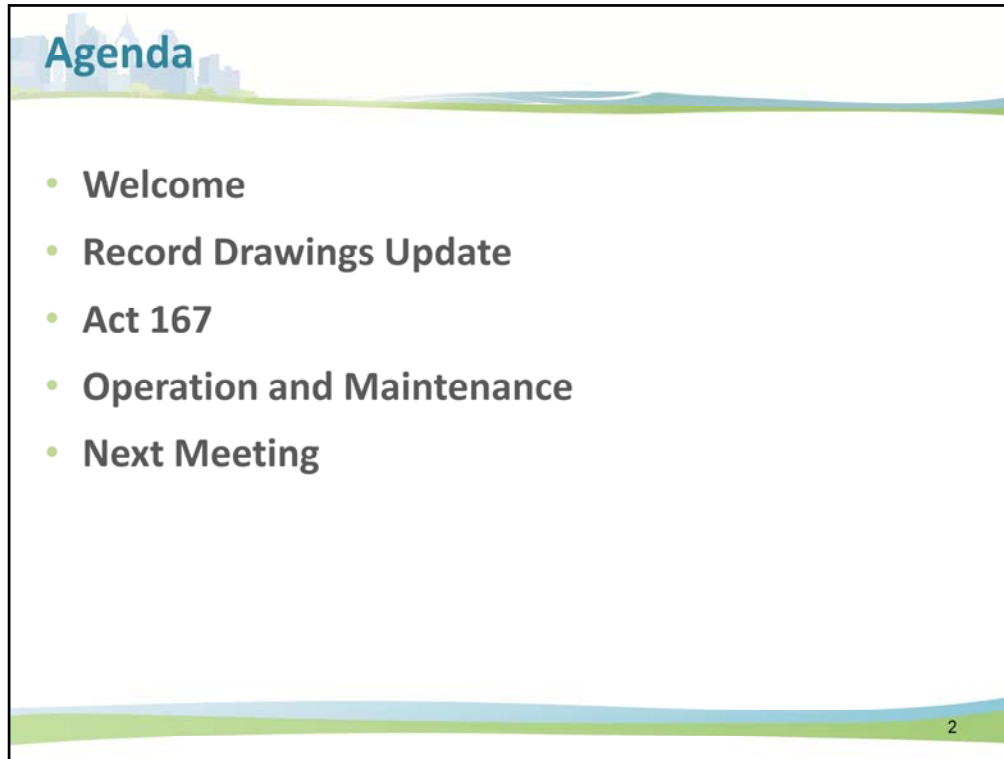


PHILADELPHIA WATER DEPARTMENT

**DEVELOPMENT SERVICES
COMMITTEE MEETING**

September 12, 2013





Record Drawings Update:

PWD has been working to address questions raised in the previous meetings.

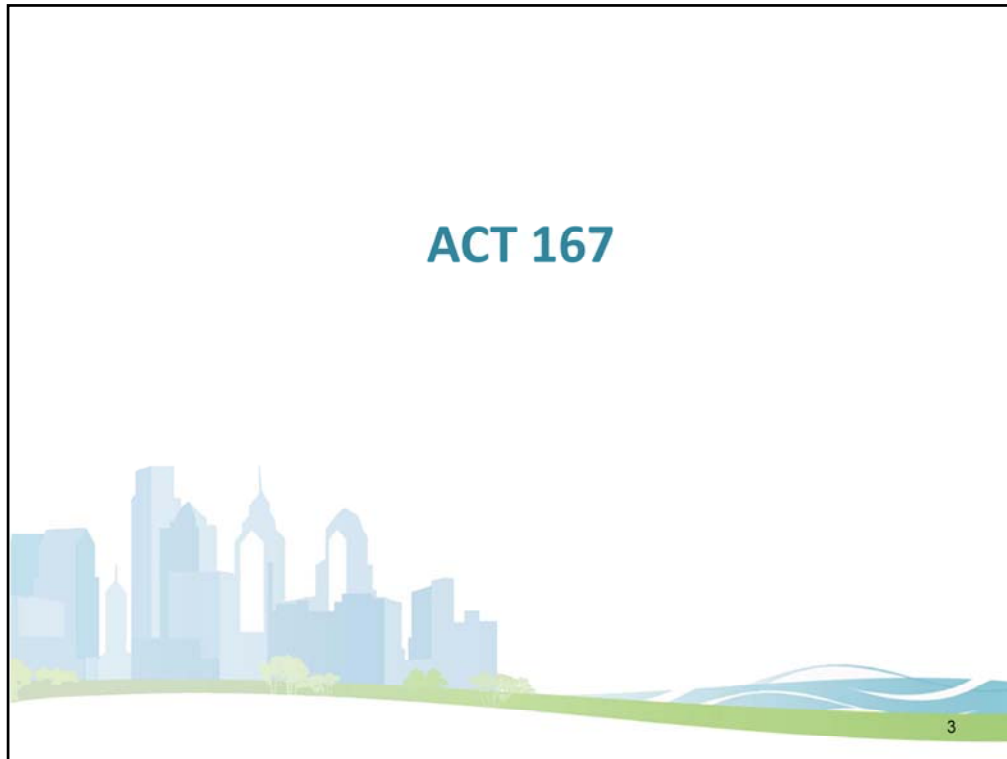
Feedback PWD heard in the previous meeting included:

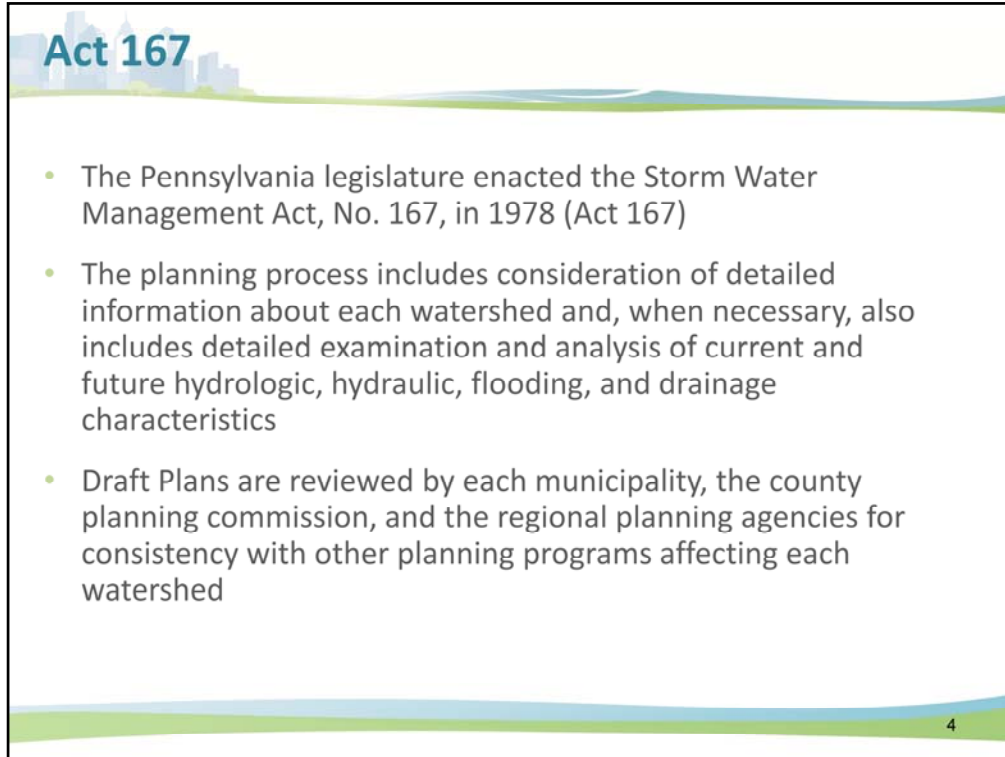
- Engineer of record should certify Record Drawing, but this is an additional service and added cost.
- Liability concern for the engineer to certify constructed conditions when they may not be on-site.
- PWD needs to ensure the owner, engineer, and contractor aware of the process early, include in contract costs.
- Not all projects are the same. PWD should consider identifying specific components for certification for each project.

In response to the feedback from the previous meetings, PWD has taken the following actions:

- PWD has begun conversations with Licenses & Inspections (L&I) and Pennsylvania Department of Environmental Protection (PADEP) to evaluate the best course of action to implement the specifications for content and submittal requirements for Record Drawings. An option for implementation being considered is to withhold the Certificate of Occupancy until Record Drawings are submitted.
- PWD is considering the acceptance of a redline drawing maintained through the life of the project construction and supplemented with inspection forms or certifications by the engineer for critical items to provide additional required information (i.e. elevations).
- PWD would also like to provide more education materials and is exploring creation of a Construction Guidance Manual as well as a Template Record Drawing plan.

