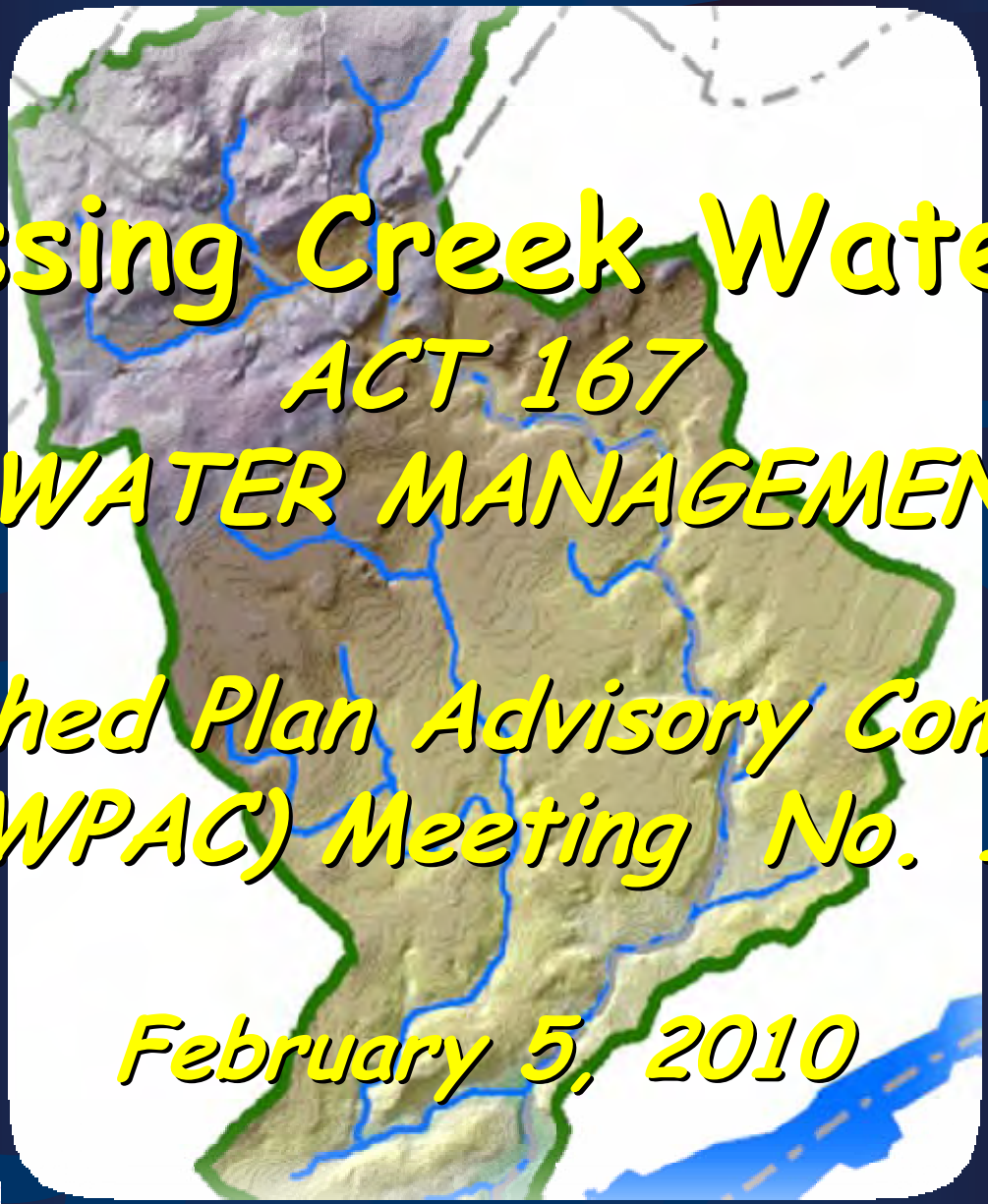
Poquessing Creek Watershed

ACT 167
STORM WATER MANAGEMENT PLAN



Watershed Plan Advisory Committee (WPAC) Meeting No. 1

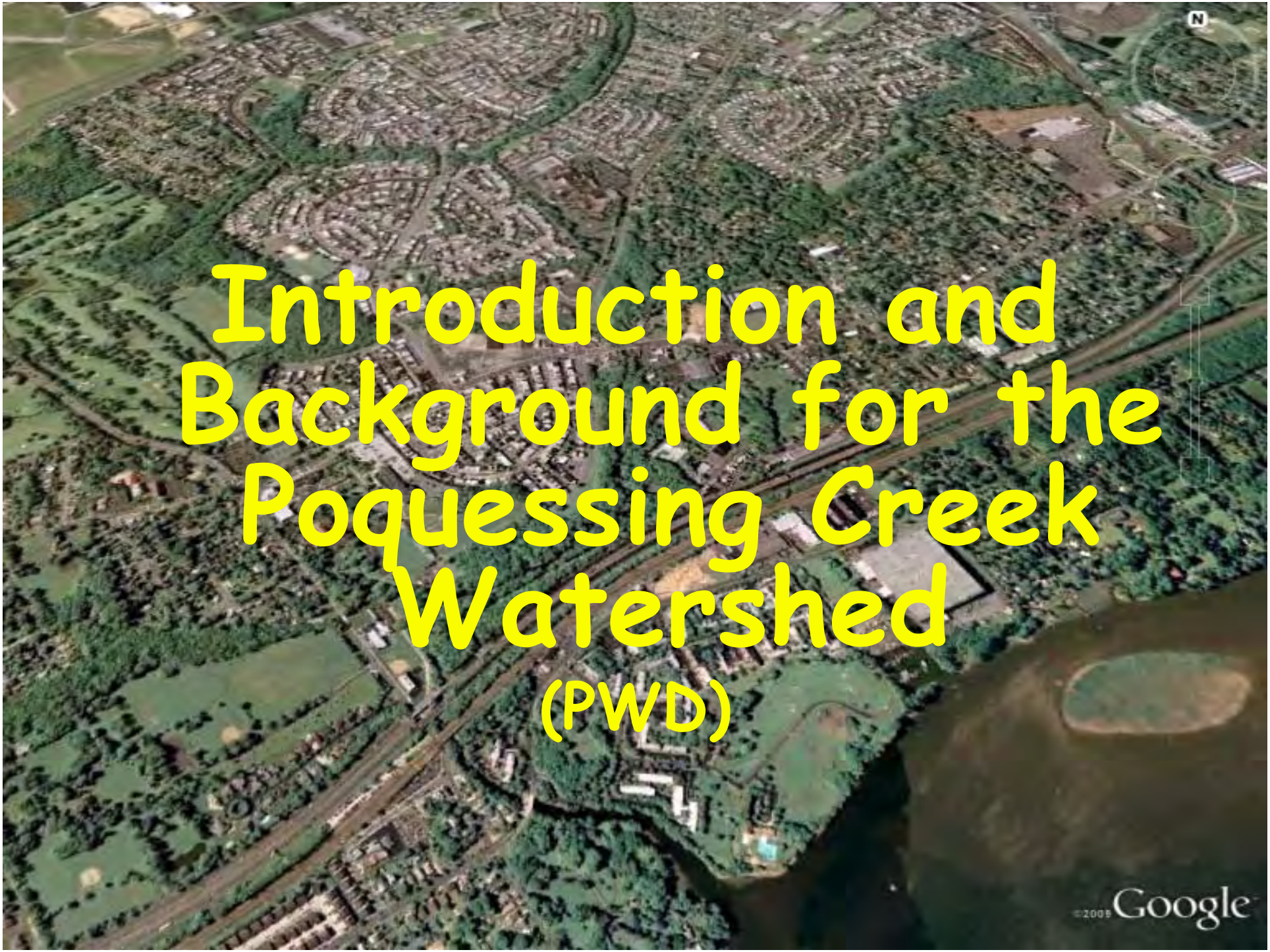
February 5, 2010

AGENDA
Watershed Plan Advisory Committee (WPAC) Meeting No. 1.

February 5, 2010
10:00 A.M.
Glen Foerd Mansion,
Philadelphia, PA

- Attendee Introductions
  (Joanne Dahme, PWD)
- Introduction and Background for the Poquessing Creek Watershed
  (Marc Cammarata, PWD)
- Partneship Updates
  (Paul Racette, PEC)
- Act 167 Overview
  (Jennifer Kehler, DEP)
- Poquessing Creek Act 167 Scope of Work
  (Paul DeBarry, NTM Engineering)
- Municipal Participation–Data Collection Forms
  (Paul DeBarry, NTM Engineering)
- Coordination with the Pennpack Act 167 Plan
  (Jeff Featherstone)
- Schedule, timeline

Welcome & Introductions


Introduction and Background for the Poquessing Creek Watershed
(PWD)
©2009 Google

Related Documents/ Studies:

- **Poquessing Creek Watershed Rivers Conservation Plan (RCP)**

Poquessing Watershed River Conservation Plan Goals:

