Stormwater Management for CSOs via Private Development Regulations, Ordinances, and Rates

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The Burning Questions

- How did you do it?
- What did you do?
- How is it working?
- What are your lessons learned?
- What’s your advice to those looking to do something similar?
- What would you change?
How Did You Do It?

Factors for Success
• Know your regs & ordinances
• Find a driver or series of drivers to leverage
• Know the political and public landscape and have a team to help maneuver it
• Be willing to compromise and offer something in return
• Be willing to take some shots and weather the storm of initial reaction
• Provide political cover
• Know the impacted parties and create dialogues in advance
Drivers/Levers/Opportunities

- Act 167 funding related to development
- Act 537 planning development caps
- MS4 permit
- TMDL
- NPDES permit
- CSO consent order
- LEED
- Flooding

Cost of meeting all these on public side vs. cost of doing some in private side = billions $$$
The Philadelphia Strategy

- Long term
  - Create a framework for stormwater currency on private lands
- Short term
  - Have development manage stormwater better
  - Have stormwater rates fairly allocated to have large impervious areas pay their fair share
What did you do?

- Leveraged existing ordinance from 1996 by promulgating regulations
- Coordinated with all City agencies and development community for 2 years in advance
- Moved water from last thing to first thing in development process
- Developed economic, public, and political messages
- Changed our stormwater billing approach
Water Quality

- **Infiltration of the first inch of runoff from all directly connected impervious area (DCIA)**
  - Volume reduction
  - Recharge groundwater table
  - Mimic natural hydrology
  - Reduce pollution in runoff

- **When infiltration is not feasible**
  - Combined Sewershed: Volume reduction, control discharge rate
  - Separate Sewershed: Volume reduction, increased quality
Control the rate in which the site releases stormwater
- Reduce or prevent flooding
- Prevent pipe backups
- Utilize existing infrastructure

Reduce post-development runoff peaks to pre-development conditions

Slow release of the 1-year, 24-hour storm event
- Protect quality of stream channels and banks

Detain and release runoff at a specified rate
Erosion & Sedimentation (E & S) Control

- Prevent runoff carrying sediment, trash, and other pollutants from obstructing infrastructure and impairing waterways and aquatic life
- Review and enforce E & S in accordance with PADEP Manual
- Coordinate with PADEP as part of NPDES permit review
• 481 development projects approved
• 1,100 acres of planned management.
• >547 acres constructed = >519 MG/yr runoff reduction
• Saved PWD > $57 million in capital.

<table>
<thead>
<tr>
<th></th>
<th>Planned Acres</th>
<th>Constructed Acres</th>
<th>Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Roof</td>
<td>16</td>
<td>5</td>
<td>68</td>
</tr>
<tr>
<td>Porous Pavement</td>
<td>15</td>
<td>39</td>
<td>117</td>
</tr>
</tbody>
</table>
Development Review Process

- PWD Conceptual Plan Approval is a required prerequisite to obtain Licenses and Inspections (L & I) Zoning Permit.

- PWD Technical Stormwater Management Plan Approval is a required prerequisite to obtain L & I Building Permit.

- During construction activity, PWD inspectors visit site to ensure compliance.
  - With the support of L & I, PWD will issue violations to non-compliant sites.

- Record Drawings, indicating the as-built condition of the site, are submitted to PWD at the conclusion of construction.
Stormwater Parcel-Based Billing

- Began July 1, 2010
- Driven by customer equity
- Accompanying credits program – customers can receive up to 100% discount
Changing how PWD Charges for Stormwater Management

- PWD began charging customers for stormwater service in the late 1960s
- Traditional method: Costs based on size of the water meter
  - 40,000 stormwater customers not billed because they didn’t have a water meter
- PWD convened a Citizens Advisory Council (CAC) in 1996 to receive guidance on equitable stormwater billing methods
Recommendations of the Stormwater Reallocation CAC

- Charge based on a property’s total size (gross area) and amount of impervious area
- Every property pays a stormwater fee
- Revenue neutral
- Fair cost of service
- Encourage BMP retrofits through a credits program