Changes in the Record Drawing requirements and process are planned for January 2014, and will be discussed again with more detail in the next DSC workshop/meeting, scheduled tentatively for December 5, 2013.



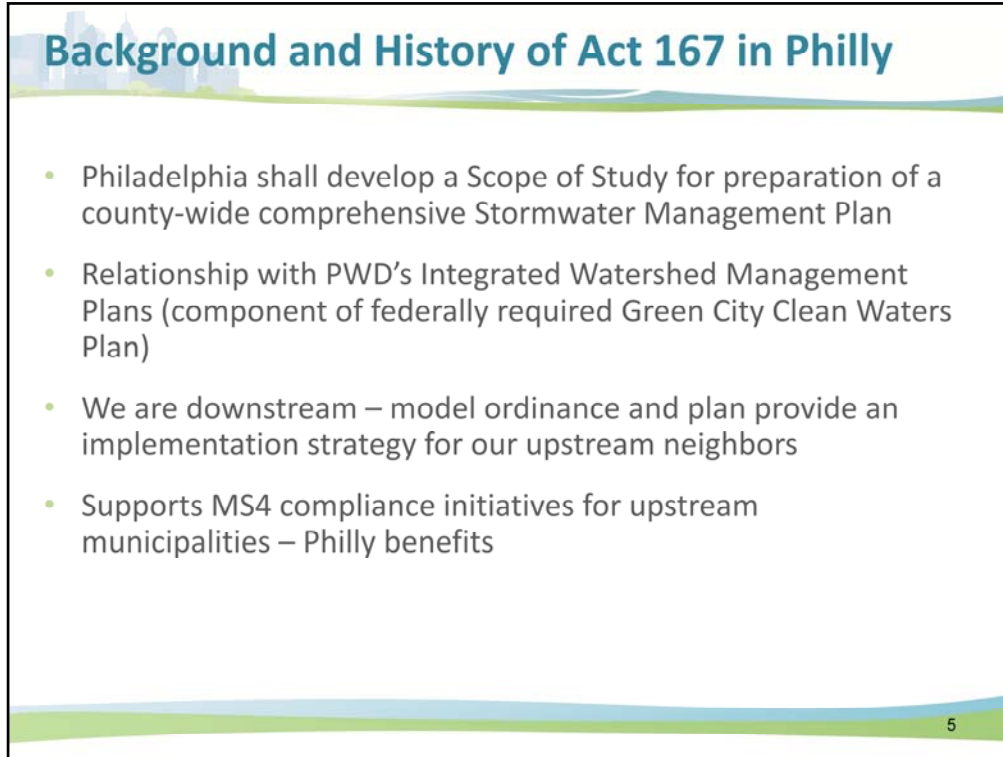


Act 167

- The Pennsylvania legislature enacted the Storm Water Management Act, No. 167, in 1978 (Act 167)
- The planning process includes consideration of detailed information about each watershed and, when necessary, also includes detailed examination and analysis of current and future hydrologic, hydraulic, flooding, and drainage characteristics
- Draft Plans are reviewed by each municipality, the county planning commission, and the regional planning agencies for consistency with other planning programs affecting each watershed

4

- Act 167 establishes a comprehensive systematic program for counties to develop comprehensive watershed-based stormwater management plans (Plans) that provide control measures for development and activities that affect stormwater runoff, including quality, quantity, and groundwater recharge. These control measures are implemented through the adoption of ordinances and regulations by local municipalities.
- The intent of stormwater planning is to identify sound management measures that will address problems that could be caused by existing or future development and activities.
- After the thorough review of the Plan, the County then holds a public hearing, adopts the Plan and submits the Plan for the Pennsylvania Department of Environmental Protection's (PADEP) final review and approval.



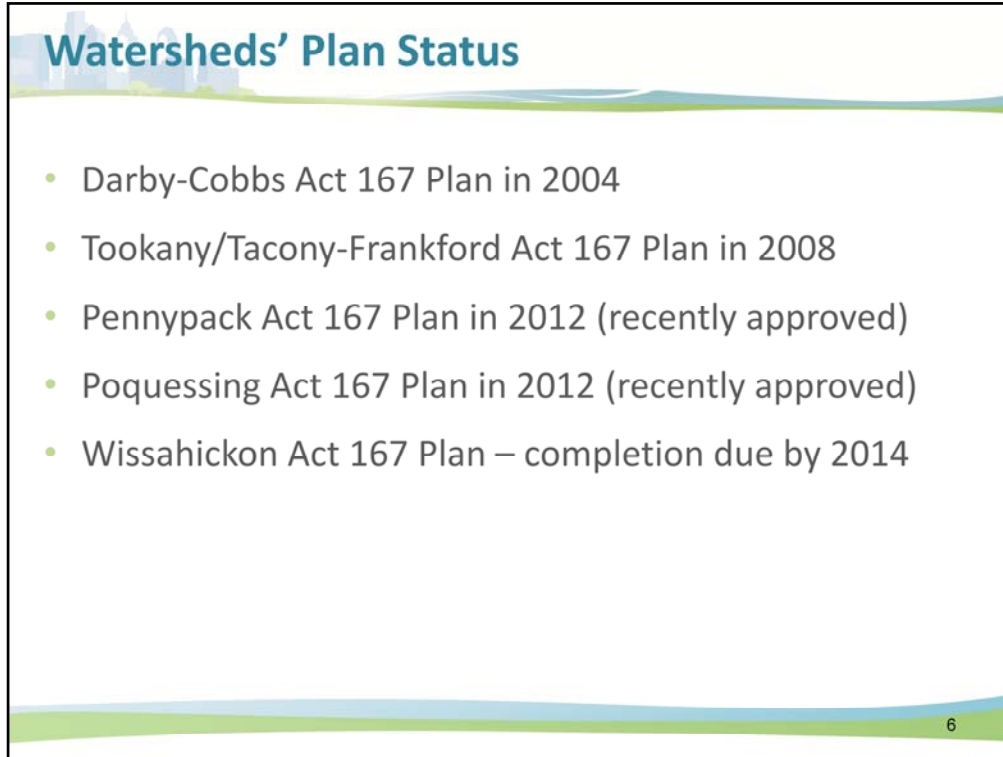
Background and History of Act 167 in Philly

- Philadelphia shall develop a Scope of Study for preparation of a county-wide comprehensive Stormwater Management Plan
- Relationship with PWD's Integrated Watershed Management Plans (component of federally required Green City Clean Waters Plan)
- We are downstream – model ordinance and plan provide an implementation strategy for our upstream neighbors
- Supports MS4 compliance initiatives for upstream municipalities – Philly benefits

5

Creating a county wide Stormwater Management Plan will better align local stormwater management guidance with State and Federal goals and regulations. A County wide approach will also create more consistent stormwater management requirements for development and redevelopment activities.

PWD has made commitments to the PADEP and the US Environmental Protection Agency (EPA); therefore, it was essential to engage upstream parties in order to meet these regulatory goals.

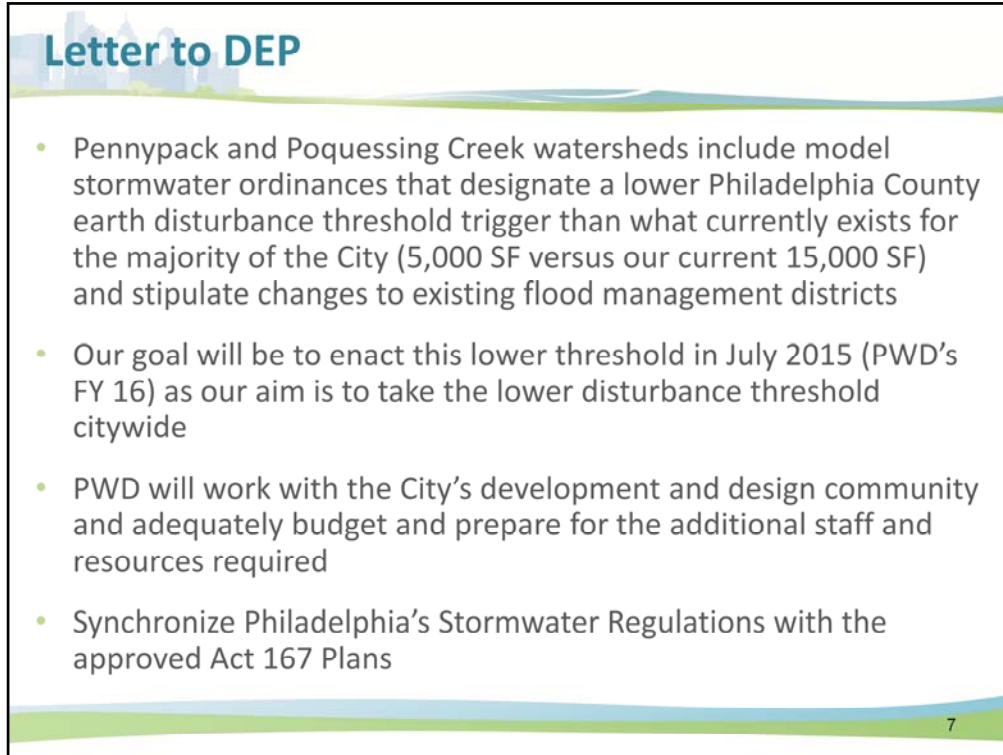
A presentation slide titled "Watersheds' Plan Status" with a decorative header and footer. The header features a stylized city skyline in shades of blue and green. The footer contains a small number "6".

