

CITY OF TACOMA • SURFACE WATER MANAGEMENT

# Annual Report Summary

2008

September 2009 • Public Works Environmental Services

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# Introduction

## Tacoma's Surface Water 2008 Annual Report Summary

We are pleased to present an update of Tacoma's Stormwater Management Program activities conducted by Environmental Services during 2008. The work we do in stormwater and surface water management supports one of the top priorities of the City of Tacoma's Strategic Plan: *to provide a safe, clean and attractive community*. It also fulfills the City's obligations under our municipal stormwater discharge permit with the Washington State Department of Ecology (formally known as the National Pollutant Discharge Elimination System, or NPDES, Stormwater Permit for Phase I Municipalities). Under this permit, we are working together with other Phase I communities in the Puget Sound area including the City of

Seattle, Pierce County, King County, Snohomish County and Clark County to protect the water quality of our local receiving waters including lakes, streams and Puget Sound.

The City of Tacoma is a leader in responding to the impacts of urban runoff on surface water quality. Tacoma's model source control and monitoring programs in the Thea Foss Watershed were initiated in 2001 under a Consent Decree with EPA for the cleanup of the Thea Foss Waterway Superfund site. Since then, the Department of Ecology has required other municipalities to develop similar programs under the NPDES Municipal Stormwater Permit. Tacoma also continues to be a leader in the stormwater research field with

our current investigations of the source control and treatment of wide spread stormwater pollutants like phthalates.

In recognition of the importance of protecting and enhancing the water quality in Commencement Bay and Puget Sound, Environmental Services is constructing the Center for Urban Waters, located on the Thea Foss Waterway, as a center for marine research and collaboration that will house City Environmental Services staff, a University of Washington marine research center and offices of the Puget Sound Partnership. Construction of this LEED Platinum certified building is anticipated to be complete in 2010.



Conceptual drawing of the Center for Urban Waters.



China Lake

## Surface Water Management Mission and Priorities

Environmental Services Surface Water and Wastewater utilities share a common mission and vision of providing our customers high-quality and cost-effective surface water and wastewater management in order to ensure that the receiving waters of Commencement Bay and adjacent aquatic environments are healthy and vibrant through a balance of community development and ecosystem protection. Four strategic goals are the focus to achieve this mission and vision:

- The protection of human health and the environment throughout our service area
- The efficient and effective management of Tacoma's wastewater and surface water and the protection of the public's investment in its infrastructure assets
- A well-informed, well-supported and satisfied workforce
- Customers satisfied with and supportive of our services

The City's surface water management priorities were established in 1999 under the first NPDES Municipal Stormwater Permit and remain essential elements of the Stormwater Management Program today. The City's priorities include the following:

- **Manage stormwater to minimize flooding and erosion.** In 2008, the City upsized more than 1,800 feet of aging storm pipe in Stadium Way to reduce local flooding. *Read more under Capital Improvement Program.*
- **Manage stormwater to minimize contact with contaminants.** In 2008, our Environmental Compliance inspectors expanded a program of door-to-door business inspections of potential pollutant generating businesses to evaluate their operations and suggest appropriate best management practices. *Read more under Pollutant Source Control and Eliminating Illicit Connections.*
- **Mitigate the impacts of increased runoff due to urbanization.** Plan review staff evaluate both large and small development projects to ensure they will be built in a way that protects our surface waters. More than 700 commercial building plans, private work order plans and land use actions for new development and redevelopment projects were reviewed in 2008. *Read more under New Development and Redevelopment Permitting and Inspection.*
- **Manage runoff from developed properties and those being developed.** In 2008, the Environmental Compliance inspectors responded to 782 spills and complaints to prevent pollution from reaching our waterways. *Read more under Pollutant Source Control and Eliminating Illicit Connections.*
- **Protect the health, safety and welfare of the public.** Environmental Services Emergency Operations Center springs into action during flooding events to clear storm sewers, identify problem areas and respond to flooding claims. *Read more under Storm Sewer Operation and Maintenance.*
- **Correct or mitigate existing water quality problems.** The Illicit Discharge Detection and Elimination (IDDE) program field crews are identifying and eliminating sanitary and storm sewer cross-connections by smoke testing and dye testing every sewer connection throughout the City. Approximately one quarter of the City of Tacoma's storm sewer system was tested in 2008. *Read more under Pollutant Source Control and Eliminating Illicit Connections.*
- **Restore and maintain the chemical, physical and biological integrity of the receiving waters in the City to protect beneficial uses.** Since the City completed the Thea Foss Waterway cleanup project in 2006, Environmental Services has observed evidence of significant ecosystem recovery in the sediment cap area. *Read more under Thea Foss Waterway Stormwater Quality Monitoring and Restoration Projects.*



