

CITY OF PORTLAND
COMBINED SEWER OVERFLOW PROGRAM

ANNUAL CSO PROGRESS REPORT TO DEQ
FISCAL YEAR 2003-2004

As Required by the Amended Stipulated Final Order
(ASFO WQ-NWR-91-75)

CITY OF PORTLAND
BUREAU OF ENVIRONMENTAL SERVICES

JUNE 30, 2004



Annual CSO Progress Report to DEQ for FY 2003-2004

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I. Summary

Portland's Combined Sewer Overflow (CSO) Program has completed the 13th year of implementing the full array of projects that will fulfill Portland's commitment to control all CSO discharges by December 2011. The City has completed all CSO projects for the Columbia Slough system resulting several years of eliminating CSO to the Slough. For the Willamette System River, Portland is fully engaged constructing the 14-foot tunnel and the Swan Island Pump Station as part of the Westside CSO Program. The City has also completed 30% design of the Eastside CSO Tunnel. These efforts are occurring at the same time the City is constructing and designing stream separation projects and local basin improvements, all control CSO across the combined system.

The Annual CSO Progress Report, required under the Amended Stipulated and Final Order (ASFO), presents the activities completed during fiscal year that ends June 30. The highlights and note-worthy accomplishments from fiscal year 2003-2004 include:

- Initiated micro-tunneling for the SW Parallel Interceptor Segment 3.
- Completed slurry wall construction and excavation of all shafts on the West Side CSO tunnel alignment process. Also completed base slab construction and have begun constructing the internal concrete structures for each shaft.
- Completed construction of over 4,000 lineal feet of West Side CSO Tunnel, 14-feet in diameter.
- Completed excavation and began construction of the internal structural walls of the Swan Island Pump Station.
- Began construction to upgrade the Columbia Boulevard Influent Pump Station from 105 to 135 MGD.
- Completed 30% Design for the East Side Willamette River CSO Tunnel.

The City of Portland has completed each of the 20 milestones required in the ASFO that have come due since August 1995 through June 30, 2004. Portland's CSO Program is on schedule and moving aggressively through the next phase of controlling the Willamette River CSO outfalls. This year, due to the massive facility construction program we have undertaken, we will expend approximately \$120 Million in CIP funds constructing the required CSO facilities.

The significant activities we expect to complete next fiscal year ending June 30, 2004 include:

- Complete the West Side CSO Tunnel North drive to the Swan Island Pump Station. Complete the South drive through the Upshur Shaft and the Ankeny Shaft.
- Peninsular Forcemain: Initiate construction to connect the Swan Island Pump Station to the Peninsular Tunnel
- Complete 60% design of the Eastside CSO Tunnel

II. Introduction

Requirement for Annual Progress Report

This annual report to the Oregon Department of Environmental Quality (DEQ) is required under the Amended Stipulation and Final Order (ASFO) No. WQ-NWR-91-75 signed with the City of Portland (City) on August 11, 1994. During the period that the ASFO is in effect, the City is required to submit (each year by September 1st) an annual progress report summarizing the City's efforts to eliminate CSO discharges. The report is to contain information on CSO control activities performed during the past fiscal year and identify the CSO Program work planned for the current fiscal year. This report covers the CSO Program activities performed under the Capital Improvement Program (CIP) as well as the planning, operation and maintenance activities performed by the Bureau of Environmental Services (BES) operating programs for the combined sewer and CSO systems during the recently completed fiscal year.

Portland's Capital Improvement Program (CIP)

The City of Portland's Bureau of Environmental Services manages the planning, and implementation (pre-design, design, construction, & startup) of all capital projects. The CIP is divided into specific functional categories which include: CSO, Maintenance and Reliability, Sewage Treatment Systems, Surface Water Management, and Systems Development. The number of capital improvement projects, listed by program area, is shown in Table 1 below.

Table 1 : Projects in Current Capital Improvement Program

Category	Projects Listed at End of FY 03-04	Projects Open During FY 03-04
Combined Sewer Overflow	293	20
Maintenance and Reliability	414	14
Mid-County Sewer	86	0
Sewage Treatment Systems	356	23
Surface Water Management	137	3
Systems Development	225	15
Total	1,511	75

At the end of fiscal year 2003-04, there were 1,511 individual projects listed in the CIP and 75 projects open during the year. For the CSO Program, there were 293 CSO projects listed in the CIP (see Appendix A for the CSO Capital Improvement Program Implementation Schedule). The 293 CSO projects represent the CSO Management Plan, as it currently exists within the City of Portland in terms of CIP activities. This report focuses primarily on the accomplishments of those projects. It should be noted, however, that there are projects in other CIP categories that

have or will have a positive impact on water quality and the control and/or handling of CSO such as basement flooding control projects and improvements at Columbia Boulevard Wastewater Treatment Plant (CBWTP). These projects are not extensively covered in this report but represent other work BES performs that results in improved control of CSO discharges.

III. CSO Program Background

In 1991, when the Stipulation and Final Order (SFO) was issued by DEQ, approximately 60% of Portland's population was served by the combined sewer system. When a storm event occurred in the City that exceeded 0.10 inches in a few hours, stormwater runoff into the combined system would cause overflows to both the Columbia Slough and the Willamette River through up to 55 individual outfalls. Model simulations showed that the 1990 combined sewer system would discharge approximately 6.0 billion gallons of CSO to the Columbia Slough and Willamette River for an average year. CSO discharges are estimated to contain approximately 20% untreated municipal wastewater and 80% stormwater.

Since 1991, the City has implemented stormwater reduction facilities across the city (these are referred to as the “Cornerstone Projects”), improved interceptor system performance, and completed large CSO conveyance, storage and treatment facilities in the Columbia Slough system. These activities have resulted in CSO discharges being reduced by more than half citywide. In the Columbia Slough, CSO events have been eliminated for storms less than 5-year winter or 10-year summer return frequency. CSO discharge volumes to the Willamette River have been reduced from 4.8 billion gallons per year (1990 estimate) to 2.73 billion gallons per year, based on average annual rainfall. This represents an annual system-wide reduction of 54.5% since 1990.

In 1994, the SFO was amended to allow a more cost-effective approach for obtaining appropriate water quality benefits for the Willamette River. The new agreement, the Amended Stipulated Final Order (ASFO), retained a similar schedule such that the CSO controls would be implemented across a 20-year period from 1991 through 2011. The City has met or exceeded each of the regulatory requirements for CSO control identified in the ASFO. The ASFO contains the following major milestones for controlling the CSO outfalls:

- By December 1, 2000, the City must eliminate all CSO discharges to the Columbia Slough for storms equal to or less than the 5-year winter storm and 10-year summer intensities. [Milestone completed.]
- By December 1, 2001, the City must eliminate CSO discharges at 7 Willamette River outfalls for storms less than or equal to a 3-year summer storm and limit winter overflows to four or less per winter on average. [Milestone completed.]
- By December 1, 2006, the City must eliminate CSO discharges at 16 additional Willamette River CSO outfalls for storms less than or equal to a 3-year summer storm and limit winter overflows four or less per winter on average. [Construction in progress.]