Watersheds' Plan Status

- Darby-Cobbs Act 167 Plan in 2004
- Tookany/Tacony-Frankford Act 167 Plan in 2008
- Pennypack Act 167 Plan in 2012 (recently approved)
- Poquessing Act 167 Plan in 2012 (recently approved)
- Wissahickon Act 167 Plan – completion due by 2014

Philadelphia has assisted in the development of many Act 167 plans throughout the region, over many years as the activities of Philadelphia and upstream communities can significantly impact local water resources. PWD has sponsored many watershed-wide partnerships, that held stakeholder meetings to facilitate watershed-wide planning across the region, such as those listed here.

Completion dates of the Plans in the region are listed. Plans are completed and then reviewed, so for example, Pennypack and Poquessing Plans were recently approved in 2013.



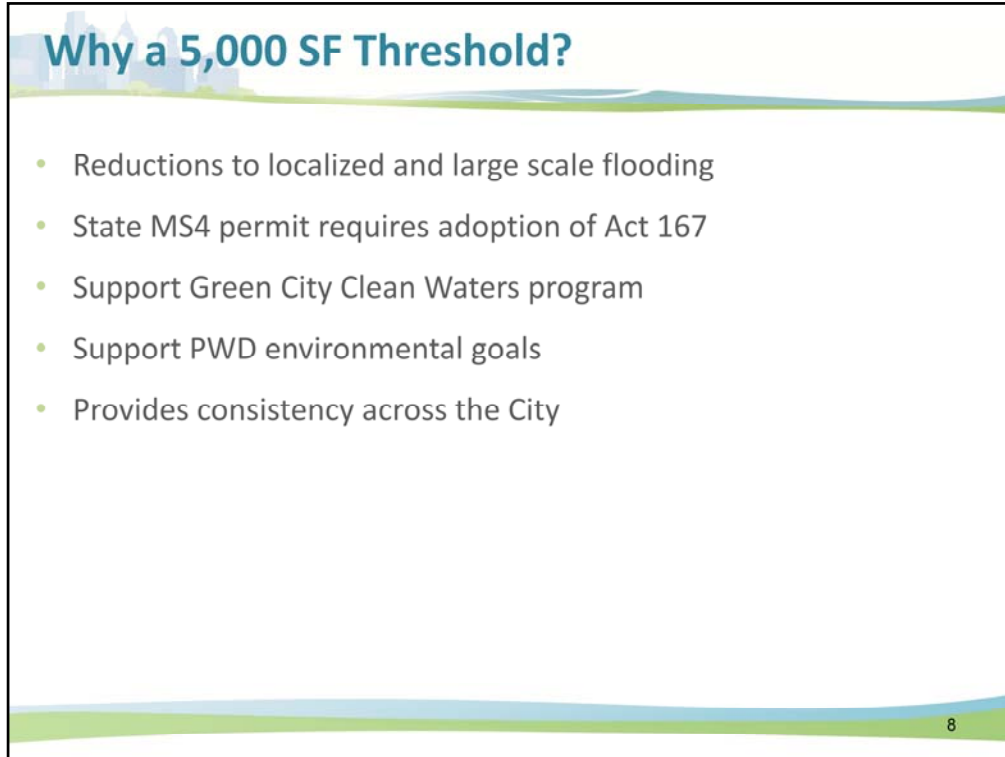
Letter to DEP

- Pennypack and Poquessing Creek watersheds include model stormwater ordinances that designate a lower Philadelphia County earth disturbance threshold trigger than what currently exists for the majority of the City (5,000 SF versus our current 15,000 SF) and stipulate changes to existing flood management districts
- Our goal will be to enact this lower threshold in July 2015 (PWD's FY 16) as our aim is to take the lower disturbance threshold citywide
- PWD will work with the City's development and design community and adequately budget and prepare for the additional staff and resources required
- Synchronize Philadelphia's Stormwater Regulations with the approved Act 167 Plans

7

PWD has outlined a plan for creating a county wide Stormwater Management Plan, and presented this plan to the PADEP in a letter.

The Watershed plans stipulate changes to existing flood management districts which PWD plans to implement in January 2014. PWD plans to enact the lower 5,000 SF threshold citywide but has asked to delay implementation until in July 2015 in order to better understand the impacts and implement an appropriate policy for the City.



Why a 5,000 SF Threshold?

- Reductions to localized and large scale flooding
- State MS4 permit requires adoption of Act 167
- Support Green City Clean Waters program
- Support PWD environmental goals
- Provides consistency across the City

8

In summary, utilizing a 5,000 SF threshold will bring about city wide improvements as well, such as those noted here.

PEER COMMUNITY RESEARCH



Stormwater Management Triggers – Across the U.S.

<u>COMMUNITY</u>	<u>MANAGEMENT TRIGGER</u>
• Austin, TX	Any Earth Disturbance
• Doylestown, PA Bucks County	100 SF Impervious Trigger
• Radnor, PA (Delaware County, Darby/Cobbs Creek Act 167)	500 SF Impervious Trigger
• Chester County Model Ordinance	1,000 SF Impervious Trigger
• Baltimore, MD	5,000 SF Earth Disturbance
• Washington, DC	5,000 SF Earth Disturbance
• San Francisco (City and County), CA	5,000 SF Earth Disturbance
• Chicago, IL	7,500 SF Impervious Trigger
• Boston, MA	1 Acre Earth Disturbance

10

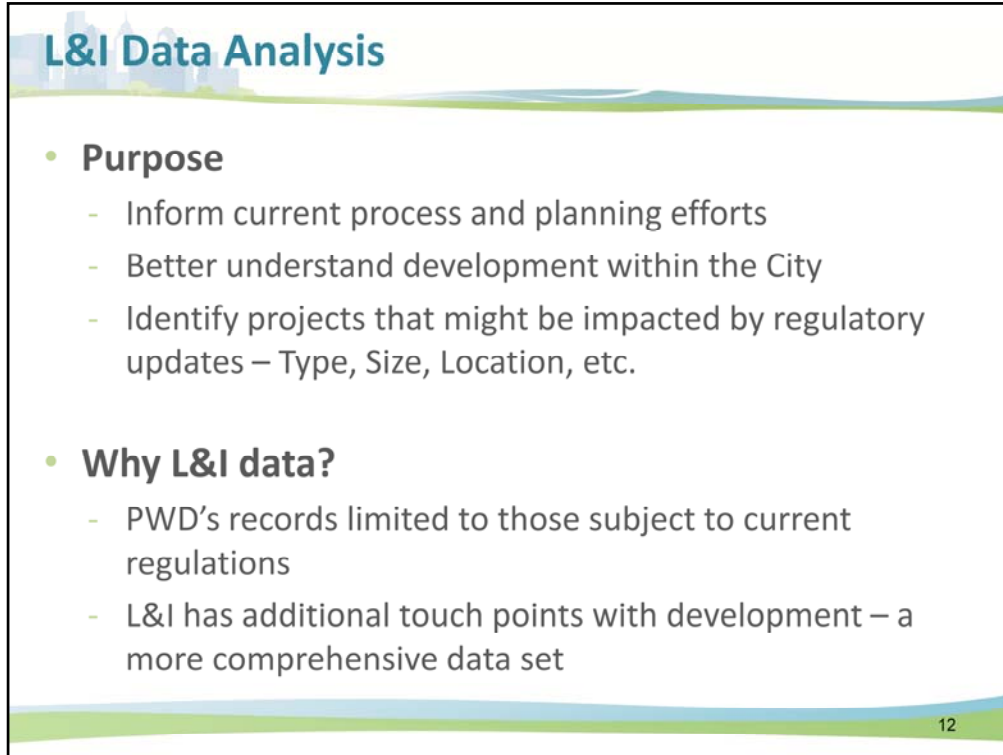
PWD has researched both peer and local communities in order to understand and compare the requirements being considered for Philadelphia in context of similar Cities as well as surrounding communities. For instance, Chester County and Radnor Township utilize a relatively small impervious area trigger. Communities more similar to Philadelphia such as Baltimore and Washington, D.C. have the same earth disturbance trigger currently being considered.

Philadelphia chose to implement a trigger based on earth disturbance instead of an impervious area trigger. This was due to several factors such as:

- Philadelphia is mostly developed and 80 percent of submitted projects are considered redevelopment.
- Changes to the amount of pervious cover can also impact stormwater runoff significantly.

