PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

2000

Chapter 94: Wasteload Management Report

March 31st, 2001

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Section 1 - Introduction

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 2000, to manage and reduce the combined sewer overflows (CSO's) permitted to discharge to waters of the Commonwealth of Pennsylvania. Specifically, 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 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. Improvement projects as they relate to the continued proper operation of combined sewage infrastructure as 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. Sections 3 through 7 describe the status of the watershed management planning and capital project implementation occurring within each respective CSO watershed. Post Construction Monitoring of CSO discharges and other performance-related information for each CSO system is summarized by watershed. Section 8 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. Measures to ensure that the public is informed about the occurrence, location and impacts of CSOs
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.

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 2000, 37 cubic yards of debris was removed from the two grit pockets. The underwater inspection of the North shafts down to the grit pockets was performed on October 2, 2000. the inspection revealed no degradation or problems with the new plastic liner.

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 2000 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 who 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 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: 7/31/2001 Status: Ongoing

The Philadelphia Water Department's CSO Monitoring Expansion Project is based upon installing state-of-the-art technologies selected from a six month CSO monitoring demonstration held in 1994. Although the monitoring network is designed to provide a high level of confidence with respect to minimizing dry weather overflow to the furthest extent possible, the network is expected to provide valuable data to support the evaluation of further CSO mitigation practices which may result from the watershed management programs.

Presently, the CSO monitoring network expansion is still undergoing site acceptance testing. A site specific status report is provided in Table 1.5.1 for the each of the major site types in the contract including:

- CSO & Storm Flood Relief Chambers
- Township Metering Stations
- Pump Stations
- Hydraulic Control Points (Miscellaneous points of interest)
- Rain Gages

The following descriptors are provided to indicate the status of the major phases of acceptance testing of site components. Since phone and electric service are required in order to make a site operational, utility availability in remote areas has significantly impacted the implementation schedule. The acceptance testing is a 3-part process design to ensure short and long-term reliability along with assurance that the individual sites will work with the entire system. Please refer to Table 1.5.1 for a summary of the construction status of each remote site.

Aerial Service - Power provided by above ground service
Underground Service - Power provided by below ground service

PECO Service -	Electric service operational.
Bell Service -	Phone service operational.
One-Day Test (P/F) –	Current Status (Pass / Fail) of one-day site acceptance testing
7-Day Test -	Current Status (Pass / Fail) of 7-day site acceptance testing
Site Acceptance Date-	Date on which the entire site was accepted

The new computer system currently collects data from 152 sites throughout Philadelphia and the surrounding areas. Currently around 189 sites have been accepted, although a few sites remain without power or phone service. Upgraded computer hardware was installed in the fall of 1999. Updated software for the system is in the debugging stage, with fixes applied on an as needed basis. Graphs for operating sites can now be displayed and printed. Reports are in the development stage where data is verified on continuous basis. Based upon input from the contractor, these reports are expected to be completed and accepted in 2001. Accepted sites are regularly monitored and reconfigured for consistent data collection. The data remains provisional until the computer system is fully implemented and accepted. Shutdown of the old computer system occurred and all data was migrated to the new computer system.

The overall expansion of the program into the Southeast and Southwest districts of the city will allow for the observance and rapid abatement of line blockages and dry weather discharges, as currently practiced in the Northeast district. In addition, the network will provide calibration data for the continued application of the CSO models. These models are presently used to produce the monthly and annual estimates of CSO frequency and volume.

Implement Event Notification Systems (ENS) for DWOs & Inflow

The implementation of the CSO monitoring network was designed to include the use of an Event Notification System (ENS) to reduce the response time to abate dry weather discharges and river inflow which may occur when the tide gate becomes wedged open by debris. The implementation of the ENS is ongoing as the new computer system is implemented and site-specific requirements of newly monitored sites are incorporated. It is expected that the upgraded computer hardware and software installed in 1999 should increase the ability to which this function can be used in 2001.

Table 1.5.1 Site Status Report for CSO Monitoring Network Implementation

Site Type	# of Sites	# with Aerial Service	# with Underground Service	% with PECO Service	% with BELL Service	# passing 1 day test	# failing 1 day test	# passing 7 day test	# failing 7 day test	# sites accepted	% of sites accepted
Cobbs Creek CSO's	34	19	8	76	94	32	2	32	0	32	94
Delaware River CSO's	47	32	11	85	85	46	1	46	0	46	98
Frankford Creek CSO's	14	11	0	7	100	4	7	4	0	4	29
Pennypack Creek CSO's	4	4	0	100	100	0	4	0	0	0	0
Schuylkill River CSO's	45	28	10	67	74	36	7	36	0	36	80
Tacony Creek CSO's	14	9	0	14	100	6	8	6	0	6	43
Hydraulic Control Points	19	6	0	55	75	9	1	9	0	9	47
Relief Structures	8	5	0	100	100	2	6	2	0	2	25
Siphons	1	1	0	0	100	1	0	1	0	1	100
Pump Stations	16	0	0	100	100	15	0	15	0	15	94
Rain Gages	23	0	0	100	96	18	3	18	0	18	78
Township Meters	23	0	0	96	96	23	0	22	0	22	96

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 2000, the Somerset Grit Chamber was cleaned 4 times in 2000 on the following dates:

Date	Cu. Yards Removed
01/07/2000	85
04/20/2000	81
06/29/2000	88
10/25/2000	67

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, 66 nets have been replaced (33 visits) with an approximate total of 4500 pounds of debris captured. Statistics show that the nets are replaced approximately every 43 days with debris disposal averaging 68 pounds per net (drained weight) or 3.20 pounds of debris per day. 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 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 2000:

- Sandy Run Head works: Installed a 4ft x 4ft debris grill to prevent large tree limbs from entering the system.
- D-45 CSO Outfall: A 20ft x 20ft multi-section debris grill was fabricated. It is scheduled to be installed this spring
- Sandy Run Outfall: Repair and modify debris grill to prevent unauthorized entry. This site was vandalized several times in 2000 and needed extensive modification.

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 2000 include:

- General Stormwater Education
- PWD's Defective Lateral Program
- Streets Department Recycling Program
- Grass Clippings & Recycling
- In's & Out's of Sewer Inlets
- PWD's 200th Anniversary and the History of Watershed Protection
- Clean Water Starts Here – Neighborhood Tips for Non-point Pollution Prevention
- Phila. More Beautiful Committee (PMBC) – Block Cleanups

1.7.2 Waterwheel Watershed Newsletters

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

Spring/Summer '00 Edition - This edition introduced the public to the formation of the Cobbs/Darby Watershed Partnership and discussed the watershed components of the LTCP. The issue also featured one of the PWD's source water protection projects which involved streambank and buffer restoration and the discouragement of the feeding of Canadian geese in an area directly above the PWD's Belmont Drinking Water Plant intake. The issue also publicized the availability of watershed tours along Philadelphia's rivers and streams in addition to the availability "Let's Learn About Water" activity books designed for teachers, schools and other children's groups.

Spring/Summer '01 Edition – This upcoming issue with provide our customers with an update on various components of the PWD's CSO LTCP, focusing on capital improvement projects in neighborhoods and watershed partnership updates (introducing the new Tacony-Frankford Watershed Partnership).

1.7.3 Comprehensive Education Materials

The following projects were initiated and/or completed in calendar year 2000:

- History of the city's sewersheds with a special emphasis on Mill Creek.
- Watershed educational partnerships (continued from 1999) with Bodine High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, Lincoln High School, and the Schuylkill Center for Environmental Education.
- Development (continuing) of watershed self-guided tour booklets for the city's eight watersheds
- Design conceit for the watershed exhibit to be installed at the Fairmount Water Works Interpretive Center (FWWIC) in addition to the submittal to DCNR for a grant to assist in construction of the FWWIC and the creation of a watershed technology center to be housed in the FWWIC.
- Completion of the Technical Memos for water quality assessments (chemical, biological, physical) for the Cobbs/Darby Watershed Partnership, facilitated by the Water Department and its consultant, the Pennsylvania Environmental Council.
- Recruitment of stakeholders for the Tacony-Frankford Watershed Partnership
- Submittal to DCNR for a River Conservation Plan grant for the Tacony-Frankford watershed to complement the Tookany Creek RCP in development by Cheltenham Township.
- The development and publication of a watershed status report for the Darby-Cobbs watershed.
- The development of a website (www.darby-cobbs.org) for the Darby-Cobbs Watershed Partnership.

General Educational projects in calendar year 2000 - 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, including: fact sheets, press releases, press conferences, brochures, watershed status reports, websites, watershed walks, and presentation materials.

1.7.4 Citizen Advisory Committee (CAC)

The Water Department's consultant, the Pennsylvania Environmental Council, facilitates the CAC advisory committee meetings and the project specific team meetings (this format has changed from the past practice of subcommittee meetings). The CAC is comprised of the following members:

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

The following projects were completed or initiated by the Water Department and/or its CAC in 2000:

Design and Construction 2000 - During the reporting period, the City co-sponsored the *Design & Construction 2000 Conference and Trade Show,* aimed to promote and increase the use of environmentally preferable products and systems for use in building renovation and new construction projects in Greater Philadelphia. Sponsors raised awareness about the benefits and feasibility of environmentally sound development projects.

Design and Construction 2000 Partners

- Philadelphia Self-Reliant
- City of Philadelphia
- American Institute of Architects
- Greater Philadelphia Recycling Council
- PA Department of Environmental Protection

- NJ Commerce and Economic Growth Comm.
- Eco-Smart Healthy Properties, LLC
- Sheraton Rittenhouse Square Hotel

The event attracted 400 city, state, and federal government representatives, architects, builders, and corporate representatives, with a trade show that showcased 60 exhibitors of recycled content and sustainable products and systems, and guided tours of the environmentally-friendly Sheraton Rittenhouse Square Hotel. The conference and trade show was held at the Philadelphia Marriott, on November 18, 1999.

Philadelphia Self-Reliant, a non-profit organization, organized the event with an advisory committee comprised of representatives from the Philadelphia Municipal Energy Office, Capital Program Office, Water Department, and Procurement Department. Partnerships with these agencies and organizations, and others, were critical to the success of the conference and trade show; other partners include: the American Institute of Architects, Greater Philadelphia Recycling Council, Pennsylvania Department of Environmental Protection, New Jersey Commerce and Economic Growth Commission, EcoSmart Healthy Properties, LLC, Sheraton Rittenhouse Square Hotel, and Philadelphia Streets Department.

The organizers developed a comprehensive conference program, with Pennsylvania Department of Environmental Protection Secretary James Seif as keynote speaker, followed by concurrent sessions on "Design and Construction", and "Recycling", presented by leaders in each field. Other speakers included Kristen Childs, environmentally responsible designer, author, and lecturer, and Barry Dimson, President of EcoSmart Healthy Properties, LLC, specializing in environmentally responsible building techniques and products.

Kristen Childs, as Co-Director of Croxton Collaborative, was one of the first design professionals to recognize the impact of construction processes and materials on the natural environment. She redirected the focus of her firm to address issues of sustainability in all of its work. She also co-authored 'Audobon House' and participated in the Public Television presentation describing the process of constructing the building in a sustainable manner.

EcoSmart's most recent project was as environmental consultant to Philadelphia's Rittenhouse Square Hotel, the first environmentally smart hotel in the United States. The hotel is recognized for its combination of environmentally responsible and high-tech features. EcoSmart graciously opened the doors of the hotel to conference attendees for a guided-tour.

Design and Construction 2000 brought together a diverse group of buy-recycled, energy, water, and air interests under the umbrella of sustainability. Participant feedback revealed that the event was beneficial in giving attendees the opportunity to: learn from professionals, network with public and private sector individuals involved in sustainable issues, and highlight products and services available in construction and renovation projects. Conference participants, tradeshow exhibitors, and cooperating agencies have expressed an interest in a follow-up event to build on the momentum of *Design and Construction 2000*. Conference organizers are seeking funding to sponsor a second conference and trade show in 2001.

City - SEPA Partnership - The City proposes to continue public education on environmentally friendly design and construction, through a partnership with the Southeastern Association of Pennsylvania Conservation Districts (SEPA): Bucks, Chester, Delaware, and Montgomery Counties, in the development of watershed-based educational programs.

SEPA formed in 1985 with the delegated authority to administer erosion and sedimentation pollution control programs and NPDES permitting of construction site storm water runoff. The creation of SEPA affords continuity across districts in construction review and inspection procedures. The conservation districts provide annual training on erosion and sedimentation controls for construction site operators and engineers in an effort to reduce construction site storm water pollution.

For each of the City's 7 watersheds, comprehensive watershed planning and management includes a very wide array of skills and resources: water and land use policy, communications, natural sciences, engineering, administration, management, public education, laboratory and analytical services, computer science, mapping and information systems.

Partnerships and Educational Programs - From the moment the City of Philadelphia began providing water to its citizens there has been a need to create partnerships to protect the water supply. In our earliest days it was through the creation of Fairmount Park. Today we comply with state and federal regulations that require citizen participation. More importantly however, the Philadelphia Water Department through its Public Education Unit has for more than 15 years voluntarily reached the public through an aggressive education and community outreach program that serves as a model for utilities across the country. Through these programs, the Water Department raises public awareness and understanding of combined sewer and storm water problems and issues. Educational materials are distributed at these events and included in billstuffers to over 500,000 households. In addition, the City continues to facilitate watershed stakeholder meetings to unify public participation in the surrounding counties and to address the issues pertaining to stormwater management on a watershed scale.

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. PWD joined 25 other environmental and conservancy organizations in Harpers Meadow in the northwest part of the city to share information with school and community groups. As part of our effort to develop an understanding of water resources issues and stewardship qualities in the next generation, Public Education staff demonstrated a watershed model to **more than 500 children from 20 schools** on June 2 and offered similar watershed and storm water runoff information to **150 members of northwest communities** on June 3.

Stormwater Citizens Advisory Council: The Stormwater CAC promotes public participation and education in the city's stormwater management program, to achieve three specific objectives: (1) encourage changes in individual behavior to improve storm water quality, (2) develop informed citizenry to support the City's storm water management objectives, and (3) comply with the public education and involvement component of the storm water permit. The Partnership for the Delaware Estuary facilitates meetings of the CAC. The Council reviewed its original priorities list from last year to assess completion/progress on various projects, including the storm drain stenciling volunteer program and production of the "Let's Learn About Water" activity book for children. In addition, the CAC continues to distribute its award-winning video, "Stormy Weather." In FY 2000, major projects included the largest inlet stenciling project to date, during Earth Week and the "Clean Water Begins and Ends with You!" school art contest.

Largest Earth Day Service Project: Approximately 4,000 volunteers participated in the Water Department and Stormwater CAC sponsored largest Earth Day service project by stenciling more than 10,000 storm drains throughout the City, from April 15 through April 29. Volunteers used stencils and materials provided by PWD, PA Coastal Zone Management Project, and Duron Paints and Wall-coverings, to stencil the message "Yo!!! No Dumping! Drains to River!" beside an irate fish.

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.

"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 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" Drawing Contest: The Partnership for the Delaware Estuary, the PWD, and the PA Coastal Zone Management sponsored a 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 in celebration of the 30th Anniversary of Earth Day and in the creation of a "Clean Water Begins and Ends with You" calendar. More than 450 drawings were entered into the contest from 25 public, private and parochial schools.

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. Public Education (and PWD summer interns) met with the Cobbs Creek Community Environmental Education Center's Program Coordinatorfor orientation for their six-week "Park Management Program for Youth 2000," in which the attending interns are designated to participate. 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.

Darby-Cobbs Watershed Partnership: 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: the development of the Watershed Status Report, 2) the proposed Regional Water Monitoring and Stormwater Awareness Education Program, in conjunction with the CCCEEC, 3) initial planning for an Education Symposium, including identifying the needs of our audiences, and determining the roles of participating agencies and 4) conducting a watershed wide citizen survey to facilitate the production of a watershed video which documents the visions of the watershed's residents for the watershed.

Fairmount Water Works: The City's Combined Sewer, 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 treat-ment 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. In FY 2000, over 14,000 people visited and participated in programs at the Fairmount Water Works.

PWD Summer Water Camp: For more than 9 years, the Public Education Unit has offered a "water camp day" as a field trip experience for day camps throughout Philadelphia. Water themes include lessons on the urban water cycle, non-point source pollution, watershed protection, and water quality. In the summer of 1999 and again in 2000, PWD partnered with the Recreation Department to offer this opportunity to camps operated through the City's recreation centers. In order to prepare for this activity 6 student interns, all Philadelphia residents, are hired to staff the camp. This year our student interns are attending Pitt, Goucher, Moore, LaSalle, Penn State and Drexel and are majoring in communications, computers, environmental sciences, secondary education and nursing. The month of June has been spent acquainting them with PWD issues and culture, water resource science, and child development and management skills. During the summer

of 1999, 35 day-camps participated in the PWD summer camp program. In summer 2000, our interns provided water resource lessons to more than 50 city day camps.

Eco-Meet: For the last eight years, Water Department employees from the labs, Industrial Waste, Southwest Water Pollution Control Plant and other treatment facilities have participated with outside partners from the Academy of Natural Sciences and the Schuylkill Center for Environmental Education to provide middle school students with the opportunity to compete on a one day science competition. On May 15, more than 65 students from ten schools completed a series of activities with the help of PWD personnel that allowed them to evaluate water quality in the urban environment.

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 currently being developed.

Senior Citizen Corps (SEC): The Water Department continues to work with the Senior Citizen Corps to address pollution problems and water quality monitoring programs for the Monoshone Creek, a tributary to the Wissahickon 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 Water Department participated in the second "Monoshone Watershed Day" in October 2000.

Community Outreach and the Captain Sewer Program: The Water Department continues to organize and distribute information to the public about cso, 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. As an example of the scope of this outreach program, in June 2000, Captain Sewer presented the Water Department's educational message to more than 3,100 citizens and their children at 19 locations.

The Pennsylvania School for the Deaf: The Philadelphia Water Department initiated a program during the reporting period concerningeducational outreach programs for students with disabilities. Aquatic biologists from the City's Office of Watersheds and Bureau of Laboratory Services participated in a biological assessment of the Wissahickon Creek near Kitchen's Lane. During the school year, students have been focusing on all aspects of the watershed ranging from the history of the Wissahickon to water testing. Bioassessments, which focused on the benthic (macroinvertebrate) community, were incorporated into the program in attempt to educate students on the effects of anthropogenic influences (e.g. storm water, non-point and point source pollution) on the biological integrity of our water ways. Students learned the procedures for collecting macroinvertebrates, identification of the various aquatic taxa, and discriminate between healthy aquatic assemblages and pollution tolerant communities. Future programs will involve fish assessments and algal analyses on the Wissahickon to further broaden the student's understanding of trophic relationships and community dynamics (e.g. food web interactions) in aquatic ecosystems.

"Operation Clean Below-Earthweek 2000": The Philadelphia Water Department, Fairmount Park Commission, The Philadelphia Scuba and Aquatics Club (PSAC) along with the U.S. Environmental Protection Agency (Region III) partnered on April 18th, 2000 to address the problematic areas of trash and debris along the upper Schuylkill River. "Operation Clean Below"consisted of scuba divers and individuals in boats pulling debris out of the river, volunteers cleaning along the shore, water quality monitoring, and workshops on watershed protection and stewardship. For Operation Clean Below, over 100 volunteers were mobilized and removed approximately 3 tons of trash, recyclables and debris from the Schuylkill River, the riverbank from Grant Monument to Strawberry Mansion Bridge and Lemon Hill. This program addressed

the importance of developing partnerships within city agencies and local stakeholders, and the impact of stormwater runoff on the environmental and aesthetic conditions within the City's watersheds.

The Big Brother Big Sister Association of Philadelphia: During the reporting period, members of the Philadelphia Water Department met with individuals from the Northeast Branch of the Big Brother/Big Sister Association of Philadelphiaduring a day-long hike in the Pennypack Water-shed. During the day, children were educated onvarious aspects of the watershed which includedterrestrial 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.

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. The department will continue with this focus in 2001 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 are prime for this kind of public/private effort to protect stream water quality.