- By December 1, 2011, the City must eliminate CSO discharges at all remaining Willamette River outfalls for storms less than or equal to a 3-year summer storm and limit winter overflows to less than four per winter on average. [Design in progress.]

The ASFO has a number of intermediate milestones, including submission of this annual CSO progress report to DEQ by September 1 of each year that the ASFO is in effect.

IV. Past Fiscal Year Activities

The CSO abatement activities performed during the period beginning July 1, 2003 and ending June 30, 2004 are categorized in five subsections:

- ASFO Milestones Achieved
- Program Planning Accomplished
- CSO Control Projects Planned, Designed, and/or Constructed
- CSO Operation and Maintenance Activities
- Public Involvement Activities

A. ASFO Milestones Achieved

This past fiscal year contained one ASFO milestone for completing Portland's 20-year CSO program. In total, there are 38 milestones beginning with the first CSO Progress Report required in 1995 all the way through the final report in 2012 that will demonstrate the completed system's compliance with the ASFO performance criteria. The FY 03-04 milestone was #20, the Annual CSO Report. This milestone and the relevant ASFO section requiring the task are as follows:

Milestone #20 – Annual CSO Progress Report for FY02-03 as per ASFO Section 12.a (11):
 "By no later than September 1 of each year that this Amended Order is in effect, the City shall submit to the Department and to the Commission for review an annual progress report on efforts to eliminate untreated CSO discharges, subject to the storm return frequencies specified in Paragraph 12.a. of this Amended Order."

B. Accomplishments in Program Planning

The CSO Program continues to develop and execute planning projects for facilities and activities that will cost-effectively control CSO and assure that the Program meets our regulatory obligations. Planning activities performed during Fiscal Year 03-04 include the following:

Portland's Facilities/System Planning

The Bureau of Environmental Services is completing a new effort to develop a Systems Planning Division and Strategy to guide how planning facilities and surface water systems

can be done on an on-going, continual basis. Previously, the bureau has performed this kind of planning on a cyclical basis in response to requirements for a Public Facilities Plan and other documents such as a CSO Facilities Plan. Now, the bureau will allocate staff and resources dedicated to on-going system planning needs for sanitary, combined, stormwater and surface water systems. This new strategy should be completed in the fall of 2004.

Portland's Clean River Planning Efforts

The Clean River Plan addresses multiple regulatory requirements and provides a framework to integrate the activities of Environmental Services including: CSO control, watershed restoration, stormwater management, operations and maintenance, stewardship, coordination, and flood protection.

- **Watershed Planning Efforts:** The BES Planning Group is developing five comprehensive watershed plans that will further refine the Clean River Plan. BES staff and team members are developing Watershed plans for Tryon Creek and Fanno Creek the Willamette River, Johnson Creek and Columbia Slough Watersheds. The plans have completed watershed characterization efforts to document the current conditions of the ecological functions in the watersheds. The planning efforts are now determining the impacts of the built environment on the health of these functions; analyzing problems and opportunities; and recommending solutions to address these issues.
- **City-wide River Renaissance Efforts:** The City of Portland is also working to integrate multiple efforts that impact watershed health under an “umbrella” process called “River Renaissance.” The focus of the River Renaissance is to develop common work plans that address watershed health, urban development, Portland’s economy, water quality, the City’s response to ESA-listings, Willamette Greenway, Portland Harbor Superfund efforts, and the Clean River Plan activities. A 2004 Draft River Renaissance Strategy Report is available at the River Renaissance Website at:
<http://www.river.ci.portland.or.us/mainpages/strategy.htm>.

C. Accomplishments in Predesign, Design and Construction

As noted in Section II, 20 of the 293 projects in the City's CIP directly related to the CSO Program were active during the fiscal year. To be "active" a project must have been in at least one of the following project phases:

- Predesign
- Design
- Advertise/Bid
- Construction
- Startup / Close Out

Appendix A provides a graphical status check for all of the 293 CSO projects. The major active projects are described in narrative summaries below.

Downspout Disconnections FY 03/04

During FY 03-04, the City implemented the Downspout Disconnection Program in the East Willamette Watershed. The Program focused on areas recommended by the 1994 CSO Facilities Plan (where sumps are installed) while also performing disconnections in neighboring combined sewer areas in addition to the original 1994 CSO Plan area.

In the East Willamette watershed, downspouts were disconnected at 1,793 homes. This activity is estimated to remove about 36 million additional gallons of stormwater per year from the combined sewer system. Of these homes, 508 were located in the original Cornerstone Project area defined in the 1994 CSO Plan. The other homes disconnected are in the new Program area outside of the original Cornerstone area. Finally, 569 homeowners (280 from sumped areas) signed up to disconnect downspouts but the work was not completed before the end of the fiscal year. Also, many homes were surveyed and found to have the roof area already disconnected from the combined sewer.

Since the beginning of the Downspout Disconnection Program through June 30, 2004, the Program has disconnected downspouts at over 21,200 homes removing about 424 million gallons of stormwater per year from the combined sewer system. Of these homes, 13,668 were located in the original Cornerstone area while the remaining are in the new Program area. Counting the homes surveyed and those found to have the roof area already disconnected, a total of 43,165 homes have disconnected one or more of their downspouts from the combined sewer system. A map of the downspout disconnections performed during the entire program period as well as during the past fiscal year is provided in Figure 1.

Sustainable Stormwater Program

BES has organized several parallel efforts to implement green solutions and stormwater inflow controls into a single integrated program titled the Sustainable Stormwater Program. This overall program guides the efforts: (1) Pilot / Field Projects; (2) Policy and Technical Assistance; and (3) Education and Outreach related to sustainable stormwater strategies. The efforts completed under this program for its first year are documented in Attachment B – “End of Year Summary for the Sustainable Stormwater Program 2003/04”. Two projects that were previously documented in the Annual CSO Report have been brought into the Sustainable Stormwater Program are the Willamette Stormwater Inflow Controls Project and the Eastside Inflow Controls Predesign Project:

Willamette Stormwater Inflow Controls Implemented in the CSO Area

Through this project, BES previously provided \$350,000 in grants to implement 11 commercial stormwater retrofit projects that substantially reduced runoff from more than 5 acres of roofs and parking lots. The projects were implemented in partnership with the property owners who helped defray the total cost of the projects, which was more than \$650,000. Landscape infiltration systems and infiltration swales were the most common technologies employed. The projects also included soakage trenches, a green roof, and a pervious pavement system.