Wapato Lake

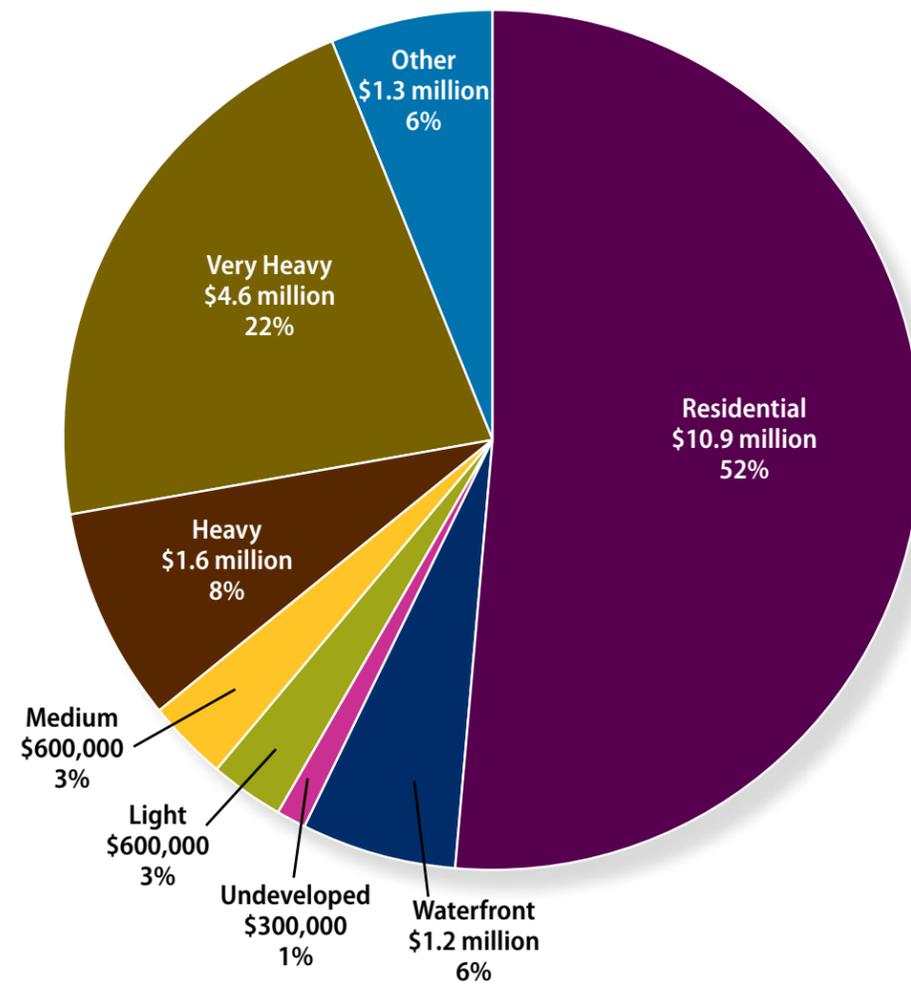
# Tacoma's Surface Water Management Utility

Tacoma's Stormwater Management Program is coordinated by the Surface Water Management section of Environmental Services in the Public Works Department. Staffing and resources are organized to fulfill the requirements of the Stormwater Management Program with the ultimate goal of managing Tacoma's stormwater and protecting our environment.

The Surface Water Management Utility expenditures for 2008 totaled \$19.1 million, and the annual revenue collected from stormwater utility fees was approximately \$21.1 million. The different sources of revenue and areas of expenditures are summarized in the following figures.