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 any water quality benefits achievable by CSO mitigation measures. The tables included in the following section represent the average annual CSO overflow statistics for calendar year 2000 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

1.9.1 Annual CSO Statistics (2000)

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

COBBS CREEK 2000 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 - 71	23	1273 - 1366	51% - 52%	0 - 275
Cobbs Creek Low Level	9	12	0 - 58	22	111 - 120	74% - 75%	0 - 175

DELAWARE RIVER 2000 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	5 - 53	31	947 - 1059	57% - 59%	5 - 182
Somerset	8	9	25 - 65	46	3352 - 3676	50% - 52%	44 - 251
Lower Delaware Low Level	27	27	69 - 124	103	2755 - 3027	59% - 62%	5 - 262
Oregon	5	6	45 - 58	52	1226 - 1281	39% - 40%	100 - 166
Lower Frankford Low Level	5	6	23 - 60	40	1129 - 1226	44% - 46%	39 - 195

PENNYPACK CREEK 2000 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	16 - 53	31	85 - 96	65% - 67%	26 - 151

SCHUYLKILL RIVER 2000 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	2 - 79	32	1257 - 1371		58% - 60%		2 - 378	
Central Schuylkill West Side	10	10	1 - 61	41	638 - 710		49% - 52%		1 - 268	
Lower Schuylkill East Side	7	9	5 - 56	42	737 - 816		53% - 56%		5 - 247	
Lower Schuylkill West Side	4	4	8 - 60	45	1044 - 1196		22% - 24%		8 - 199	
Southwest Main Gravity	2	2	5 - 56	31	1892 - 2072		64% - 66%		5 - 205	

TACONY CREEK 2000 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	4 - 67	40	3983 - 4366		40% - 42%		4 - 270	
Upper Frankford Low Level	12	12	12 - 57	40	391 - 435		58% - 60%		13 - 215	

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 CSOs: 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 CSO program staff is currently putting in place tools to facilitate a prioritization of inflow sources. In 1999, a tabular inflow database was created that included every sewer creek crossing in the city of Philadelphia (hydraulic characterization, location, etc). In 2000, this database was linked with the digitized drainage maps to create graphical displays in GIS. This information will then be used to develop and implement an inflow source inspection plan during calendar 2001 which will define and prioritize I/I remediation projects.

During the period from 1999-2000, a flow-monitoring contract was awarded to Utility Pipeline Services (UPS). The contract called for installation of 15 temporary flow meters, routine meter maintenance, data downloads, and training for existing PWD instrumentation crews in proper flow monitoring techniques. The new meters, as well as the Departments stock of flow monitors were deployed at various locations

throughout the city to support the LTCP projects including the quantification of Rainfall Dependent Inflow and Infiltration.

During 2000, two major flow meter deployments took place. The initial deployment was targeted to the separate sewered area in Northeast Philadelphia. All fifteen flow monitors installed in this target area were to support the Inflow/Infiltration effort. The meters gathered data until mid-April of 2000 when they were removed for redeployment to our second major target area of Northwest Philadelphia. This deployment consisted of 14 flow meter installations in the Manayunk/Roxborough area of the Northwest. All of these sites are supporting the I/I effort, and similar to the first deployment, they are also supporting an additional project in the LTCP (Elimination / Consolidation of Outfalls - *Main & Shurs).* A third deployment will take place in April or May of 2001. The target area for these monitors will be selected sites in Northeast Philadelphia and the separate sanitary areas of Southwest Philadelphia.

The data collected to date has been used to assist in the targeting and prioritization of future projects to reduce the impact of rainfall dependant inflow and infiltration (RDI/I) on Philadelphia's collector system. A RD I/I report summarizing the 1st phase of the assessment program will be completed during the 2nd quarter of 2001.

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, recent reviews of the study and monitoring data, 23 additional sites were targeted for inflow protection measures. Although situated at elevations significantly higher than extreme high tides, 23 additional sites have been targeted for additional inflow protection and are summarized in Table 1.1.1. Implementation progress made in calendar year 2000 detailed in Table 1.1.2.

Table 1.1.1 Status tide inflow protection project.

Drainage District	Total # Sites	# Completed
Northeast	8	0
Southwest	9	9
Southeast	6	6
Total	23	15

The following sites were modified during calendar 2000 to have flexible flap gates installed in the emergency overflow weir area:

Table 1.1.2 Emergency overflow weir gates installed during calendar 2000 as part of tide inflow protection project.

	Site	Ordered	Received	Installed
D_45	Laurel St. & Delaware Ave.	07/01/99	09/08/99	03/31/00
S_05	24th St. 155ft S of Park Towne Place	01/01/00	04/27/00	08/07/00
S_06	24th St. 350ft S of Park Towne Place	01/01/00	04/27/00	07/20/00
S_22	660ft S of South St. E of Penn Field	01/01/00	04/27/00	05/01/00
S_24	1060ft S of South St. E of Penn Field	01/01/00	04/27/00	05/02/00
S_26	Ellsworth St. E of Schuylkill River	01/01/00	04/27/00	05/03/00
S_31	Reed St. & Schuylkill Avenue	01/01/00	04/27/00	06/07/00
S_42A	Passyunk Ave. & 28th St.	01/01/00	04/27/00	06/21/00

Somerset Tide Gate Replacement -PWD has issued a contract to replace the 4 timber tide gates at the Somerset St. (D-25) CSO. Due to the deterioration of these gates over time, a significant amount of leakage occurs. This project was advertised for bid June 30th , 2000. The contract was Awarded to AP Construction during calendar 2000 at a cost of $477,150

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 design work for the new Real Time Control Center RTC building is complete, including space development, physical feature and equipment requirements as appropriate for the initial phase of the Center's operation. The project is presently in Projects Control awaiting advertisement and bid. This process usually takes approximately 4 months from the beginning of the advertisement to when construction commences. Projects Control plans to bid the project in early April with construction possibly starting by the summer of 2001. The estimated capital cost for establishing an RTC center is $350,000. The cost of the entire building addition is expected to exceed $1,000,000.

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 2000, the SWDD RTC strategy was further refined and analyzed and a conceptual design memorandum was completed describing the RTC facilities, system strategies and objectives, cost estimates for RTC implementation, analysis of alternative scenarios, and workplan 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 objectives of the RTC scenarios include:

- Increasing capacity of the C_17 and CCHL systems,

- Eliminating unnecessary pumping at the CSPS during wet weather,
- Prioritizing SWMG interceptor capacity for conveyance of CCHL flows during wet weather,
- Increasing wet weather capacity of the SWMG system at existing HGLs upstream of the 70th & Dicks chamber, and
- Decreasing system-wide CSO volumes and increasing utilization of the SWWPCP low-level influent pumping station.

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 final phase of the RTC conceptual design is enlargement of the S38 DWO pipe and regulating flows using a computer-controlled DWO gate. The total mechanical and construction costs of all three phases are estimated to be $1,254,000 or $0.003/gallon of average annual reduced overflow volume per year.

2.3 WPCP Flow Optimization (Stress Testing)

Start: 1/1/1998 End: 12/31/2001 Status: In-Progress

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

The plant stress testing project will establish:

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

The results of stress testing will allow a determination of existing and future optimum flows, loads, and operations of the various unit processes. The identification of choke points, deficiencies and unit process capacities will be provided in the stress testing summary report that will be developed for each WPCP. Specific WPCP Capital Improvement Projects (CIP) will be identified as potential projects resulting from the findings of the stress testing which will be 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 will be accomplished within the context of the overall watershed approach to CSO abatement defined in the LTCP.
The Draft Final Report for each of the three WPCPs wastewater treatment plants was submitted by CH2MHill for review on January 28, 2000. The report provides the following information: project objectives and methodology, current performance, maximum instantaneous flow, current sustainable treatment capacity and potential upgrades. The report also includes 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.

A subsequent meeting was held to discuss the draft documents. During the meeting and subsequent discussions particular attention was given to developing report summarization. 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. Recommended revisions have been made to the draft report and submittal of the Final Report is anticipated by May 1, 2001.

2.4 Specialized Sewer Cleaning Projects

$1.35 million was budgeted for specialized, large-scale sewer cleaning contracts to be implemented in FY 1999 & FY 2000. The recent sewer cleaning programs are focusing on those required to support LTCP capital project implementation and as such, are discussed in detail in the sections describing programs taking place in each respective watershed. More specifically, calendar 1999 projects were conducted in the Cobbs Creek Low Level Interceptor and the Main Intercepting Sewer. For calendar 2000, work continued on both of those projects. In addition, sewer cleanings took place on the following sewers:

Richmond Street Sewer from Cumberland to Dyott Streets - Dredging work started on this 24-inch sewer on September 27, 1999 and was completed on 6/29/2000. The work at this location was put on hold while the Cumberland sewer system cleaning was being completed. The reason for this course of action was due to the fact that the Richmond Sewer System is connected with the adjacent Cumberland Sewer System. A total of 83 tons of debris was removed from the sewer. The Richmond sewer system consisted of 1,835 linear feet. The cost of cleaning this section was $12,496.35.

Cumberland Trunk Sewer from Aramingo Avenue and Huntingdon Street to Cumberland Street and Delaware River - The project started on 3/7/00 and was completed on 6/12/00. A total of 760 tons of debris was removed from the Cumberland system. This 4,389 linear foot twin sewer was cleaned at a cost of $110,384.19.

Island Avenue / 80th Street sewer from 75th and Wheeler Streets to SWWPCP - This project started on 5/3/00 and is ongoing. 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. As of 6/30/2000 a payment of $46,900.00 was authorized and the project is about 50% complete with approximately 60 tons of debris removed from the system.

Lower Schuylkill West Side Interceptor - Between 58th Street and Passyunk Avenue and on Botanic Avenue from 49th to 51st Streets - The project started on 1/3/00 and ended on 3/30/00. The total amount of debris removed was 37 tons. The two sections of this sewer consist of 3,980 linear feet. The cleaning cost of both sections was $155,964.50.

Upper Schuylkill East Side Interceptor Sewer between Domino Lane (just upstream of the Flat Rock Siphon) to Ridge Avenue at a junction chamber located just east of Wissahickon Creek. - The project started on 7/9/99 and was completed on 3/7/00. Approximately 450 tons of debris was pulled out of the system. The length of the section that was cleaned consisted of 14,542 linear feet at a cost of $285,112.94.

Christian Street Trunk Sewer starting at Intercepting Chamber S-25 at Schuylkill Avenue approximately 270 feet upstream - The work started on 9/26/99 and was completed on 2/10/00. Approximately 5 tons of debris was removed from this 270-foot section at a cost of $4,414.50.

The north Twin Trunk on Front Street starting at the Intercepting Chamber D-54 (Front Street south of Chestnut Street) and extending approximately 700 feet upstream on Walnut Street just west of Hancock Street - The project started on 9/14/99 and was completed on 10/29/99. About 471 tons of grit/debris was removed from that section. The 755-foot section was cleaned at a cost of $150,556.90.

The north Twin Trunk on Former Lardner Street starting at the Intercepting Chamber D-07 (Lardner Street southeast of Milnor Street) and extending approximately 650 feet upstream just southeast of Tacony Street - This job started on 3/13/00 and ended on 4/19/00. About 25 tons of debris was removed from this system. The cost of cleaning this 650-foot section was $62,348.00.

Southwest Main Gravity Interceptor Sewer starting at the Intercepting Chamber S-27 (43rd and Locust Streets) and extending approximately 850 feet on 44th Street just south of Spruce Street.

Southwest Main Gravity Interceptor Sewer starting north of Larchwood Avenue and extending through Chester Avenue (just west of Intercepting Chamber S-28) and ending at Kingsessing Avenue - This project started on 4/5/00 and is still ongoing. Approximately 37 tons of debris was removed from this system as of 4/11/2000. Due to the fact that this system runs full most of the time, Mobile Dredging requested assistance from the City to divert the flow in order to install their dredging equipment. However, the flow diversion, only performed during high river tide, would only allow a 45-minute storage time beyond which a discharge will likely occur. This time frame was determined to be inadequate for Mobile to install the bucket machines inside the sewer. Other alternatives will be discussed with the Flow Control Unit soon.

Snyder Avenue Sewer between Front and Swanson Streets Status: The work on this job was initiated on 5/1/00 and was completed on 6/30/2000. This task was coordinated with Septa and as a result, the trolley traffic was re-routed from Snyder Avenue to Water Street for the duration of the project. About 252 tons of debris was removed from this 660-foot sewer section at a cost of $159,885.00.

The FY2000 Sewer Cleaning contract was extended. As a result, Mobile Dredging and Pumping Company will be performing the sewer cleaning work for FY2001. A budget of $1,000,000.00 was allocated for the sewer cleaning contracts for FY2001. The following is a list of sewers that was determined to have the priority for cleaning:

1) Vine Street starting at 22nd Street (at entrance ramp) and extending 900 feet west to Intercepting Chamber S-07.
2) Lombard Street sewer starting at 26th Street and extending approximately 530 feet west towards Intercepting Chamber S-19.
3) South Street between 24th Street and Diversion Chamber S-21. This section is 900 feet

long.

4) A 48-inch diameter sewer located in the University Of Pennsylvania soccer field. It starts at Intercepting Chamber S-24 and runs approximately 350 feet northwest. The work at this location will be coordinated with PENN.
5) Ontario Street between Balfour Street and Intercepting Chamber D-20.
6) Race Street between Front Street and Intercepting Chamber D-51.
7) South Street between Front Street and Intercepting Chamber D-58.
8) Pollock Street / Packer Avenue sewer between Pollock and Camac Streets and Packer and Delaware Avenues at Intercepting Chamber D-72.

Site visits to all ten sites were coordinated with Mobile and the Flow Control Unit. Field verifications were also conducted to identify the access manholes. The Survey Unit assistance was requested to locate buried manholes on both sites 4 and 8. Mobile is in the process of establishing a price list for these locations for our review and approval.

The three sewer sites that were not completed under the FY99 and FY00 Sewer Cleaning Contract will also be cleaned under the FY01 Contract at the same price. These sites are the following:

1) Island Avenue/80th Street Sewer from MH # 31 (Bartram Avenue) to MH # 43 (SWWPCP Plant).
2) Southwest Main Gravity Interceptor Sewer from regulating chamber S-27 (43rd & Locust Sts.) to 44th and Spruce Streets.
3) Southwest Main Gravity Interceptor Sewer from Larchwood Ave., through Chester Ave (Intercepting chamber S-28) and ending at Kingsessing Avenue.

Other major sites will also be included in FY2001 Sewer Cleaning contract. The Upper Schuylkill East Side Interceptor sewer will be cleaned again during FY2001. The cleaning will extend between the downstream end of the Frankford Siphon and the Gustine Lake treatment plant. Mobile Dredging and Pumping is currently collecting grit data along this sewer and will soon provide us with a price.

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

Additionally, PWD will pilot the use of a floatables skimming vessel to remove debris from targeted reaches of the Delaware and Schuylkill Rivers. 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, 66 nets have been replaced (33 visits) with an approximate total of 4500 pounds of captured debris. Statistics show that the nets are replaced approximately every 43 days with debris disposal averaging 68 pounds per net (drained weight) or 3.20 pounds of debris per day. 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: In 1999, the Department investigated the institutional arrangements for procuring and operating a floatable skimming vessel. During this period, members of the Department met with United Marine International, Inc., in order to obtain information on skimming vessels, operating procedures, maintenance, and various institutions that are currently operating similar vessels. In addition, the Department along with the Philadelphia Marine Police Unit investigated and surveyed the Schuylkill River from Fairmount Dam to its confluence with the Delaware River (approximately 8.1 river miles) to identify and document problematic areas of trash accumulation and deposition. After completing the initial meeting with United Marine, it was determined that a skimming vessel would cost upwards of $400,000 alone, not including any of the facility development for debris offloading and land-based handling. During calendar 2000, PWD began work on an operational plan for the skimming vessel. This plan will be based on the results of additional field data collection which will better define the relative quantities and transport dynamics of floating debris on the Delaware and Schuylkill rivers.

Small Vessel Reconnaissance Project: An RFP was written in February 2000 to acquire a small skimming vessel with the following specifications: 16-17 foot aluminum wide beam boat, 25 HP 4 Stroke engine, trailer, depth finder, oars, cushions, nets, and gaffs. The bid was awarded to Philadelphia Boat Supply Co. of Philadelphia in March of 2000 at a cost of $8,514.00. The boat was delivered April 14, 2000. The small vessel has been retrofitted with seining nets to support pilot scale trash skimming operations above the Fairmount Dam.

During 2000, the small boat was used to investigate docking and dry docking locations for a larger floatables skimming vessel to be operated on the Lower Schuylkill River and the Delaware River. It was also used to determine areas of excessive trash accumulation. The Department has continued to explore additional funding sources, which will be necessary in order to completely fund a full scale skimming operation.

In calendar 2001, PWD will collect information on the New York City and Baltimore Inner Harbor projects to support the development of an operational plan for the skimming vessel. At least one grant proposal will be submitted to request additional funding for the project.

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 possibly additional 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
Cobbs/Darby Creeks	38	3
Delaware/Schuylkill Rivers (tidal)	100	30
Pennypack Creek	5	130
Poquessing Creek	0	141
Schuylkill River (non-tidal)	3	32
Tacony/Frankford Creeks	32	35
Wissahickon	0	63

3.3 Overview of Watershed Management Planning Work Scope

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 included in most watershed planning programs. It is provided here for purposes of defining the PWD's proposed program in the following pages:

General Activities

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

Step 1 Preliminary Reconnaissance Survey

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

Step 2 Watershed Work Plan and Assessment

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

Step 3 Watershed Plan Implementation

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

The scope and importance of each task will vary among watersheds as a result of site-specific factors such as the environmental features of the watershed, regulatory factors such as the need to revise permits or complete TMDLs for the watershed, available funding, extent of previous work, land use and size of the watershed, the nature of businesses and industry, the level of involvement and resources of other stakeholders, and numerous other factors. The study area watersheds have a diverse range of planning needs that range from those of the Delaware, that has a long-standing river basin commission and has been the focus of major monitoring and modeling studies, to those of the Tacony Creek watershed, for which very little data and analysis are available. The actual scope of each task will be developed and described in a work plan or similar document by each stakeholder group at the commencement of watershed planning activities.

The purpose of the Step 1 Reconnaissance Survey is to review existing information, gain a good, non-quantitative understanding of the physical, chemical and biological conditions of the water bodies, understand the character of the watershed land uses that will drive wet weather water quality conditions, and build a common understanding of these factors among all stakeholders. From this understanding more detailed monitoring, modeling, mapping, and analytical work , which is more time consuming and expensive, can be better scoped and scheduled to meet the specific needs of the watershed. A key goal of this preliminary assessment is to define the particular pollutant parameters that are key to attainment of WQS and to define cost-effective baseline and Step 2 water quality and flow monitoring programs to supply information needed to determine attainment and develop an effective management plan.

At the beginning of each watershed program, a preliminary assessment must be performed of the conditions in each of the water body segments, supported either by direct observations or computer model simulations of current water quality conditions in each segment. Comparisons must be made to numeric and narrative limits relative to the water quality criteria appropriate for protection of both the present uses and those designated in the Commonwealth's regulations. In cases of non-attainment of criteria, it is necessary to determine if the non-attainment is related to dry weather conditions, wet weather conditions, or both. For all of the water bodies, except for the Delaware and tidal Schuylkill Rivers, the PWD will assist with the technical elements of these initial assessments. This assessment is confirmed with current, more detailed information during the Step 2 assessment. The goal will be to develop a matrix that could be used to describe the adequacy of existing data and the attainment of water quality standards for both wet and dry periods. Completion of this matrix for each major segment of each waterbody also would help define the baseline and wet weather monitoring programs that are required to determine attainment and measure improvement in

water bodies. The overall purpose of Task 2 is to put in place the information, science and technology needed to make good decisions on pollution control actions and priorities.

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:

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.

2.1 Preliminary Reconnaissance Survey

The Darby and Cobbs Creeks Watershed includes parts of Chester, Delaware, Montgomery, and Philadelphia Counties and covers 77 square miles. The watershed discharges to the Delaware River through the wetlands of Tinicum Wildlife Refuge. The Cobbs Creek Watershed and Tinicum Wildlife Refuge are sub-watersheds of the Darby Creek. Cobbs Creek and its tributaries drain the eastern portion of the watershed and comprise about 29 percent of the watershed. The Tinicum Wildlife Refuge drains the southern-most portion of the watershed, which accounts for 19 percent of the total watershed area. The watershed discharges to the Delaware River through the wetlands of Tinicum Wildlife Refuge. The watershed is highly urbanized in the lower reaches with mixed land uses, although mostly urban, in the upper reaches. Approximately 500,000 people live within the drainage area of the Darby and Cobbs Creeks, based on 1990 census data, yielding a population density of almost 10 persons/acre. In addition to CSO discharges to Cobbs Creek from the City of Philadelphia, both watersheds receive a number of point and non-point source discharges that likely impact water quality.

With the addition of a comprehensive biologic study described in section 2.1.2 during calendar 2000, the technical aspect of the Step 1 - Preliminary Reconnaissance Survey has been completed. A general partnership, steering committee, technical committee, and a public participation committee now meet 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 were complete in calendar 2000:

TM#1 - Historical Water Quality for The Darby and Cobbs Creeks Watershed
TM#2 - Analysis of 1999 Monitoring Data for The Darby and Cobbs Creeks Watershed
TM#3 – A screening Level Contaminant Loading Assessment for the Darby and Cobbs Creek Watershed
TM#4 – Preliminary Documentation of the Biological Assessment of the Cobbs Creek Watershed.

2.1.1 Darby-Cobbs Water Quality Sampling

In order to characterize the Darby-Cobbs watershed and define particular pollutants that inhibit the attainment of water quality standards in the watershed, a water quality sampling plan was developed and implemented. As part of the Phase I Reconnaissance Survey, a preliminary assessment of the conditions in each of the water body segments was performed and completed in 1999. The results of the Phase I sampling are documented in Technical Memorandum No.2 Analysis of 1999 Monitoring Data for The Darby and Cobbs Creek Watershed. The Phase I sampling was useful for defining Phase II water quality sampling program. In the year 2000, the Phase II water quality sampling plan was initiated and will continue through 2001. Interim results were distributed to the technical committee for review and comment.