This past fiscal year, staff completed the Draft Summary Report evaluating the costs and

performance of the 11 grant projects (commercial stormwater retrofits) completed in 2002. In addition, the Bureau completed a new inflow control project at SE 52nd Avenue, and began the predesign of a similar project near Mt. Tabor Middle School.

Eastside Inflow Controls Predesign Project

This project was initiated as a direct result of the Clean River Plan's Action #3: Reduce stormwater inflow to the Combined Sewer System. Explicit hydraulic models were constructed then coupled with an automated modeling tool to identify potential locations where stormwater inflow controls can be used to cost-effectively reduce basement flooding risk and CSO volumes. Stormwater inflow controls examined include downspout disconnection (including multi-family, commercial, and industrial roofs), landscape infiltration, and street runoff controls. Inflow controls for roofs, parking lots, and streets in the potential target areas were further evaluated with GIS, field, and hydraulic modeling analyses.

In January 2004, assumptions for 2040 future impervious area were substantially revised and adopted by BES. These assumptions greatly affected the localized impact of inflow controls and required a re-analysis of all sewer basins. While this effort pushed the completion of the project into the following fiscal year, it was essential to provide a consistent basis for cost comparison and compatibility with other bureau efforts. Basins were re-evaluated for potential and additional fieldwork was completed as necessary. Sites were re-evaluated and existing work was modified as necessary.

Local site maps indicating potential placement of inflow control measures was completed for all target basins, along with preliminary hydraulic performance analysis. Additional follow-up fieldwork was performed as indicated by the hydraulic analysis. Analysis of draft target areas was completed for half the basins.

Tanner Creek Stream Diversion

The Tanner Creek Stream Diversion project continued with construction of the main separation conduit and final design of the remaining segments. This stream separation project is divided into 5 phases.

- Tanner Creek Phase 1 (from 11th & Lovejoy to 17th & Johnson and the Light Rail Segment): ***Completed***
- Tanner Creek Phase 2 (from 17th & Johnson to 18th & Jefferson): ***Completed***
- Tanner Creek Phase 3 (Sylvan/Canyon to Light Rail): Design is underway for both stormwater/stream quantity and quality facilities and is about at the 70% design stage. BES staff is re-evaluating how stormwater runoff from Highway 26 should be treated before being released to the river. The project has been expanded to consider the impacts of developed residential areas that discharge into the Canyon basin.
- Tanner Creek Phase 4 (North side of Washington Park along Burnside): This phase consists of 11,000 feet of new storm sewer pipe, ranging in size from 24"-36" in diameter. Construction started in early July 2002. However, utility conflicts on the narrow Burnside Street corridor forced the cancellation of the construction contract this

spring while some telephone trunk lines are relocated. The one-third of the work that remained was bid in early 2004 and is currently underway.

- Tanner Creek Phase 5 (From CSO Drop Shaft location at Upshur to 11th & Lovejoy): *Completed.*

California Pump Station Upgrade

The sewer separation project in the collection system contributing to the pump station was substantially completed in April 2003, and a flow-monitoring network was established to evaluate the quantity of wet weather flow to the California pump station.

Flow monitoring to determine peak influent flows for design of the California PS Upgrade was completed in May 2004. The results of the monitoring effort are that the pump station needs to be upgraded from 500-gpm to a firm pumping capacity of approximately 1,320-gpm. The current project schedule calls for the following:

- Submit 90% complete plans and specifications for ODEQ Approval to Construct on or about April 22, 2005;
- Complete all final modifications and corrections to the Contract Documents in response to permit review questions and issues on or about July 8, 2005;
- Advertise for Bids on or about August 22, 2005;
- Select a construction contractor, negotiate and complete a construction contract and issue a Notice to Proceed on or about December 20, 2005;
- Complete construction and initiate start-up and testing in September 2006;
- Achieve final Project Completion and start the 2-year warranty period on or about October 25, 2006.

The draft preliminary design report indicates that it is extremely likely that the upgrade project can be implemented within the existing structural shell, and if possible design work will be accelerated to shorten the schedule described above as much as practical.

Carolina Stream Diversion Project

BES expanded the detailed modeling and analysis for Carolina Stream Diversion to determine the specific cost-effectiveness for CSO control. The information was used by the CSO Sizing & Flow Management Project to determine if the costs to separate Carolina were more cost-effective than other locations for separation. Results showed that Carolina separation was not cost-effective, and therefore staff recommended that it be dropped from the list of CSO projects.

West Side Willamette CSO Program Projects

The major set of large scale projects to control most of the outfalls along the west side of the Willamette River are managed and coordinated together within the West Side Willamette CSO Program. The specific projects contained in this program and the work accomplished include:

SW Parallel Interceptor

This critical CSO control facility for the Southwest Portland CSO area will control discharges from Outfalls #01 through #07 and is divided into 3 distinct segments that generally parallel Macadam Boulevard. Segment 1 is aligned along SW Virginia from SW Taylors Ferry to SW Sweeney. Segment 2 stretches from Sweeney to Lowell primarily along the railroad right-of-way. Segment 3 will be installed from Lowell to the SW Clay Street drop shaft where it will connect into the Westside CSO Tunnel. Segment 3 pipeline has a diameter ranging from 72-inch to 84-inch and is approximately 8,000 feet in length.

During previous fiscal years, Segment 1 and Segment 2 were completed. Construction of Segment 3, beginning with utility relocation, was initiated FY02-03 and is scheduled to be completed late 2004. Construction of multiple shafts was completed along the SWPI alignment. The contractor began micro-tunneling for the 84" diameter pipeline between Sheridan Street and Montgomery Street (Manholes Sheridan to 8). Once completed, the Southwest Parallel Interceptor will discharge directly into the Westside CSO Tunnel at the Clay Street Dropshaft and will help control CSO from OF#01 through OF#07.

West Side CSO Tunnel, Shafts, Pump Station and Pipelines

The tunnel will collect and intercept overflows from existing combined sewer and storm outfalls that discharge to the Willamette River from the City of Portland's Central Business District and basins immediately north. The tunnel is approximately 18,000-feet long extending from the area near SW Clay Street, proceeding north paralleling the Willamette River to an area between NW Nicolai Street and NW 26th Street, then crossing underneath the Willamette River to a confluent structure and the Swan Island CSO Pump Station. The tunnel includes the construction of various shafts along the alignment with depths ranging between 100 to 150 feet. Specific shafts include:

- Swan Island Pump station shaft (135 feet diameter approximate)
- Confluent shaft for the West and future East CSO tunnels (45-ft diameter approximate)
- Four drop shafts along the alignment (outside diameter)
 - Clay Street 47-feet diameter
 - Ankeny 39- feet in diameter
 - Upshur 39-feet in diameter
 - Nicolai 60- feet in diameter

CSO Tunnel and Shafts

Slurry wall construction and shaft excavation are completed for all the shafts. The base slab for each shaft is completed and the internal concrete structures have begun on all shafts.