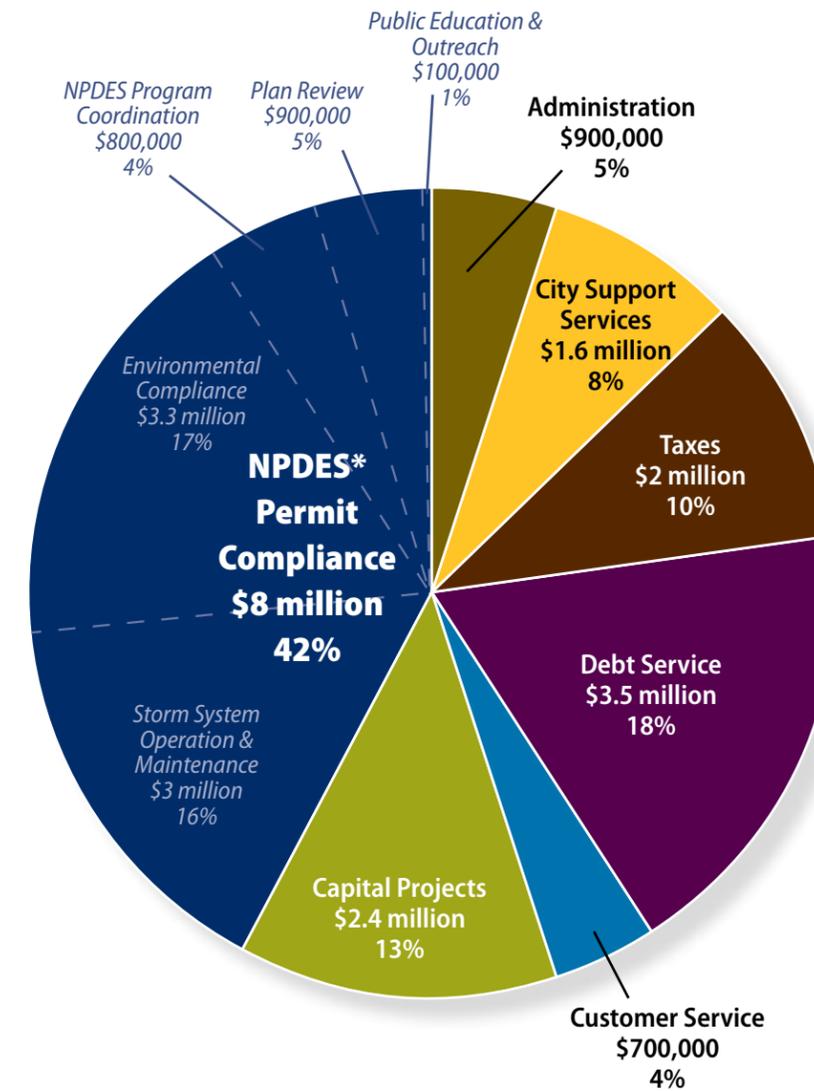
## Revenues 2008

Identified by category of property development.



Note: The percentages do not add up to 100 because of rounding.

## Expenditures 2008



\*National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit

For more information about Tacoma's Surface Water Utility budget, you may request a copy of the Wastewater and Surface Water Management 2008 Financial Report by calling the Public Works Director's Office at (253) 591-5525.



Commencement Bay

## Tacoma's New NPDES Municipal Stormwater Permit

On Feb. 16, 2007, the Washington State Department of Ecology (Ecology) issued a new NPDES Stormwater Permit for Phase I Municipalities. The permit language is available to view online at Ecology's Web site:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/PermitsPermittees.html>

The permit requires the City of Tacoma to implement stormwater management activities designed to protect and improve the quality of stormwater that is discharged into local receiving waters. In 2008, we updated Tacoma's Stormwater Management Program to include all of the NPDES permit requirements and deadlines from now until 2012. This 2008 Annual Report Summary is organized based on the elements of our new Stormwater Management Program.

With this annual report summary, we invite you to explore the City's stormwater and surface water management efforts, share your ideas for improvements with us, and get involved in helping us protect our valuable surface water resources.

### **If you have questions or comments about our program, please contact:**

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Stormwater outfall pipe,  
Thea Foss Waterway



The use of global positioning system (GPS) handheld computers help City workers more accurately map Tacoma's storm sewer system.

## Storm Sewer and Watershed Mapping

In 2008, we made substantial progress in mapping the citywide stormwater system and all private drainage connections to it. This work is critical to aid our Environmental Compliance Program efforts to track down and stop sources of pollution from entering our surface water resources.

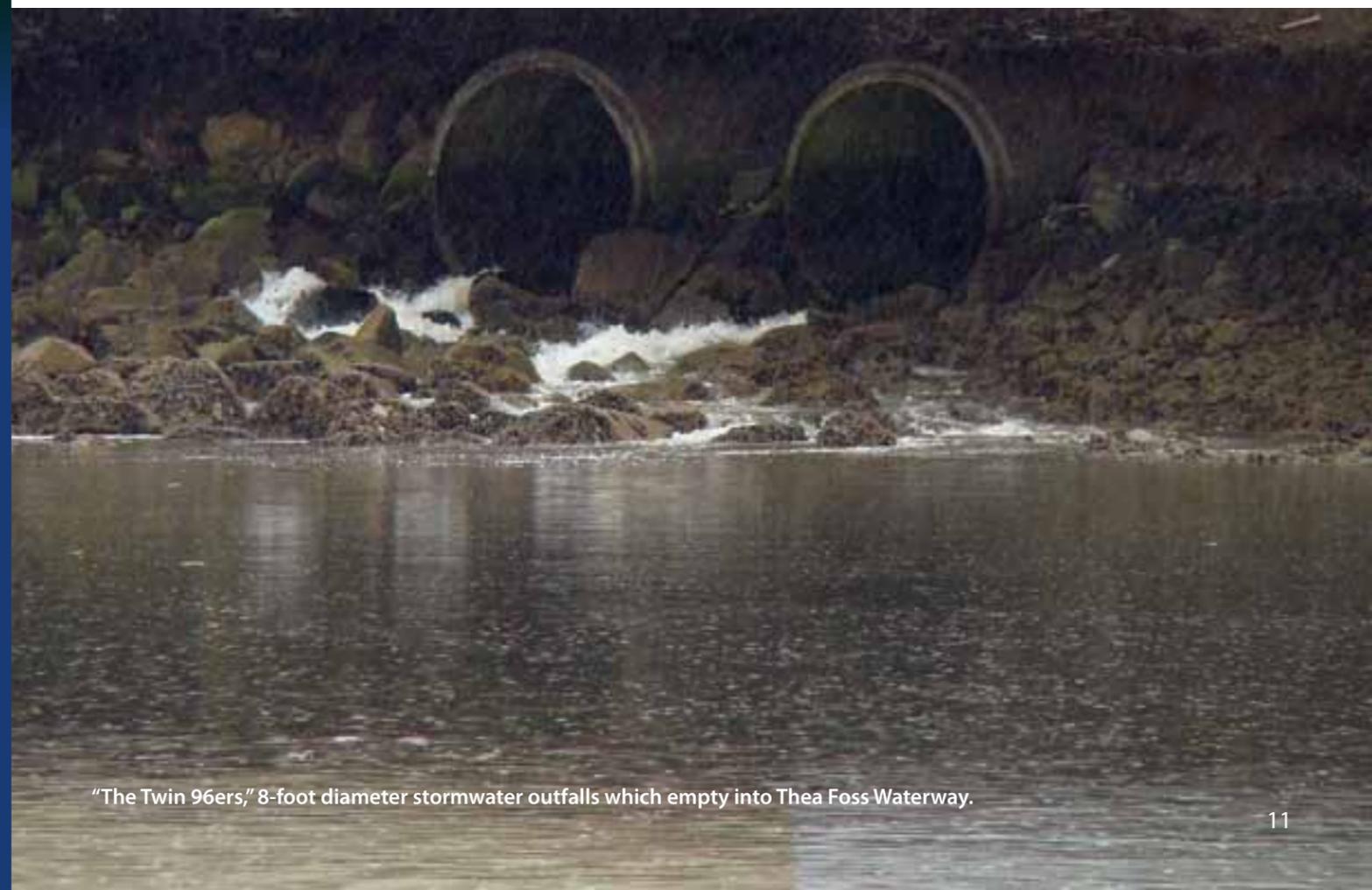
- All of the more than 400 marine and freshwater outfalls in Tacoma's stormwater system with a minimum 6-inch diameter have been mapped.
- The City has been mapping private storm systems on a quadrant-by-quadrant basis since 2005. Information has now been collected and mapped in 56 of the 250 quarter sections in the City. This information assists us in our business inspection program and is also used by property owners and developers interested in redeveloping their sites.