Both the Phase I and II water quality sampling plans included selections of sampling locations and pollutant parameters. The ten sampling sites for Phase I were chosen to collect data at various locations throughout the watershed. Based on results from Phase I, Phase II sampling sites included only four from the Reconnaissance Survey and one additional site located further upstream in the Darby Creek. The selection of parameters sampled were based, in part, on the Statewide Specific Criteria used to assess a stream's attainment or non-attainment of uses. Additional parameters were included for use in future modeling calibration and validation.

The sampling plans included discrete sampling and continuous water quality monitoring using Sondes. During the Phase I water quality sampling, the discrete samples were collected weekly in wet and dry weather. Phase II water quality sampling concentrated on wet weather the discrete sampling supplemented with Sonde data collection. The Phase II water quality sampling program will continue through the year 2001.

2.1.2 Watershed Management Strategy: Biological Assessment

Biological monitoring is a useful means of detecting anthropogenic impacts to the aquatic community. Resident biota (e.g. benthic macroinvertebrates, fish, periphyton) in a water body are natural monitors of environmental quality and can reveal the effects of episodic and cumulative pollution and habitat alteration (Plafkin et. al. 1989, Barbour et al. 1995). Biological surveys and assessments are the primary approaches to biomonitoring.

During the reporting period, the Philadelphia Water Department's Office of Watersheds and Bureau of Laboratory Services, along with the Academy of Natural Sciences and the Pennsylvania Department of Environmental Protection worked together to develop a preliminary assessment of the biological integrity of the Cobbs Creek watershed. Macroinvertebrate (RBP III), ichthyfauna (IBI/RBP V) and habitat assessments were conducted at seven specified locations within Cobbs Creek watershed. Geographical Information Systems (GIS) databases and watershed maps were also constructed to provide accurate locations of the sampling sites. Compiled data was then analyzed by the Office of Watersheds and the Bureau of Laboratory Services to provide both a quantitative and qualitative assessment of Cobbs Creek, and to provide insight on the current problems associated with this urban stream system. In addition, this report addressed future assessments and potential solutions for the restoration of the Darby-Cobbs watershed.

During 2000-2001, the Office of Watersheds and Bureau of Laboratory Services continued its biological assessments on the Tacony-Frankford watershed. Eight benthic (RBP III) and four ichthyfaunal assessments (Index of Biological Integrity) were completed. Currently, macroinvertebrate identification and metric calculations are being completed along with fish analyses. Biological and physical habitat data are also being compared to the water quality monitoring data (10 week assessment) to provide insight on the current status of the watershed. Technical information is being disseminated to the public as well as stakeholders involved in the watershed planning initiative.

2.3 Ecological Assessment and Restoration

The City's Fairmount Park Commission completed a Natural Lands Restoration Master Plan for the portion of Fairmount park adjacent to Cobbs Creek as it passes through the City. In completing the master plan, the City has compiled an extensive inventory and assessment of local fauna, vegetation, and aquatic ecology. From this assessment, the Natural Lands Restoration and Environmental Education Program (NLREEP) has defined 68 high priority projects that cover 124 acres of park land. Generally, the following types of projects will be implemented - wetland creation and enhancement, control of invasive plant species, forest planting, stream bank stabilization, dam removal, and stream channel modification to reduce erosion. [1] This program has continued to implement the vegetative and stormwater improvements to the Cobbs Creek stream corridor recommended in the plan.

2.4 Public Involvement and Education

The Darby-Cobbs Watershed Partnership was facilitated by the Philadelphia Water Department to create a framework for all stakeholders in the 75 square mile Darby-Cobbs watershed basin to work together to

[1] Fairmount Park System – Natural Lands Master Plan. Volumes 1,2,3, Fairmount Park Commission, 1999.

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 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.

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 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 (DEP), Cobbs Creek Community Environmental Education Center, 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 Public Participation and Education Committee's goal is to increase public understanding and encourage grassroots stewardship in the watershed.
During 2000, the Public Participation Committee developed and/or sponsored the following projects and events:

- The publishing of the first Darby-Cobbs Watershed Partnership Status Report, which provided a public summary of the technical reports. This report noted in user-friendly terms that the health of the Darby and Cobbs Creeks are "impaired," meaning that the diversity of aquatic life that these creeks could support, if they were healthy, was not present. The report detailed the presence of pollutants and contaminants that could cause this impairment, and provided pollution prevention tips for the public and information on how to participate in the Partnership.
- A Darby-Cobbs Watershed Partnership Status Report Press Conference was held on September 19 in Cobbs Creek Park and on September 20 in John Bartram Park The Darby-Cobbs Watershed Partnership announced the release of its Watershed Status Report during these exciting events featuring the water quality of the Darby and Cobbs creeks and plans for their revitalization. The Partnership shared with the press and public that it is in the midst of developing a watershed management plan that will outline actions for environmental improvements that will result in healthy (fishable and swimmable) streams, improved aquatic habitats, and attractive parks and stream buffers. Results of this report were shared during two water quality sampling events conducted by students from the School District of Philadelphia and Delaware County's William Penn School District in the Cobbs and Darby creeks.
- A watershed teacher training module was developed and implemented with support from a Partnership Growing Greener grant. Twenty teachers who teach within the Darby-Cobbs watershed began attending the Saturday training sessions in 2000 and will complete the final session in spring 2001. The training modules include: Watershed Management, Stormwater Management, Water Quality, Ecological Restoration, and a final Workshop to assist in the creation of service learning projects.

Projects in the chute for 2001 include:

- Create a Calendar of Events – 30 Days in the Darby and Cobbs Watershed – mid April to mid May 2001

- Conduct a resident survey of issues and create a watershed video, funded by a Partnership Growing Greener grant.
- Host an educational symposium.
- Sponsor a Partnership logo design contest and school calendar, funded by a grant application to the Ethel Clark Smith Fund
- Host an evening Partnership meeting/celebratory event that publicizes the existence of a variety of regulatory and conservation plans that will be included in the Partnership's watershed management plan. These include Delaware County's Act 167 Plan, DCVA's River Conservation Plan, and the Water Department's CSO LTCP.
- Develop and publish the second Darby-Cobbs Watershed Partnership Status Report

In 2000, the Public Participation Committee met on January 12, February 15, March 27, June 7, June 19, July 12, August 21, September 28.

General Partnership meetings occurred on March 24, June 28, September 19 and 20.

3.0 Annual CSO Statistics

COBBS CREEK 2000 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 - 71	23	1273 - 1366	51% - 52%	0 - 275
Cobbs Creek Low Level	9	12	0 - 58	22	111 - 120	74% - 75%	0 - 175

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, CSOs 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: Calibration of PWD's hydrologic and hydraulic models of the Northeast High Level (NEHL) intercepting system was completed in 2000. Continuous model simulations were performed to characterize and assess existing sewer hydraulics. Comparison of the model estimated overflow event volumes with the available in-system storage volume, 2.3 MG, identified infrequent full utilization of the available storage under existing system conditions – very few events achieve or exceed the 2.3 MG of available storage for the modeled period of record. In order to increase the utilization of available storage, modification to the R15 diversion chamber has been proposed. Elimination of the side overflow weir at the R15 chamber will increase flow conveyance to the Rock Run Relief system.

The calibrated models were utilized to develop control logics for the inflatable dam and drain down gate. Control logic for the inflatable dam was developed through interviews with the manufacturer to understand the physical limitations of the dam and through model analyses of the NEHL system that estimate the effects of control variations on sewer hydraulic grade lines (HGLs). The control logic was developed to allow for storage utilization while maintaining adequate flood relief during wet weather events. The design of DWO

pipe systems and controlling sluice gates, used to drain-down in-system storage after wet weather, was developed to prevent excessive storage times (de-watering in less than 24 hours) without resulting in overflows downstream of the T_08 regulator.

The existing model was modified to incorporate the inflatable dam, drain down gate and their associated control logics. In order to characterize the benefit of the inflatable dam project, continuous simulations were performed to quantify the CSO reductions on an average annual basis. 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. A draft design memo has been submitted for internal review. The final design memo will be completed in early 2001.

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, CSOs 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: Calibration of PWD's hydrologic and hydraulic models of the NEHL intercepting system was completed in 2000. Continuous model simulations were performed to characterize and assess existing sewer hydraulics. The calibrated models were utilized to develop control logics for the inflatable dam and drain down gate. The control logic for the inflatable dam was developed through interviews with the manufacturer to understand the physical limitations of the dam and through model analyses of the NEHL system that estimate the effects of control variations on sewer hydraulic grade lines (HGLs). The control logic was developed to allow for storage utilization while maintaining adequate flood relief during wet weather events. The design of DWO pipe systems and controlling sluice gates, used to drain-down in-system storage after wet weather, was developed to prevent excessive storage times (de-watering in less than 24 hours) without resulting in overflows downstream of the T_14 regulator. In order to characterize the benefit of the inflatable dam project, continuous simulations were performed to quantify the CSO reductions on an average annual basis. A 430 million gallon (20%) reduction in average annual CSO volumes to the Tacony Creek, from the T_14 outfall is expected through the implementation of this capital project. The Rock Run Relief and T_14

are part of the same intercepting system. Implementation of the two capital projects will allow for a great deal of control peak wet weather hydraulic grade lines in the intercepting system. The developed control logics will also affect overflow volumes and frequencies at other overflows on this interceptor. A system wide overflow reduction of 600 MG is expected through implementation of these two capital projects, based on simulations using the refined and calibrated hydraulic and hydrologic models. A draft design memo has been submitted for internal review. The final design memo will be completed in early 2001.

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

The goals of the Preliminary Reconnaissance Survey are to gain a general understanding of water quality and water pollution control problems within the Tacony and Frankford Creeks Watershed. Once a general idea of where impaired areas are located then a more specific study can be implemented focusing on the problematic sites. Actions taken during the reconnaissance survey include reviewing existing information, developing a preliminary understanding of the physical, chemical and biological conditions of the water bodies, understanding the relationship between land use and water quality and, communicating and facilitating understanding of these factors among the various groups of stakeholders.

The Tacony and Frankford Creeks Watershed study area includes parts of Montgomery county and the greater portion of Philadelphia County, and covers a total of 29 square miles or 20,900 acres. The drainage area discharges to the Delaware River through Frankford Creek, and is highly urbanized in the lower reaches primarily composed of Philadelphia County. The upper reaches of the Tacony-Frankford study area, mostly Montgomery County, are also highly urbanized, however, there is a more varying mixture of land use. Based upon 1990 census data, the population of the study area was approximately 362,000 people yielding an average population density of 20 persons/acre. In addition to CSO discharges to Frankford Creek from the City of Philadelphia, both watersheds receive a number of point and non-point source discharges that likely impact water quality.

During 2000 the partnership structure of Tacony-Frankford watershed initiative was largely put into place and the Preliminary Reconnaissance Survey was initiated. Initial water quality sampling sites were selected along Tacony and Frankford Creeks representative of water quality conditions from the upper to lower reaches of the watershed and to maintain consistency with USGS historic monitoring sites from the 1970's. Most of the parameters quantified in the initial survey were selected because they are a part of the Statewide Specific Criteria used to assess a stream's attainment or non-attainment with its designated uses. Other parameters were measured so that these preliminary data points may be used for model calibration and validation at an additional site on Mill Run. This site was added at a later date to better quantify the impact of this tributary on the main stem Tookany Creek. A total of 10 grab samples were taken at 7 sampling locations and 3 samples were taken at a site established added on towards the end of the survey. The sampling period began on June 29th and ended November 9th 2000 and occurred regardless of weather conditions resulting in a mixture of wet and dry weather data.

A general partnership, technical committee, and a public participation committee have begun to now meet and 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 water quality data obtained during 2000 will be analyzed during 2001, the results of which will be included in *Technical Memorandum 2 - Analysis of 2000 Water Quality Monitoring Data for the Tacony and Frankford Creeks Watershed.* A draft of *Technical Memorandum 1 – Historical Flow and water quality* was completed in November of 2000 and will be distributed to the Tacony-Frankford partnership early in 2001.

2.2 Ecological Assessment and Restoration

The City's Fairmount Park Commission completed a Natural Lands Restoration Master Plan for the portion of Fairmount Park adjacent to Tacony Creek as it passes through the City. In completing the master plan, the City has compiled an extensive inventory and assessment of local fauna, vegetation, and aquatic ecology. From this assessment, the Natural Lands Restoration and Environmental Education Program (NLREEP) has defined 68 high priority projects that cover 124 acres of park land. Generally, the following types of projects will be implemented - wetland creation and enhancement, control of invasive plant species, forest planting, stream bank stabilization, dam removal, and stream channel modification to reduce erosion. [2] This program has continued to implement the vegetative and stormwater improvements to the Cobbs Creek stream corridor recommended in the plan.

2.3 Public Involvement and Education

The PWD sponsored Tacony-Frankford Watershed kicked off with its first Partnership meeting on October 4. 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

[2] Fairmount Park System – Natural Lands Master Plan. Volumes 1,2,3, Fairmount Park Commission, 1999.

- US Environmental Protection Agency
- US Army Corps of Engineers
- Philadelphia Green
- Phila. Urban Resources Partnership
- Cheltenham Township

This Partnership will be 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

3.0 Annual CSO Statistics

TACONY CREEK 2000 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	4	-	67	40	3983	-	4366	40%	-	42%	4	-	270
Upper Frankford Low Level	12	12	12	-	57	40	391	-	435	58%	-	60%	13	-	215

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 preparation of design plans and specifications for the new CSO regulator chambers and larger DWO pipes is currently underway. Site surveys and conceptual designs should be completed by the fall of 2001.

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 started on September 15, 1998. Because this project also incorporated 4500 feet of water main replacement in addition to the 3600 feet (various sizes) of sewer to be reconstructed, the contractor has indicated an implementation schedule of 500 calendar days, therefore the revised estimated project completion date for the 85% capture project was moved to November 1, 2000.

Approximately 1000 feet of sewer and most of the water mains were completed in 1998. The new regulator chamber and outfall structure including flexible flap gates for backflow prevention, dam, 24-inch diameter DWO pipe, and interceptor manholes have also been completed. In 2000, the bank rehabilitation work at the outfall, and the installation of approximately 2600 feet of sewer upstream of the outfall was completed.

During 1999, a significant portion of water main replacement and sewer reconstruction was completed. The contractor worked quicker than his original estimate and the majority of the pipe work was competed in March of 2000 and the remainder of the manhole and street level access work was completed in June of 2000. This project is now complete.

2.0 Annual CSO Statistics

PENNYPACK CREEK 2000 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	16 - 53	31	85 - 96	65% - 67%	26 - 151

Section 6 – 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

Additional model analyses will be performed in calendar year 2001 to quantify tidal inflow frequency and volume reductions in all three of PWD's drainage districts due to installation of emergency overflow weir gates.

2.0 Watershed Management Planning

In calendar 2000 the CSO sub-committee and the Estuary Model development committees did not meet, but some study reports were issued with CSO-related content. Draft reports from the DRBC regarding wet weather impacts and overall monitoring suggest that fecal coliform standards are being met in the main stem estuary in the Philadelphia region. [3] DRBC indicated that further work on Bacteria Total Maximum Daily loads that might be required would occur in 2005. Dissolved oxygen concentrations in the Estuary were shown to be largely unaffected by CSO contributions. [4]

3.0 Annual CSO Statistics

DELAWARE RIVER 2000 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	5 - 53	31	947 - 1059		57% - 59%		5 - 182	
Somerset	8	9	25 - 65	46	3352 - 3676		50% - 52%		44 - 251	
Lower Delaware Low Level	27	27	69 - 124	103	2755 - 3027		59% - 62%		5 - 262	
Oregon	5	6	45 - 58	52	1226 - 1281		39% - 40%		100 - 166	
Lower Frankford Low Level	5	6	23 - 60	40	1129 - 1226		44% - 46%		39 - 195	

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

Section 7 – 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.

Design of the Main Relief Sewer DWO conduit and a new segment of CSES interceptor sewer including a drop structure to eliminate odors was completed in 1999. Construction of the DWO pipe was completed as well as the construction on the rehabilitation of the CSES interceptor and drop structure. Construction of the chambers that will store the electronic and mechanical equipment associated with the inflatable dam has also been completed. The design plans and specifications for the inflatable dam in the Main Relief Sewer will be completed by the spring of 2001. Since there is only one supplier of the inflatable dam technology, PWD is seeking to procure the inflatable dams for the Main Relief Sewer in conjunction with the dams for project 10.5.3 RTC Rock Run Relief Sewer and 10.5.4 in order to take advantage of economies of scale.

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 1999, a detailed grit profile was completed for three reaches of the Upper Schuylkill Intercepting Sewer: 1. From Domino Lane to Shurs Lane, 2. Shurs Lane to Wissahickon Creek, and 3. From Wissahickon Creek to Nicetown Lane. These inspections showed significant grit deposition. The first two reaches were included in the sewer cleaning contract that was funded in fiscal year 2000 beginning July 1, 1999. The cleaning began on July 9, 1999 and was completed in 2000. At the completion of the cleaning, a total of 450.12 tons of debris was removed at a cost of $285,112.93. A total of 14,562 lineal feet (2.76 miles) of sewer was cleaned.

In March of 2000, as part of the UPS/Flow Control contract, a flowmeter was deployed in the USES interceptor just downstream of the Green Lane Bridge. While inspecting the suitability of the manhole and sewer, UPS found at least a six-inch buildup of grit in the invert of the sewer. A second grit profiling was requested from sewer maintenance. Measurements were taken from 14 manholes on the USES Interceptor. Nine manholes contained grit ranging in amounts of 2 inches to thirteen inches. MD&P Co. have been contracted to clean the USES interceptor again in 2001. The cleaning is scheduled for completion by June 30, 2001. The grit reduces the conveyance capacity and dynamic storage of the interceptor. Model analyses were performed to quantify the impact of the grit accumulation on overflow frequency and volume at the Main & Shurs overflow.

Modeling analyses were performed to quantify the impact of the grit deposits on overflows at the Main & Shurs overflow. Two scenarios were modeled with PWD's hydrologic and hydraulic models to quantify grit depth impacts on average annual overflows at Main & Shurs:

- The USES interceptor with pre-cleaning (1999) grit depths.
- The USES interceptor with grit depths equal to 5% of the interceptor diameter.

The first scenario models the interceptor with pre-cleaning grit depths obtained from the May, 1999 profile. Assuming the interceptor had not been cleaned since 1979-80, this scenario served as the worst case for grit impacts on overflows at Main & Shurs. The pre-cleaning grit measurements were incorporated into the model with grit depth estimates linearly interpolated from measurements for manholes where none was taken. The second scenario assumes a grit depth equivalent to 5% of the interceptor diameter. This is a realistic scenario achievable with regular sewer cleaning and maintenance. Continuous simulations were performed for both scenarios. Overflow statistics for the two scenarios indicate that the grit accumulation does have a significant impact on overflows at Main & Shurs. Maintaining a grit depth equivalent to 5% of the interceptor's diameter will not eliminate overflows, but model analyses indicate an average annual volume and frequency reduction of approximately 36%. Maintaining a clean interceptor will increase wet weather capacity and reduce the size of the proposed storage facility.

Five temporary level/flow monitors have been installed in the collection system tributary to the Main & Shurs overflow. Two of the monitors were installed in the upper reaches of the interceptor. Excessive grit deposits have prevented installations in the lower reaches because the grit will not allow for accurate flow measurements. As a result, major branch sewers were selected to assess flows from as much of the service area as possible. Three monitors have been installed in major branch sewers. The five monitors cover 63% of the service area. Two additional monitor installations planned for 2001 will bring this total to 77%.

The data has been used to perform dry and wet weather flow analyses and to refine and calibrate the hydrologic and hydraulic models of the collection system. Preliminary analyses have identified several areas with sources excessive infiltration and inflows (I&I). Television inspections of these areas will be performed in 2001 to identify and eliminate the sources. Reduction of I&I will provide additional wet weather capacity in the interceptor and reduce the size of the proposed storage facility.

The hydraulic and hydrologic models of the collection system tributary to Main & Shurs have undergone extensive expansion and refinement. All major branch sewers have been added to the model and service areas have been subdelineated. Monitoring data has been used to refine baseflow estimates and rain derived infiltration and inflows in monitored areas of the collection system.

I&I analyses of monitored flow data will continue in 2001. Achievable reductions will be quantified and used to refine the size of a storage facility necessary to eliminate the overflow art Main & Shurs. Additionally, potential facility sites will be identified and all analyses will be summarized into a design memorandum for the Main & Shurs overflow elimination project.

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. The issues with CSX and MCI were resolved in the fall of 2000. The project is currently in Projects Control awaiting advertisement and bid. Projects Control plans to bid this project in April of 2001 with construction possibly starting in the summer of 2001.