Both Tunnel Boring Machines were launched from the Nicolai Shaft. The South Drive Tunnel Boring Machine has completed 3,050 (1850 as of July 1, 2004) lineal feet of tunnel. The North Drive Tunnel Boring Machine has completed 3,680 (2250 as of July 1, 2004) lineal feet of tunnel and has completed the crossing under the Willamette River.

Swan Island Pump Station

Located on Swan Island, at the downstream end of the tunnel is a 220 Million Gallon per Day (MGD) dry-pit submersible pump station that transfers flow from the tunnel through a new force main system to existing interceptors (Peninsular Tunnel and Portsmouth Tunnel). The pump station will be designed to accommodate low-flow dry-weather conditions as well as peak wet weather flows up to the design capacity. The pump station design includes surge control equipment, and other site improvements.

The excavation of the pump station is complete. Beginning at 80 feet below the ground surface, the structural liner for the pump station was constructed in a top-down manner to the bottom of the shaft.

Tanner Pipeline Extension

Shaft construction (Manholes 14 and 15) along the alignment are complete. Begin and complete installation of micro-tunnel pipelines. Once completed, the Tanner Pipeline will discharge directly into the Westside CSO Tunnel at the Upshur Street Dropshaft and will help control CSO from OF#12 through OF#13.

Peninsular Force Main

The force main system, constructed as part of this contract, is a dual force main consisting of a 30-inch and 48-inch-inch pipelines up to 1,400 feet in length each that will connect the pump station to the existing Peninsular Tunnel interceptor. This force main system will be used for pumping dry weather flow as well wet weather flows up to 100 MGD.

The micro-tunnel jacking shaft located in the UPRR yard has been constructed and excavated. The micro-tunnel receiving shaft adjacent to the Swan Island Pump Station has been constructed.

Portsmouth Force Main

A force main system that will connect the Swan Island Pump Station to an existing collection system tunnel and direct CSO to the CBWTP for treatment. The force main system will carry up to 120 MGD of CSO flow and will be complete in 2011. The preliminary design for this project was initiated this past fiscal year.

Influent Pump Station Capacity Improvements

A construction contract to upgrade the CBWTP Influent Pump Station (IPS) from 105 MGD to 135 MGD was awarded this past fiscal year and construction is underway. The contract also includes the installation of the wet weather hydraulic improvements that were designed under the CBWTP Wet Weather Headworks project No. 5512.

CBWTP Wet Weather Headworks

The substantially complete design for retrofitting the existing screen house building into a 150-MGD capacity wet weather screening facility has been shelved, and will be revived and updated at the appropriate time to upgrade the CBWTP wet weather screening capacity “just in time” to accommodate increased peak influent flows due to the implementation of the East Willamette CSO control system. Current CSO System Operations Plan development work will be used to confirm the decision to delay construction of the Wet Weather Screening Facility. The hydraulic improvement structures and pipelines were incorporated into the IPS Upgrade Project, and are under construction at this time.

Eastside Willamette CSO Program

CSO Sizing & Flow Management Predesign Project

This project is charged with developing the sizing, configuration and operation recommendations for designing the Willamette Eastside CSO Tunnel by determining the best balance of stormwater separation, interceptor relief and flow equalization to meet the various bureau objectives for CSO, stormwater quality, and systems operations. The project must provide design recommendations for the interceptor/basin relief, stream diversion and stormwater separation projects that impact CSO flows.

The project team submitted the recommended size of the Eastside CSO Tunnel diameter to the Predesign Project Team along with recommended inflow reduction projects timed from 2006 through 2040. Examples of these projects include basin stream separation, stormwater separation, and inflow controls. The Flow Management Project also completed a system-wide model calibration memorandum describing the new, highly detailed Explicit Model with its assumptions and calibration results. The project completed the Characterization Report to provide the latest estimated flows throughout the combined sewer system and the information required to size and operate the Eastside CSO Tunnel system.

Eastside CSO Tunnel Predesign Project

Preliminary design of the East Side CSO Tunnel was initiated in February 2003. The purpose of this project is to control the overflows at the remaining 14 outfalls to the Willamette River by 2011.

The tunnel will be approximately 5.7 miles long, 21 to 22 feet in diameter, and 85 to 165 feet deep. The predesign/preliminary design will be complete with 30% preliminary design and construction documents complete by August 31, 2004.

The focus of the preliminary design was to assess the alternatives for locating the tunnel alignment and connections to the 14 outfalls. A weighted criteria was established for the alignment and the tunnel shafts. Criteria data (including utilities, geologic conditions, hydraulic connections, community impact, etc) was collected and analyzed to evaluate the alternative alignments established by the design team. Using this approach, a preferred alignment was selected for the tunnel for final design analysis. The preferred alignment establishes the horizontal and vertical alignment, connections points, shaft locations and configurations, and many of the final preliminary design parameters for the East Side CSO Tunnel.

The East Side CSO Tunnel Predesign will use the final flows and size recommendation from the CSO Sizing & Flow Management Project in developing the 60% design for the tunnel and related facilities as the project moves into final design in September 2004.

Columbia Slough CSO Program

Since the completion of the Columbia Slough CSO facilities, the primary work performed on the facilities consisted of operation, maintenance and monitoring. The large Columbia Slough Consolidation Conduit (CSCC) and the related pumping and conveyance system has performed above the required level in controlling storms equal to and exceeding the 5-year winter storm. There has not been an overflow from the CSCC system since it began operation in October 2000.

Combined Sewer Basin Relief & Reconstruction Projects

Basin relief and reconstruction projects in the combined sewer area are intended primarily to control basement and street flooding and address pipe condition and rehabilitation needs. A secondary purpose is to also provide projects that help reduce CSO flows to the river or to CSO facilities. This is typically done through stormwater management activities and/or inline storage projects that serve to reduce both flooding and CSO impacts. Although these projects are not considered "CSO Program" projects in the CIP, they nonetheless provide on-going reductions in CSO flows and help contribute to a higher level of CSO control.

During this past fiscal year, two major basin systems are under-going predesign for basin relief and reconstruction. The two basin areas, the Beech-Essex & Oak basins and the Northwest Neighborhood (Balch, Nicolai, Fremont and Tanner B) Basins are described below.

Beech-Essex & Oak Basin Relief & Reconstruction Predesign Project

This project performed a detailed basin-wide predesign for the Beech/Essex and Oak combined sewer basins to address significant system deficiencies including basement flooding, pipe capacity problems, and structural condition problems while controlling combined sewer overflows to the Willamette River.