- The City is also working with the surrounding municipalities of Pierce County, Fife, Lakewood, University Place, Fircrest and Federal Way to map all interconnections between our respective municipal storm sewers to assist in joint efforts to track down and respond to stormwater pollution.

- All the information we collect about the public and private storm drainage systems throughout the City is corrected and updated using City record



drawings, global positioning system data and field inspections. This collection of information is available for public use on the City's popular Government Made Easy (govMe) Web site [www.govme.com](http://www.govme.com).



"The Twin 96ers," 8-foot diameter stormwater outfalls which empty into Thea Foss Waterway.

Kobayashi Preserve, at the confluence of Leach and Chambers creeks.



## Public Participation and Regional Coordination

As part of our efforts to engage the public and cooperate with other organizations and neighboring municipalities that are also working to protect our waterways, we participate in regional groups working on issues including watershed conservation, public education and outreach, and environmental inspections.

- On Feb. 12, 2008, we completed a series of four stakeholder workshops and a final public meeting to gather input for the 2008 update to the Stormwater Management Program (SWMP). Members of the stakeholder group spent hours reviewing and commenting on each element of

our program to ensure that the needs and concerns of Tacoma's citizens are addressed. Another opportunity for public input will be coming up with the 2010 update of the SWMP.

- The City benefits from sharing information about stormwater-related challenges and lessons learned with many regional organizations including the Puyallup River Watershed Council, the Chambers-Clover Creek Watershed Council, Puget Sound Partnership, NPDES Municipal Stormwater Permit coordinators, and interagency inspector forums.
- The City is participating with

neighboring cities and counties, the Department of Ecology, and the Puget Sound Partnership in a regional public outreach effort that includes a \$1 million stormwater education campaign, Puget Sound Starts Here, which includes a television advertising campaign and Web site. This campaign educates residents about how their daily actions affect surface water quality and empowers them to make good choices throughout their day in order to keep pollution out of our local surface water resources.

**Puget Sound**  
**Starts Here.org**



Chambers-Clover Watershed Council field trip to Wapato Lake.



Ways to incorporate low-impact development into your development or redevelopment project can include a rain garden, pictured here on Visscher Street, or pervious pavers, like those at The Triangle condos at Sixth & Fawcett, shown below.



## New Development and Redevelopment Permitting and Inspection

Each new construction project that could have a significant impact on stormwater runoff is reviewed to make sure it incorporates adequate stormwater management and erosion control practices to prevent stormwater pollution, flooding and erosion. Specific design requirements are described in the City of Tacoma's Surface Water Management Manual.

- We completed the huge task of updating all five volumes of our Surface Water Management Manual to reflect current standards and meet the requirements of the Department of Ecology. A new Volume 6 was added to provide specific guidance on how to use Low Impact Development and On-site Stormwater Management, two of the most cost-effective and sustainable ways of dealing with stormwater runoff.
- The Environmental Services Plan Review Team reviewed more than 700 commercial building plans, private work order plans and land use actions for new development

and redevelopment projects this year. One highly complex review involved the Point Ruston development at the remediated Asarco Tacoma Smelter Superfund Site on the shoreline of Commencement Bay. The project will include commercial and retail buildings, open space and recreational facilities, and residential apartments and condominiums, as well as major public and private street and utility improvements along Ruston Way. This project requires us to team with EPA to address special design considerations related to stormwater management and site cap issues.