1.) Establish Comprehensive Watershed-Based Planning & Protective Regulations
2.) Improve Stream Habitat, Protect Aquatic Resources and Restore Aquatic Communities
3.) Improve In-Stream Flow Conditions
4.) Improve and Protect Water Quality of Ground and Surface Waters and Reduce Pollutant Loads
5.) Improve and Protect Stream Corridors
6.) Address Flooding

Poquessing Watershed River Conservation Plan Goals:

7.) Enhance and Improve Recreational Opportunities

8.) Improve Stewardship, Communication and Coordination Among WS Stakeholders

9.) Protect Significant Natural Features

10.) Protect Significant Historic & Cultural Features

11.) Initiate Sustainable Development on a Watershed Level

12.) Initiate Capital Improvements for Watershed Protection

Related Documents / Studies:

- Southeast Regional Wetland Inventory and Water Quality Improvement Initiative Poquessing Creek Watershed

Southeast Regional Wetland Inventory and Water Quality Improvement Initiative - Poquessing Creek Watershed Bucks, Philadelphia, and Montgomery Counties, Pennsylvania - PWD & EPA

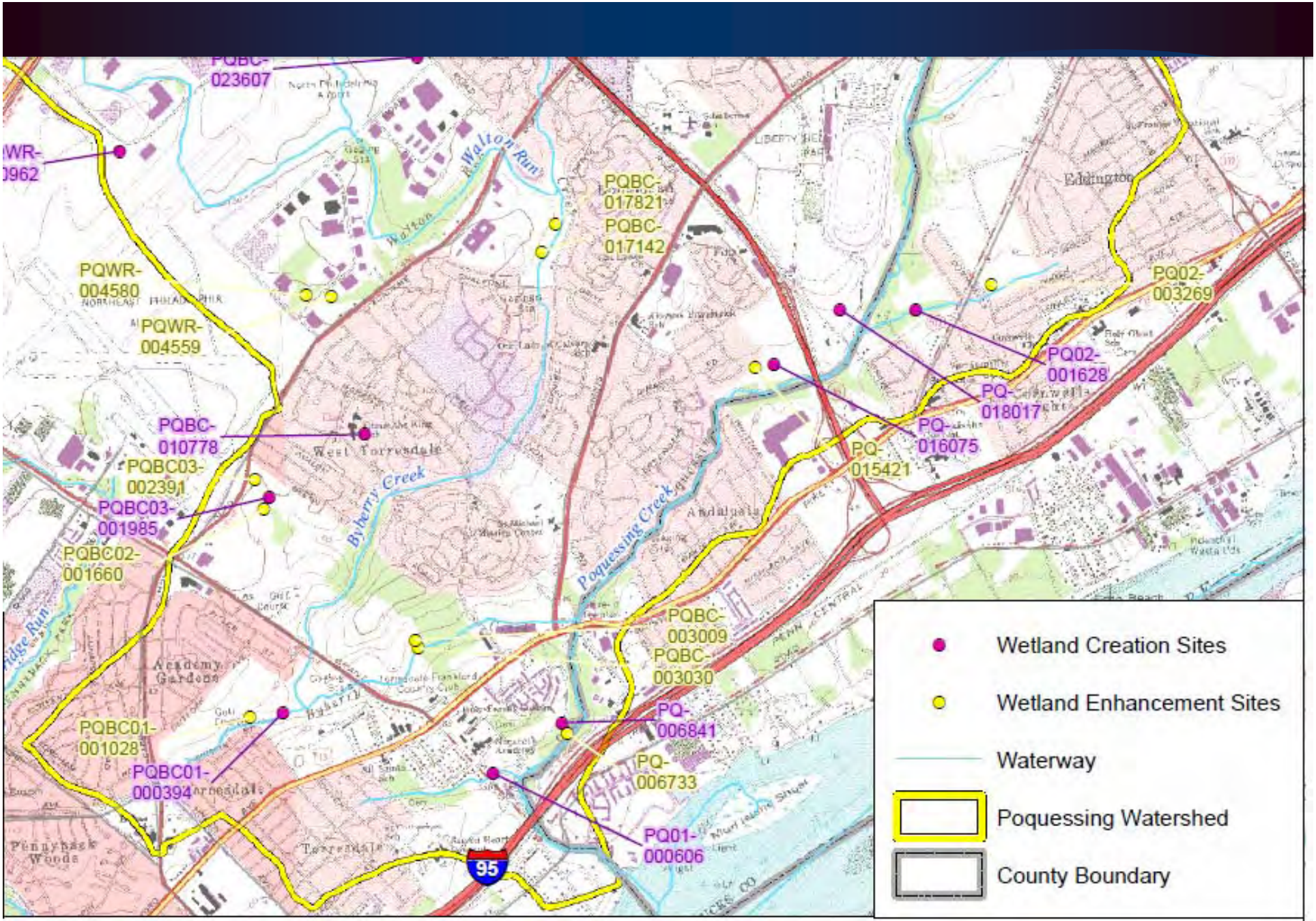
RECOMMENDATIONS FOR POTENTIAL WETLAND ENHANCEMENT AND CREATION AREAS

A. Potential Creation Areas: In-City Locations
B. Potential Creation Areas: Out-Of-City Locations

WETLAND RESOURCES

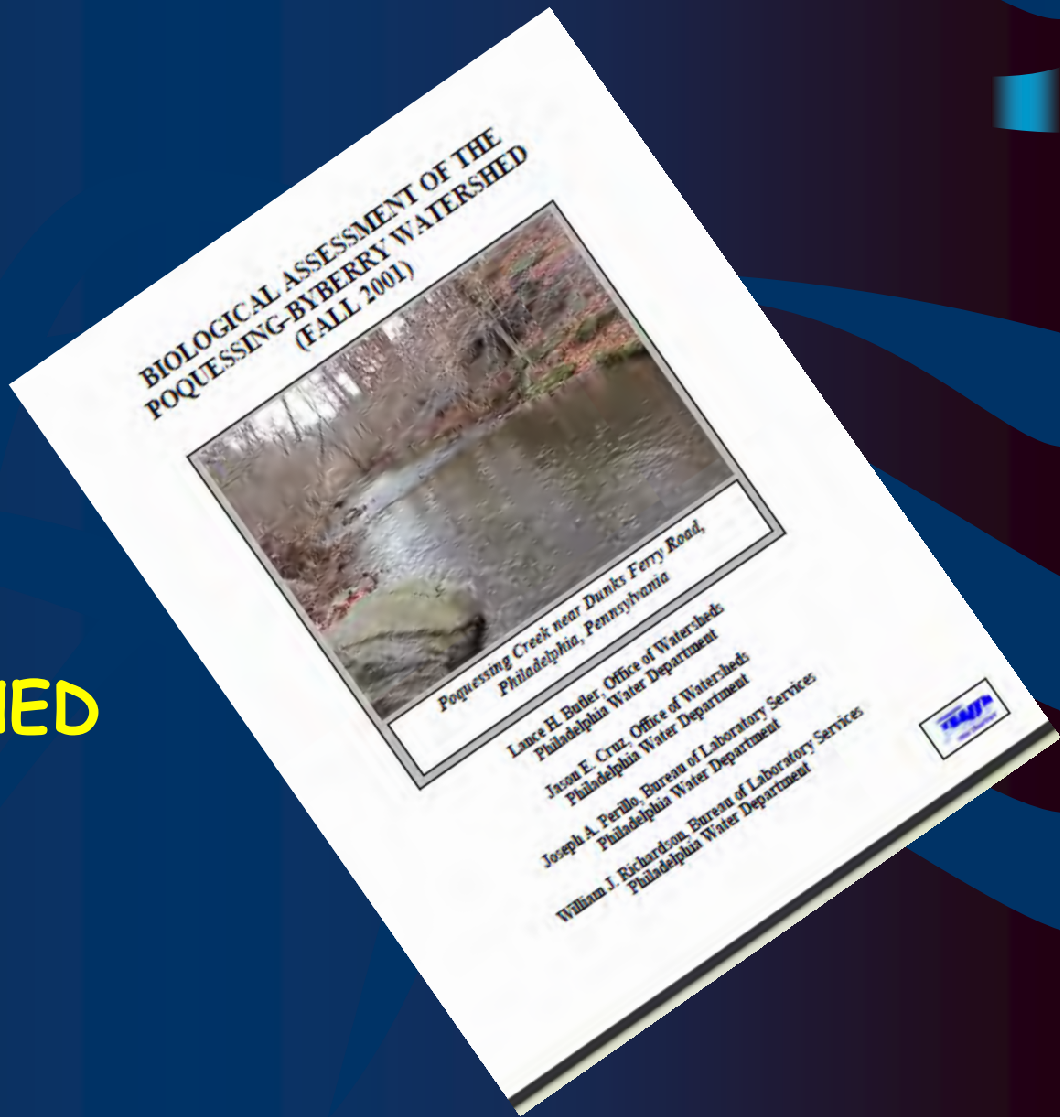
A. In-City Existing Wetlands
B. Out-Of-City Existing Wetlands