During fiscal year 2003/2004, this project developed and analyzed practical and cost-effective alternatives for addressing the system deficiencies and necessary CSO control improvements. The alternatives analyzed include system separation, inline storage, inflow control technologies, and conveyance solutions (replacing pipes to upsize capacity). These alternatives were developed based on the comprehensive characterization for local and regional flooding problems, basin constraints, structural condition of the sewer, and in coordination with the CSO Sizing and Flow Management Predesign Project (BES Project #7341) for controlling CSOs. Evaluation of these alternatives occurred based on several factors including cost, operations and maintenance, public relations, and constructability. An integrated recommended basin collection system control plan was developed from a balanced combination of the best components of the different technological approaches. The final recommended plan for each basin incorporates both condition-based and hydraulic-based improvements.

This work has been documented in a final Beech/Essex and Oak Basins Predesign Report, which summarizes the work performed and documents the recommended solution with an implementation strategy. This report and its associated predesign drawings were finalized and delivered to the Bureau of Environmental Services on June 30th, 2004 and will serve as a valid foundation for final design.

Northwest Neighborhood Basin Relief & Reconstruction Predesign Project

This project will develop a recommended plan to alleviate current and potential basement flooding problems, identify repair or replacement requirements for structurally defective pipes, and provide a level of CSO control consistent with the Clean River Plan. The project area consists of Balch, Nicolai, Tanner B and Fremont combined sewer Basins.

During FY03-04 the project team completed the following activities:

- Separation and cost analysis for the Flow Management project to determine the cost-effectiveness of separation options.
- Additional flow monitoring located in areas that did not calibrate well last year and required re-calibration.
- Draft Report on the CSO separation analysis for the Flow Management Project's Preferred Option.
- Analyzed options for the Balch basin's 54-inch trunk line requiring rehabilitation and completed draft report documenting options.

D. CSO Operation and Maintenance Activities

During the year the City continued implementation of operation and maintenance practices that reduce the impact of CSOs and stormwater on the receiving streams. These activities capture and remove pollutants, floatables and debris from the stormwater before it is discharged to the receiving streams from the CSO outfalls. The following information provides the magnitude of the **citywide** effort.

- Sewer Cleaning: 190 miles

- Catch Basin / Inlet Cleaning: 11,400 units
- Drainage Sump/Sedimentation Manhole Cleaning: 690 units
- Street Sweeping: 51,700 curb miles

The maintenance activities described above that are performed and recorded specifically in the **CSO area** include the following:

- Sewer Cleaning: 159 miles
- Drainage Sump/Sedimentation Manhole Cleaning: 403 units
- Street Sweeping: 21,100 curb miles

The data to determine the split between the numbers of catch basins cleaned on a citywide basis versus only in the CSO area was not available.

Diversion Structure Inspections and Modifications

The Diversion Structure Inspection Program is designed such that each active diversion structure that can overflow to a receiving water body (approximately 130) is inspected once a week. Diversions that overflow to a downstream facility (approximately 30) and do not pose a risk of direct discharge to the receiving water body are inspected once every two months. Overall, the City performed approximately 7500 diversion inspections last fiscal year.

As a result of Diversion Structure Inspection Program and the flow monitoring system installed on many diversions, the City modified eleven diversion structures during the past fiscal year to improve performance or address maintenance issues specific to the structure. The diversion structures that were modified are summarized in Table 2 below.

Table 2 : Diversion Structures Modified FY 03-04

Basin	Diversion Name	Latest Status	Location	Date of Change	Comments	Old Dam Height (feet)	New Dam Height (feet)
Alder	SE102	Active	2nd & Salmon	September, 2003	Raised dam 0.6 feet	0.46	1.10
Taggart D	SE133	Active	SE Tacoma near Grand	September, 2003	Raised dam 0.5 feet	0.50	1.00
Oak	SE14	Active	3rd Near Ash	September, 2003	Removed old dam, constructed new channel and dam inside chamber, raised dam	1.44	1.80
Sellwood	SE199	Active	SE Grand near Tacoma	October, 2003	Extended and raised dam by 0.7 feet	0.60	1.30
Riverside	EC7	Active	Going Near Denver	November, 2003	Constructed new beaverslide channel, constructed new dam inside of chamber.	1.45	4.00
Sullivan	EC102	Active	Union & Glisan	April, 2004	Removed old dam, constructed new channel and dam inside chamber.	0.33	1.25
Taggart D	SE137	Active	14th & Gideon	May, 2004	Reconstructed as an overflow manhole	2.40	4.00
Taggart D	SE138	Abandoned	13th & Gideon	May, 2004	Removed and sealed	- n/a -	- na -
St Johns B	SJ17	Active	Philadelphia, 110FT E. Decatur	June, 2004	Construct beaverslide, raise dam to crown of outflow pipe in chamber	0.67	3.50
St Johns B	SJ22	Active	Burlington Near Edison	June, 2004	Construct beaverslide, raise dam to crown of outflow pipe in chamber	0.70	3.50
St Johns B	SJ9	Active	Reno 300ft West ff Edison	June, 2004	Construct beaverslide, raise dam to crown of outflow pipe in chamber	0.90	4.00

Dry Weather Overflow & CSO Events and Alarms

During this past fiscal year, the Portland combined system experienced four dry weather overflow events. All incidents were reported to DEQ as required in the NPDES permit. Table 3 below lists the different events that occurred and includes the cause, resolution of the problem, and additional follow-up activities performed to better understand and prevent additional overflows.

Table 3 : Dry Weather Overflow Incidents and Follow-Up Activities

Date	Basin	Outfall	Diversion Number	Street Location	Cause	Resolution	Follow-Up Actions
8/24/03	Taggart D	30	SE138	13 th & Gideon	Flood Control Plate blocking orifice	Re-attached plate to wall	Diversion reconstructed, sealed off and abandoned.
9/20/03	Woods	6	SW21	Woods And Moody Drive	Brick, Sand & Gravel Debris Blockage	Cleared Debris	Installed grate screens upstream to catch debris.
1/21/04	Tanner B	11	WC34	NW 12th & Johnson	Debris Plug	Cleared Debris	Inspected upstream for cause. None found, no food service providers.
4/4/2004	St Johns B	52	SE199	Grand Near Tacoma	Yard Debris Blockage	Cleared Debris	Diversion reconstructed, dam raised to ensure ASFO compliance for 2006.

E. Public Involvement, Education and Information Activities

As the focus of the CSO construction program shifts from the west side of the Willamette River, CSO public involvement activities have changed to meet the needs of individual East Side CSO projects. The goals listed below are met through the public information and involvement activities:

- Goal 1:** Inform and involve residents and businesses in West Side CSO construction areas and the broader public about key issues such as noise issues, construction schedules and traffic plans.
- Goal 2:** Develop and maintain good working relationships between the public and project team members.
- Goal 3:** Meet construction timelines and minimize community impacts.
- Goal 4:** Respond to individual citizen or business concerns within 24 hours.
- Goal 5:** Help complete projects on time and within budget.