Stormwater parcel-based billing went live in July 2010 – with a 4 year phase-in
# Current Stormwater Rates

<table>
<thead>
<tr>
<th>Meter-Based Rates</th>
<th>Parcel-Based Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5/8 inch meter</strong></td>
<td>$0.528/mo per 500 square feet</td>
</tr>
<tr>
<td><strong>3/4 inch meter</strong></td>
<td>$4.169/mo per 500 square feet</td>
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<tr>
<td><strong>1 inch meter</strong></td>
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<tr>
<td><strong>1-1/2 inch meter</strong></td>
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<tr>
<td><strong>2 inch meter</strong></td>
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<td><strong>3 inch meter</strong></td>
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<td><strong>4 inch meter</strong></td>
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<td><strong>6 inch meter</strong></td>
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<td><strong>8 inch meter</strong></td>
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<td><strong>10 inch meter</strong></td>
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<tr>
<td><strong>12 inch meter</strong></td>
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<tr>
<td><strong>$11.06</strong></td>
<td></td>
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<tr>
<td><strong>$72.12</strong></td>
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<td><strong>$120.20</strong></td>
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<td><strong>$240.39</strong></td>
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<tr>
<td><strong>$384.62</strong></td>
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<td><strong>$721.15</strong></td>
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<td><strong>$1,201.92</strong></td>
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<td><strong>$2,403.83</strong></td>
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<td><strong>$3,846.14</strong></td>
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<tr>
<td><strong>$5,528.80</strong></td>
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<tr>
<td><strong>$10,336.50</strong></td>
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# Stormwater Billing

## 1101-11 MARKET ST

### Basic Parcel Details

- **Owner**: GIRARD ESTATE FEE
- **Property Type**: Non-Residential
- **CIP/BRT Account(s)**: 8833008000
- **Gross Area**: 39,800 ft²
- **Impervious Area**: 39,698 ft²

### Charge Summary

This summary shows monthly stormwater charges phased in during FY 2011 to FY 2014 as the charge transitions from completely meter-based (FY 2010) to completely parcel area-based (FY 2014).

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Total Stormwater (SWMC) Charge</td>
<td>$682.35</td>
<td>$682.35</td>
<td>$682.35</td>
<td>$682.35</td>
<td>$682.35</td>
<td>$682.35</td>
</tr>
</tbody>
</table>

- **Account # 011-53560-01101-002**

- **Total Stormwater (SWMC) Charge**

$1,364.70, $1,156.67, $916.89, $648.98, $381.06


Please Note: The data on this site is to be used for stormwater billing purposes only. The Records Department's Mapping Unit maintains parcel maps. These maps contain the graphical depiction of the legal descriptions contained on deeds that are also processed by Records. The Streets Department's Survey Unit maintains maps that contain survey data and street plans.
# 2201-39 Fairmount Ave

## Basic Parcel Details
- **Owner**: Spring Garden Community
- **Property Type**: Non-Residential
- **OPA/BRT Account(s)**: 7726683300
- **Gross Area**: 101,548 ft²
- **Impervious Area**: 84,606 ft²
- **Credit Application Form**: Get Application Form
- **Appeal Application Form**: Get Application Form
- [Download Details as PDF](#)

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</thead>
<tbody>
<tr>
<td>Total Stormwater (SWMC) Charge</td>
<td></td>
<td>$0.00</td>
<td>$203.62</td>
<td>$409.55</td>
<td>$614.32</td>
<td>$819.09</td>
</tr>
</tbody>
</table>
Stormwater Credits

- Impervious Area Credit – management of the first inch of runoff, same requirement in Stormwater Regulations
- Gross Area Credit – eligible to properties with a lot of green/open space
- NPDES Industrial Permit Credit – eligible to properties that maintain a permit with the PA DEP for stormwater discharge
Impervious Area Credit

• Management of the first 1” = fee credit = greened acre
• PWD needs 12,000 greened acres in combined sewer area
• 8,000 acres of non-residential impervious area available