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.

The estimated cost for both phases of the 4000 linear foot sewer reconstruction is $16.0 million. The geotechnical investigation required to design the tunnel has been completed. Much of the tunnel design has also been completed. The process of obtaining easements from the railroad and several other private property owners along the proposed tunnel route has been initiated as well as the process of obtaining the required permits from PADEP. The final design plans will be completed by the middle of next year.

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 Annual CSO Statistics

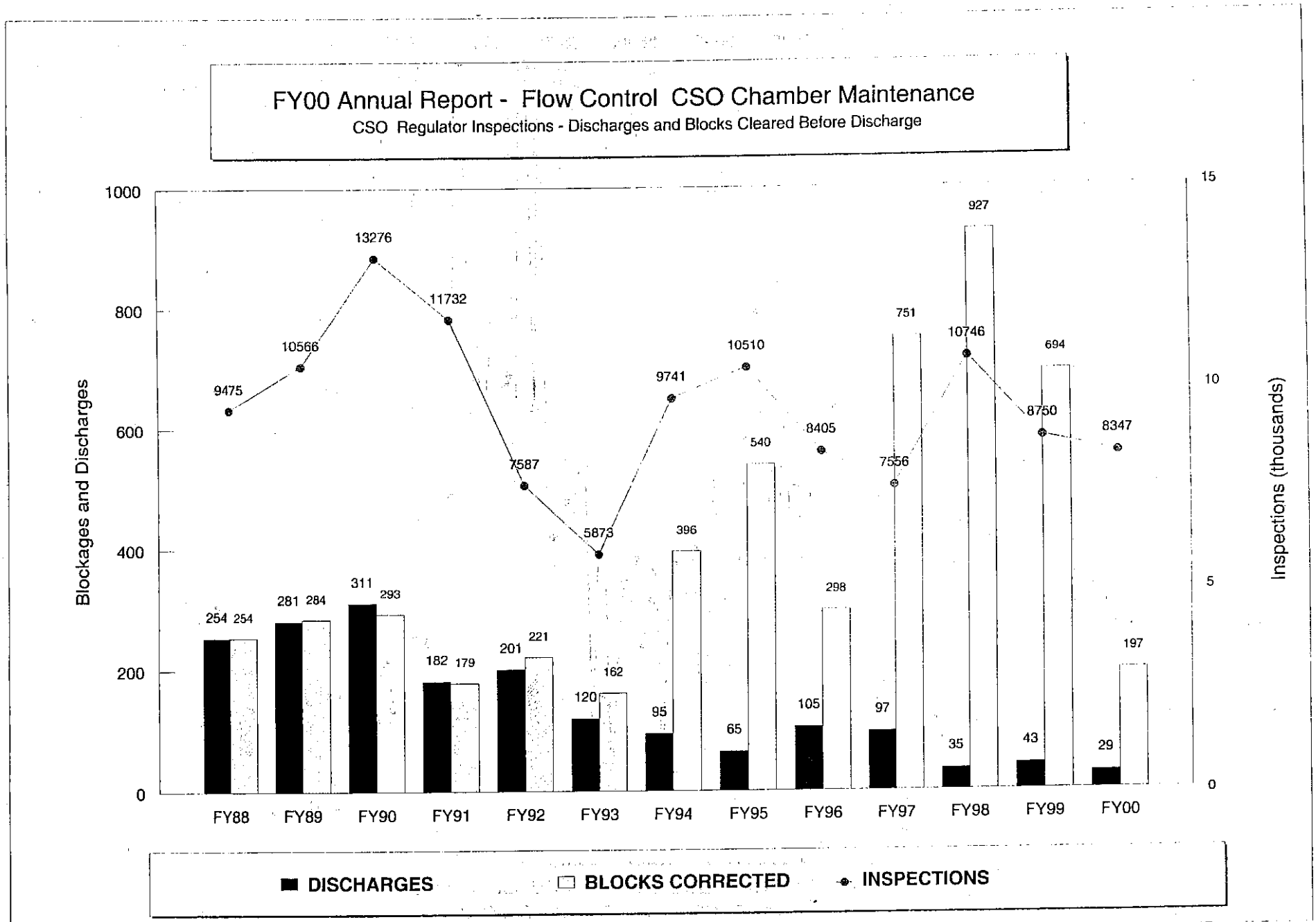
SCHUYLKILL RIVER 2000 CSO Statistics

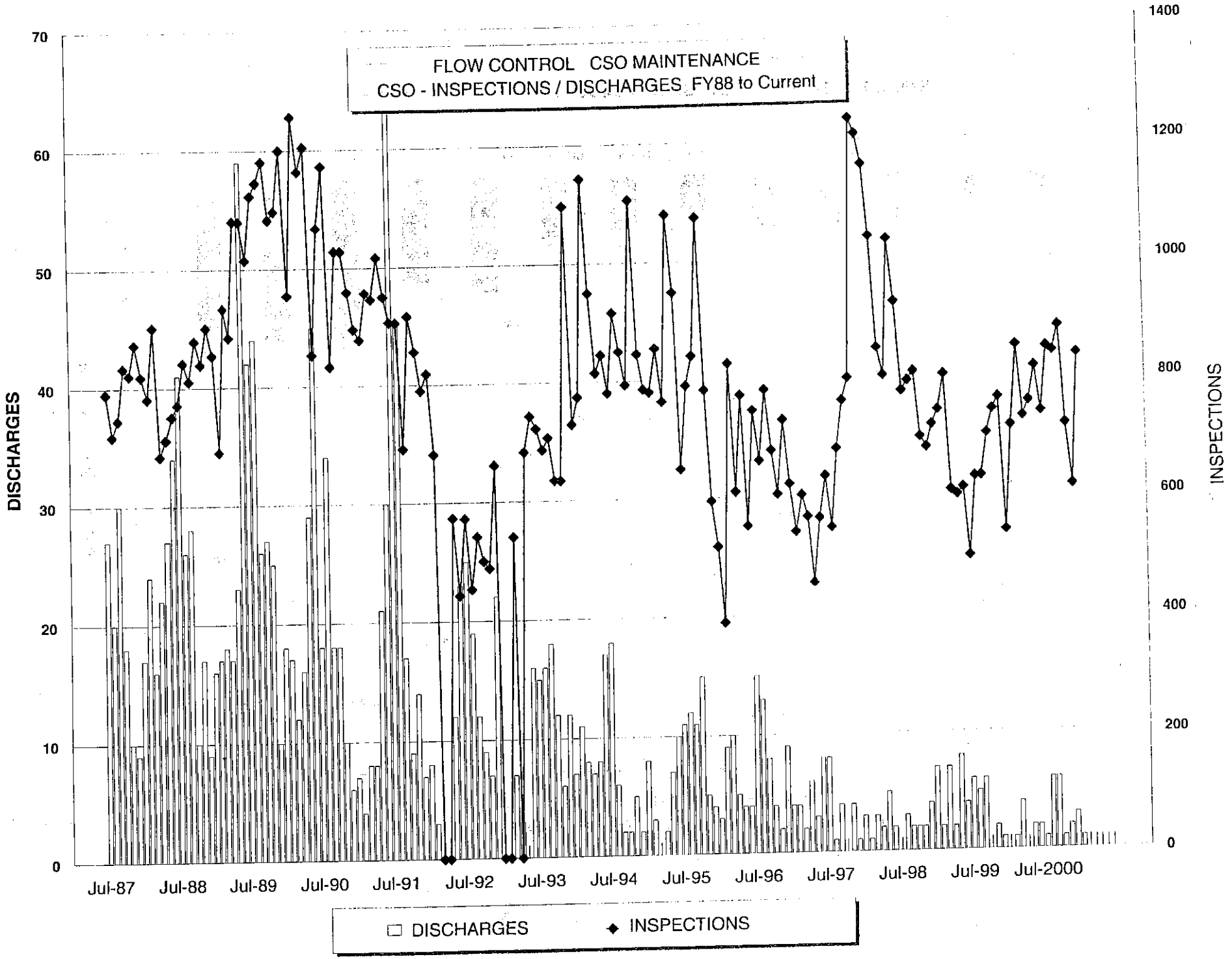
Interceptor	# of point sources	# of structures	Frequency			CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Central Schuylkill East Side	20	26	2	-	79	32	1257	-	1371	58%	-	60%	2	-	378
Central Schuylkill West Side	10	10	1	-	61	41	638	-	710	49%	-	52%	1	-	268
Lower Schuylkill East Side	7	9	5	-	56	42	737	-	816	53%	-	56%	5	-	247
Lower Schuylkill West Side	4	4	8	-	60	45	1044	-	1196	22%	-	24%	8	-	199
Southwest Main Gravity	2	2	5	-	56	31	1892	-	2072	64%	-	66%	5	-	205

Section 8 - Watershed Technology Center

During 2000, 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. PWD submitted a grant project proposal in conjunction with the Fairmount Water Works Interpretive Center to pursue a project to establish an Urban Watershed Institute at the Fairmount Waterworks. 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. The Darby-Cobbs partnership web page was launched in calendar year 2000 and has continued to grow as relevant content from the technical and public involvement aspects of the program mature.

Appendix A – Flow Control CSO Maintenance Summaries


FY00 Annual Report - Flow Control CSO Chamber Maintenance
CSO Regulator Inspections - Discharges and Blocks Cleared Before Discharge
Blockages and Discharges
Inspections (thousands)
1000
800
600
400
200
0
15
10
5
0
9475
10566
13276
11732
7587
5873
9741
10510
8405
7556
10746
8750
8347
254 254
281 284
311 293
182 179
201 221
120 162
95 396
65 540
105 298
97 751
35 927
43 694
29 197
FY88
FY89
FY90
FY91
FY92
FY93
FY94
FY95
FY96
FY97
FY98
FY99
FY00
DISCHARGES
BLOCKS CORRECTED
INSPECTIONS


FLOW CONTROL CSO MAINTENANCE
CSO - INSPECTIONS / DISCHARGES FY88 to Current
DISCHARGES
INSPECTIONS
0
10
20
30
40
50
60
70
0
200
400
600
800
1000
1200
1400
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-2000
DISCHARGES
INSPECTIONS

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

FY2000 BLOCKAGES CLEARED

COLLECTOR	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-2000	Feb-2000	Mar-2000	Apr-2000	May-2000	Jun-2000	Totals
UPPER PENNYPACK - 5 UNITS													
BLOCKS CLEARED	3	0	0	0	0	1	0	2	0	0	1	1	8
UPPER DELAWARE LOW LEVEL - 12 UNITS													
BLOCKS CLEARED	7	1	1	0	0	0	0	0	0	2	0	0	11
LOWER FRANKFORD CREEK - 6 UNITS													
BLOCKS CLEARED	0	2	1	1	0	0	0	0	0	0	0	0	4
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
BLOCKS CLEARED	2	1	2	3	0	0	0	0	0	1	5	1	15
FRANKFORD HIGH LEVEL - 14 UNITS													
BLOCKS CLEARED	3	1	2	1	1	0	0	0	1	0	0	2	11
SOMERSET - 9 UNITS													
BLOCKS CLEARED	0	0	1	0	0	0	0	0	0	1	1	0	3
LOWER DELAWARE LOW LEVEL - 32 UNITS													
BLOCKS CLEARED	6	5	12	9	0	0	0	0	2	4	4	16	58
CENTRAL SCHUYLKILL EAST - 18 UNITS													
BLOCKS CLEARED	3	6	0	1	0	0	0	0	0	6	1	0	17
LOWER SCHUYLKILL EAST - 9 UNITS													
BLOCKS CLEARED	0	2	1	1	0	0	0	0	0	0	0	0	4
CENTRAL SCHUYLKILL WEST - 9 UNITS													
BLOCKS CLEARED	0	0	0	2	0	0	0	0	0	0	0	1	3
SOUTHWEST MAIN GRAVITY - 10 UNITS													
BLOCKS CLEARED	9	0	1	13	0	15	0	0	0	1	1	0	40
LOWER SCHUYLKILL WEST - 4 UNITS													
BLOCKS CLEARED	1	0	1	0	0	1	0	0	0	3	0	1	7
COBBS CREEK HIGH LEVEL - 23 UNITS													
BLOCKS CLEARED	0	1	0	1	2	0	0	0	0	0	1	0	5
COBBS CREEK LOW LEVEL - 13 UNITS													
BLOCKS CLEARED	2	0	0	0	0	0	0	0	2	2	1	2	9
RELIEF SEWERS - 27 UNITS													
BLOCKS CLEARED	0	0	0	0	1	0	0	0	1	0	0	0	2
200 CSO UNITS													
TOTALS / MONTH													
TOTAL BLOCKS CLEARE	36	19	22	32	4	17	0	2	6	20	15	24	197
AVER. # of INSP. / BC	14	33	29	22	185	45	n/a	357	141	36	50	34	86

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JUNE 2000

COLLECTOR	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-2000	Feb-2000	Mar-2000	Apr-2000	May-2000	Jun-2000	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	13	16	17	17	13	16	17	25	28	30	28	35	255
DISCHARGES	1	0	0	0	0	1	0	1	0	0	1	1	5
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	31	37	31	24	49	48	24	50	47	47	53	73	514
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	9	13	14	17	16	18	16	24	32	14	28	19	220
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	19	28	23	36	46	37	36	48	46	32	50	37	438
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	24	45	57	61	81	70	46	44	74	55	68	78	703
DISCHARGES	2	2	1	0	1	0	0	0	0	0	0	0	6
SOMERSET - 9 UNITS													
INSPECTIONS	25	28	24	27	26	38	23	20	18	34	37	21	321
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	101	132	116	150	110	145	81	165	187	173	162	185	1707
DISCHARGES	0	0	0	0	0	0	0	0	1	0	0	0	1
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	79	138	105	116	90	74	73	100	87	57	76	79	1074
DISCHARGES	0	2	0	0	0	0	0	0	0	0	0	0	2
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	41	31	26	36	38	43	19	13	17	14	4	14	296
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	20	19	43	35	50	47	39	41	50	52	37	33	466
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	32	36	63	46	42	59	46	51	68	52	56	60	611
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	26	23	34	24	31	27	19	18	30	23	18	20	293
DISCHARGES	1	0	2	0	0	0	0	0	0	0	0	0	3
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	26	31	29	45	60	52	39	44	68	54	57	57	562
DISCHARGES	0	1	0	0	0	0	0	0	1	0	0	0	2
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	15	16	17	19	26	36	17	25	40	35	33	34	313
DISCHARGES	2	0	0	0	0	0	0	0	2	0	1	1	6
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	34	35	30	48	63	51	42	45	56	56	47	67	574
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
201 REGULATOR UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	495	628	629	701	741	761	537	713	848	728	754	812	8347
DISCHARGES	6	5	6	0	2	1	0	1	4	0	2	2	29
DISC / 100 INSPECTIONS	1.2	0.8	1.0	0.0	0.3	0.1	0.0	0.1	0.5	0.0	0.3	0.2	0.3

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS															
TOTAL	79	138	105	116	90	74	73	100	87	57	76	79	1074	5.0	6.5
S05	8	19	8	8	3	5	7	8	6	5	6	6	89	7.4	4.1
S06	7	9	7	9	3	5	7	8	6	5	5	6	77	6.4	4.7
S07	7	9	8	9	4	6	6	8	6	4	6	6	79	6.6	4.6
S08	7	8	9	8	4	5	5	8	6	4	7	5	76	6.3	4.8
S09	7	8	9	7	5	4	7	8	6	3	5	5	74	6.2	4.9
S10	5	6	5	6	5	5	5	6	5	3	5	5	61	5.1	6.0
S12	6	7	5	8	6	5	5	5	6	3	6	5	68	5.7	5.4
S12A	6	7	6	8	6	4	5	5	6	3	6	5	67	5.6	5.4
S13	6	6	4	6	5	5	9	5	4	4	4	4	56	4.7	6.5
S15	5	6	4	7	8	4	5	6	5	4	5	4	63	5.3	5.8
S16	3	5	2	7	5	4	5	6	4	3	4	4	52	4.3	7.0
S17	2	5	4	6	5	4	5	5	4	3	5	4	52	4.3	7.0
S18	5	11	3	6	5	3	2	4	4	2	3	3	51	4.3	7.2
S19	1	5	3	4	5	3	2	4	5	2	2	4	40	3.3	9.1
S21	1	6	3	5	6	3	1	4	4	2	3	5	43	3.6	8.5
S23	1	6	8	4	4	3	1	4	5	3	2	3	44	3.7	8.3
S25	1	6	7	4	5	3	1	3	3	2	1	3	39	3.3	9.4
S26	1	9	9	4	6	3	1	3	2	2	1	2	43	3.6	8.5
LOWER SCHUYLKILL EAST SIDE — 9 UNITS															
TOTAL	41	31	26	36	38	43	19	13	17	14	4	14	296	2.7	12.0
S31	6	4	5	6	4	9	3	3	5	4	1	3	53	4.4	6.9
S35	6	4	4	4	4	4	2	1	4	4	1	4	42	3.5	8.7
S36	6	4	3	4	4	3	1	1	1	0	0	0	27	2.3	13.5
S36A	5	3	3	4	4	3	1	1	3	4	1	3	35	2.9	10.4
S37	4	3	2	3	3	3	2	1	1	0	0	0	22	1.8	16.6
S42	4	4	3	4	5	6	3	2	0	0	0	0	31	2.6	11.8
S42A	5	4	2	5	6	7	5	1	0	0	0	0	35	2.9	10.4
S44	4	3	2	3	3	3	1	2	0	0	0	0	21	1.8	17.4
S46	1	2	2	3	5	5	1	1	3	2	1	4	30	2.5	12.2
CENTRAL SCHUYLKILL WEST — 9 UNITS															
TOTAL	20	19	43	35	50	47	39	41	50	52	37	33	466	4.3	7.3
S01	2	1	7	3	7	5	4	7	5	5	5	5	56	4.7	6.5
S02	2	1	6	2	6	5	4	7	5	5	5	5	53	4.4	6.9
S03	2	2	3	2	6	5	3	4	5	5	5	4	46	3.8	7.9
S04	3	4	7	3	6	5	3	3	6	4	3	4	51	4.3	7.2
S11	3	2	4	2	4	5	3	3	5	4	2	2	39	3.3	9.4
S14	2	3	4	4	3	5	4	1	4	2	2	3	37	3.1	9.9
S20	2	2	4	5	6	7	6	6	8	10	7	2	65	5.4	5.6
S22	2	2	4	7	6	5	6	5	6	8	4	5	60	5.0	6.1
S24	2	2	4	7	6	5	6	5	6	9	4	3	59	4.9	6.2
SOUTHWEST MAIN GRAVITY — 10 UNITS															
TOTAL	32	36	63	46	42	59	46	51	68	52	56	60	611	5.1	9.3
S27	2	3	3	3	4	4	4	3	5	5	6	4	46	3.8	7.9
S28	1	3	3	2	4	4	3	5	5	2	2	3	37	3.1	9.9
S30	1	1	3	3	2	3	4	4	5	2	2	2	32	2.7	11.4
S34	1	1	6	4	2	3	4	3	5	2	1	3	35	2.9	10.4
S39	1	1	5	3	2	3	3	3	5	2	2	3	33	2.8	11.1
S40	1	2	5	3	2	4	1	3	5	2	2	4	34	2.8	10.7
S43	1	1	4	4	2	3	2	4	1	2	2	3	29	2.4	12.6
S47	1	1	4	3	2	3	1	3	2	1	2	3	26	2.2	14.0
S50	13	15	18	15	15	22	17	17	23	19	21	23	218	18.2	1.7
S51	10	8	12	6	7	10	7	6	12	15	16	12	121	10.1	3.0
LOWER SCHUYLKILL WEST SIDE — 4 UNITS															
TOTAL	26	23	34	24	31	27	19	18	30	23	18	20	293	6.1	5.0
S32	7	5	10	4	9	6	4	4	9	6	4	4	74	6.2	4.9
S33	7	6	8	6	8	10	5	6	9	6	7	4	82	6.8	4.4
S36	6	6	9	9	8	1	5	4	7	5	4	6	70	5.8	5.2
S45	5	6	7	5	6	8	5	4	5	6	3	6	67	5.6	5.4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL — 23 UNITS															
TOTAL	26	31	29	45	50	52	39	44	68	54	57	57	562	2.0	15.2
C01	1	1	1	1	3	3	2	1	3	3	3	2	24	2.0	15.2
C02	1	1	1	1	2	3	2	2	3	2	3	2	23	1.9	15.9
C04	1	1	1	3	3	2	1	2	3	3	3	2	25	2.1	14.6
C04A	2	1	1	2	3	2	1	2	3	3	2	1	23	1.9	15.9
C05	1	1	1	1	2	2	2	2	3	3	2	2	22	1.8	16.6
C06	1	1	1	1	2	2	1	2	3	2	2	2	20	1.7	18.2
C07	1	1	1	1	2	2	1	2	3	2	2	2	20	1.7	18.2
C09	1	1	1	2	2	1	3	2	3	2	2	3	23	1.9	15.9
C10	1	1	1	1	2	3	3	2	4	2	2	3	25	2.1	14.6
C11	1	1	1	3	1	3	2	2	3	2	2	3	24	2.0	15.2
C12	1	1	1	1	1	2	1	2	3	2	2	2	19	1.6	19.2
C13	1	1	1	2	1	2	1	2	3	2	2	2	20	1.7	18.2
C14	1	1	1	3	2	3	2	2	3	2	3	3	26	2.2	14.0
C15	1	1	2	3	3	2	2	2	3	2	2	4	27	2.3	13.5
C16	1	1	2	3	4	3	2	2	3	2	2	4	29	2.4	12.6
C17	1	1	2	3	3	3	2	2	3	2	2	1	25	2.1	14.6
C31	1	2	1	2	4	2	1	2	3	2	3	2	25	2.1	14.6
C32	1	2	1	2	3	2	1	2	2	2	3	2	23	1.9	15.9
C33	1	2	1	2	4	2	2	2	3	2	3	3	27	2.3	13.5
C34	1	3	3	2	3	2	2	2	3	2	3	3	29	2.4	12.6
C35	2	2	1	2	3	2	2	2	3	5	3	3	30	2.5	12.2
C36	2	2	1	2	3	2	1	1	3	3	3	3	26	2.2	14.0
C37	1	2	2	2	4	2	2	2	2	2	3	3	27	2.3	13.5
COBBS CREEK LOW LEVEL — 13 UNITS															
TOTAL	15	16	17	19	26	36	17	25	40	35	33	34	313	2.0	15.8
C18	1	1	2	1	2	4	2	2	3	6	3	2	29	2.4	12.6
C19	3	1	2	2	2	3	2	3	4	2	2	4	30	2.5	12.2
C20	1	1	1	2	2	3	2	3	3	2	2	4	26	2.2	14.0
C21	1	1	1	1	2	3	1	2	3	2	4	3	24	2.0	15.2
C22	1	1	1	1	2	3	1	2	3	1	2	4	22	1.8	16.6
C23	1	1	1	1	2	3	1	1	3	2	2	1	19	1.6	19.2
C24	1	2	1	2	3	3	2	4	4	5	3	3	33	2.8	11.1
C25	1	1	1	1	3	3	1	1	3	2	2	2	21	1.8	17.4
C26	1	1	2	1	2	3	1	1	3	2	3	2	22	1.8	16.6
C27	1	1	1	1	2	2	1	1	4	2	3	2	21	1.8	17.4
C28A	1	1	2	3	1	3	1	3	4	6	3	2	30	2.5	12.2
C29	1	2	1	1	2	1	1	1	1	2	2	3	18	1.5	20.3
C30	1	2	1	2	1	2	1	1	2	1	2	2	18	1.5	20.3
TOTAL	239	294	317	321	337	338	252	292	360	287	281	297	3615		
I/D/C	2.6	3.2	3.5	3.5	3.7	3.7	2.8	3.2	3.9	3.1	3.1	3.3			