IMPACT OF ACT 167 ON DEVELOPMENT COMMUNITY



A presentation slide titled "L&I Data Analysis" with a decorative header and footer. The header features a stylized city skyline in shades of blue and green. The slide content is organized into two main bullet points, each with sub-bullets. The footer contains the number "12".

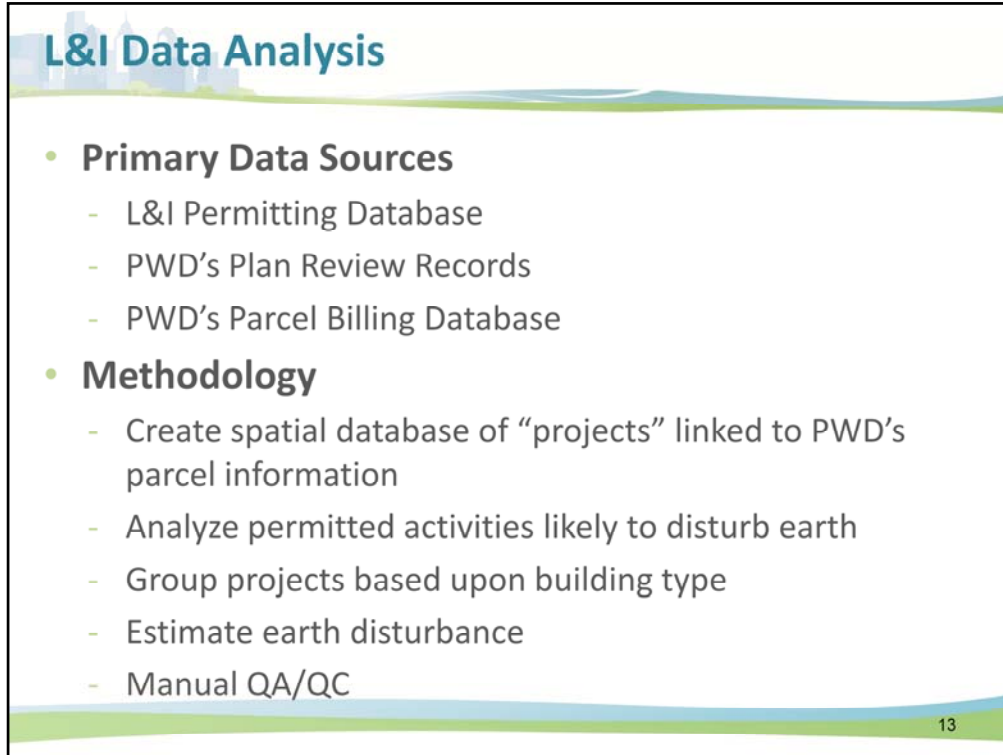
L&I Data Analysis

- **Purpose**
 - Inform current process and planning efforts
 - Better understand development within the City
 - Identify projects that might be impacted by regulatory updates – Type, Size, Location, etc.
- **Why L&I data?**
 - PWD's records limited to those subject to current regulations
 - L&I has additional touch points with development – a more comprehensive data set

12

The purpose of the L&I data analysis is to inform current processes and planning efforts, to better understand development within the City, and to identify projects that might be impacted by regulatory updates. Impacts were considered with respect to both the development community and PWD.

PWD will continue forward with this analysis by considering constructability and feasibility of both new and updated requirement to develop reasonable regulations.

A presentation slide titled "L&I Data Analysis" with a decorative header and footer. The slide contains two main bullet points: "Primary Data Sources" and "Methodology".

L&I Data Analysis

- **Primary Data Sources**
 - L&I Permitting Database
 - PWD's Plan Review Records
 - PWD's Parcel Billing Database
- **Methodology**
 - Create spatial database of "projects" linked to PWD's parcel information
 - Analyze permitted activities likely to disturb earth
 - Group projects based upon building type
 - Estimate earth disturbance
 - Manual QA/QC

13

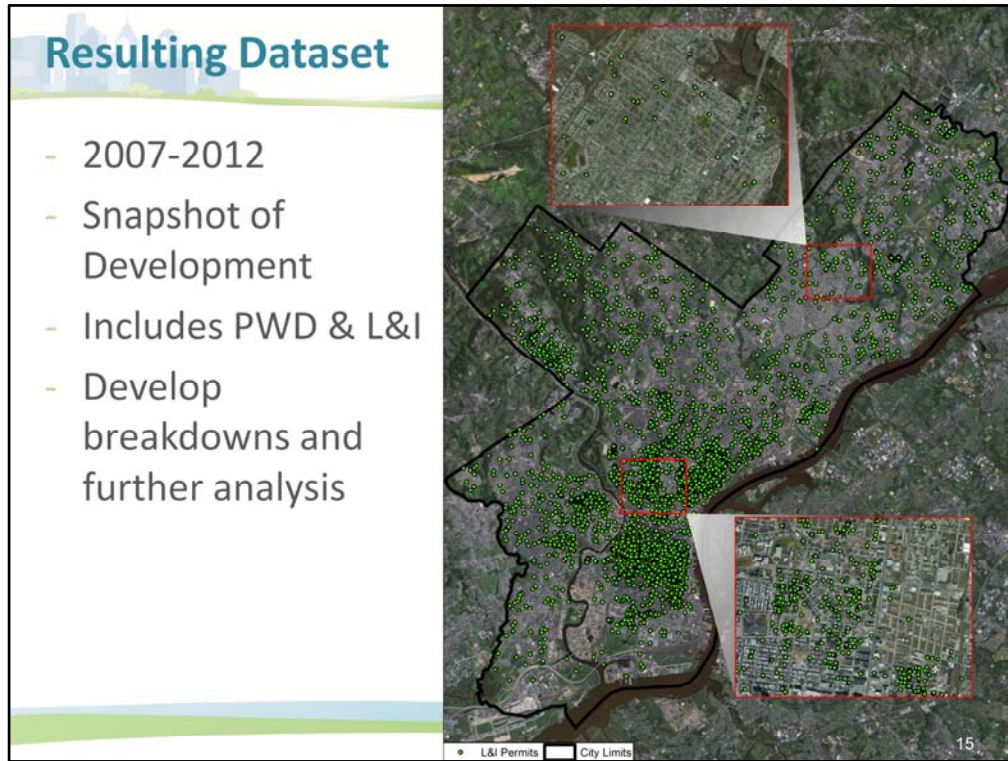
L&I data was chosen because they permit all development activity. The L&I data provides a larger set of projects, specifically those projects that are below PWD's current earth disturbance threshold that are not being reviewed.

L&I Data Analysis - Building Types

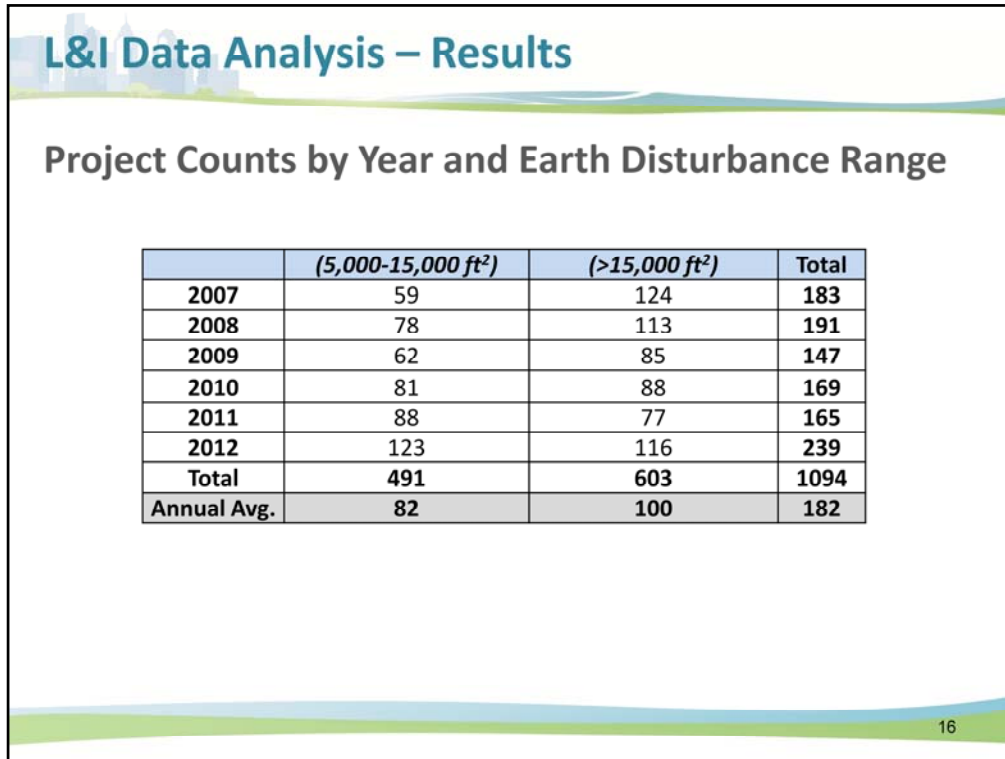
- **Residential Buildings**
 - Apartments
 - Row
 - Single
 - Twin
- **Non-Residential Buildings**
 - Apartments 5+ Units/Condo
 - Airport
 - Auto Lot/ Auto Repair/ Gas Station
 - Bank
 - Cemetery/Golf
 - Hospital
 - Hotel
 - Industry
 - Office
 - Park/Rec Center
 - Parking
 - Public
 - Religious
 - Restaurant/Nightclub/Entertainment
 - School
 - Scrap yard
 - Shopping Center
 - Store
 - Supermarket
 - Transportation
 - Utility
 - Vacant
 - Other

14

L&I analysis identified 27 building types to represent development communities within the dataset.