- Several other large projects under review this year included the Northshore Golf Course redevelopment in Northeast Tacoma, Phase III of the Salishan Hope VI project in the First Creek neighborhood, and Tacoma Community College and University of Puget Sound campus improvements.

- We coordinate with other agencies to ensure City stormwater issues are being addressed on huge regional transportation projects including the Nalley Valley Viaduct improvements on State Route 16, Sound Transit's Commuter Rail from Tacoma to Lakewood, the Lincoln Avenue Grade Separation at Port of Tacoma Road, and redevelopment of the Port property between the Blair and Hylebos waterways.
- The Plan Review Team also participates in hundreds of pre-submittal meetings per year to give developers an idea of what potential erosion control, stormwater design and wetland development requirements may affect their projects, as well as identifying opportunities for low-impact development options during the planning stages of the project.



Point Ruston development site



Plan review staff on a site visit



Bioretention pond at Salishan



View of the Port of Tacoma from Commencement Bay



Emergency storm sewer repair in First Creek Gulch

## Capital Improvement Program (CIP)

In response to the NPDES Permit emphasis on improving water quality and reducing the volume of stormwater discharging into receiving waters, the Capital Improvement Program, which in the past prioritized flood control and pipe repair projects, will begin including more stormwater treatment and flow reduction facilities. Through participation in the City-wide Infrastructure Coordination Team and other coordination efforts, stormwater system improvements are built along with other infrastructure improvements like water line upgrades, arterial street improvements or local improvement district projects to save both money and time.

- In 2008, Environmental Services participated in a utilities replacement project with Tacoma Public Utilities to rehabilitate and upsize existing aging water and stormwater pipes under one project. The project included upsizing approximately 1,840 linear feet of 10-inch diameter storm sewer pipe and replacing associated manholes and catch basin leads on Stadium Way between Borough Road and North Fourth Street.



Broadway Local Improvement District project under construction



- The City applied for and received a \$1 million Department of Ecology grant to rehabilitate deteriorated stormwater pipe in the downtown area upstream of the Thea Foss Waterway with cured-in-place pipe (CIPP) technology. Retrofitting the aged system with CIPP will reduce inflow and infiltration which is a suspected source of contamination in the waterway.
- 1,500 feet of severely degraded pipe was replaced in Earnest S. Brazill Street between South L and Ainsworth streets.
- An emergency storm sewer repair project removed and replaced approximately 100 linear feet of 48-inch HDPE plastic pipe that was damaged when a fire was started inside the pipe at the bottom of the First Creek gulch near R Street. The project replaced the plastic pipe with new concrete pipe, removed contaminated remnants from

the fire, replaced the concrete headwall, and installed a steel grate over the end of the pipe to prevent future unwanted activities inside the line.

Surface Water Management participated in the funding of more than 8,200 linear feet of storm mains along the new streets of four local improvement district (LID) projects with a total value of \$1.9 Million. One example, the Broadway LID project, began construction this year and represents a major collaborative undertaking by City staff and local property owners to reinvigorate and beautify downtown Tacoma.

**More information about the list of current and upcoming capital improvement projects for the City Stormwater System is available on the City Web site at [www.cityoftacoma.org/pwactivepage.aspx](http://www.cityoftacoma.org/pwactivepage.aspx).**



Environmental Compliance inspectors respond to reports of potential stormwater contamination and help educate businesses on proper storage and disposal of hazardous waste and other best management practices.

## Pollutant Source Control and Eliminating Illicit Connections

The City's Environmental Compliance inspectors lead the City's efforts in public education and surface water pollution prevention by completing annual business inspections, responding to reports of spills and complaints, tracking sources of stormwater contamination and assisting with permitting and inspection of new construction projects.

- The Environmental Compliance inspectors completed 1,769 stormwater business inspections this year. The inspection program is being expanded to include a comprehensive list of more than 5,000 potential pollution-generating businesses and commercial developments, and 20% of these sites will be inspected each year starting in 2009.

- Responding to reports of illicit discharges to the City's storm sewer system and waterways continues to be a top priority. This year, Environmental Compliance inspectors helped respond to 782 spills and complaints putting a stop to cases of paint, automotive fluids, soap, construction runoff, sewage and other pollutants running directly to our waterways through the storm drains.

- The City sponsors a pollution prevention hotline with the environmental group Citizens for a Healthy Bay (CHB). The hotline, (253) 383-2429, received 54 calls in 2008. Additionally, the City helps sponsor the CHB Bay Patrol which patrolled more than 2,000 miles by land and water in 2008.

- Environmental Compliance inspectors assist with final inspection and sign-off of newly constructed private stormwater facilities providing an educational opportunity for inspectors to review operation and maintenance requirements with the builder or owner and initiate the process of tracking long-term maintenance of these facilities.