14 TOTAL DISCHARGES IN SW DISTRICT

1.2 AVERAGE DISCHARGES PER MONTH

10.1 AVER. DAYS BEFORE RETURNING TO SITE

3.3 AVER. INSPECTIONS PER DAY PER CREW

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

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL													**23 UNITS**
TOTAL	0	1	0	0	0	0	0	0	1	0	0	0	2
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07													0
C09													0
C10													0
C11													0
C12													0
C13		1											1
C14													0
C15													0
C16													0
C17													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36									1				1
C37													0
COBBS CREEK LOW LEVEL													**13 UNITS**
TOTAL	2	0	0	0	0	0	0	0	2	0	1	1	6
C18													0
C19	1												1
C20													0
C21											1	1	2
C22	1												1
C23													0
C24													0
C25													0
C26													0
C27									2				2
C28A													0
C29													0
C30													0
TOTAL DISC	3	3	3	0	0	0	0	0	3	0	1	1	14

	NO OF UNITS IN DISTRICT BLOCKED												
CSE	0	2	0	0	0	0	0	0	0	0	0	0	2
LSE	0	0	0	0	0	0	0	0	0	0	0	0	0
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	0	0	1	0	0	0	0	0	0	0	0	0	1
LSW	1	0	2	0	0	0	0	0	0	0	0	0	3
CCHL	0	1	0	0	0	0	0	0	1	0	0	0	2
CCLL	2	0	0	0	0	0	0	0	1	0	1	1	5

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED

UPPER PENNYPACK — 5 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	3	0	0	0	0	1	0	2	0	0	1	1	8
P01								1					1
P02													0
P03						1						1	2
P04	3							1			1		5
P05													0

UPPER DELAWARE LOW LEVEL — 12 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	7	1	1	0	0	0	0	0	0	2	0	0	11
D02													0
D03													0
D04		1											1
D05	7												7
D06													0
D07										1			1
D08										1			1
D09													0
D11													0
D12													0
D13			1										1
D15													0

TOTAL	0	2	1	1	0	0	0	0	0	0	0	0	4
F13													0
F14			1										1
F21													0
F23		2											2
F24				1									1
F25													0

LOWER FRANKFORD LOW LEVEL — 10 UNITS

TOTAL	2	1	2	3	0	0	0	0	0	1	5	1	15
F03				1									1
F04													0
F05											2	1	3
F06													0
F07		1		1									2
F08											1		1
F09	1			1							1		3
F10	1												1
F11													0
F12			2							1	1		4

FRANKFORD HIGH LEVEL — 14 UNITS

TOTAL	3	1	2	1	1	0	0	0	1	0	0	2	11
T01												1	1
T03													0
T04	1												1
T05													0
T06												1	1
T07													0
T08													0
T09													0
T10	2		1	1	1								5
T11			1						1				2
T12													0
T13		1											1
T14													0
T15													0

SOMERSET LOW LEVEL — 9 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	0	0	1	0	0	0	0	0	0	1	1	0	3
D17			1										1
D18									1				1
D19													0
D20													0
D21										1			1
D22													0
D23													0
D24													0
D25													0

LOWER DELAWARE LOW LEVEL — 32 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	6	5	12	9	0	0	0	0	2	4	4	16	58
D37				1						1		2	4
D38												1	1
D39											1		1
D40				1									1
D41			1	1									2
D42													0
D43													0
D44	1	2	1	1						1		2	8
D45													0
D46										2			2
D47			2	1									3
D48	1	1	3	2							2	4	13
D49	1											2	3
D50	2		1									2	5
D51									1				1
D52				1									1
D53													0
D54													0
D58													0
D61													0
D62				1									1
D63													0
D64													0
D65												2	2
D66	1											1	2
D67													0
D68			1	1					1				3
D69													0
D70		1	3										4
D71													0
D72											1		1
D73													0
D75													0
TOTAL	21	10	19	14	1	1	0	2	3	8	11	20	110

9.17 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS													
TOTAL	3	6	0	1	0	0	0	0	0	6	1	0	17
S05		2								1			3
S06										1			1
S07		1		1						1	1		4
S08										1			1
S09	1												1
S10													0
S12		1											1
S12A													0
S13													0
S15													0
S16										1			1
S17													0
S18	2	1											3
S19										1			1
S21													0
S23		1											1
S25													0
S26													0
LOWER SCHUYLKILL EAST SIDE — 9 UNITS													
TOTAL	0	2	1	1	0	0	0	0	0	0	0	0	4
S31		1											1
S35													0
S36													0
S36A													0
S37													0
S42			1										1
S42A		2											2
S44													0
S46													0
CENTRAL SCHUYLKILL WEST — 9 UNITS													
TOTAL	0	0	0	2	0	0	0	0	0	0	0	1	3
S01													0
S02													0
S03													0
S04													0
S11													0
S14													0
S20													0
S22												1	1
S24				2									2
SOUTHWEST MAIN GRAVITY — 10 UNITS													
TOTAL	9	0	1	13	0	15	0	0	0	1	1	0	40
S27										1	1		2
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50	9			1	13		15						38
S51													0
LOWER SCHUYLKILL WEST SIDE — 4 UNITS													
TOTAL	1	0	1	0	0	1	0	0	0	3	0	1	7
S32												1	1
S33	1									1			2
S38						1				1			2
S45				1						1			2

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL — 23 UNITS													
TOTAL	0	1	0	1	2	0	0	0	0	0	1	0	5
C01													0
C02													0
C04				1	1								2
C04A													0
C05													0
C06													0
C07													0
C09													0
C10													0
C11													0
C12													0
C13		1											1
C14													0
C15													0
C16					1								1
C17													0
C31													0
C32													0
C33											1		1
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL — 13 UNITS													
TOTAL	2	0	0	0	0	0	0	0	2	2	1	2	9
C18													0
C19	1												1
C20											1	1	1
C21											1		1
C22	1											1	2
C23													0
C24													0
C25													0
C26													0
C27									2	2			4
C28A													0
C29													0
C30													0
TOTAL	15	9	3	18	2	16	0	0	2	12	4	4	85

7.08 AVERAGE BLOCKAGES PER MONTH

JUNE 2000 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER							6 UNITS						
R1	1	1	1	1	2	2	2	2	2	2	2	4	22
R2	1	1	1	2	2	2	2	2	2	2	2	4	23
R3	1	1	1	3	2	2	2	2	2	2	2	4	24
R4	1	1	1	1	2	2	2	2	2	2	2	4	22
R5	1	1	1	1	2	2	2	2	2	2	2	4	22
R6	1	1	1	1	2	2	2	2	2	2	2	4	22
MAIN RELIEF SEWER							7 UNITS						
R7	1	1	1	1	2	2	1	2	2	2	2	3	20
R8	1	1	1	2	2	2	2	2	2	2	2	3	22
R9	1	1	1	2	2	2	2	2	2	2	2	3	22
R10	1	1	1	2	2	2	2	2	2	2	2	3	22
R11	1	1	1	1	2	2	2	2	2	2	2	3	21
R11A	1	1	1	1	2	2	2	2	2	2	2	3	21
R12	1	1	1	1	2	1	2	2	2	1	2	3	19
WAKLING RELIEF SEWER							2 UNITS						
R13	1	2	1	1	3	2	1	1	2	2	1	1	18
R14	1	2	1	1	2	2	1	1	2	2	1	1	17
ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS						
R15	1	3	1	2	3	2	1	1	2	2	1	1	20
OREGON AVE RELIEF SEWER							2 UNITS						
R16	3	3	3	1	4	4	2	3	5	3	3	4	38
R17	4		3	2	4	4	2	3	5	3	3	4	37
FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS						
R18	1	1	1	2	3	1	1	1	2	2	3	1	19
32ND ST RELIEF SEWER							1 UNITS						
R19	1	1	1	2	4	2	2	1	2	3	1	1	21
MAIN STREET RELIEF SEWER							1 UNITS						
R20	1	1	1	3	3	1	1	1	1	2	1	1	17
SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS						
R21	2	2	1	3	3	2	1	1	2	2	1	1	21
TEMPORARY REGULATOR CHAMBER							1 UNITS						
R22	1	1											2
R23	2	2	1	3	3	2	1	1	1	4	1	1	22
ARCH ST RELIEF SEWER							1 UNITS						
R24	1	1	1	4	2	1	1	2	2	2	2	3	22
16TH & SNYDER							1 UNITS						
R25	1	1	1	2	2	1	1	2	2	1	1	2	17
GRANT & STATE RD. RELIEF							1 UNITS						
R26	1	2	1	3	1	2	2	1	2	3	2	1	21
TOTAL	34	35	30	48	63	51	42	45	56	56	47	67	574
AVER	1.3	1.3	1.1	1.8	2.3	1.9	1.6	1.7	2.1	2.1	1.7	2.5	1.8

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER							6 UNITS						
R1													0
R2													0
R3													0
R4							1						1
R5													0
R6													0
MAIN RELIEF SEWER							7 UNITS						
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
WAKLING RELIEF SEWER							2 UNITS						
R13													0
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS						
R15													0
OREGON AVE RELIEF SEWER							2 UNITS						
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS						
R18													0
32ND ST RELIEF SEWER							1 UNITS						
R19													0
MAIN STREET RELIEF SEWER							1 UNITS						
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS						
R21													0
TEMPORARY REGULATOR CHAMBER							1 UNITS						
R22													0
R23													0
ARCH ST RELIEF SEWER							1 UNITS						
R24													0
16TH & SNYDER							1 UNITS						
R24													0
GRANT & STATE RD. RELIEF							1 UNITS						
R26													0
TOTAL	0	0	0	0	1	0	0	0	0	0	0	0	1
UNITS	0	0	0	0	1	0	0	0	0	0	0	0	

JUNE 2000 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
	1	2	1	3	2	1	1	1	2	3	1	1	19
SOMERSET GRIT LEVEL													
	3	3	4	2	0	2	2	2	2	3	2	4	29
(H-20) 70th & Dicks													
	1	1	7	2	2	2	2	2	2	1	1	2	25
CCLL CONTROL PIPE @ ISLAND AVE.													
		5	2	3	3	2	4	2	4	6	4	2	37

JUNE 2000 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NANDINA ST													
	1	2	1	1	2	1	1	1	2	2	1	1	16
UPPER DARBY OVERFLOW													
	1	1	2	3	3	3	2	1	4	5	4	4	33
Sandy Run Creek Regulator													
	1	1	2	2	5	3	6	4	20	10	10	10	74
O & ERIE diversion gate													
	1	1	1	0	2	1	1	1	2	2	1	1	14

JUNE 2000 RELIEF SEWER MONTHLY BLOCKS CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	THOMAS RUN RELIEF SEWER								6 UNITS				
R1									1				1
R2													0
R3													0
R4					1								1
R5													0
R6													0
	MAIN RELIEF SEWER								7 UNITS				
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
	WAKLING RELIEF SEWER								2 UNITS				
R13													0
R14													0
	ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS				
R15													0
	OREGON AVE RELIEF SEWER								2 UNITS				
R16													0
R17													0
	FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS				
R18													0
	32ND ST RELIEF SEWER								1 UNITS				
R19													0
	MAIN STREET RELIEF SEWER								1 UNITS				
R20													0
	SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS				
R21													0
	TEMPORARY REGULATOR CHAMBER								1 UNITS				
R22						DISCONTINUED		PROBLEM CORRECTED					0
R23													0
	ARCH ST RELIEF SEWER								1 UNITS				
R24													0
	16TH & SNYDER								1 UNITS				
R25													0
	GRANT & STATE RD. RELIEF								1 UNITS				
R26													0
TOTAL	0	0	0	0	1	0	0	0	1	0	0	0	2
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 2000 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	CASMIER ST												
													0
	SOMERSET GRIT LEVEL												
													0
	(H-20) 70th & Dicks												
													0
	CCLL CONTROL PIPE @ ISLAND AVE.												
													0
	(R-25) 16TH & SNYDER												
													0
	NANDINA ST												
													0
	UPPER DARBY OVERFLOW												
													0
	Sandy Run Creek Regulator												
							1		1				2
	O & ERIE diversion gate												
													0

Discharge Observed		Discharge Stopped						
Date	Time	Date	Time	Site ID	Collector	Type Unit	Location	Comment
07/03/99	09:45 AM	07/03/99	01:45 PM	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Cr.	DWO connecting pipe blocked with stones and other debris.
07/10/99	08:30 AM	07/10/99	09:40 AM	P-04	PP	SLOT	Cottage Ave. & Holmesburg Ave.	Unknown blockage in DWO connecting pipe.
07/19/99	01:00 PM	07/19/99	01:35 PM	C-19	CCLL	SLOT	Mount Moriah Cemetery & 62nd St.	DWO connecting pipe was blocked with several plastic soda bottles.
07/22/99	10:20 AM	07/22/99	11:15 AM	C-22	CCLL	SLOT	70th St. & Cobbs Cr. Parkway	Sticks, cans & other debris blocked the slot opening.
07/23/99	09:30 AM	07/23/99	05:00 PM	S-33	LSWS	B & B	51st St. & Botanic Ave.	Broken fire hydrant caused a high flow in the regulator to discharge. Repair crew had difficulty in finding shut off valve for hydrant.
07/29/99	09:05 AM	07/29/99	10:55 AM	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Cr.	Grit accumulation in DWO connecting pipe caused discharge. Line is being investigated with CCTV to determine cause of grit and stone. The regulator is being inspected daily to prevent further discharges until problem is rectified.
08/09/99	11:15 AM	08/09/99	04:30 PM	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Cr.	DWO connecting pipe was blocked with stone and grit.
08/13/99	11:50 AM	08/13/99	12:25 PM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Cr.	Rags and sticks blocked the DWO connecting pipe.
08/16/99	11:05 AM	08/16/99	12:00 PM	S-07	CSES	B & B	24th St. E of Schuylkill R. (Vine St.)	Shutter gate stuck closed after rain event.
08/16/99	02:05 PM	08/16/99	02:55 PM	S-18	CSES	B & B	Pine St. W of Taney St.	Shutter gate stuck closed after rain event.
08/17/99	12:55 PM	08/17/99	02:15 PM	C-13	CCHL	SLOT	62nd St. @ Cobbs Cr.	Cable and rags blocked the dwo connecting pipe.
09/18/99	08:50 AM	09/18/99	09:12 AM	F-14	LFC	B & B	Bristol St. in Cemetery	Grit and leaves blocked the regulator opening.
09/18/99	11:50 AM	09/18/99	04:10 PM	T-11	FHL	SLOT	Ruscomb St. E of Tacony Cr.	DWO connecting pipe was blocked with debris.
09/18/99	01:30 PM	09/18/99	05:25 PM	T-12	FHL	SLOT	Whitaker Ave. E of Tacony Cr.	The slot opening was blocked with grit.
09/22/99	09:00 AM	09/22/99	04:00 PM	S-45	LSWS	B & B	67th St. E of P&R RR.	Flow diversion from the SW Main Gravity caused sporadic overflows at thisregulator throughout the day. The diversion was needed to repair the pressure plate on the SWMG Triple Barrel.
09/24/99	04:55 PM	09/24/99	06:30 PM	S-50	SWM	B & B	43rd St. E of Woodland Ave.	Flow diversion from the SW Main Gravity caused an overflow at this regulator when S-27 was shut down. The diversion was needed to repair the pressure plate on the SWMG Triple Barrel.
09/25/99	09:45 AM	09/25/99	03:00 PM	S-33	LSWS	B & B	51st St. & Botanic Ave.	Flow diversion from the SW Main Gravity caused sporadic overflows at t regulator throughout the day. The diversion was needed to repair the pressure plate on the SWMG Triple Barrel.
* There were no observed discharges for this reporting period. Oct.								
11/05/99	09:30 AM	11/05/99	02:00 PM	T-10	FHL	SLOT	Roosevelt Blvd. E of Tacony Cr.	Large rocks blocked the flow in the DWO connecting pipe.
11/08/99	12:10 PM	11/08/99	12:45 PM	R-04	-------	DAM	56th St. & Pine St.	One large rock blocked the DWO connecting pipe.
12/22/99	09:40 AM	12/22/99	11:30 AM	P-03	PP	SLOT	Torresdale Ave., NW of Pennypack St.	The DWO connecting pipe was blocked with debris.

Discharge Observed		Discharge Stopped						
Date	Time	Date	Time	Site ID	Collector	Type Unit	Location	Comment
* There were no observed discharges for this reporting period. January 2000								
02/25/2000	09:45 AM	02/25/00	10:15 AM	P-03	PP	SLOT	Torresdale Ave., NW of Pennypack St.	The DWO connecting pipe was blocked with unknown debris. Line was flushed clear.
03/15/2000	11:00 AM	03/15/2000	08:00 PM	C-27	CCLL	SLOT	Paschall Ave. & Island Ave.	Sandbags and broken concrete were lodged in the 6" connecting pipe.
03/16/2000	08:00 AM	03/16/2000	05:00 PM	C-27	CCLL	SLOT	Paschall Ave. & Island Ave.	More concrete and sandbags blocked the dwo pipe before the Supervisors were able to find the cause of the debris. The Contractor working in the area denied responsibility, but the problem has since stopped.
03/29/2000	10:45 AM	03/29/2000	11:45 AM	C-36	CCHL	SLOT	69th St. & Woodbine Ave S of Brentwood	Leaves and tissue paper formed a large ball in the dwo connecting pipe.
03/31/2000	02:40 PM	03/31/2000	03:10 PM	D-68	LDLL	B & B	Snyder Ave. & Delaware Ave.	The shuttergate was found wedged shut. The regulator received a full PM following this event.
* There were no observed discharges for this reporting period. April								
05/15/2000	11:40 AM	05/15/2000	01:15 PM	C-21	CCLL	SLOT	68th St. & Cobbs Cr. Parkway	The DWO connecting pipe became blocked with debris and needed flus
05/27/2000	10:10 AM	05/27/2000	10:55 AM	P-03	PP	SLOT	Torresdale Ave., NW of Pennypack St.	The DWO connecting pipe became blocked with debris and needed flus
06/20/2000	02:16 PM	06/20/2000	02:39 PM	S-22	CSW	B & B	660' S of South St E of Penn Field	Shutter gate was found stuck in the partially closed position.
06/27/2000	08:50 AM	06/27/2000	10:20 AM	P-03	PP	SLOT	Torresdale Ave., NW of Pennypack St.	A trash bag was found blocking the slot.