Public involvement plans have been or are being implemented for each West Side CSO project. Outreach activities for the West Side Willamette River CSO Projects continued during the past fiscal year. The projects included the West Side CSO Tunnel (West Side Big Pipe), the Swan Island Pump Station, tunnel access shaft construction for four west side locations and one eastside location, Peninsular Force Main, Southwest Parallel Interceptor and the Tanner Creek Stream Diversion.

East Side CSO Project outreach planning involves a plan for the East Side Big Pipe (tunnel route) and shafts, pipelines, and Portsmouth Force Main.

Outreach activities for the West Side Big Pipe Project continued into the construction phase. Outreach activities for the East Side Big Pipe Project is in full speed to provide for the latest project information and to gather information such as about business operations of each of the businesses along the tunnel and pipeline routes. Outreach provides businesses, residents and neighborhood groups with project information and opportunities to give input on project decisions, including construction mitigation measures and traffic plans. These activities are tailored to the needs of and impact to area communities and have included:

- **Databases** - Developed 12 area-specific databases containing over 1,715 residents and business to provide electronic and mailed updates on West Side Big Pipe Construction.. This information helps the bureau keep business and residential property owners, neighborhood, business and tenants associations and other stakeholder organizations within the project area informed about the project. A major database is being developed for the East Side Big Pipe projects. An interested parties mailing list of 1,500 has also been developed for the east side project.
- **Publications** –Mailed quarterly updates on the West Side Big Pipe Project to 42,000 households, businesses, property managers, government officials and interested persons. Mailed quarterly updates on the Southwest Parallel Interceptor #3 to 800 households, businesses, property owners, managers, government officials and interested persons. Mailed notification of beginning of construction on the Greeley Shaft for the Peninsular Force Main to 875 businesses and residents.
- **E-Mail Notification** - Sent two to three e-mail notifications per month to 200 property owners/managers, residents, businesses and interested persons regarding traffic re-routing, land closures, noise or interesting features of the project that were visible from the street.
- **The East Side Big Pipe Project** -Mailed one newsletter this reporting period to 12,000 addresses and another to 24,000. The East Side also mailed invitations for two Open Houses as well as another informational mailer to an interested parties list of 1,500. A targeted mailing was sent to 200 business and property owners within a selected area within the Central Eastside Industrial District.
- **Event Coordination** - The West Side Big Pipe runs parallel to Waterfront Park and the Ankeny Shaft is in the park extending under and south of the Burnside Bridge. The park is the site of many summer events that could be affected by the project construction. Staff maintains a calendar of events, contacts the event organizers and provides them with information about the project including safety tips for participants. Staff also provides event information to the field engineers and project inspectors.
- **Project Presentations/Tours** - The West Side CSO Project provided 60 presentations with 1,516 participants. They were provided with a PowerPoint presentation and view of the Nicolai Shaft construction site.
- **Citizen Advisory Committees** - BES continues to meet regularly with the Businesses for Clean Rivers Advisory Committee. This committee provides direct feedback and advice during our design and construction phase of the tunnel and shafts projects. This committee is slowly converting from the West Side to the East Side CSO projects interest.
- **Stakeholder Interviews** – 40 stakeholder interviews were conducted for the East Side CSO Tunnel Project. The interviews provided an opportunity for stakeholders to find out about

the project and offer input into methods for public involvement and outreach design, identify issues to address and others to involve, and to inform the project team how to be inform their constituents as the project progresses.

- **Community Presentations** – The West Side staff provided eight presentations for 150 meeting participants representing neighborhood, business and tenant associations as well as to other key stakeholder groups within the project area to provide an overview of the CSO program, the ongoing West Side construction and pre-design of the East Side project.
- **Public Meetings** – For the West Side Projects we held X meetings during project construction phases to provide more detailed information on construction and solicit concerns and ideas regarding the project. The East Side Project hosted two open houses to provide an opportunity to answer any questions and provide pre-design information to the general public. Very few people chose to attend this early meeting. Presentations continued to be offered to organized groups where six were given this reporting period.
- **Site Visits** – The West Side staff conducted 990 site visits with businesses and residents along construction routes and within the project area to provide timely information or to resolve construction issues. The East Side staff have made about 120 site visits over this reporting period. During the pre-design phase staff is collecting data that can inform the design such as business operation hours and size and route of truck deliveries and pick ups. These site visits have been an invaluable tool to begin to develop the long-term relationships that will be needed for this project.
- **Community Benefit Opportunities** – The bureau awarded funding for eight projects in areas impacted by the construction of the West Side CSO projects. Projects range from street calming to tree planting.

In addition to involving impacted communities in CSO project decisions, the Bureau is committed to educating the public about environmental issues.

- **Educational Presentations** focusing on water quality issues were provided to Portland schools and community groups. Environmental Educators made over 700 presentations. A special Combined Sewer Overflow presentation is available for students in grades 6 to 12. Students learn the history of the CSO problem, talk about solutions, and how they can help. The new CSO timeline activity was integrated into classroom and special event programs to teach about our city's history through an interactive, game-like technique. A SCO project map was also constructed to include updates and solutions in a simple format. More than 15,300 students were contacted with information about river pollution problems during the fiscal year. An additional 8,800 students received the all school assembly program entitled "River Heroes." This program contained an original story about the history of the CSO project in Portland
- **CSO video:** The CSO video has been updated and is being distributed. The BES Educators and staff are utilizing the video, "A River Renewed" for classrooms and various presentations to groups throughout Portland.
- **CSO documentary:** A 20-minute documentary is being developed about the Westside CSO project. The film will be completed in 2006.

- **Educational Tours** of the Willamette River were provided to youth and adult groups who have received presentations and learned about the City's CSO program. Typically any youth group that wants to do a jet boat tour is required to first receive the "It's an Overflow" program as a prerequisite. More than 700 students participated in boat trips.
- **OMSI display** – OMSI exhibit staff developed a CSO exhibit that is housed in the museum's Earth Science Hall (just outside the Watershed Lab). The exhibit highlights the CSO program components. The display will be opened in November 2003.

Public Notification/River Alert Program - Includes CSO identification signs that indicate where outfall pipes are located. It also includes 14 folding signs with the message "WARNING: SEWAGE" and the River Alert Hotline number, 503-823-2479. The public can call the hotline at any time to hear a message about the CSO program and to learn if a CSO advisory is in effect. The folding signs are opened and closed every time there is an overflow from May 15 to October 15 each year. During the winter months, the signs remain open with the message in view for boaters and other river users. The River Alert program notifies the media by fax and email every time there is an overflow from May 15 to October 15. The Oregonian newspaper publishes an overflow icon on the top of the weather page when overflows occur. In addition, people with Internet access can visit the Environmental Services home page at www.portlandonline.com/bes to learn if a CSO advisory is in effect.