- In 2008, the Illicit Discharge Detection and Elimination (IDDE) program field crews identified and eliminated sanitary and storm sewer cross-connections by smoke testing and dye testing sewer connections for more than 11,000 addresses in the City which equates to approximately one-quarter of the City of Tacoma's storm sewer system.

- In 2008 and 2009, the Environmental Compliance Section expects to complete and document the inspections of more than 100 city-owned facilities.



City IDDE crews smoke testing and dye testing the storm sewer system.





**Pictured examples of stormwater holding ponds, including one of the Flett Creek Holding Basins and a holding pond near Norpoint Way in Northeast Tacoma.**



## Storm Sewer Operation and Maintenance

The Sewer Transmission Maintenance Division is responsible for maintaining both the storm drainage and the sanitary sewer systems, ensuring they are working efficiently to protect our waterways. The public storm system alone includes more than 575 miles of storm pipe, 10,000 manholes, 18,300 catch basins, 400 outfalls, 4 pump stations and 47 stormwater ponds and other treatment and flow control facilities.

- In 2008, City crews cleaned and repaired 8,544 stormwater catch basins, manholes and culverts removing more than 100 cubic yards of sediment from the storm system (the equivalent of 10 full dump trucks of sediment.)
- The street sweeping program has become an integrated part of the City's stormwater maintenance activities, with 6,900 street miles swept in 2008. Since the Sewer Transmission Maintenance staff took over street sweeping in 2007, sweepers have started using GPS tracking to identify catch basins in need of maintenance and facilitate a quick response.
- In 2008, a total of 65 miles of public storm sewer pipes were maintained and cleaned including the area tributary to the Thea Foss Waterway Outfall 237A. During cleaning, crews are careful to close off the downstream outfall and remove pollutants from the washwater before discharging it to the sanitary sewer system.
- The City's Emergency Flood Response is a top priority. Upon warnings of heavy rains and potential flooding, maintenance crews proactively check and maintain trouble spots to ensure they will function at maximum

capacity during the storm. During major rain events, teams are deployed to investigate and report on flooded areas throughout the City and handle claims reports.

- All City-owned stormwater management facilities, including storm ponds, bioswales and vaults, were inspected during 2008. Standard maintenance was performed on detention ponds and holding basins including clearing brush and inspecting control structures to make sure they function properly during large storm events.
- City-wide participation in the Regional Road Maintenance Endangered Species Act Program continued during 2008. This program helps train City crews performing landscaping and road and utility maintenance work to prevent significant sediment loads or harmful chemicals from being released into fish-bearing waterbodies via the storm sewer system.





Demonstrations of “green” stormwater management techniques at the EnviroHouse, City of Tacoma Landfill, 3510 S. Mullen St., [www.cityoftacoma.org/envirohouse](http://www.cityoftacoma.org/envirohouse).

## Public Involvement and Education

One of Environmental Services’ top priorities is public education and supporting community efforts to get involved in taking care of our waterways. In 2008, we partnered with many residents and environmental groups to spread the word about water quality.

- The City’s sixth year of “Make a Splash” stormwater grants were distributed to projects promoting community environmental education, protection and restoration projects. Nearly \$35,000 was awarded to 17 different stormwater-related projects throughout Tacoma.
- The City coordinates with Pierce Stream Team and Citizens for a Healthy Bay, which help interested Tacoma community groups organize storm drain stenciling and curb marking efforts.
- The Can It Cigarette Butt Litter Prevention Pilot Program was launched in 2007 to help reduce littered cigarette butts and educate smokers on the harmful effects of cigarette butt litter in our waterways. Cigarette butt receptacles were distributed to local businesses, and personal ashtrays, posters, business cards and handbill flyers were distributed throughout the study area. These efforts received positive feedback, especially from local businesses that have shown interest in obtaining and maintaining even more cans.



A student at Truman Middle School, was one of the 2008 winners of the annual EnviroChallenger poster contest.

- Clean Bay Car Wash Kits are offered to the public at no charge. These car wash kits are loaned to nonprofit groups to ensure that dirty washwater from fundraising car washes is discharged safely to the sanitary sewer instead of our local lakes, streams and Puget Sound via the stormwater system. In 2008, approximately 10 events used the kits with more than 300 cars washed in addition to the two permanent kits available for use year-round at the 76 Station at 5015 Center Street and at the 7-Eleven at 1901 S. Trafton St.
- During the 2007-2008 school year, the City’s EnviroChallenger environmental educators taught approximately 660 lessons, participated in 32 special school events and after-school programs and reached an estimated 19,000 students. A Surface Water Investigator game board and 3-D model of wastewater and stormwater systems were developed as new tools to reinforce surface water messages. The EnviroChallengers also represented City of Tacoma Environmental Services at 30 community events.
- The six-person Department of Ecology Washington Conservation Corps crew employed by Environmental Services assisted in many public outreach events in 2008, including curb marking and catch basin stenciling, an Earth Day community planting event and the Water Festival organized by the Tacoma-Pierce County Health Department.