Discharge Observed		Discharge Stopped						
Date	Time	Date	Time	Site ID	Collector	Type Unit	Location	Comment
07/03/2000	09:10 AM	07/03/2000	01:00 PM	C-21	CCLL	SLOT	68th St. & Cobbs Cr. Parkway	Unknown object stuck in the DWO connecting pipe caused a blockage.
08/16/2000	08:45 AM	08/16/2000	03:30 PM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Cr.	DWO pipe was blocked with debris. Flushed line to clear the obstruction.
08/17/2000	09:00 AM	08/17/2000	01:45 PM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Cr.	5 gal. bucket came down sewer & blocked the DWO opening.
08/17/2000	01:45 PM	08/17/2000	02:10 PM	F-10	LFLL	WH-S	Frankford Ave. S of Frankford Cr.	Book came down sewer and blocked the DWO opening.
08/22/2000	01:00 PM	08/22/2000	02:00 PM	D-63	LDLL	B & B	Christian St. W of Delaware Ave.	Shutter gate stuck in the partially closed position. Regulator unit was servic
08/26/2000	07:15 AM	08/26/2000	10:15 AM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Cr.	Slot opening and connecting pipe filled with grit and needed flushing.
08/30/2000	09:30 AM	08/30/2000	11:00 AM	S-05	CSES	B & B	24th St. 155 S of Park Towne Place	Large boulders and brick blocked the connecting line.
09/02/2000	09:45 AM	09/02/2000	10:30 AM	T-11	FHL	SLOT	Ruscomb St. E of Tacony Creek.	A 12" bike rim and tire blocked the slot opening.
09/05/2000	02:15 PM	09/05/2000	02:50 PM	D-17	SOM	B & B	Castor Ave. & Balfour St.	The shutter gate remained stuck in the closed position.
09/05/2000	02:35 PM	09/05/2000	03:25 PM	S-23	CSES	B & B	Schuylkill Ave. & Bainbridge St.	A 4' tree trunk was lodged in the regulator opening.
09/11/2000	10:05 AM	09/11/2000	10:35 AM	T-03	FHL	SLOT	Champlost Ave. W of Tacony Creek.	Rags and other debris blocked the mouth of the slot.
09/11/2000	01:36 PM	09/11/2000	02:15 PM	S-30	SWM	SLOT	46th St. & Paschall Ave.	Unseen debris blocked the regulator opening.
09/27/2000	09:00 AM	09/27/2000	02:30 PM	C-09	CCHL	SLOT	64th St. & Cobbs Creek.	Construction lumber blocked the slot opening.
10/02/2000	08:38 AM	10/02/2000	09:00 AM	S-37	LSES	B & B	Vare Ave. & Jackson St.	Shutter gate blocked with debris.
11/15/2000	09:00 AM	11/15/2000	11:30 AM	D-43	LDLL	SLOT	Marlborough St. & Delaware Ave.	Debris, rocks & grit blocked the slot opening and connecting pipe.
11/27/2000	01:10 PM	11/27/2000	06:20 PM	C-21	CCLL	SLOT	68th St. & Cobbs Creek. Parkway	Leaves and plastic containers became lodged in the connecting pipe.
12/14/2000	11:15 AM	12/14/2000	02:00 PM	C-09	CCHL	SLOT	64th St. & Cobbs Creek.	Small board blocked the DWO connecting pipe.
12/15/2000	01:00 PM	12/15/2000	02:15 PM	C-21	CCLL	SLOT	68th St. & Cobbs Creek. Parkway	A plastic bottle blocked the DWO connecting pipe.
12/29/2000	10:30 AM	12/29/2000	12:10 PM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek.	The slot box was blocked with wood sticks.
01/03/2001	09:00 AM	01/03/2001	09:50 AM	D-40	LDLL	SLOT	Berks St. E of Beach St.	Debris blocked the mouth of the DWO connecting pipe.

CSO Regulator Emergency Overflow Weir Gates

As of: 03/09/01

Site ID	NEWPC Sites	Ordered	Delivered	Installed	Gate1 (W in.)	Gate1 (H in.)	Gate Style (G1)	Gate2 (W in.)	Gate2 (H in.)	Gate Style (G2)	# Required
D_2	Cottman St. SE of Milnor St.	01/28/97	07/24/97	08/05/97	32.0	155.0	internal	-----	-----	-----	1
D_3	Princeton Ave SE of Milnor St.	01/28/97	07/24/97	08/15/97	51.0	22.5	internal	60.0	22.5	internal	2
D_11	Sanger St. SE of Milnor St.	01/28/97	07/24/97	09/05/97	101.0	36.0	internal	95.5	36.0	internal	2
D-12	Bridge St. Se of Garden St.	10/01/97	04/04/98	04/13/98	21.0	17.0	internal	30.0	13.0	internal	2
D-8	Comly St. SE of Milnor St.	10/01/97	04/04/98	04/14/98	82.0	16.0	internal	-----	-----	-----	1
F-24	Bridge St. SE of Creek Basin	10/01/97	04/04/98	04/16/98	32.0	25.0	internal	-----	-----	-----	1
D-4	Disston St. SE of Wissinoming St.	10/01/97	05/18/98	05/13/98	105.0	23.0	internal	-----	-----	-----	1
F-8	Erie Ave. & Hunting Park Ave.	10/01/97	04/04/98	05/14/98	48.0	48.0	surface	-----	-----	-----	1
D-6	Levick St. SE of Milnor St.	10/01/97	05/18/98	05/16/98	102.0	29.0	internal	-----	-----	-----	1
D-21	Westmoreland St. W of Balfour St.	10/01/97	05/18/98	05/28/98	235.0	22.0	internal	-----	-----	-----	1
D-15	Orthodox St. & Delaware Ave.	10/01/97	04/04/98	06/01/98	46.0	18.5	internal	71.0	20.0	internal	2
D-13	Kirkbridge St. & Delaware Ave.	10/01/97	05/18/98	06/02/98	96.0	25.0	internal	-----	-----	-----	1
F-11	Paul St. S of Vandyke St.	10/01/97	05/18/98	06/11/98	37.0	34.0	internal	137.0	23.0	internal	2
F-6	Worrel St. E of Frankford Cr.	10/01/97	05/18/98	06/20/98	60.0	60.0	surface	-----	-----	-----	1
F-13/14	Duncan St. Under I-95	10/01/97	05/18/98	06/24/98	120.0	15.0	surface	-----	-----	-----	1
D-7	Lardner St. SE of Milnor St.	10/01/97	04/04/98	06/24/98	83.0	33.0	internal	83.0	33.0	internal	2
F_25	Ash St. W of Creek Basin	10/01/97	04/04/98	06/25/98	86.0	13.0	surface	-----	-----	-----	1
F_25	Ash St. W of Creek Basin	08/15/97	05/18/98	06/25/98	86.0	13.0	surface	-----	-----	-----	2
F-23	Bridge St. NW of Creek Basin	10/01/97	05/18/98	07/02/98	125.0	17.0	internal	-----	-----	-----	1
F-7	Worrel St. W of Frankford Cr.	10/01/97	05/18/98	07/03/98	54.0	54.0	surface	-----	-----	-----	1
											27

Site ID	SWWPC Sites	Ordered	Delivered	Installed	Gate1 (W in.)	Gate1 (H in.)	Gate Style (G1)	Gate2 (W in.)	Gate2 (H in.)	Gate Style (G2)	# Required
S_45	67th St. E of P&R RR	----------	----------	11/07/94	115.0	9.5	surface	gate2 same	gate3 same	surface	3
S_08	Race St. W of Bonsall St.	07/01/98	11/13/98	11/18/98	36.5	8.75	surface	-----	-----	-----	1
S_04	Schuylkill Expressway 600'	07/01/98	11/17/98	11/19/98	54.0	13.0	internal	-----	-----	-----	1
S_09	Arch St. W of 23rd St.	07/01/98	11/17/98	12/05/98	115.0	16.0	surface	-----	-----	-----	1
S_33	51st St. and Botanic St.	07/01/98	11/13/98	12/10/98	97.5	10.0	surface	-----	-----	-----	1
S_16	Locust St. and 25th St.	07/01/98	11/17/98	01/19/99	37.0	8.5	surface	-----	-----	-----	1
S_14	Schuylkill Exp. Under Walnut St. Bridge	07/01/98	11/17/98	01/21/99	54.0	10.0	surface	-----	-----	-----	1
											9

Site ID	SEWPC Sites	Ordered	Delivered	Installed	Gate1 (W in.)	Gate1 (H in.)	Gate Style (G1)	Gate2 (W in.)	Gate2 (H in.)	Gate Style (G2)	# Required
D_63	Christian St. W of Delaware Ave.	----------	----------	1995	131.0	9.0	surface	-----	-----	-----	1
D_44	Shackamaxon St. E of Delaware Ave.	----------	----------	1995	114.5	31.5	surface	-----	-----	-----	1
D_66	Tasker St. E of Delaware Ave.	07/01/98	11/04/98	12/09/98	94.0	8.5	surface	-----	-----	-----	1
D_47	Fairmount Ave. W of Delaware Ave.	07/01/98	11/04/98	11/05/98	90.0	5.5	surface	-----	-----	-----	1
D_39	Susquehanna Ave SE of Beach St.	07/01/98	11/04/98	12/04/98	106.0	5.5	surface	-----	-----	-----	1
D_73	Pattison Ave. and Swanson St.	07/01/98	11/04/98	06/04/99	72.0	18.0	surface	gate 2-3-4 same		surface	4
											9

Site ID	Previously Unidentified Sites	Ordered	Delivered	Installed	Gate1 (W in.)	Gate1 (H in.)	Gate Style (G1)	Gate2 (W in.)	Gate2 (H in.)	Gate Style (G2)	# Required
D_51	Race St. W of Delaware Ave.	07/01/98	11/23/98	02/05/99	64.0	48.0	surface	-----	-----	-----	1
D_45	Laurel St. & Delaware Ave.	07/01/99	09/08/99	03/31/00	104.5	29.0	surface	104.5	29.0	surace	2
D_51	Race St. W of Delaware Ave.	07/01/99	09/08/99	10/05/99	27.0	12.5	surface	-----	-----	-----	1
D_62	Queen St. E of Swanson St.	07/01/99	09/08/99	10/25/99	35.0	5.5	surface	-----	-----	-----	1
D_64	Washington Ave. E of Delaware Ave.	07/01/99	09/08/99	10/14/99	29.5	10.5	surface	-----	-----	-----	1
D_39	Susquehanna Ave. E of Beach St.	07/01/99	09/08/99	10/07/99	106.0	5.5	surface	-----	-----	-----	1
F_10	Frankford Ave. S of Frankford Cr.	07/01/99	09/08/99	12/08/99	65.0	27.0	internal	-----	-----	-----	1
F_12	Sepviva St. N of Butler St.	07/01/99	09/08/99		54.0	54.0	surface	-----	-----	-----	1
S_02	Haverford Ave. & West River Dr.	07/01/99	09/08/99	11/13/99	48.0	7.5	surface	-----	-----	-----	1
S_05	24th St. 155 S of Park Towne Place	01/01/00	04/27/00	08/07/00	126.0	70.0	internal	-----	-----	-----	1
S_06	24th St. 350' S of Park Towne Place	01/01/00	04/27/00	07/20/00	102.0	20.0	surface	-----	-----	-----	1
S_18	Pine St. W of Taney St.	07/01/99	09/08/99	10/15/99	116.0	9.0	surface	-----	-----	-----	1
S_22	660' S of South St E of Penn Field	01/01/00	04/27/00	05/01/00	72.0	10.0	surface	-----	-----	-----	1
S_24	1060' S of South St. E of Penn Field	01/01/00	04/27/00	05/02/00	48.0	9.0	surface	-----	-----	-----	1
S_26	Ellsworth St. E of Schuylkill R.	01/01/00	04/27/00	05/03/00	42.0	8.0	surface	42.0	8.0	surface	2
S_31	Reed St. & Schuylkill Ave.	01/01/00	04/27/00	06/07/00	54.0	6.0	surface	-----	-----	-----	1
S_42A	Passyunk Ave. & 28th St.	01/01/00	04/27/00	06/21/00	108.0	56.0	surface	-----	-----	-----	1
D_17	Castor Ave. & Balfour St.				3- 8" dia		surface	-----	-----	-----	3
D_18	Venango St. W of Casper St.				2- 8" dia		surface	-----	-----	-----	2
D_19	Tioga St. W of Casper St.				2- 8" dia		surface	-----	-----	-----	2
D_20	Ontario St. W of Casper St.				2- 8" dia		surface	-----	-----	-----	2
D_25	Somerset St. E of Richmond St.				4- 8" dia		surface	-----	-----	-----	4
D_22	Allegheny Ave. SE of Bath St.				4- 4" dia		internal	-----	-----	-----	4

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

FY2001 BLOCKAGES CLEARED

COLLECTOR	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-2000	Feb-2000	Mar-2000	Apr-2000	May-2000	Jun-2000	Totals
UPPER PENNYPACK - 5 UNITS													
BLOCKS CLEARED	1	5	0	0	0	0	1	0	0	0	0	0	7
UPPER DELAWARE LOW LEVEL - 12 UNITS													
BLOCKS CLEARED	0	7	2	3	3	0	0	3	0	0	0	0	18
LOWER FRANKFORD CREEK - 6 UNITS													
BLOCKS CLEARED	0	0	0	0	1	0	0	0	0	0	0	0	1
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
BLOCKS CLEARED	0	7	0	1	0	0	0	0	0	0	0	0	8
FRANKFORD HIGH LEVEL - 14 UNITS													
BLOCKS CLEARED	0	4	5	3	0	2	0	1	0	0	0	0	15
SOMERSET - 9 UNITS													
BLOCKS CLEARED	1	5	4	7	0	1	0	0	0	0	0	0	18
LOWER DELAWARE LOW LEVEL - 32 UNITS													
BLOCKS CLEARED	4	17	25	13	13	3	2	2	0	0	0	0	79
CENTRAL SCHUYLKILL EAST - 18 UNITS													
BLOCKS CLEARED	0	12	5	13	4	0	2	1	0	0	0	0	37
LOWER SCHUYLKILL EAST - 9 UNITS													
BLOCKS CLEARED	0	0	5	6	1	0	0	0	0	0	0	0	12
CENTRAL SCHUYLKILL WEST - 9 UNITS													
BLOCKS CLEARED	0	4	0	2	1	0	0	2	0	0	0	0	9
SOUTHWEST MAIN GRAVITY - 10 UNITS													
BLOCKS CLEARED	1	21	24	18	0	0	0	2	0	0	0	0	66
LOWER SCHUYLKILL WEST - 4 UNITS													
BLOCKS CLEARED	0	3	6	5	6	0	0	0	0	0	0	0	20
COBBS CREEK HIGH LEVEL - 23 UNITS													
BLOCKS CLEARED	1	2	1	5	1	3	0	1	0	0	0	0	14
COBBS CREEK LOW LEVEL - 13 UNITS													
BLOCKS CLEARED	1	2	1	0	2	1	0	0	0	0	0	0	7
RELIEF SEWERS - 27 UNITS													
BLOCKS CLEARED	0	0	0	0	0	0	0	0	0	0	0	0	0
200 CSO UNITS													
TOTALS / MONTH													
TOTAL BLOCKS CLEARE	9	89	78	76	32	10	5	12	0	0	0	0	311
AVER. # of INSP. / BC	82	9	11	12	22	61	168	n/a	n/a	n/a	n/a	n/a	52

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JANUARY 2001

COLLECTOR	Jul-2000	Aug-2000	Sep-2000	Oct-2000	Nov-2000	Dec-2000	Jan-2001	Feb-2001	Mar-2001	Apr-2001	May-2001	Jun-2001	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	21	35	38	27	29	31	26	0	0	0	0	0	207
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	38	61	38	66	50	43	59	0	0	0	0	0	355
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	13	24	27	30	26	19	20	0	0	0	0	0	159
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	41	66	27	53	30	31	36	0	0	0	0	0	284
DISCHARGES	0	3	0	0	0	0	0	0	0	0	0	0	3
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	73	82	68	87	65	50	100	0	0	0	0	0	525
DISCHARGES	0	1	2	0	0	1	0	0	0	0	0	0	4
SOMERSET - 9 UNITS													
INSPECTIONS	21	31	39	48	23	18	34	0	0	0	0	0	214
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	172	162	176	121	152	139	163	0	0	0	0	0	1085
DISCHARGES	0	1	0	0	1	0	1	0	0	0	0	0	3
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	84	88	100	93	62	71	103	0	0	0	0	0	601
DISCHARGES	0	1	1	0	0	0	0	0	0	0	0	0	2
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	26	11	26	47	29	20	40	0	0	0	0	0	199
DISCHARGES	0	0	0	1	0	0	0	0	0	0	0	0	1
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	32	40	45	37	20	30	33	0	0	0	0	0	237
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	52	57	48	65	38	44	52	0	0	0	0	0	356
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	31	26	33	20	24	11	20	0	0	0	0	0	165
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	57	76	70	87	89	28	56	0	0	0	0	0	463
DISCHARGES	0	0	1	0	0	1	0	0	0	0	0	0	2
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	28	41	44	39	31	23	40	0	0	0	0	0	246
DISCHARGES	1	0	0	0	1	1	0	0	0	0	0	0	3
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	47	45	58	59	46	53	50	0	0	0	0	0	358
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
201 REGULATOR UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	736	845	837	879	714	611	832	0	0	0	0	0	5454
DISCHARGES	1	6	6	1	2	3	1	0	0	0	0	0	20
DISC / 100 INSPECTIONS	0.1	0.7	0.7	0.1	0.3	0.5	0.1						0.4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK												**5 NEWPC UNITS**			
TOTAL	21	35	38	27	29	31	26	0	0	0	0	0	207	5.9	5.2
P01	4	7	8	5	6	6	6						42	6.0	5.1
P02	4	8	7	5	5	6	5						40	5.7	5.3
P03	5	9	8	6	6	7	7						48	6.9	4.4
P04	4	6	10	6	6	6	5						43	6.1	4.9
P05	4	5	5	5	6	6	3						34	4.9	6.3
UPPER DELAWARE LOW LEVEL												**12 NEWPC UNITS**			
TOTAL	38	61	38	66	50	43	59	0	0	0	0	0	355	4.2	7.4
D02	4	5	5	6	7	5	7						39	5.6	5.5
D03	4	5	5	6	6	5	5						36	5.1	5.9
D04	3	5	5	6	6	5	7						37	5.3	5.8
D05	3	5	3	6	7	5	4						33	4.7	6.4
D06	3	6	4	6	5	3	5						32	4.6	6.7
D07	3	5	3	5	4	3	5						28	4.0	7.6
D08	3	6	2	5	3	3	6						28	4.0	7.6
D09	2	5	2	5	2	2	5						23	3.3	9.3
D11	3	5	2	6	3	3	4						26	3.7	8.2
D12	3	5	2	5	3	3	5						26	3.7	8.2
D13	4	5	3	5	2	3	4						26	3.7	8.2
D15	3	4	2	5	2	3	2						21	3.0	10.1
LOWER FRANKFORD CREEK												**6 NEWPC UNITS**			
TOTAL	13	24	27	30	26	19	20	0	0	0	0	0	159	3.8	8.1
F13	2	4	6	5	5	4	4						30	4.3	7.1
F14	3	4	5	5	5	3	4						29	4.1	7.3
F21	2	4	4	5	3	3	3						24	3.4	8.9
F23	2	4	4	5	5	3	3						26	3.7	8.2
F24	2	4	4	5	4	3	3						25	3.6	8.5
F25	2	4	4	5	4	3	3						25	3.6	8.5
LOWER FRANKFORD LOW LEVEL												**10 NEWPC UNITS**			
TOTAL	41	66	27	53	30	31	36	0	0	0	0	0	284	4.1	7.7
F03	5	7	3	6	2	5	5						33	4.7	6.4
F04	5	7	4	6	4	5	4						35	5.0	6.1
F05	5	5	2	6	2	3	3						26	3.7	8.2
F06	5	5	2	6	3	4	3						28	4.0	7.6
F07	4	5	2	5	3	4	3						26	3.7	8.2
F08	4	5	2	5	4	2	4						26	3.7	8.2
F09	4	10	3	5	4	2	4						32	4.6	6.7
F10	4	10	3	5	3	3	5						33	4.7	6.4
F11	3	5	3	4	2	1	2						20	2.9	10.6
F12	2	7	3	5	3	2	3						25	3.6	8.5
FRANKFORD HIGH LEVEL												**14 NEWPC UNITS**			
TOTAL	73	82	68	87	65	50	100	0	0	0	0	0	525	5.4	6.2
T01	3	3	3	5	3	2	3						22	3.1	9.7
T03	5	6	6	6	5	4	8						40	5.7	5.3
T04	7	8	6	8	7	4	10						50	7.1	4.3
T05	5	4	4	6	5	3	8						35	5.0	6.1
T06	6	5	4	6	5	3	8						37	5.3	5.8
T07	7	3	4	6	5	4	6						35	5.0	6.1
T08	7	8	4	6	5	5	9						44	6.3	4.8
T09	5	9	5	7	5	5	10						46	6.6	4.6
T10	7	11	7	8	6	4	11						54	7.7	3.9
T11	7	12	8	7	5	4	10						53	7.6	4.0
T12	4	3	4	6	5	3	6						31	4.4	6.9
T13	4	4	6	6	5	3	6						34	4.9	6.3
T14	3	3	4	5	2	3	3						23	3.3	9.3
T15	3	3	3	5	2	3	2						21	3.0	10.1

