3:30 PM	5	CSPS	OV	OVERHAUL - COMPLETE UNIT
08/08/02	3:00 PM	08/08/02	8:00 PM	2	NEILL DR	BD	PUMP BEARING FAILURE
07/24/02	12:15 PM	08/10/02	10:30 AM	1	SPRING LA	BD	WATER IN MOTOR
06/13/02	9:30 AM	06/13/02	7:00 PM	2	NEILL DR	BD	MOTOR FAILURE
06/06/02	2:30 PM	06/07/02	12:00 PM	2	BANK ST	BD	ELECTRICAL PROBLEM
06/03/02	10:00 AM	01/06/03	8:00 AM	1	NEILL DR	PM	PUMP SUCTION PLATE WORN
04/05/02	10:00 AM	04/08/02	11:00 AM	2	MILNOR ST	BD	BREAKDOWN
03/11/02	10:00 AM	03/14/02	11:00 AM	1	PNBC 120	OV	OVERHAUL - COMPLETE UNIT
02/09/02	12:30 PM	02/20/02	11:00 AM	2	MINGO CREEK	BD	SEALWATER VALVE STUCK OPEN, PUMP NOT RUNNING
01/09/02	11:10 AM	01/10/02	1:50 PM	2	BROAD ST	BD	VIBRATION
01/07/02	9:00 AM	02/14/02	11:00 AM	3	CSPS	OV	OVERHAUL



FLOW CONTROL - SERVICE LEVEL GOAL - MAIN PUMP AVAILABILITY HISTORY FOR : JUNE 2001

Availability FY90		Availability FY91		Availability FY92		Availability FY93		Availability FY94		Availability FY95		Availability FY96		Availability FY97		Availability FY98		Availability FY99		Availability FY00		Availability FY01		Availability FY02		Availability FY03	
Jul 89	87.3 %	Jul 90	89.1 %	Jul 91	91.4 %	Jul 92	93.3 %	Jul 93	97.2 %	Jul 84	92.2 %	Jul 95	98.5 %	Jul 96	90.3 %	Jul 97	95.7 %	Jul 98	91.3 %	Jul 99	97.2 %	Jul 00	95.7 %	Jul 01	95.7 %	Jul 01	97.7 %
Aug 89	88.8 %	Aug 90	90.6 %	Aug 91	78.7 %	Aug 92	94.3 %	Aug 93	100.0 %	Aug 94	91.5 %	Aug 95	99.6 %	Aug 96	91.5 %	Aug 97	94.0 %	Aug 98	93.6 %	Aug 99	96.1 %	Aug 00	95.6 %	Aug 01	97.6 %	Aug 01	96.5 %
Sep 89	86.5 %	Sep 90	89.1 %	Sep 91	91.6 %	Sep 92	93.0 %	Sep 93	96.8 %	Sep 04	94.9 %	Sep 95	100.0 %	Sep 96	89.5 %	Sep 97	93.6 %	Sep 98	95.6 %	Sep 99	97.7 %	Sep 00	94.7 %	Sep 01	97.9 %	Sep 01	96.7 %
Oct 89	83.5 %	Oct 90	93.1 %	Oct 91	88.2 %	Oct 92	95.6 %	Oct 93	97.9 %	Oct 14	96.4 %	Oct 95	100.0 %	Oct 96	89.3 %	Oct 97	95.0 %	Oct 98	95.6 %	Oct 99	97.9 %	Oct 00	96.1 %	Oct 01	96.3 %	Oct 01	97.4 %
Nov 89	88.0 %	Nov 90	90.9 %	Nov 91	93.1 %	Nov 92	95.8 %	Nov 93	100.0 %	Nov 24	98.4 %	Nov 95	96.6 %	Nov 96	90.5 %	Nov 97	97.9 %	Nov 98	95.7 %	Nov 99	96.6 %	Nov 00	97.7 %	Nov 01	96.3 %	Nov 01	98.1 %
Dec 89	86.4 %	Dec 90	90.8 %	Dec 91	94.0 %	Dec 92	97.1 %	Dec 93	99.6 %	Dec 34	100.0 %	Dec 95	96.8 %	Dec 96	91.1 %	Dec 97	97.9 %	Dec 98	94.9 %	Dec 99	97.9 %	Dec 00	91.3 %	Dec 01	97.9 %	Dec 01	98.1 %
Jan 90	80.4 %	Jan 91	88.0 %	Jan 92	94.3 %	Jan 93	96.0 %	Jan 94	100.0 %	Jan 45	99.4 %	Jan 96	93.3 %	Jan 97	91.2 %	Jan 98	96.7 %	Jan 99	95.1 %	Jan 00	98.5 %	Jan 01	97.6 %	Jan 02	96.0 %	Jan 02	99.3 %
Feb 90	85.1 %	Feb 91	90.4 %	Feb 92	91.6 %	Feb 93	97.9 %	Feb 94	97.9 %	Feb 55	99.9 %	Feb 96	96.9 %	Feb 97	91.7 %	Feb 98	94.5 %	Feb 99	94.0 %	Feb 00	99.9 %	Feb 01	94.9 %	Feb 02	98.0 %	Feb 02	96.7 %
Mar 90	88.9 %	Mar 91	92.8 %	Mar 92	93.3 %	Mar 93	97.1 %	Mar 94	99.8 %	Mar 65	98.7 %	Mar 96	91.1 %	Mar 97	92.2 %	Mar 98	93.0 %	Mar 99	95.2 %	Mar 00	96.8 %	Mar 01	91.9 %	Mar 02	100.0 %	Mar 02	%
Apr 90	86.9 %	Apr 91	91.3 %	Apr 92	88.2 %	Apr 93	94.8 %	Apr 94	96.2 %	Apr 75	97.9 %	Apr 96	89.2 %	Apr 97	93.4 %	Apr 98	90.6 %	Apr 99	94.9 %	Apr 00	92.5 %	Apr 01	96.4 %	Apr 02	98.5 %	Apr 02	%
May 90	87.0 %	May 91	90.0 %	May 92	90.6 %	May 93	92.0 %	May 94	93.9 %	May 85	97.8 %	May 96	89.7 %	May 97	93.9 %	May 98	94.6 %	May 99	94.1 %	May 00	97.9 %	May 01	99.8 %	May 02	99.7 %	May 02	%
Jun 90	88.0 %	Jun 91	91.2 %	Jun 92	93.0 %	Jun 93	94.0 %	Jun 94	95.0 %	Jun 95	97.2 %	Jun 96	91.1 %	Jun 97	92.8 %	Jun 98	94.3 %	Jun 99	95.7 %	Jun 00	95.2 %	Jun 01	99.8 %	Jun 02	98.3 %	Jun 02	%
Avg	86.4 %	Avg	90.6 %	Avg	90.7 %	Avg	95.1 %	Avg	97.9 %	Avg	97.0 %	Avg	95.2 %	Avg	91.5 %	Avg	94.8 %	Avg	94.6 %	Avg	97.0 %	Avg	96.0 %	Avg	97.7 %	Avg	97.6 %
Max	88.9 %	Max	93.1 %	Max	94.3 %	Max	97.9 %	Max	100.0 %	Max	100.0 %	Max	100.0 %	Max	93.9 %	Max	97.9 %	Max	95.7 %	Max	99.9 %	Max	99.8 %	Max	100.0 %	Max	99.3 %
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	90.6 %	Min	91.3 %	Min	92.5 %	Min	91.3 %	Min	95.7 %	Min	96.5 %