- **Clean River Projects Construction Signage** requires contractors to post signage at any sewer system-related construction site with the Clean Rivers message to inform the public that the construction is a sewer project designed to keep our rivers and streams clean. In addition, BES posted very large banner signs at several of their shaft locations.
- **CSO Interpretive Signage** was developed with six being posted in the Waterfront Park and at construction locations.
- **Media Relations** draw the media's attention to CSO projects. Media advisories, news releases, traffic advisories and media events are used to alert the media about CSO projects. Individual briefings are also held with reporters. The City provides timely, accurate responses to all media requests and keeps files of all newsprint and broadcast media coverage. This past year, 34 media notifications regarding combined sewer overflow projects were released. Six were related to actual combined sewer overflows during the summer notification period.
- **Three CSO media events** were held in the last year.
 - August 26, 2003 – Environmental Services and West Side CSO Project contractor Impregilo-Healy held a traditional christening ceremony for the tunnel boring machines used to bore the West Side CSO Tunnel.
 - November 6, 2003 – News conference to announce the opening of a new exhibit at the Oregon Museum of Science and Industry (OMSI) about the West Side CSO tunneling project, followed by an evening "sewer soiree" to dedicate the exhibit.

- June 25, 2004 – Environmental Services developed a new educational video about the CSO abatement program. Former CBS Evening News Anchor Walter Cronkite donated his time to narrate the video. Environmental Services rented a neighborhood movie theater for the public premier of the video, “A River Renewed.”

In addition to these three media events, Environmental Services also made public presentations to the Portland City Council on July 30, 2003 and February 18, 2004 to update the Council on the CSO abatement program. The briefings were covered by Portland media and were broadcast on the community and government access channel of Portland Cable Access.

- **Bill Inserts** with updated information about upcoming West Side CSO construction were enclosed in water/sewer bills from June 2003 through August 2003 to provide residential customers with updated construction information. The inserts were delivered to 165,000 customers in the summer of 2002.
- **The Internet** provides current information about the City’s CSO programs to the general public. Environmental Services has a website dedicated entirely to CSO construction projects, schedules, and impacts at www.cleanriverworks.com (www.portlandonline.com/cso) in addition to main BES website at www.cleanrivers-pdx.org (www.portlandonline.com/bes). The CSO Program site receives an average of 13, 200 page views and 2,400 visits to the site per month.

V. Planned Efforts for Current Fiscal Year

Fiscal Year 2003-2004 activities to reduce CSO continue the implementation of the 20-year program to plan, design, construct, and operate Portland's CSO control system. The activities this fiscal year can be briefly summarized as follows:

- Continue large scale construction of the West Side Willamette CSO Tunnel and Swan Island Pump Station
- Continue design of the East Side Willamette CSO Tunnel System
- Continue operating, maintaining and monitoring the Columbia Slough CSO System to assure compliance with the ASFO and the NPDES Permit
- Continue implementation of stormwater inflow reduction projects in the form of the Downspout Disconnection Program

The current work is divided into the same five subsections used for the previous year's efforts.

A. ASFO Milestones to be Achieved

This fiscal year contains one ASFO milestone – submitting the Annual CSO Progress Report:

- ASFO Section 12.a (11): “By no later than September 1 of each year that this Amended Order is in effect, the City shall submit to the Department and to the Commission for review an annual progress report on efforts to eliminate untreated CSO discharges, subject to the storm return frequencies specified in Paragraph 12.a. of this Amended Order.”

B. Program Planning to be Accomplished

CSO Program level planning will continue during the current fiscal year. The activities that will support the CSO Program include:

- Portland's Clean River Planning Efforts: The CSO Program staff will be working with the BES Planning Group to further integrate the stormwater elements of the watershed plans into the CSO Program and System Facilities Planning efforts as directed by the Clean River Plan.
- The BES Planning Group will continue the top priority planning efforts to further refine the Clean River Plan. These efforts consist of the Willamette River Watershed Plan, Tryon-Fanno Watershed Plan, and the BES Monitoring Plan.
- The City of Portland will also continue the new efforts to integrate key city functions that impact watershed health under the River Renaissance. BES is one of three bureaus serving as the executive committee for the River Renaissance Management Team.

C. CSO Projects to be Predesigned, Designed and/or Constructed

The CSO control projects that will be in the predesign, design and/or construction phases during the current fiscal year include:

- During FY 03-04, the **Downspout Disconnection Program** will continue to disconnect downspouts at homes in the East Willamette Watershed served by the combined sewer. In addition, staff will implement a survey of thousands of homes in the Columbia Slough Watershed served by the combined sewer. The purpose of the survey is to check the status of downspout disconnection work completed at homes between 1996 and 2000 as well as to collect additional information on roof area removed from the combined sewer.
- **Tanner Creek Stream Diversion:** Complete construction of Phase 4 (Nicolai basin / Burnside) and continue design on Phase 3 (Sylvan /Canyon) segments of the Tanner Creek Stream Diversion Project.
- The **Eastside Inflow Controls Predesign Project:** Final hydraulic performance analysis, cost effectiveness assessment, and final target maps will be completed and integrated in to the draft Predesign Report. This document will include the analysis procedure and highlight the most cost effective areas for the implementation of inflow controls, including a recommendation for implementation phasing. Primary results include the amount of basement flooding relief, total CSO volume reduction, and overall cost savings over traditional pipe upsize projects. Results will be summarized for local areas and individual sewer basins. The report will undergo review by various Bureau and City staff and is scheduled to be final in October 2004.
- **Willamette Stormwater Inflow Control Projects in the CSO Area:** Staff will finalize the performance summary report concerning the 11 stormwater retrofit projects completed in 2002. The landscape infiltration basin at SE 52nd Avenue will be tested to confirm retention of the ASFO storm. The inflow control project near Mt. Tabor Middle School will move into the design phase and part of the project will be completed. Staff

will also begin predesign activities for one additional inflow control project recommended by the Holladay, Stark, and Sullivan Basins Predesign.