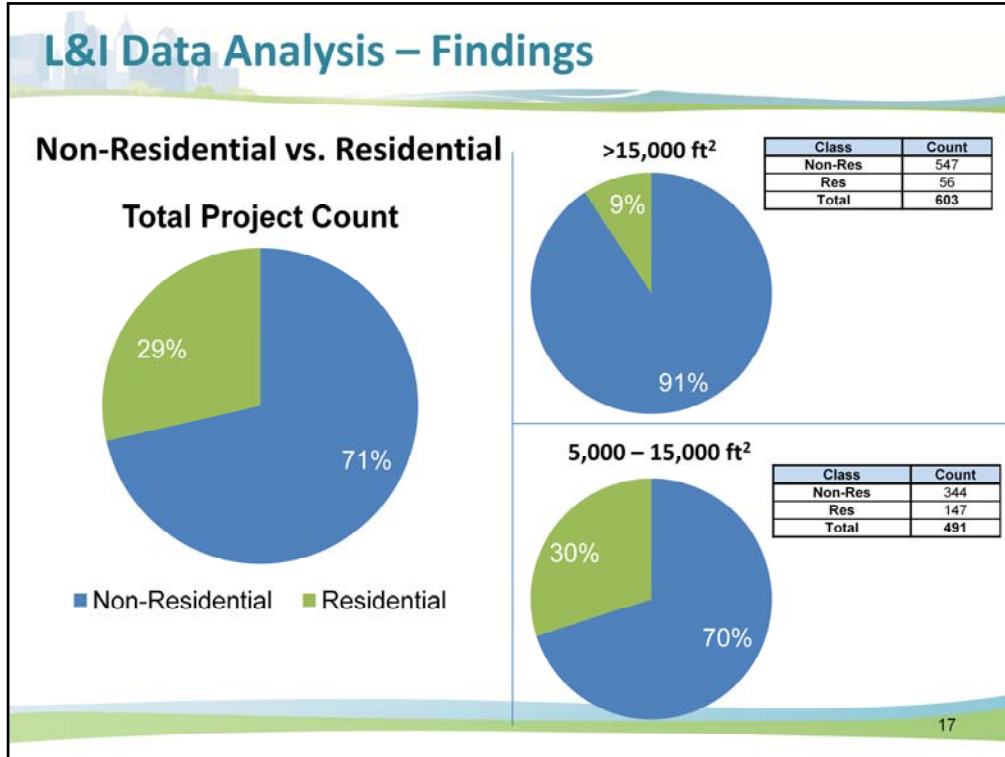


A snapshot of the data is presented in figure above. These points were identified as project locations and were used to develop breakdowns and further analysis of development patterns and trends. The figures gives an idea of the general distribution of projects between 2007 and 2012 across Philadelphia that may have involved earth disturbance, and would potentially trigger stormwater management under the updated requirements.



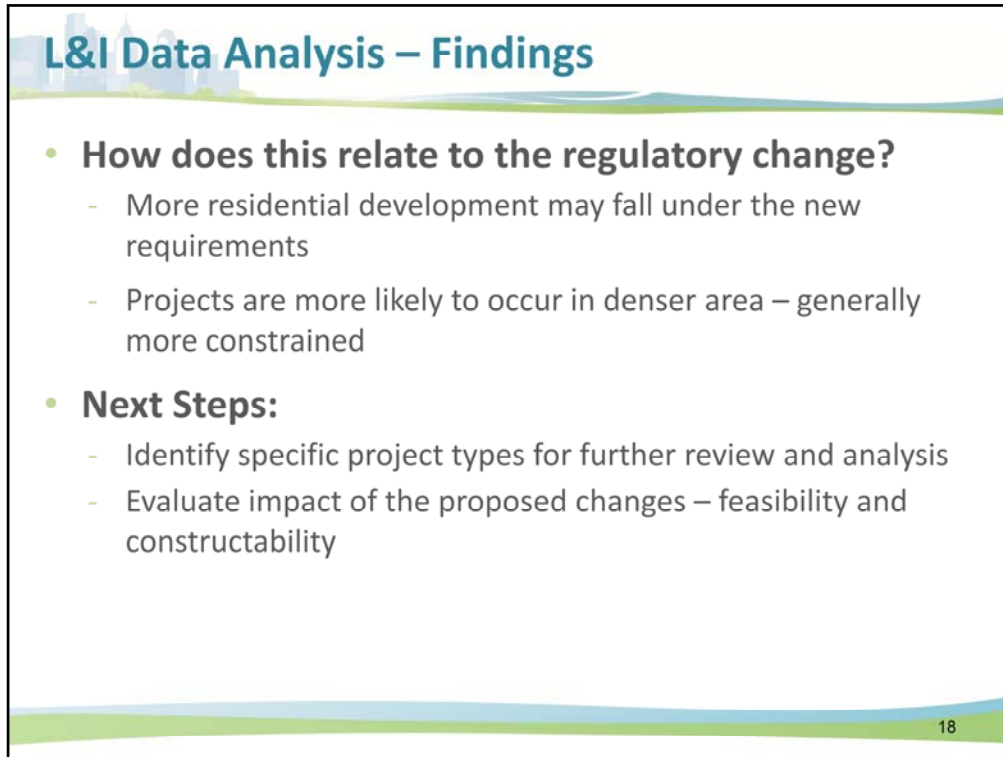
Results from the L&I analysis determined an annual average project count across various ranges of earth disturbance. An average annual count of 82 projects was estimated with an associated earth disturbance of 5,000 - 15,000 SF. Similarly, an average annual count of 100 projects was estimated with disturbance above 15,000 SF.

This data indicated that with the updates, PWD may experience almost double the work load by regulating smaller sites. This is important as PWD wants to have sufficient support available to process permits, minimize and hopefully eliminate any delays that might result from implementing the 5,000 SF earth disturbance trigger.



This slide presents a break down of project types in the 5,000-15,000 SF projects and over 15,000 SF projects.

As seen here, for projects over 15,000 SF, only 9% of development is residential. Furthermore, for development between 5,000 - 15,000 SF, the percent of residential development more than triples, indicating a shift in development trends with the range of earth disturbance as the trigger.

A presentation slide titled "L&I Data Analysis – Findings" with a decorative header and footer. The slide contains two main bullet points: "How does this relate to the regulatory change?" and "Next Steps:", each followed by sub-bullets. The number "18" is in the bottom right corner of the slide frame.