How can we leverage private investment in green infrastructure retrofits?
Next on the horizon

Coming attractions.....
Leveraging Private Financing

• Similar to energy efficiency financing models
• Third-party off-balance sheet financing
• Government policies to facilitate third-party financing:
  • Credit enhancement
  • On-bill collection
  • Tax-lien financing
• Off-site mitigation

Many parties are engaging with PWD to explore alternative financing models
Current PWD Assistance & Incentive Programs

• Stormwater Assistance Phase-in Program (SWAPP)
  – effective 10% cap on stormwater charge increases
  • Customer must see fiscal year increase greater than 10% and $100 and must be current in all city taxes and bills
  • 1700 eligible accounts, ~350 approved applications

• Stormwater Management Incentives Program (SMIP)
  • $5 million in grant monies available
Stormwater Management Incentive Program Grant

BACKGROUND
The City of Philadelphia, through the Philadelphia Water Department (PWD), and the Philadelphia Industrial Development Corporation (PIDC) created the Stormwater Management Incentive Program Grant (SMIP) to provide assistance to non-residential PWD customers. This program offers grant funding to stimulate investment in and utilization of stormwater best management practices which reduce a parcel’s contribution of stormwater to the City’s system.

USES
Use of funds is restricted to grants which support the design and construction of stormwater mitigation measures. These may include, but are not limited to: detention and retention basins, tree trenches, green roofs, porous paving, and rain gardens.

ELIGIBILITY
Only non-residential properties are eligible for SMIP grant funds. Applicants must be owners of the property or have permission from the property owner(s). The applicant cannot be an agency with the City of Philadelphia, the Commonwealth of Pennsylvania or any United States Department or Federal Agency.

GRANT EVALUATION & REQUIREMENTS
Projects will be evaluated based on a variety of criteria, including, but not limited to, the total volume of runoff managed, the expected benefits of the project, and the ability of the grantee to leverage other funding sources. Capture of the first inch of runoff from the property that would otherwise be discharged to the City system is required. All funded projects will be required to file a deed restriction in the form of an Access, Operations, and Maintenance Agreement with the property.

PROCESS
A Selection Committee comprised of PWD staff will evaluate applications. Applications must be submitted electronically by March 31, 2012. Applicants will be notified by July 1, 2012 if their applications have been accepted. Grantees will be eligible to receive credits on their stormwater bills upon successful construction of the green stormwater infrastructure. Some projects may receive partial grant funding supplemented by low interest loans.

For more information about the SMIP Grant please go to www.phillywatersheds.org/what Were_doin/gSMIP_Grant.

To apply for the SMIP Grant please go to www.pidc-pa.org/development-and-contract-opportunities/ rfp-fq-opportunities.

For questions about the grant, please contact Jennifer Crowther at (215) 496-8139 or jcrowther@pidc-pa.org.
For technical questions, please contact Erin Williams at Erin.Williams@phila.gov.
SMIP Background

- Offer incentives and assistance to non-residential PWD customers impacted by the change in PWD stormwater regulations and fees
- Stimulate investment in and utilization of stormwater best management practices

SMIP Eligibility

- Non-residential Philadelphia-based property owners that implement stormwater management practices and reduce a parcel’s contribution of stormwater
- Applicants must be current in their PWD water, sewer, and stormwater accounts
- All City taxes must be paid
SMIP Selection Process

- A PWD Selection Committee will evaluate applications based on the technical merit of the stormwater management practice and a variety of other factors – cost-efficiency!

- 1st Round closed March 31st
  - 48 applications received, $25 million in requests
  - 8 applications awarded, totaling $3.3 million

- 2nd Round anticipated Fall 2012
Proposed rainwater harvesting systems could result in savings of $2,600/month in stormwater fees and $1,800 in water usage charges.