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

I/D =INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL												**9 NEWPC UNITS**			
TOTAL	21	31	39	48	23	18	34	0	0	0	0	0	214	3.4	9.1
D17	3	3	7	6	3	2	5						29	4.1	7.3
D18	3	3	4	6	4	2	5						27	3.9	7.9
D19	3	3	6	5	3	2	3						25	3.6	8.5
D20	3	4	6	5	3	3	3						27	3.9	7.9
D21	1	4	3	5	2	2	3						20	2.9	10.6
D22	2	4	3	5	2	2	4						22	3.1	9.7
D23	1	3	4	6	2	2	4						22	3.1	9.7
D24	1	3	3	6	2	1	4						20	2.9	10.6
D25	4	4	3	4	2	2	3						22	3.1	9.7
LOWER DELAWARE LOW LEVEL												**33 SEWPC UNITS**			
TOTAL	172	162	176	121	152	139	163	0	0	0	0	0	1085	4.7	6.7
D37	6	4	5	4	9	6	7						41	5.9	5.2
D38	6	4	5	4	5	6	8						38	5.4	5.6
D39	6	5	4	4	3	4	7						33	4.7	6.4
D40	5	3	5	4	4	5	8						34	4.9	6.3
D41	5	3	3	4	4	3	6						28	4.0	7.6
D42	5	3	2	4	4	4	6						28	4.0	7.6
D43	5	3	2	4	7	4	6						31	4.4	6.9
D44	8	4	6	4	2	5	7						36	5.1	5.9
D45	6	6	8	7	6	5	8						46	6.6	4.6
D46	6	5	5	4	6	5	7						38	5.4	5.6
D47	5	7	8	4	6	3	5						38	5.4	5.6
D48	7	8	9	4	7	4	8						47	6.7	4.5
D49	5	6	7	4	4	3	5						34	4.9	6.3
D50	7	8	9	4	4	3	7						42	6.0	5.1
D51	6	5	8	4	4	4	5						36	5.1	5.9
D52	4	5	5	3	4	3	5						29	4.1	7.3
D53	4	4	4	3	4	4	3						26	3.7	8.2
D54	4	4	4	3	4	4	3						26	3.7	8.2
D58	4	5	6	3	4	4	5						31	4.4	6.9
D61	5	5	4	3	4	5	4						30	4.3	7.1
D62	4	6	4	3	3	5	4						29	4.1	7.3
D63	4	8	8	3	5	6	5						39	5.6	5.5
D64	5	5	6	3	4	5	2						30	4.3	7.1
D65	4	4	7	4	4	3	2						28	4.0	7.6
D66	5	3	7	3	5	3	2						28	4.0	7.6
D67	6	7	4	3	5	5	3						33	4.7	6.4
D68	8	7	7	4	5	4	4						39	5.6	5.5
D69	5	3	4	4	5	4	2						27	3.9	7.9
D70	5	4	4	4	4	4	4						29	4.1	7.3
D71	5	4	4	4	5	4	4						30	4.3	7.1
D72	4	5	3	2	4	5	3						26	3.7	8.2
D73	4	4	4	3	4	4	3						28	3.7	8.2
D75	4	5	5	3	4	3	5						29	4.1	7.3
TOTAL	379	461	413	432	375	331	438	0	0	0	0	0	2829		
I/D/C	6.2	7.6	6.8	7.1	6.2	5.4	7.2	0.0	0.0	0.0	0.0	0.0			

11 TOTAL DISCHARGES FOR NE & SE DISTRICTS

1.6 AVERAGE DISCHARGES PER MONTH

7.1 AVER. DAYS BEFORE RETURNING TO SITE

6.6 AVER. INSPECTIONS PER DAY PER CREW

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL												**9 UNITS**	
TOTAL	0	0	1	0	0	0	0	0	0	0	0	0	1
D17			1										1
D18													0
D19													0
D20													0
D21													0
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL												**33 UNITS**	
TOTAL	0	1	0	0	1	0	1	0	0	0	0	0	3
D37													0
D38													0
D39													0
D40							1						1
D41													0
D42													0
D43					1								1
D44													0
D45													0
D46													0
D47													0
D48													0
D49													0
D50													0
D51													0
D52													0
D53													0
D54													0
D58													0
D61													0
D62													0
D63		1											1
D64													0
D65													0
D66													0
D67													0
D68													0
D69													0
D70													0
D71													0
D72													0
D73													0
D75													0
TOTAL DISC	0	5	3	0	1	1	1	0	0	0	0	0	11

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	0	0
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	0	0	0	0	0	0	0	0	0	0	0	0
LFLL	0	2	0	0	0	0	0	0	0	0	0	0	2
FHL	0	1	2	0	0	1	0	0	0	0	0	0	4
SLL	0	0	1	0	0	0	0	0	0	0	0	0	1
LDLL	0	1	0	0	1	0	1	0	0	0	0	0	3

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SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS															
TOTAL	84	88	100	93	62	71	103	0	0	0	0	0	601	4.8	6.6
S05	6	7	8	5	4	6	5						41	5.9	5.2
S06	6	7	6	5	4	5	5						38	5.4	5.6
S07	7	7	7	6	4	5	13						49	7.0	4.3
S08	7	7	6	5	4	6	6						41	5.9	5.2
S09	6	6	6	5	4	4	5						36	5.1	5.9
S10	4	5	6	5	3	5	4						32	4.6	6.7
S12	5	4	5	5	4	5	7						35	5.0	6.1
S12A	5	5	5	5	4	5	6						35	5.0	6.1
S13	4	5	3	5	5	4	5						31	4.4	6.9
S15	5	5	5	6	5	4	6						36	5.1	5.9
S16	4	5	5	5	3	4	6						32	4.6	6.7
S17	4	5	5	5	2	4	6						31	4.4	6.9
S18	3	4	5	5	2	3	4						26	3.7	8.2
S19	3	3	6	4	1	3	5						25	3.6	8.5
S21	4	4	6	6	4	4	5						33	4.7	6.4
S23	4	3	7	6	3	2	5						30	4.3	7.1
S25	3	3	6	5	3	1	5						26	3.7	8.2
S26	4	3	3	5	3	1	5						24	3.4	8.9
LOWER SCHUYLKILL EAST SIDE — 9 UNITS															
TOTAL	26	11	26	47	29	20	40	0	0	0	0	0	199	3.2	10.5
S31	6	3	6	5	4	3	5						32	4.6	6.7
S35	6	2	5	7	4	2	5						31	4.4	6.9
S36	1	1	1	4	3	2	4						16	2.3	13.3
S36A	5	1	4	5	3	3	5						26	3.7	8.2
S37	0	0	2	5	3	2	7						19	2.7	11.2
S42	1	0	0	6	3	3	4						17	2.4	12.5
S42A	1	0	1	5	3	1	4						15	2.1	14.2
S44	0	2	2	4	3	2	3						16	2.3	13.3
S46	6	2	5	6	3	2	3						27	3.9	7.9
CENTRAL SCHUYLKILL WEST — 9 UNITS															
TOTAL	32	40	45	37	20	30	33	0	0	0	0	0	237	3.8	8.1
S01	6	5	5	5	2	2	4						29	4.1	7.3
S02	6	5	5	4	2	2	4						28	4.0	7.6
S03	6	5	5	4	1	2	4						27	3.9	7.9
S04	4	5	5	4	2	3	4						27	3.9	7.9
S11	2	4	5	4	2	4	4						25	3.6	8.5
S14	2	4	4	4	2	3	4						23	3.3	9.3
S20	2	4	5	4	3	4	3						25	3.6	8.5
S22	2	4	5	4	3	5	3						26	3.7	8.2
S24	2	4	6	4	3	5	3						27	3.9	7.9
SOUTHWEST MAIN GRAVITY — 10 UNITS															
TOTAL	52	57	48	65	38	44	52	0	0	0	0	0	356	5.1	9.4
S27	6	5	4	4	2	3	4						28	4.0	7.6
S28	3	4	3	4	2	3	4						23	3.3	9.3
S30	2	4	3	4	2	3	4						22	3.1	9.7
S34	1	4	3	4	1	2	3						18	2.6	11.8
S39	1	4	2	4	2	2	3						18	2.6	11.8
S40	2	3	1	5	1	1	3						16	2.3	13.3
S43	4	2	2	4	1	1	3						17	2.4	12.5
S47	3	2	2	4	1	1	3						16	2.3	13.3
S50	20	19	20	23	16	19	18						135	19.3	1.6
S51	10	10	8	9	10	9	7						63	9.0	3.4
LOWER SCHUYLKILL WEST SIDE — 4 UNITS															
TOTAL	31	26	33	20	24	11	20	0	0	0	0	0	165	5.9	5.2
S32	6	6	8	5	7	3	5						42	6.0	5.1
S33	8	8	9	5	7	3	5						45	6.4	4.7
S38	6	6	8	5	5	2	5						37	5.3	5.8
S45	8	6	8	5	5	3	5						41	5.9	5.2

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL — 23 UNITS															
TOTAL	57	76	70	87	89	28	56	0	0	0	0	0	463	2.9	10.7
C01	2	4	3	4	4	1	2						20	2.9	10.6
C02	3	4	3	4	4	1	2						21	3.0	10.1
C04	2	3	3	4	5	2	3						22	3.1	9.7
C04A	2	3	3	4	5	2	2						21	3.0	10.1
C05	3	3	2	4	4	1	2						19	2.7	11.2
C06	2	6	2	4	3	1	2						20	2.9	10.6
C07	2	4	2	4	4	1	2						19	2.7	11.2
C09	3	3	4	3	5	2	4						24	3.4	8.9
C10	3	3	4	3	5	3	4						25	3.6	8.5
C11	2	3	3	2	3	1	2						16	2.3	13.3
C12	2	3	3	2	3	1	2						16	2.3	13.3
C13	3	3	2	2	3	1	2						16	2.3	13.3
C14	4	2	4	3	3	1	3						20	2.9	10.6
C15	4	3	4	3	3	1	2						20	2.9	10.6
C16	4	3	4	3	3	1	4						22	3.1	9.7
C17	2	2	3	3	3	1	3						17	2.4	12.5
C31	2	3	3	5	4	1	3						21	3.0	10.1
C32	2	4	3	5	4	1	2						21	3.0	10.1
C33	2	3	3	5	5	1	2						21	3.0	10.1
C34	2	3	3	5	5	1	2						21	3.0	10.1
C35	2	4	3	5	4	1	2						21	3.0	10.1
C36	2	4	3	5	4	1	2						21	3.0	10.1
C37	2	3	3	5	3	1	2						19	2.7	11.2
COBBS CREEK LOW LEVEL — 13 UNITS															
TOTAL	28	41	44	39	31	23	40	0	0	0	0	0	246	2.7	12.1
C18	2	2	5	3	4	1	2						19	2.7	11.2
C19	3	4	5	3	3	3	3						24	3.4	8.9
C20	2	5	5	3	4	3	4						26	3.7	8.2
C21	3	5	4	3	5	4	8						32	4.6	6.7
C22	2	3	2	3	2	1	3						16	2.3	13.3
C23	2	3	2	3	4	2	2						18	2.6	11.8
C24	4	6	3	3	2	1	2						21	3.0	10.1
C25	3	2	3	3	2	1	3						17	2.4	12.5
C26	1	2	3	3	1	1	3						14	2.0	15.2
C27	1	2	3	3	1	1	3						14	2.0	15.2
C28A	3	2	4	3	1	3	2						18	2.6	11.8
C29	1	2	2	3	1	1	2						12	1.7	17.7
C30	1	3	3	3	1	1	3						15	2.1	14.2
TOTAL	310	339	366	388	293	227	344	0	0	0	0	0	2267		
I/D/C	3.4	3.7	4.0	4.3	3.2	2.5	3.8	0.0	0.0	0.0	0.0	0.0			

9 TOTAL DISCHARGES IN SW DISTRICT

1.9 AVERAGE DISCHARGES PER MONTH

8.9 AVER. DAYS BEFORE RETURNING TO SITE

8.5 AVER. INSPECTIONS PER DAY PER CREW

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

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

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

NO OF UNITS IN DISTRICT BLOCKED

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CSE	0	1	1	0	0	0	0	0	0	0	0	0	2
LSE	0	0	0	1	0	0	0	0	0	0	0	0	1
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	0	0	1	0	0	0	0	0	0	0	0	0	1
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	1	0	0	1	0	0	0	0	0	0	2
CCLL	1	0	0	0	1	1	0	0	0	0	0	0	3

JANUARY 2001 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER							6 UNITS						
R1	2	2	4	2	2	2	2						16
R2	2	2	4	2	2	2	2						16
R3	2	2	4	2	2	2	2						16
R4	2	2	3	2	2	2	2						15
R5	2	2	3	2	2	2	2						15
R6	2	2	3	2	2	2	2						15
MAIN RELIEF SEWER							7 UNITS						
R7	2	2	2	2	2	2	2						14
R8	2	2	2	2	2	2	2						14
R9	2	2	2	2	2	2	2						14
R10	2	2	2	2	2	2	2						14
R11	2	2	2	2	2	2	2						14
R11A	2	2	2	2	1	2	2						13
R12	2	2	2	1	2	1	2						12
WAKLING RELIEF SEWER							2 UNITS						
R13	1	1	2	3	1	2	1						11
R14	1	1	2	3	1	2	1						11
ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS						
R15	1	1	1	3	1	2	2						11
OREGON AVE RELIEF SEWER							2 UNITS						
R16	4	3	2	2	2	2	3						18
R17	4	3	2	2	2	3	3						19
FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS						
R18	1	1	2	4	2	2	2						14
32ND ST RELIEF SEWER							1 UNITS						
R19	1	1	2	3	2	2	2						13
MAIN STREET RELIEF SEWER							1 UNITS						
R20	1	1	2	2	2	2	2						12
SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS						
R21	1	1	2	3	1	3	2						13
TEMPORARY REGULATOR CHAMBER							1 UNITS						
R22													0
R23	1	1	2	2	2	2	1						11
ARCH ST RELIEF SEWER							1 UNITS						
R24	3	3	2	2	2	2	3						17
16TH & SNYDER							1 UNITS						
R25	2	2	2	2	2	2	1						13
GRANT & STATE RD. RELIEF							1 UNITS						
R26	-----	-----	-----	3	1	2	1						7
TOTAL	47	45	58	59	46	53	50	0	0	0	0	0	358
AVER	1.7	1.7	2.1	2.2	1.7	2.0	1.9	0.0	0.0	0.0	0.0	0.0	1.9

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER							6 UNITS						
R1													0
R2													0
R3													0
R4													0
R5													0
R6													0
MAIN RELIEF SEWER							7 UNITS						
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
WAKLING RELIEF SEWER							2 UNITS						
R13													0
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS						
R15													0
OREGON AVE RELIEF SEWER							2 UNITS						
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS						
R18													0
32ND ST RELIEF SEWER							1 UNITS						
R19													0
MAIN STREET RELIEF SEWER							1 UNITS						
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS						
R21													0
TEMPORARY REGULATOR CHAMBER							1 UNITS						
R22													0
R23													0
ARCH ST RELIEF SEWER							1 UNITS						
R24													0
16TH & SNYDER							1 UNITS						
R24													0
GRANT & STATE RD. RELIEF							1 UNITS						
R26													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	0	0	

JANUARY 2001 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
	1	1	1	3	2	2	1						11
SOMERSET GRIT LEVEL													
	2	3	3	3	2	1	3						17
(H-20) 70th & Dicks													
	2	2	3	3	1	2	2						15
CCLL CONTROL PIPE @ ISLAND AVE.													
	4	5	6	3	1	4	2						25

JANUARY 2001 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NANDINA ST													
	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4
UPPER DARBY OVERFLOW													
	1	4	6	3	2	4	4						24
Sandy Run Creek Regulator													
	7	12	5	6	4	10	11						55
O & ERIE diversion gate													
	1	1	2	3	2	1	1						11

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL													**9 UNITS**
TOTAL	1	5	4	7	0	1	0	0	0	0	0	0	18
D17			3	2									5
D18		1	1	1									3
D19	1	4		1									6
D20				1									1
D21													0
D22													0
D23				1		1							2
D24				1									1
D25													0
LOWER DELAWARE LOW LEVEL													**32 UNITS**
TOTAL	4	17	25	13	13	3	2	2	0	0	0	0	79
D37				1	1								2
D38			2										2
D39													0
D40			1	1			2						4
D41		1		1									2
D42													0
D43		1		1	3								5
D44		1		2				1					4
D45			3	2	1								6
D46			1		1								2
D47	1		1	1									3
D48	2	2	3		1	1							9
D49													0
D50		3	2										5
D51			2	1									3
D52					1								1
D53													0
D54													0
D58								1					1
D61	1												1
D62		1	1										2
D63		3	1	1									5
D64		1											1
D65		2	2		1	1							6
D66		1	1	1	1	1							5
D67		1		1	1								3
D68													0
D69													0
D70			1										1
D71			2		2								4
D72			1										1
D73			1										1
D75													0
TOTAL	6	45	36	27	17	6	3	8	0	0	0	0	146

20.9 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS													
TOTAL	0	12	5	13	4	0	2	1	0	0	0	0	37
S05		1	1	1									3
S06		1		1			1						3
S07		1			1								2
S08		2		1			1						4
S09				1									1
S10													0
S12					1								1
S12A													0
S13													0
S15		1		1	2								4
S16		1		1									2
S17		1	1	2									4
S18													0
S19		2		1									3
S21		1		4				1					6
S23		1	3										4
S25													0
S26													0
LOWER SCHUYLKILL EAST SIDE — 9 UNITS													
TOTAL	0	0	5	6	1	0	0	0	0	0	0	0	12
S31			1	1									2
S35													0
S36													0
S36A													0
S37			2	1									3
S42				3	1								4
S42A													0
S44			1										1
S46			1	1									2
CENTRAL SCHUYLKILL WEST — 9 UNITS													
TOTAL	0	4	0	2	1	0	0	2	0	0	0	0	9
S01				1									1
S02													0
S03													0
S04		3						1					4
S11					1								1
S14		1											1
S20													0
S22				1									1
S24								1					1
SOUTHWEST MAIN GRAVITY — 10 UNITS													
TOTAL	1	21	24	18	0	0	0	2	0	0	0	0	66
S27													0
S28			1					1					2
S30			1										1
S34				1				1					2
S39			1	1									2
S40		1		1									2
S43													0
S47													0
S50	1	18	18	12									49
S51		2	3	3									8
LOWER SCHUYLKILL WEST SIDE — 4 UNITS													
TOTAL	0	3	6	5	6	0	0	0	0	0	0	0	20
S32					2								2
S33		1	3	1	2								7
S38			1	2	2								5
S45		2	2	2									6

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL — 23 UNITS													
TOTAL	1	2	1	5	1	3	0	1	0	0	0	0	14
C01						1							1
C02	1												1
C04													0
C04A													0
C05				1		1							2
C06													0
C07													0
C09			1	1		1							3
C10													0
C11													0
C12													0
C13													0
C14													0
C15													0
C16					1			1					2
C17													0
C31		1											1
C32													0
C33				1									1
C34		1											1
C35				1									1
C36				1									1
C37													0
COBBS CREEK LOW LEVEL — 13 UNITS													
TOTAL	1	2	1	0	2	1	0	0	0	0	0	0	7
C18													0
C19					1								1
C20													0
C21	1		1		1	1							4
C22													0
C23													0
C24		2											2
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	3	44	42	49	15	4	2	6	0	0	0	0	165

23.6 AVERAGE BLOCKAGES PER MONTH

JANUARY 2001 RELIEF SEWER MONTHLY BLOCKS CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	THOMAS RUN RELIEF SEWER								6 UNITS				
R1													0
R2													0
R3													0
R4													0
R5													0
R6													0
	MAIN RELIEF SEWER								7 UNITS				
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
	WAKLING RELIEF SEWER								2 UNITS				
R13													0
R14													0
	ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS				
R15													0
	OREGON AVE RELIEF SEWER								2 UNITS				
R16													0
R17													0
	FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS				
R18													0
	32ND ST RELIEF SEWER								1 UNITS				
R19													0
	MAIN STREET RELIEF SEWER								1 UNITS				
R20													0
	SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS				
R21													0
	TEMPORARY REGULATOR CHAMBER								1 UNITS				
R22					DISCONTINUED; PROBLEM CORRECTED								0
R23													0
	ARCH ST RELIEF SEWER								1 UNITS				
R24													0
	16TH & SNYDER								1 UNITS				
R25													0
	GRANT & STATE RD. RELIEF								1 UNITS				
R26													0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
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