- **Southwest Parallel Interceptor:** Continue construction of the third and final component - Segment 3. Continue shaft construction along the alignment and begin micro-tunneling of the pipeline for Segment 3. Once completed, the Southwest Parallel Interceptor will discharge directly into the Westside CSO Tunnel at the Clay Street Dropshaft and will help control CSO from OF#01 through OF#07.
- **West Side Willamette CSO Program:** Tunnel construction will continue on both the North and South Drives. The City expects to complete the North drive to the Swan Island Pump Station in the fall of 2004. The South drive is expected to reach the Ankeny Shaft by June 2005. Shaft buildout will occur at the Upshur Shaft once the TBM exits the shaft.
 - **Swan Island Pump Station:** The base slab for the station will be constructed within the next fiscal year. The internal structural, mechanical, and electrical buildout of the station will begin. Construction on the Operations and Maintenance Building in support of the pump station will begin construction towards the end of next fiscal year.
 - **Peninsular Forcemain:** Begin installation and excavation of the second receiving micro-tunnel shaft located near N. Going Street and Greeley Avenue. Begin micro-tunneling of 108” diameter casing to carry 30” and 48” diameter force mains.
 - **SW Parallel Interceptor:** Complete installation of micro-tunnel pipelines. Begin installation of ancillary pipelines.
- Design of the **East Side Willamette CSO System** will be continued this fiscal year through two parallel activities.
 - **CSO Sizing and Flow Management Predesign Project:** Develop, review and finalize the Systems Operations Plan and the Final Predesign Report for 2006, 2011 and 2040 configurations. Project closeout is expected by end of 2004 calendar year.
 - **East Side CSO Tunnel Design Project:** Final design will begin in September 2004. 60% design is expected to be complete in January 2005. At that time, the project will add the selected contractor to the design team to help complete the project design. The contractor will provide pre-construction services through final design which is expected to be complete in January 2006. During final design, the following work shall occur: Final sizing of the tunnel, shaft size and configuration, design of the tunnel lining, detailed design of the pipe connections from the existing sewer system to the tunnel, verification of the long-term system performance, acquisition of properties and easements to be acquired, continued development of construction drawings, and evaluation of means and methods of the project construction. Construction is expected to begin in early 2006.
- **Portsmouth Force Main Predesign Project:** This new force main system will connect the Swan Island Pump Station to the existing Portsmouth Tunnel to direct up to 120 of CSO to CBWTP for treatment by December 2011. Preliminary design work will begin

this new fiscal year and will focus on selecting an alignment for the force main pipe system.

- **Basin Relief & Reconstruction in the CSO Area:**
 - **Beech-Essex & Oak Basin Predesign:** In coordination with the CSO Sizing and Flow Management Predesign Project (#7341), the Beech/Essex and Oak Basins Predesign Report (June 2004) recommends that separation of outfall 44A be achieved to control existing combined sewer outfall 44A and cost-effectively reduce the amount of stormwater flow reaching the combined sewer system. Separation of this existing combined sewer outfall will be coordinated with the East Side CSO Tunnel Project, whose purpose is to control the remaining 14 existing combined sewer outfalls from the east side of the Willamette River by December 1, 2011 to comply with the City's ASFO agreement. .
 - **Northwest Neighborhoods:** Finalize Draft CSO separation analysis report and Draft Balch Basin report. Receive direction from the Technical Review committee on direction of the project based on outcome from the Flow Management project and Balch basin sewer trunk issues. Refine separation alternatives for CSO to eliminate basement flooding and replace structurally deficient pipes. Evaluate other potential options such as local pipe solutions and inflow controls. Analyze water quality treatment options for separated storm water. Identify right-of-way requirements. Predesign to be completed December 2005.

D. CSO Operation and Maintenance Activities Planned

During the current fiscal year the City will continue the implementation of operation and maintenance practices that reduce the impact of CSOs on receiving streams. This Citywide effort is expected to complete the following estimated project work:

- Sewer Cleaning: 200 miles
- Catch Basin/inlet Cleaning: 12,000 catch basin/inlets
- Drainage Sump Cleaning: 800 sumps/sedimentation manholes
- Street Sweeping: 60,100 curb miles
- Diversion Structure Inspections: Perform weekly inspections on all active diversion structures that directly overflow to the receiving stream; perform routine inspections on all other active diversions on a bi-monthly (once per two months) basis or as needed for maintenance and proper performance

E. Public Involvement Activities Planned

BES will continue to educate and identify opportunities for Portland residents, businesses and neighborhood groups to participate in CSO and watersheds enhancement projects. The City will expand efforts to increase citizen participation in project decisions, raise awareness about watershed issues and encourage citizens to become stewards for the Portland watershed. The

Bureau will work closely with Neighborhood Coalition Offices and Associations to raise awareness about the CSO program, gain active public input on project decisions, and involve more citizens, businesses and neighborhood groups in watershed protection and restoration efforts. This year's activities include:

- Work with citizen committees and work groups to address issues regarding CSO project designs and construction plans. This will include continued community involvement and outreach for the East Side CSO Tunnel design now underway.
- Continue support of the Businesses for Clean Rivers Advisory Committee.
- Continue to conduct site visits to areas within the East Side CSO Tunnel alignment.
- Continue to give presentations to organized community groups and trade groups.
- Provide opportunities to provide face-to-face discussions such as open house activities.
- Develop informational materials that explain CSO projects, time lines, construction mitigation plans and opportunities to enhance impacted communities.
- Provide public involvement support for Willamette Stormwater Inflow Control Projects to encourage and assist commercial and industrial property owners in the combined area to remove stormwater from the combined system by creating on-site stormwater infiltration facilities. These facilities use more natural systems like swales, wetlands and native vegetation to detain and treat stormwater.
- Complete the Community Benefits Opportunity Program projects for the West Side CSO projects. Begin a process for a Community Benefit Opportunity Program for the East Side CSO Tunnel Project.
- Provide educational CSO classroom presentations and assembly program; develop a new CSO classroom activity that focuses on the history of sewers and implementation of the CSO solutions in Portland.
- Provide information to the public about the CSO program through special displays and computer kiosks in high traffic areas such as OMSI and businesses affected by construction.
- Provide guided tours of project sites and jet boat tours.
- Continue CSO River Alert signage and notification program.
- Distribute Citywide newsletters and quarterly bill inserts that inform citizens about the CSO program, watershed restoration activities and how citizens help protect Portland watersheds.
- Develop a speakers bureau / watershed workshop to highlight City of Portland water quality issues and projects such as the CSO Program to improve the Willamette River.

VI. Conclusions

This past fiscal year, the City continued its aggressive construction effort to complete the large-scale facilities for the West Side CSO Program. The City has nearly finished the West Side CSO Tunnel's northern drive to the Swan Island Pump Station and is moving quickly on the southern drive to the Upshur shaft. At both extreme ends of the tunnel alignment, construction has begun in the fullest sense at the Swan Island Pump Station and on the last and largest segment of the SW Parallel Interceptor. These activities are in addition to the predesign and design efforts for the East Side CSO Tunnel, as well as the smaller system improvement projects completed to bring the system to a higher overall level of CSO control. Due to these efforts, the capital expenditures for the CSO Program was about \$120 million this past fiscal year, and is expected to be similar over the next few years. These costs are in addition to the approximate \$350 million in capital costs already expended over the past years for the Cornerstone Projects and the Columbia Slough CSO system.

APPENDIX A

CITY OF PORTLAND - BES

CSO Capital Improvement Program Implementation Schedule

(Appendix A contains 33 pages including this title page)

APPENDIX B

CITY OF PORTLAND - BES

SUSTAINABLE STORMWATER PROGRAM

2003/04 End of Year Summary