7.25 greened acres
And 3 to 6 years later in our communities after PWD implemented stormwater regulations and parcel based billing the benefits are more than stormwater......
Salvation Army –
Kroc Corps Community Center

- **Project Type:** Community center
- **Project Status:** Complete
- **Project Location:** 4200 Wissahickon Ave in Hunting Park, separate sewer, Schuylkill River watershed
- **Project Size:** 12.4-acre Brownfield redevelopment site
- **Regulations:** Water Quality; Flood Control exempt due to reduction in impervious area
- **SMPs:**
  - +/- 78,000 sq. ft. of porous pavement
  - Multiple robustly-planted bioretention basins connected in series
  - Cisterns to capture and store rainwater for site irrigation and for use in aesthetic water features on site
Kensington Creative and Performing Arts (CAPA) School

- **Project Type:** School
- **Project Status:** Complete
- **Project Location:** 1751 N. Front St. in Kensington, CSO, Delaware River watershed
- **Project Size:** 7.8-acre redevelopment site
- **Regulations:** Water Quality, Flood Control, PHS rate
- **SMPs:**
  - 22,000 sq. ft. of green roof
  - 13,500 sq. ft. of porous pavement with two subsurface infiltration basins.
  - Two slow-release, subsurface detention basins in series with porous pavement topped infiltration basins.
  - Large rain garden with subsurface storage modules
Transit Oriented Design / Affordable Housing

- **Project Type:** Mixed Use / Residential
- **Project Status:** Active Construction
- **Project Location:** 9th and Berks Streets in North Philly near Temple University, CSO, Delaware River
- **Project Size:** 2.5-acre Brownfield redevelopment site
- **Regulations:** Water Quality, Flood Control, PHS rate
- **SMPs:**
  - Two subsurface infiltration basins below a subsurface parking garage.
  - Buildings proposed on top of subsurface parking garage. Landscaping area around buildings is an “intensive / extensive” green roof.
  - 1,200 sq. ft. of porous pavement hardscape areas around buildings.
  - Blue roofs atop proposed buildings.
Xfinity Live!

- **Project Type:** Commercial Sports Bar / Entertainment
- **Project Status:** Complete
- **Project Location:** Broad St. and Pattison Avenue among professional sports venues in South Philly, CSO, Delaware River watershed
- **Project Size:** 4.9-acre redevelopment site
- **Regulations:** Water Quality, Flood Control
- **SMPs:**
  - Two bioretention areas
  - One subsurface detention basin
  - One bioretention area is a highly visible SMP within an outdoor gathering space
Sister Cities Park

- **Project Type**: Park
- **Project Status**: Complete
- **Project Location**: 18th Street and Ben Franklin Parkway in Center City, CSO area, Delaware River watershed
- **Project Size**: 1.3-acre redevelopment site
- **Regulations**: Water Quality, Flood Control Flood Control exempt due to reduction in impervious area from existing conditions
- **SMPs**:
  - “Disconnected” impervious areas including walkways, plaza, and playground area. Runoff from paved areas drains into green spaces.
  - Café / Community Center building with green roof
  - One slow-release, subsurface detention basin to further reduce peak runoff rates
PA Liquor Control Board Distribution Facility

- **Project Type**: Industrial / large commercial / warehouse
- **Project Status**: Design
- **Project Location**: 3rd St. and Packer Ave. in South Philly, CSO area, Delaware River watershed
- **Project Size**: +/- 445,000 sq. ft. (10.2 ac.) building footprint on a 24.3-acre redevelopment site
- **Regulations**: Water Quality, Flood Control
- **SMPs**:
  - Large green roof – currently proposed 187,540 sq. ft. (4.3 ac.). If approved and constructed as proposed, may be among a handful of the biggest “extensive” green roofs in the world.
  - Four large, slow release detention basins beneath parking / loading areas to further reduce peak runoff rates.
Conclusions

Take home messages
Conclusions

- Managing stormwater on private lands is >40% of PWD’s CSO compliance
- Leverages the equivalent of another $1.2 billion in CSO management for rate payers that they can’t afford.
- Achieves more than stormwater in terms of community improvements/impacts
- Creates new industries and jobs
- If Philadelphia can do it why can’t other cities?