JANUARY 2001 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	CASMIER ST												
													0
	SOMERSET GRIT LEVEL												
													0
	(H-20) 70th & Dicks												
													0
	CCLL CONTROL PIPE @ ISLAND AVE.												
													0
	(R-25) 16TH & SNYDER												
													0
	NANDINA ST												
													0
	UPPER DARBY OVERFLOW												
													0
	Sandy Run Creek Regulator												
							1						1
	C & ERIE diversion gate												
													0

CSO MAINTENANCE REPORT — Print all — NORTH DISTRICT — FOR: Calander 2000

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	UPPER PENNYPACK				
P01					
P02					
P03					
P04					
P05					
	UPPER DELAWARE LOW LEVEL				
D02					
D03					
D04					
D05					
D06					
D07					
D08					
D09					
D11					
D12					
D13					
D15					
	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	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	SOMERSET LOW LEVEL				
D17		04/18/00			
D18					
D19					
D20	12/19/00				
D21					
D22					
D23					
D24					
D25					
	LOWER DELAWARE LOW LEVEL				
D37					
D38					
D39		04/18/00			
D40					
D41					
D42					
D43					
D44					
D45					
D46					
D47					
D48	06/16/00				
D49	06/12/00				
D50					
D51	09/11/00				
D52					
D53					
D54					
D58	06/01/00				
D61					
D62					
D63	08/23/00				
D64	08/24/00				
D65					
D66					
D67					
D68	04/07/00				
D69					
D70	09/09/00				
D71					
D72					
D73	09/09/00	09/09/00			

CSO MAINTENANCE REPORT — SOUTH DISTRICT — FOR: Calander 2000

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	CENTRAL SCHUYLKILL EAST SIDE				
S05					
S06					
S07					
S08	12/18/00				
S09					
S10					
S12					
S12A					
S13					
S15					
S16					
S17					
S18					
S19		08/19/00			
S20					
S21					
S23	04/07/00				
S25					
S26					
	LOWER SCHUYLKILL EAST SIDE				
S31	09/11/00				
S35					
S36					
S36A					
S37					
S42					
S42A					
S44					
S46	09/12/00				
	CENTRAL SCHUYLKILL WEST				
S01	10/12/00				
S02					
S03					
S04					
S11					
S14					
S20					
S22					
S24					
	SOUTHWEST MAIN GRAVITY				
S27					
S28					
S30					
S34					
S39					
S40					
S43					
S47					
S50					
S51					
	LOWER SCHUYLKILL WEST SIDE				
S32					
S33		05/04/00			
S38	06/12/00				
S45	09/12/00				

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	COBBS CREEK HIGH LEVEL				
C01					
C02					
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	COBBS CREEK LOW LEVEL				
C18					
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C26					
C27					
C28A					
C29					
C30					

Appendix B – Flow Control Pumping Station Maintenance Summaries

FLOW CONTROL UNIT

2000 PUMP STATION YEARLY FLOW REPORT

WASTEWATER PUMP STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	STATION FLOW (MG)
BANK STREET	4.502	3.894					8.396
BELFRY DRIVE	4.066	4.547					8.612
CENTRAL SCHUYLKILL	4,734.481	4,885.863	589.247	806.281	5,045.328	3,899.338	19,960.538
FORD ROAD	44.584	70.115					114.700
FORT MIFFLIN	0.074	0.001	0.002	0.073			0.075
HOG ISLAND	4.488	4.351					8.839
LINDEN AVENUE	37.818	84.200					122.018
LOCKHART STREET	28.692	37.723					66.416
MILNOR STREET	2.448	2.536	2.321				7.305
NEILL DRIVE	236.513	215.135	97.689				549.337
POLICE ACADEMY	3.107	3.001					6.108
RENNARD STREET	5.039	4.676					9.715
SPRING LANE	1.334	1.301					2.635
42ND STREET	1,067.549	651.315	966.142				2,685.006
STORMWATER PUMP STATIONS							
BROAD & BOULEVARD	0.310	19.925	21.014	51.761			93.011
MINGO CREEK	0.000	0.338	305.371	574.936	589.799	621.552	2,091.995
26TH & VARE	0.564	0.490					1.054

OUTLYING PUMPING STATION - CAPACITIES

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

WASTEWATER PUMPING STATION LOCATION	NO. PUMPS IN STATION	RATED CAPACITY PER PUMP GPM	ACTUAL STATION CAPACITY GPM	MAXIMUM INFLOW PERIOD GPM	WPC PLANT FLOW DESTINATION	GENERAL CONDITION
BANK STREET	2	250	496	49	SEWPC	Good, new pumps, controls and electric gear installed in 1994
BELFRY DRIVE	2	150	389	71	SWWPC	Good, built 1978 One pump rebuilt in 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
RENNARD STREET	2	400	329	49	NEWPC	Good, built in 1968 Two pumps rebuilt in 1999
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 1984 One pump rebuilt in 2000 Two pumps rebuilt in 1999

PHILADELPHIA WATER DEPARTMENT

SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

DIVISION: OPERATIONS | BY: GEORGE COLLIER | NO. | RESPONSIBILITY CENTER: COLLECTOR SYSTEM - FLOW CONTROL | NO | FUND: WATER | DATE PREPARED: FOR : JUNE 2000

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.
FISCAL YEAR 2000 ACTUAL														
Main Wastewater Pump Availability (goal is 90% or higher)	Percent	97.2%	96.1%	97.7%	97.9%	96.6%	97.9%	98.5%	99.9%	96.8%	92.5%	97.9%	***95.2%***	97.0%
CSO Dry Weather Discharges (goal is less than 1)	CSO Discharges / 100 Inspections	1.2	0.8	0.9	0.0	0.3	0.1	0.0	0.1	0.6	0.0	0.3	***0.3***	0.4
CCTV Inspections of Sewer Infrastructure (goal - greater than 20,000 ft)	Feet	30,759	19,859	30,431	35,891	36,822	28,532	25,634	31,557	33,010	23,811	24,331	***29,718***	29,196

PHILADELPHIA WATER DEPARTMENT

SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

DIVISION: OPERATIONS | BY: GEORGE COLLIER | NO. | RESPONSIBILITY CENTER: COLLECTOR SYSTEM - FLOW CONTROL | NO | FUND: WATER | DATE PREPARED: FOR : JAN 2001

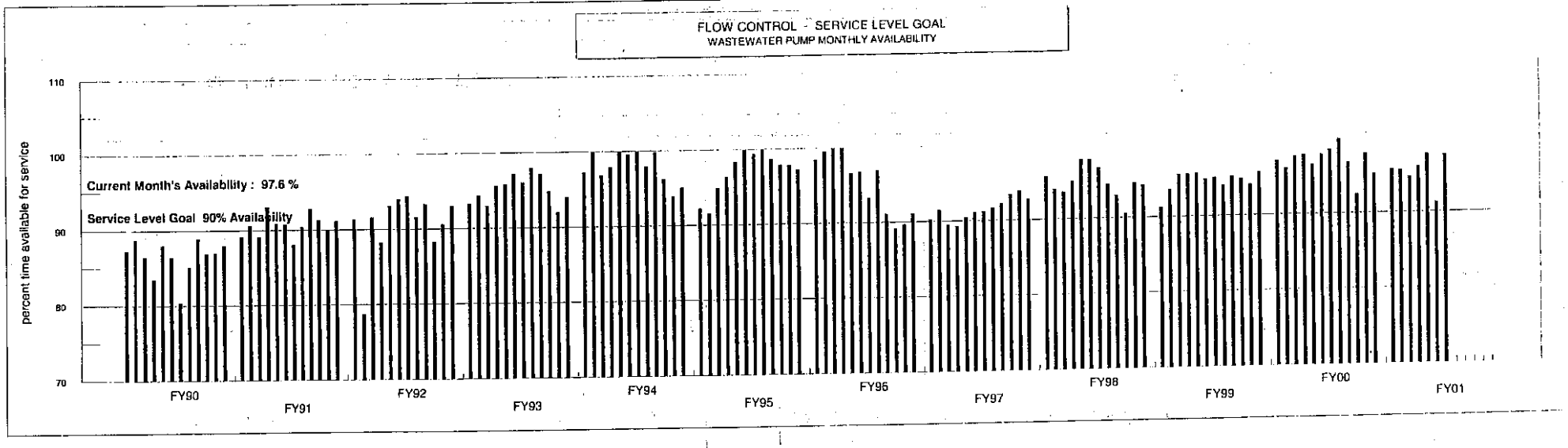
MAJOR SERVICE ACTIVITIES PERFORMED BY THIS DIVISION/RESPONSIBILITY CENTER

NAME/DESCRIPTION OF SERVICE	UNIT OF MEASUREMENT (1)	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL OR MTHLY. AVG.
FISCAL YEAR 2001 ACTUAL														
Main Wastewater Pump Availability (goal is 90% or higher)	Percent	95.7%	95.6%	94.7%	96.1%	97.7%	91.3%	97.6%						95.5%
CSO Dry Weather Discharges (goal is less than 1)	CSO Discharges / 100 Inspections	0.1	0.7	0.7	0.1	0.3	0.5	0.1						0.4
CCTV Inspections of Sewer Infrastructure (goal - greater than 20,000 ft)	Feet	27,415	21,604	26,335	27,928	27,470	28,937	23,692						26,197

FLOW CONTROL - SERVICE LEVEL GOAL - MAIN PUMP AVAILABILITY HISTORY

FOR : JAN 2001

AVAILABILITY FY92		AVAILABILITY FY93		AVAILABILITY FY94		AVAILABILITY FY95		AVAILABILITY FY96		AVAILABILITY FY97		AVAILABILITY FY98		AVAILABILITY FY99		AVAILABILITY FY00		AVAILABILITY FY01	
JUL91	91.4 %	JUL92	93.3 %	JUL93	97.2 %	JUL94	92.2 %	JUL95	98.5 %	JUL96	90.3 %	Jul-97	95.7 %	Jul-98	91.3 %	Jul-99	97.2 %	Jul-2000	95.7 %
AUG91	78.7 %	AUG92	94.3 %	AUG93	100.0 %	AUG94	91.5 %	AUG95	99.6 %	AUG96	91.5 %	Aug-97	94.0 %	Aug-98	93.6 %	Aug-99	96.1 %	Aug-2000	95.6 %
SEP91	91.6 %	SEP92	93.0 %	SEP93	96.8 %	SEP94	94.9 %	SEP95	100.0 %	SEP96	89.5 %	Sep-97	93.6 %	Sep-98	95.6 %	Sep-99	97.7 %	Sep-2000	94.7 %
OCT91	88.2 %	OCT92	95.6 %	OCT93	97.9 %	OCT94	96.4 %	OCT95	100.0 %	OCT96	89.3 %	Oct-97	95.0 %	Oct-98	95.6 %	Oct-99	97.9 %	Oct-2000	96.1 %
NOV91	93.1 %	NOV92	95.8 %	NOV93	100.0 %	NOV94	98.4 %	NOV95	96.6 %	NOV96	90.5 %	Nov-97	97.9 %	Nov-98	95.7 %	Nov-99	96.6 %	Nov-2000	97.7 %
DEC91	94.0 %	DEC92	97.1 %	DEC93	99.6 %	DEC94	100.0 %	DEC95	96.8 %	DEC96	91.1 %	Dec-97	97.9 %	Dec-98	94.9 %	Dec-99	97.9 %	Dec-2000	91.3 %
JAN92	94.3 %	JAN93	96.0 %	JAN94	100.0 %	JAN95	99.4 %	JAN96	93.3 %	JAN97	91.2 %	Jan-98	96.7 %	Jan-99	95.1 %	Jan-2000	98.5 %	Jan-2001	97.6 %
FEB92	91.6 %	FEB93	97.9 %	FEB94	97.9 %	FEB95	99.9 %	FEB96	96.9 %	FEB97	91.7 %	Feb-98	94.5 %	Feb-99	94.0 %	Feb-2000	99.9 %	Feb-2001	%
MAR92	93.3 %	MAR93	97.1 %	MAR94	99.8 %	MAR95	98.7 %	MAR96	91.1 %	MAR97	92.2 %	Mar-98	93.0 %	Mar-99	95.2 %	Mar-2000	96.8 %	Mar-2001	%
APR92	88.2 %	APR93	94.8 %	APR94	95.2 %	APR95	97.9 %	APR96	89.2 %	APR97	93.4 %	Apr-98	90.6 %	Apr-99	94.9 %	Apr-2000	92.5 %	Apr-2001	%
MAY92	90.6 %	MAY93	92.0 %	MAY94	93.9 %	MAY95	97.8 %	MAY96	89.7 %	MAY97	93.9 %	May-98	94.6 %	May-99	94.1 %	May-2000	97.9 %	May-2001	%
JUN92	93.0 %	JUN93	94.0 %	JUN94	95.0 %	JUN95	97.2 %	JUN96	91.1 %	JUN97	92.8 %	Jun-98	94.3 %	Jun-99	95.7 %	Jun-2000	95.2 %	Jun-2001	%
YEAR AVER.	90.7 %	YEAR AVER.	95.1 %	YEAR AVER.	97.9 %	YEAR AVER.	97.0 %	YEAR AVER.	95.2 %	YEAR AVER.	91.5 %	YEAR AVER.	94.8 %	YEAR AVER.	94.6 %	YEAR AVE!	97.0 %	YEAR AVE!	95.5 %
FY92 AVERAGE TO JAN:	90.2 %	FY93 AVERAGE TO JAN:	95.0 %	FY94 AVERAGE TO JAN:	98.8 %	FY95 AVERAGE TO JAN:	96.1 %	FY96 AVERAGE TO JAN:	97.8 %	FY97 AVERAGE TO JAN:	90.5 %	FY98 AVERAGE TO JAN:	95.8 %	FY99 AVERAGE TO JAN:	94.5 %	FY99 AVERAGE TO JAN:	97.4 %	FY99 AVERAGE TO JAN:	95.5 %
MAX	94.3 %	MAX	97.9 %	MAX	100 %	MAX	100 %	MAX	100 %	MAX	93.9 %	MAX	97.9 %	MAX	95.7 %	MAX	99.9 %	MAX	97.7 %
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 %



WASTEWATER PUMPING - OOS & AVAILABILITY

OOS FOR MONTH OF: Dec-2000

OOS PERIOD 01/01/2000 12/31/2000 366 DAYS

TOTAL HOURS	412848
PUMP OOS HOURS	15598
OVERALL AVAILABILITY	96.2%
% OOS FOR BREAKDOWN	10.0%
% OOS FOR PM & OV	86.2%

BD HRS	HRS.	DAYS	DATE OUT	DATE IN	UNIT	STATION	TYPE	REASON	DAYS OUT	HRS OUT
38	38	1.6	12/30/2000	01/24/2001	3	NEILL DR	BD	LEAKING OIL	25	601
165	165	6.9	12/12/2000	12/18/2000	4	CSPS	BD	TRIPS OUT OVERCURRENT	6	141
25	25	1.1	12/12/2000	12/12/2000	2	LINDEN AVE	BD	PUMP KEEPS TRIPPING OUT.	0	1
0	147	6.1	10/30/2000	11/04/2000	1	BELFRY DR	OV	REPLACEMENT	5	123
0	175	7.3	10/24/2000	10/30/2000	1	POLICE ACA	OV	REPLACEMENT	6	151
171	171	7.1	10/17/2000	10/23/2000	3	NEILL DR	BD	NOISY PUMP	6	147
221	221	9.2	10/17/2000	10/25/2000	1	42ND ST	BD	IMPELLOR CAME OFF	8	197
0	216	9.0	10/05/2000	10/13/2000	2	POLICE ACA	OV	REPAIR PROBLEM WITH PUMP TIME	8	192
0	27	1.1	10/05/2000	10/05/2000	1	POLICE ACA	OV	REPLACEMENT	0	3
72	72	3.0	09/26/2000	09/28/2000	2	BELFRY DR	BD	PUMP REFUSED TO START.	2	48
118	118	4.9	09/14/2000	09/18/2000	2	LOCKHART ST	BD	IMPELLOR FELL OFF	4	94
0	372	15.5	09/21/2000	10/05/2000	2	POLICE ACA	OV	REPLACEMENT	15	348
0	49	2.0	08/22/2000	08/23/2000	2	LOCKHART ST	PM	#1 HAS BAD CHECK VALVE & DISCHARGE VALVE.	1	25
144	144	6.0	06/19/2000	06/24/2000	4	CSPS	BD	BAD BEARING	5	120
0	2808	117.0	06/02/2000	09/26/2000	3	NEILL DR	PM	OVERHAUL - MINOR HOLE IN SUCTION PLATE	116	2784
66	66	2.7	06/01/2000	06/02/2000	5	CSPS	BD	ELECTRICAL PROBLEM	2	42
75	75	3.1	05/31/2000	06/02/2000	1	NEILL DR	BD	POSSIBLE BAD IMPELLER / actual bad pressure switch.	2	51
0	102	4.2	05/31/2000	06/03/2000	2	BELFRY DR	PM	COMPLETE REPLACEMENT	3	78
0	31	1.3	04/25/2000	04/25/2000	1	POLICE ACA	OV	COMPLETE CHANGE-OUT	0	7
20	20	0.9	04/20/2000	04/20/2000	2	BELFRY DR	BD	CONTROL PROBLEM	-0	-4
0	456	19.0	04/10/2000	04/28/2000	2	HOG ISLAND	OV	OVERHAUL	18	432
0	173	7.2	04/04/2000	04/10/2000	1	LINDEN AVE	OV	OVERHAUL	6	149
0	24	1.0	04/03/2000	04/03/2000	5	MINGO CK	OV	CORRECTIVE MAINTENANCE (INST)	0	0
0	478	19.9	03/20/2000	04/08/2000	3	MILNOR ST	OV	OVERHAUL	19	454
0	53	2.2	03/20/2000	03/21/2000	2	FORD RD	PM	CHECK VALVE REPLACEMENT.	1	29
0	31	1.3	03/14/2000	03/14/2000	1	FORD RD	OV	CHECK VALVE REPLACEMENT	0	7
0	48	2.0	02/07/2000	02/08/2000	5	CSPS	PM	CLEANING	1	24
169	169	7.0	01/18/2000	01/24/2000	5	CSPS	BD	VFD COMPONENT FAILURE	6	145
340	340	14.2	01/08/2000	01/21/2000	1	CSPS	BD	VFD COMPONENT FAILURE	13	316
0	8784	366.0	01/03/96	10/16/2000	2	BROAD ST	OV	FY96 - OVERHAUL CONVERT TO SUBMERSIBLE, CV PAR	1748	41952

WASTEWATER PUMPING
FY2001 OVERHAUL SCHEDULE

REPORT FOR: 03/09/01

COMPLETED 15
PROGRESSING 0

6.1 AVERAGE DAYS TO OVERHAUL IN FY2001

44.1 AVERAGE DAYS TO OVERHAUL PAST YRS

START	FINISH	MAIN PUMPING UNITS			STATUS	OOS DAYS
10/30/00	11/04/00	BELFRY DRIVE	#	1	COMPLETE	5 DAYS
10/24/00	10/30/00	POLICE ACD.	#	1	COMPLETE	6 DAYS
09/21/00	10/05/00	POLICE ACD.	#	2	COMPLETE	14 DAYS
01/18/01	01/24/01	LINDEN AVE	#	2	COMPLETE	6 DAYS
		42nd ST.	#	2		DAYS
		CSPS	#	3		DAYS
		CSPS	#	4		DAYS
02/28/01	03/03/01	BANK ST.	#	1	COMPLETE	3 DAYS
		BROAD & BLVD	#	1		
10/13/00	10/16/00	BROAD & BLVD	#	2	COMPLETE	3 DAYS
10/17/00	10/23/00	NEILL DR.	#	3	COMPLETE	6 DAYS
10/17/00	10/25/00	42nd ST.	#	1	COMPLETE	8 DAYS

START	FINISH	AUXILIARY EQUIPMENT			STATUS	OOS DAYS
		26th & VARE Vent.				
09/08/00	09/14/00	Lockart Disch. Valve	#	1	COMPLETE	6 DAYS
09/10/00	09/16/00	Lockart Disch. Valve	#	2	COMPLETE	6 DAYS
12/08/00	12/13/00	Bank St. Blower			COMPLETE	5 DAYS
02/01/01	02/09/01	Milner WW Blower			COMPLETE	8 DAYS
09/11/00	09/18/00	CSE Hypo Pump	#	2	COMPLETE	7 DAYS
02/01/01	02/08/01	Fort Mifflin Blower			COMPLETE	7 DAYS
07/16/01	07/18/01	Linden Ave. WW Vent.			COMPLETE	2 DAYS
11/04/00	11/05/00	Belfry New Str. & Id Ctr.			COMPLETE	1 DAYS