**EnviroChallengers John Inch and Jacquelyn Fuller deliver environmental messages to Tacoma classrooms and at community events.**



- The City’s EnviroHouse is a unique, hands-on showcase of green building and natural landscape ideas, materials and techniques to create a healthy and eco-friendly home. In 2008, the on-site rain garden was beginning to mature and educational signage and handouts about sustainable stormwater management and natural yard care were made available.
- The City continues to spread the word about Natural Yard Care practices by partnering with the Tacoma-Pierce County Health Department’s Natural Yard Care Program. In 2008, Environmental Services co-sponsored three springtime natural yard care workshops at the Point Defiance Zoo and two fall workshops at the Tacoma Nature Center.





Pierce Stream Team volunteers monitoring water quality in Swan Creek.

## Stormwater Monitoring Efforts

Environmental Services conducts and coordinates many ongoing stormwater and surface water monitoring and research projects to help us make educated decisions about how to most effectively manage and treat our stormwater runoff.

- To fulfill our requirements under the NPDES Permit, we are pursuing several specific stormwater monitoring projects, as approved by Ecology. By December 2008, the City of Tacoma had submitted draft monitoring plans and was waiting for Ecology's approval for a Stormwater Quality Monitoring project, Stormwater Program Effectiveness Monitoring project and Stormwater Treatment Device Effectiveness Monitoring project. Monitoring for all three projects is scheduled to commence in 2009.
- The City is completing a \$500,000 grant from the Federal Highway Administration to evaluate the effectiveness of two media filtration systems installed to treat freeway runoff at the Ship Canal Test Facility in Seattle: the Contech StormFilter system and the AquaShield, AquaFilter system. The results of this study will be used to evaluate the applicability of these technologies for use in the Thea Foss Watershed.
- We are testing the effectiveness of three pervious pavements installed at the Tacoma Landfill, including PercoCrete pervious concrete, pervious asphalt and Ecoloc pavers to evaluate the feasibility of using them elsewhere in the City. Monitoring of the pavements' ability to provide flow control, water quality treatment, ease of maintenance and durability began in late 2006 and should be completed by summer 2009.



Pervious pavement pilot project at the Tacoma Landfill.

- Pierce Stream Team volunteers continue to provide ongoing monitoring data to the City about basic stream health characteristics in several urban streams including Swan Creek, Puget Creek, Mason Creek, Garfield Creek, Wapato Creek and Hylebos Creek.
- As part of a study to identify the sources of a ubiquitous group of chemical pollutants called phthalates, contaminants of concern in our waterways, Tacoma is investigating what type of pollutants atmospheric deposition contributes to stormwater. Sampling has been conducted at commercial, industrial and residential sites in the Thea Foss Watershed.
- In response to recent concerns over the health of Wapato Lake, the City is partnering with University of Washington Tacoma to investigate the sources of nutrient contributions to the lake, including stormwater runoff, and to help further understand their effects on the lake.

Atmospheric deposition sampler to detect phthalates.





Swan Creek



Olympic View



Middle Waterway

The City provides ongoing care for 11 habitat restoration sites throughout the City, including Swan Creek, Olympic View, and Middle Waterway.

A City employee collects a sediment sample from a stormwater outfall.



## Thea Foss Waterway Stormwater Quality Monitoring and Restoration Projects

The City has an intensive, ongoing Stormwater Monitoring and Source Control Program that was initiated in support of the City's cleanup of the Thea Foss Waterway and Wheeler-Osgood Waterway Superfund site. The monitoring results are being used to help identify and manage new and existing pollutant sources and to protect sediment quality in these restored waterways.

- Over a period of seven years (2001-2008), more than 600 samples from stormwater outfalls have been collected and tested for water quality pollutants. The data show, for the most part, stormwater quality has improved or remained the same indicating that source control efforts in Thea Foss Watershed are effective.
- The Stormwater Collection System field support staff completed a variety of special projects throughout the Thea Foss Basin including quarterly sampling of "Pom-Pom" oil snare devices in 13 different locations within the storm system and small "Tattle Tail" samplers used to indicate areas of the storm system which have recently conveyed stormwater pollutants and need cleaning. Staff also conducted a pilot study to assist downtown businesses by determining the effectiveness of Absorb-It Filter Blankets for treating washwater from property cleaning activities. They determined that the filter blankets significantly reduced turbidity and oil sheen from the washwater prior to going down the drain.
- Since the waterway cleanup was completed in 2006, Environmental Services Special Projects staff has been performing low-tide slope inspections to verify the sediment cap is staying in place. Experts are also monitoring the benthic organisms in the capped area

which are showing evidence of benthic ecosystem recovery, a good indicator that the cleanup is working.