L&I Data Analysis – Findings

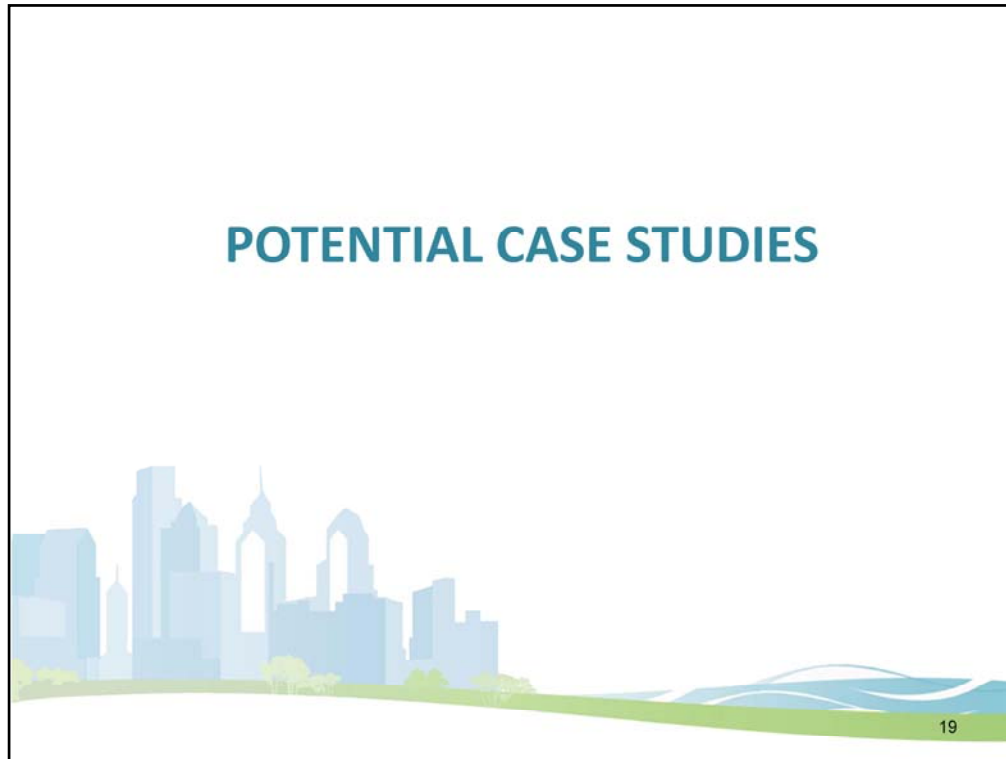
- **How does this relate to the regulatory change?**
 - More residential development may fall under the new requirements
 - Projects are more likely to occur in denser area – generally more constrained
- **Next Steps:**
 - Identify specific project types for further review and analysis
 - Evaluate impact of the proposed changes – feasibility and constructability

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Impacts between 5,000 and 15,000 SF need to be evaluated and understood and different requirements may be needed for the projects of this size.

PWD is looking for DSC assistance in identifying development that frequently occurs between 5,000 - 15,000 SF of earth disturbance, and to identify some of the unique challenges for projects of varying types and land use (e.g. the challenges faced by implementing stormwater on a 12 unit row of home versus a 4 unit row of homes development).

The next slides provide some real world examples.



The following slides presents a series of 6 examples of development projects which have occurred within the City on sites where less than 15,000 SF of earth disturbance occurred. These examples include projects both with and without on-site stormwater management. In the future, under the new regulatory requirements, all of these sites might be required to provide some level of stormwater management.



West Mermaid Lane Residential Development Example: BEFORE

Location: 500 Block of West Mermaid Lane

Estimated Earth Disturbance: 15,500 SF



West Mermaid Lane Residential Development Example: DURING

Location: 500 Block of West Mermaid Lane

Estimated Earth Disturbance: 15,500 SF



West Mermaid Lane Residential Development Example: AFTER

Location: 500 Block of West Mermaid Lane

Estimated Earth Disturbance: 15,500 SF

Stormwater Management: Subsurface Infiltration Basin



North 18th Street Residential Development Example: BEFORE

Location: 1800 Block North 18th Street

Estimated Earth Disturbance: 5,300 SF



North 18th Street Example: AFTER

Location: 1800 Block North 18th Street

Estimated Earth Disturbance: 5,300 SF

Stormwater Management: N/A



Spruce Street Institutional Project Example: BEFORE

Location: Spruce and South 40th Street

Estimated Earth Disturbance: 14,800 SF



Spruce Street Institutional Project Example: DURING

Location: Spruce and South 40th Street

Estimated Earth Disturbance: 14,800 SF

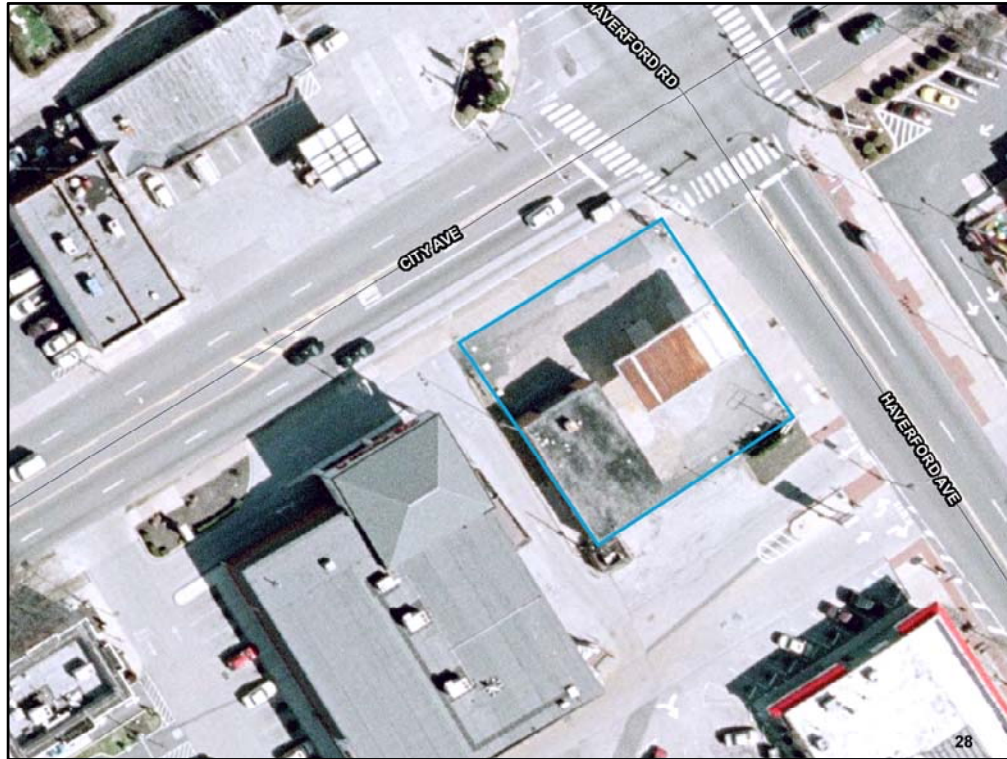


Spruce Street Institutional Project Example: AFTER

Location: Spruce and South 40th Street

Estimated Earth Disturbance: 14,800 SF

Stormwater Management: N/A



Popeye's Chicken and Biscuits Commercial Project Example: BEFORE

Location: City Avenue and Haverford Avenue

Estimated Earth Disturbance: 11,428 SF



Popeye's Chicken and Biscuits Commercial Project Example: DURING

Location: City Avenue and Haverford Avenue

Estimated Earth Disturbance: 11,428 SF



Popeye's Chicken and Biscuits Commercial Project Example: AFTER

Location: City Avenue and Haverford Avenue

Estimated Earth Disturbance: 11,428 SF

Stormwater Management: Stormwater management for this site includes a subsurface infiltration basin located along length of building in parking area between building and City Avenue.



Stenton Avenue Residential Project Example: BEFORE

Location: 8400 Block of Stenton Avenue

Estimated Earth Disturbance: 14,000 SF



Stenton Avenue Residential Project Example: DURING

Location: 8400 Block of Stenton Avenue

Estimated Earth Disturbance: 14,000 SF



Stenton Avenue Residential Project Example: AFTER

Location: 8400 Block of Stenton Avenue

Estimated Earth Disturbance: 14,000 SF

Stormwater Management: Stormwater management for this site includes, a subsurface infiltration basin located along the front of house parallel to Stenton Avenue, and approximately 700 square feet rooftop disconnection.



PWD is considering the following approaches as potential management strategies or options for projects at 5,000 – 15,000 SF. Some of these may apply to projects with more than 15,000 SF as well, but the focus of this presentation is how these options can help ease the burden on the smaller development sites.

Fee in Lieu

What is it?

- Fee payment in lieu of providing on-site stormwater management

Why is it important?

- Provides flexibility in site design, shortens review times

What needs to be done?

- Evaluate how fits into PWD regulatory compliance
- Economic consultant to explore implementation options and help develop program

35

Fee in Lieu (FIL) exists today but is not heavily promoted by PWD. Typically this option is used as a last resort, in enforcement scenarios.

In the time since the June DSC, PWD has hired economic consultant, eConsult, to work with the department on a number of economic analyses. These include FIL, determining the economic burden on the development community to implement stormwater management on smaller sites, as well as understanding and development of costing data for stormwater management. Due to the expressed interest by the committee and the development community, FIL is being considered as a top priority for the department and will be an immediate task for eConsult. Work should begin by the end of October and FIL will be first.

Eligibility criteria will be key in implementing this management tool, in order to determine who and where this will work. In certain situations, regulatory compliance may limit the use of FIL (e.g. sites with flood control applicable may not be eligible).

Banking and Trading

What is it?

- Ability to provide stormwater management off-site or outside of immediate project area

Why is it important?

- Provides flexibility in site design and may reduce costs

What needs to be done?

- Provide tools to applicant for same parcel and same owner trading, and same parcel banking

36

Banking and trading provides the ability to implement stormwater management off-site or outside of an immediate project area. This management tool allows for flexibility in site design and may reduce costs. This tool may prove useful, particularly for smaller projects.

The Department has assessed the committee's response on the previous banking and trading discussion, where there was minimal interest in larger tools like mitigation banks or searching through parcel lists for a match. PWD understands the need to provide tools to applicants for same parcel and same owner trading and same parcel banking, and intends to provide more formal guidance to clarify when and how this tool can be used.

This tool may apply beyond the private site limits, to include trading for management in the public Right of Way (ROW).

Management in Public ROW

What is it?

- Use of the public ROW for private regulatory compliance

Why is it important?

- Provides flexibility in site design

What needs to be done?

- Legal and policy discussions
- Pilot projects

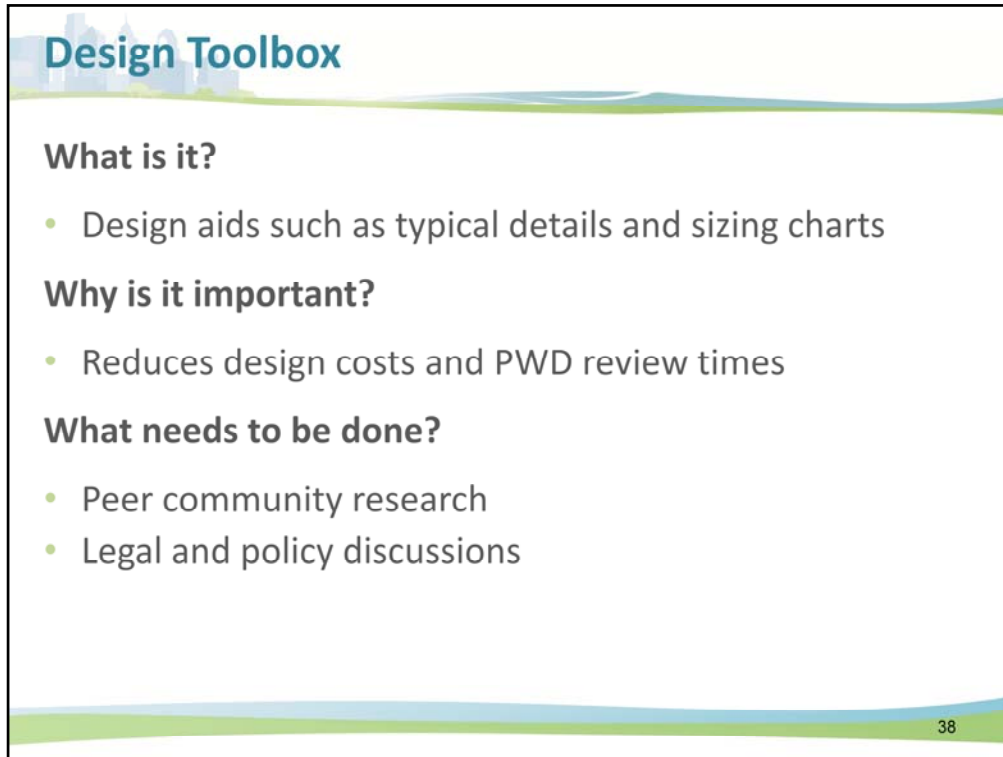
37

Management of or in the Right of Way (ROW) can be any of the following or a combination thereof:

- Management of private site runoff in ROW
- Management of ROW runoff in ROW
- Management of ROW runoff on private site
- Or comingled systems

PWD prefers to own and maintain stormwater management infrastructure installed in the public ROW. This affects PWD's ability to offer stormwater billing credit to those projects that utilize the ROW for their private development compliance.

PWD recognizes that this is a new opportunity for management and is currently developing a Green Street Manual which will assist developers. This manual and specifications contained therein will be especially important, as building green infrastructure to PWD standards may look different or cost more than typical construction or what is allowed on private development.

A slide titled "Design Toolbox" with a decorative header and footer. The header features a stylized city skyline in shades of blue and green. The footer has a similar color scheme and contains the number "38".

Design Toolbox

What is it?

- Design aids such as typical details and sizing charts

Why is it important?

- Reduces design costs and PWD review times

What needs to be done?

- Peer community research
- Legal and policy discussions

38

Design aids such as typical details and sizing charts could be made available to assist in the design process. Plans developed using these tools could anticipate a high level of certainty of approval and reduce design costs and PWD review times. PWD must still discuss legal and policy concerns, and complete peer community research in order to create this management tool. This management tool may only be available to certain projects, and PWD will define this eligibility criteria.

PWD recognizes that this may be the most viable option on predictable site types (e.g. residential properties).

PWD will continue with peer community research of similar design aids in other urban environments and continue with legal and policy discussions in order to create this management tool.

Tree Credits

What is it?

- New and existing trees are eligible for management credit

Why is it important?

- Provides flexibility in site design and helps meet Zoning requirements

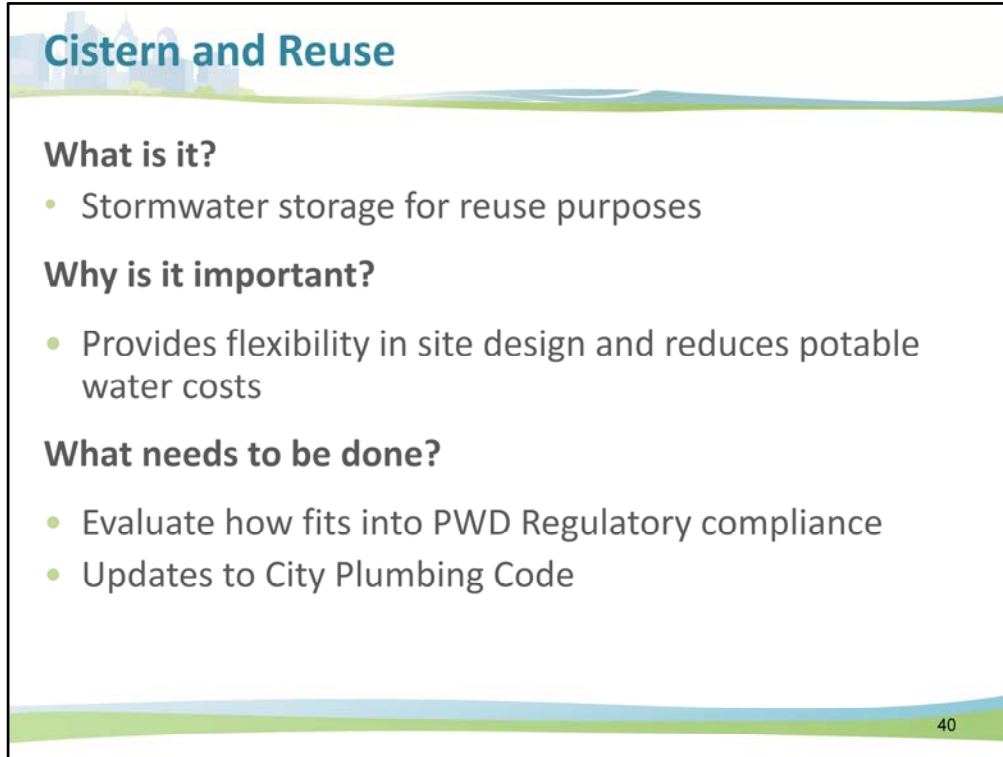
What needs to be done?

- Identify connections with Zoning Code
- Explore approaches to maximize management credit

39

This tool is identified as being insufficient to provide complete management for a site, but can be used in conjunction with other management practices to obtain the amount of stormwater management needed for a site. Tree credits are obtained through the planting of new trees, and the consideration of canopy cover for existing trees. Currently, new trees provide 100 SF of management, and existing trees are computed to provide half the canopy area cover in management.

PWD proposed some variations to the current uses for tree credits, identifying the Zoning Code requirement to implement trees and the possibility for the property to obtain stormwater credit for these trees. This tool, coupled with ROW management and FIL, could provide alternative management solutions for developers. Currently the Zoning code requires trees in sidewalk along linear frontage for sites exceeding 5,000 SF.



Cistern and Reuse

What is it?

- Stormwater storage for reuse purposes

Why is it important?

- Provides flexibility in site design and reduces potable water costs

What needs to be done?

- Evaluate how fits into PWD Regulatory compliance
- Updates to City Plumbing Code

40

This stormwater management practice is currently underutilized. This is mainly due to the fact that revisions and clarifications are needed from PWD on design requirements and specifications. In addition, projects using cisterns for reuse purposes need a variance from the current plumbing code, which can make this option expensive and tedious to pursue.

This tool provides flexibility in site design and reduces potable water costs. PWD needs to evaluate how this tool would best fit into PWD regulatory compliance. The City acknowledges the need to revisit water use criteria and plumbing code, but this could be a viable option if people could use up the water within 72 hours. PWD can commit to finalizing the requirements for Cistern and Reuse as an approved management tool by 2015, but cannot guarantee the needed updates to the plumbing code can be completed within the same timeframe, as this is a City wide effort.