- All four shoreline habitat restoration sites completed in coordination with the Thea Foss Waterway Cleanup, including sites at the Puyallup River Side Channel, Hylebos Creek, North Beach of Middle Waterway and the Middle Waterway Tideflats were inspected in 2008, and the plants are becoming well established.
- Four "pocket" habitat enhancement areas were also constructed around the Thea Foss Waterway during the cleanup. Monitoring in 2008 showed all areas are becoming well established.
- Additionally, four of the five Superfund mitigation restoration sites have been cleaned up and replanted and are now being monitored and maintained. These sites are located at the Middle Waterway, Swan Creek, Olympic View and Tahoma Salt Marsh. The City and the Port have been working together to identify an appropriate site for the fifth restoration project at 1641 Marine View Drive, previously a gravel mining and concrete recycling operation. The project to be constructed by the Port in 2010 will consist of creating aquatic habitat, removing invasive species, planting native species and overall site enhancement.
- The City is establishing an "Environmental Stewardship Project" based on a Settlement Agreement with EPA executed in July 2008. The project work plan is currently being developed and will provide ongoing care for 11 habitat restoration sites throughout the City.



## Conclusion

In response to the 2007 NPDES Municipal Stormwater Permit, we expanded the Stormwater Management Program to include many more permit activities and deadlines. Environmental Services staff has been supplemented to complete the additional work related to plan review, business inspections, mapping and monitoring. In addition to meeting the new NPDES permit requirements, we have the following goals for 2009:

### Storm Sewer and Watershed Mapping and Modeling

- Revitalize the storm system capacity modeling efforts.
- Complete mapping all storm interconnections between Tacoma and neighboring municipalities.

### Public Participation and Regional Coordination

- Continue to improve coordination with neighboring jurisdictions.
- Review and update our Stormwater Management Program in 2009 based on what we've learned.

### New Development and Redevelopment Permitting and Inspection

- Improve plan review coordination between Public Works Divisions to streamline the permit process.
- Develop additional informational materials to assist permit applicants to meet stormwater requirements.
- Complete the analysis of how to incorporate LID in Tacoma including updating public street construction standards, developing incentives for retrofitting existing private storm systems with LID, and updating building codes.

### Capital Improvement Program

- Initiate work under a \$1 Million grant from the Department of Ecology to rehabilitate failing storm mains in the downtown area tributary to the Thea Foss Waterway.
- Complete scheduled storm system improvement projects including downtown pipe repair and rehab projects, the directional drill pipe installation at the intersection of Borough Road and Stadium Way, and the storm system upgrade at the intersection of Slayden and Varco roads.
- Initiate planning for the Gravel Pit holding pond expansion, Thea Foss Watershed nodal treatment facility and maintenance of the Flett Creek Holding Basins.
- Obtain Leach Creek Holding Basin Maintenance Project permits.
- Design the Snake Lake outfall treatment facility to be built in 2009.

### Pollutant Source Control and Eliminating Illicit Connections

- Streamline source control regulations.
- Draft business survey to be required with annual business licensing by the Tax and License Department.
- Develop and provide additional source control and illicit connection training to City staff and businesses.
- Continue citywide investigation to eliminate cross-connections between sanitary and storm sewers.



City staff inspect stormwater outfalls during a late-night low tide walk.

### Storm Sewer Operation and Maintenance

- Clean and inspect 5% of the storm system per year.
- Increase use of lining technology to complete 60% of storm pipe repairs without trench excavation.
- Fully implement GPS technology in street sweeping and dispatching maintenance crews.
- Update the content of the road and utility maintenance worker training course for the Regional Road Maintenance Endangered Species Act (ESA) Program to reference the new 2008 Surface Water Management Manual and add illicit discharge detection and elimination training.
- Develop an internal web page to provide easy access to ESA Program best management practices and resources for City employees.

### Public Involvement and Education

- Award the seventh round of "Make a Splash" grants.
- Continue to improve the City's Surface Water Web site and other public education tools.
- Develop a residential rain garden program.
- Coordinate with the Tacoma Pierce County Health Department to provide Natural Yard Care Training to Wapato Lake neighbors.

### Stormwater Monitoring and Research Efforts

- Continue Wapato watershed investigation and coordination with UW Tacoma to determine stormwater impacts to the system.
- Obtain approval from the Department of Ecology and initiate three new NPDES stormwater monitoring projects.
- Complete the sixth year summary report for the Thea Foss Waterway Stormwater Quality Monitoring and Source Control Programs to prevent recontamination of the Superfund Cleanup site.
- Complete the final stage of a study of media filtration treatment facilities at the Ship Canal Test Facility to remove pollutants of concern from stormwater runoff in the Thea Foss Waterway.
- Continue sampling for atmospheric deposition stormwater pollutants, research other atmospheric sampling methods and work with King County on regional data evaluation of the atmospheric deposition data.
- Continue to monitor the effectiveness of pervious pavement parking lots located at Tacoma's Landfill.
- Develop a biofiltration "rain garden" soil mix using TAGRO biosolids.
- Finalize "tattle tails" report with conclusions and recommendations on the continued and appropriate use and methodology of the "tattle tails".

Tacoma's Surface Water staff would like to thank you for your interest and cooperation in managing our stormwater runoff in 2008. We hope this overview of Tacoma's surface water management activities both informs and inspires you to take an active part with us in protecting and restoring the valuable and irreplaceable surface water resources we share in Tacoma.





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