PWD is interested in knowing if requirements were clearer would this option be more widely used.



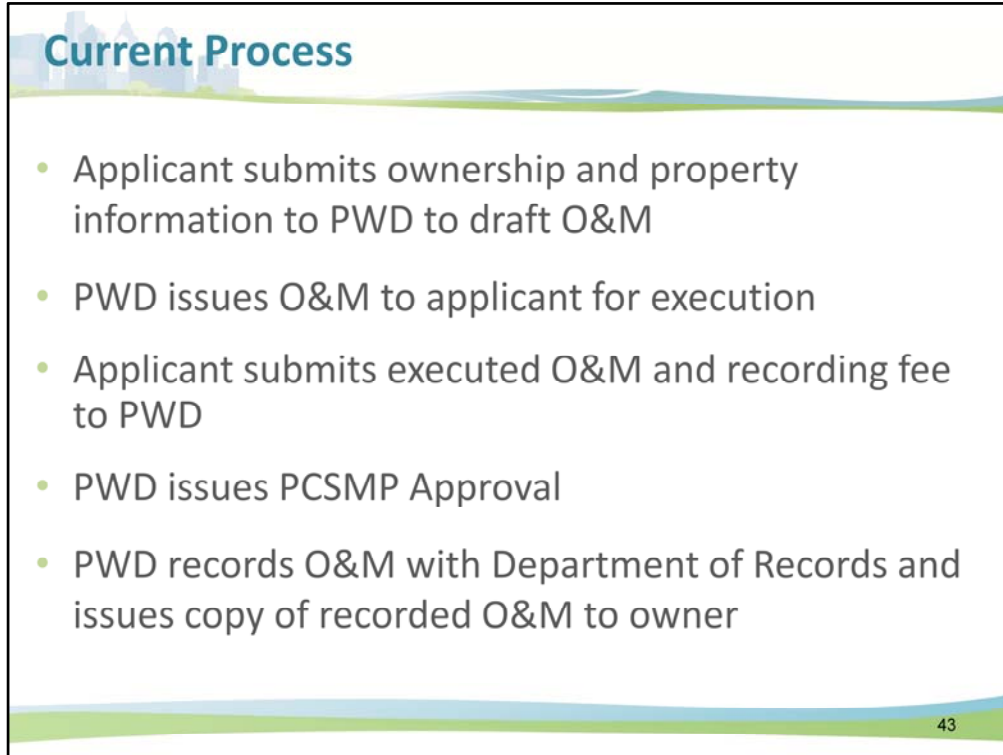
PWD then presented on the topic of Operation & Maintenance (O&M) requirements, describing the current process and some of the known issues as well as suggested improvements for the agreement documentation.

Operation & Maintenance Agreement (O&M)

- PWD Regulations 600.11: *No regulated Earth Disturbance activities shall commence until the Department has approved a PCSMP and O&M Plan prepared in accordance with the requirements set forth in the Manual.*
- Establishes agreement between PWD and property owner to ensure long-term maintenance and functionality of stormwater management practices.
- Recorded O&Ms show up in property search and the document can be transferred between owners.

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Operation and Maintenance Agreements are legal and recordable documents.



Current Process

- Applicant submits ownership and property information to PWD to draft O&M
- PWD issues O&M to applicant for execution
- Applicant submits executed O&M and recording fee to PWD
- PWD issues PCSMP Approval
- PWD records O&M with Department of Records and issues copy of recorded O&M to owner

43

This process outlined above illustrates some of the challenges faced when finalizing the agreements prior to PWD approval.

Need for O&M Process Improvement

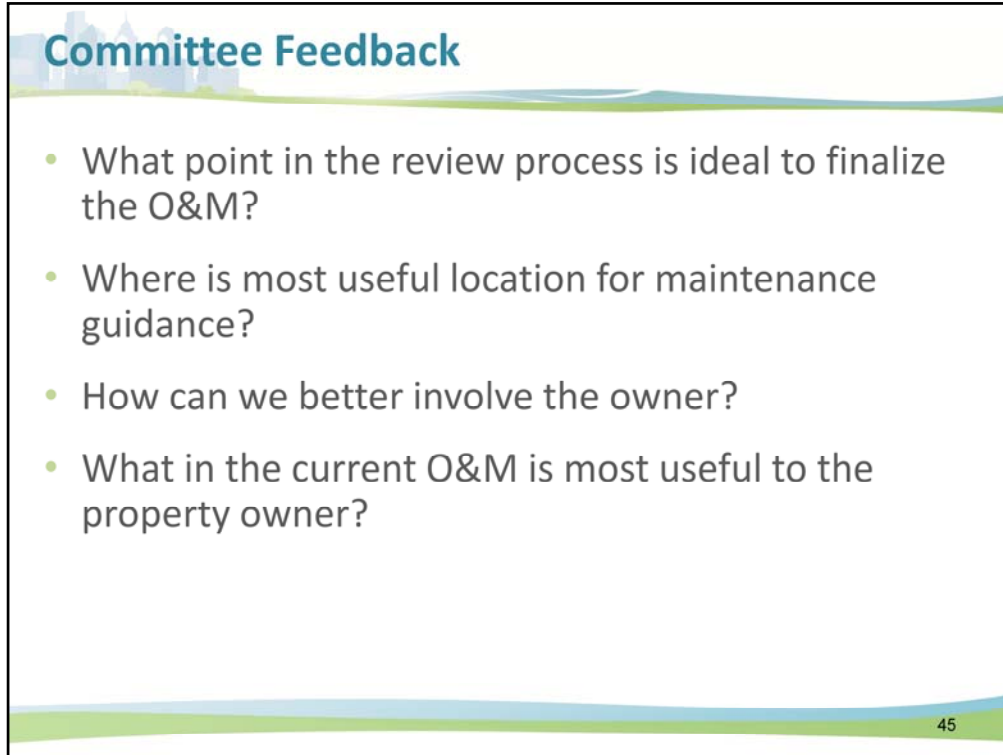
- Property owner is disconnected from the process
- Process is time consuming and can hold up PCSMP Approval
- O&M must be amended for changes during construction
 - Including lot consolidations and subdivisions
- Not an ideal location for maintenance procedures

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From PWD’s perspective, depending on the type of project, the property owner or manager may be disconnected from the agreement process. As currently administered, this is a time consuming process and can hold up Post Construction Stormwater Management Plan approval from PWD and DEP, when applicable.

Since the O&M agreement is drafted at the time of approval, the agreements must often be amended for changes which occurred during construction, including lot consolidations and subdivisions.

PWD also feels that the property ownership documents may not be the most ideal location for O&M procedures, due to accessibility and readability for the party responsible for management.



Committee Feedback

- What point in the review process is ideal to finalize the O&M?
- Where is most useful location for maintenance guidance?
- How can we better involve the owner?
- What in the current O&M is most useful to the property owner?

45

PWD asked the committee if they would prefer that the O&M be tied to the Post Construction Stormwater Management Plan (PCSMP) Approval or the Certificate of Occupancy (CO)? PWD acknowledged the committee's suggestion in holding a certificate of occupancy, similar to that for Record Drawings.

PWD also asked the committee for feedback about where would be the most helpful location for maintenance guidance. Suggestions offered by PWD included the following:

- O&M Agreement
- Stormwater Guidance Manual
- Maintenance plan prepared by a PE

Ideas for O&M Process Improvement

- Connect owner in with the process
 - Reduces PWD review times
 - O&M recorded by owner once lots are finalized and/or sale of property is complete
- Shift O&M finalization as pre-requisite to Certificate of Occupancy
 - Faster PCSMP Approval and reduces Field Change review times
 - Less O&M amendments and recording fees
- Provide maintenance guidance external from O&M
 - Owner and engineer have control over maintenance approach
 - Maintenance information is more accessible to owner
 - Shorter O&M processing time with PWD

46

PWD suggested that the O&M agreement be finalized as a pre-requisite to obtaining a CO. This would eliminate time spent preparing O&Ms for projects that don't go to construction, changes to property boundaries, and/or design changes during construction.

PWD asked the committee if the maintenance requirements should be placed in the O&M agreement or be covered in an external PWD Guidance Manual. With this approach SMPs would still be listed in the O&M agreement, and PWD would provide general guidance in a manual to cover them.

Housekeeping

Next Meeting

- January 2014 Regulation update
- December 5th at 8:30 AM

Thank you!

47

The next DSC Meeting is tentatively scheduled for December 5th, 2013 at 8:30 AM. Topics to be discussed include regulatory updates to the following:

- Implementation of new Review Fees
- Record Drawing and Operation & Maintenance Agreement Improvements
- Implementation of revised Flood Management Districts from Act 167 Plans
- Guidance Manual Improvements

During the next DSC Meeting, PWD will also discuss progress with the Technical Analysis, particularly the impact on small sites.