STORMWATER OUTFALL ASSESSMENT


PQBC-023607
PQWR-0962
PQBC-017821
PQBC-017142
PQWR-004580
PQWR-004559
PQ02-003269
PQ02-001628
PQ-018017
PQ-016075
PQ-015421
PQBC-010778
PQBC03-002391
PQBC03-001985
PQBC02-001660
PQBC-003009
PQBC-003030
PQ-006841
PQ-006733
PQBC01-001028
PQBC01-000394
PQ01-000606
Walton Run
Byberry Creek
Poquessing Creek
West Torresdale
Andalusia
Academy Gardens
Torresdale
Pennypack Woods
Edgington
95
Wetland Creation Sites
Wetland Enhancement Sites
Waterway
Poquessing Watershed
County Boundary

Related Documents / Studies:

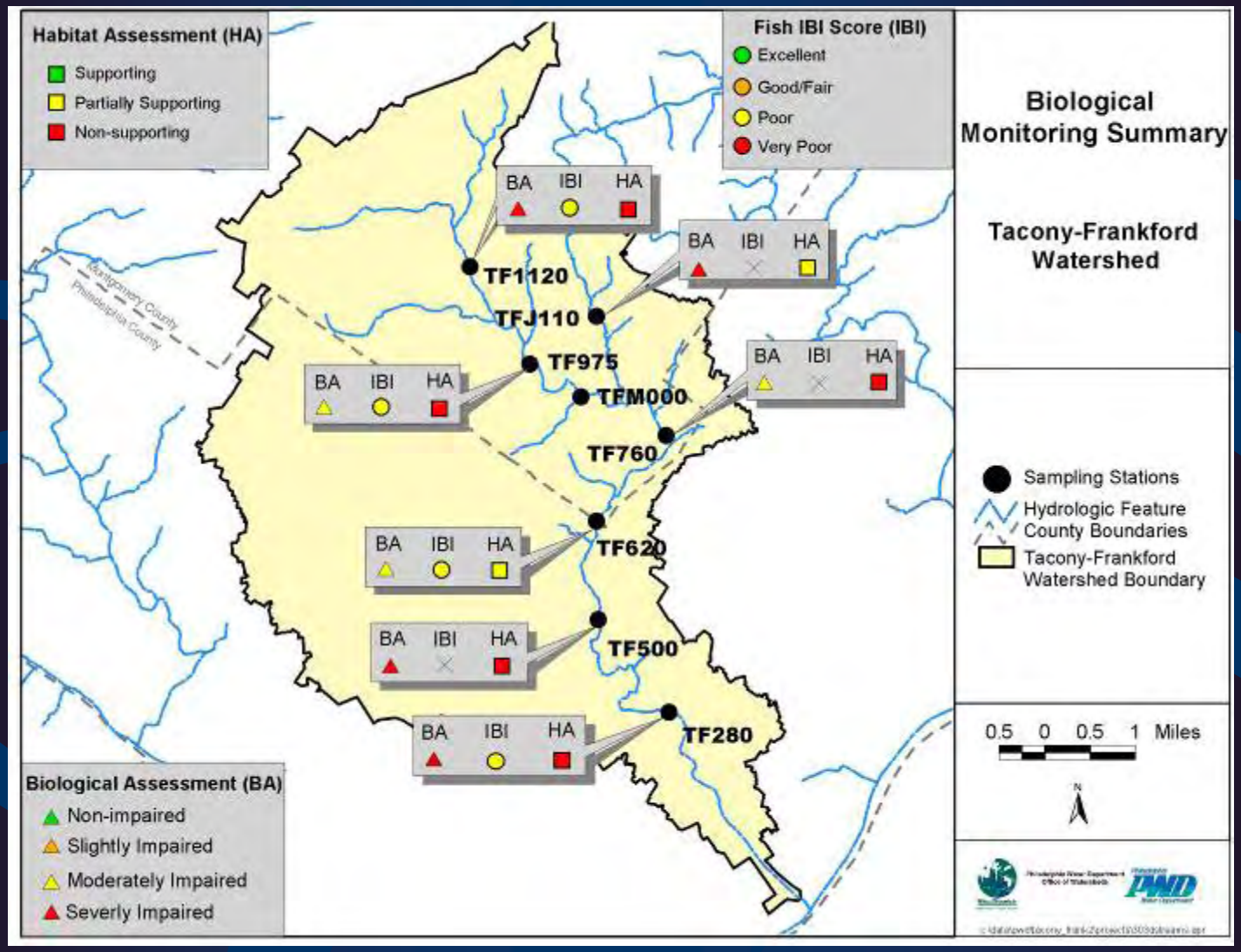
- BIOLOGICAL ASSESSMENT OF THE POQUESSING-BYBERRY WATERSHED (FALL 2001)



Biological and Habitat Related Problems

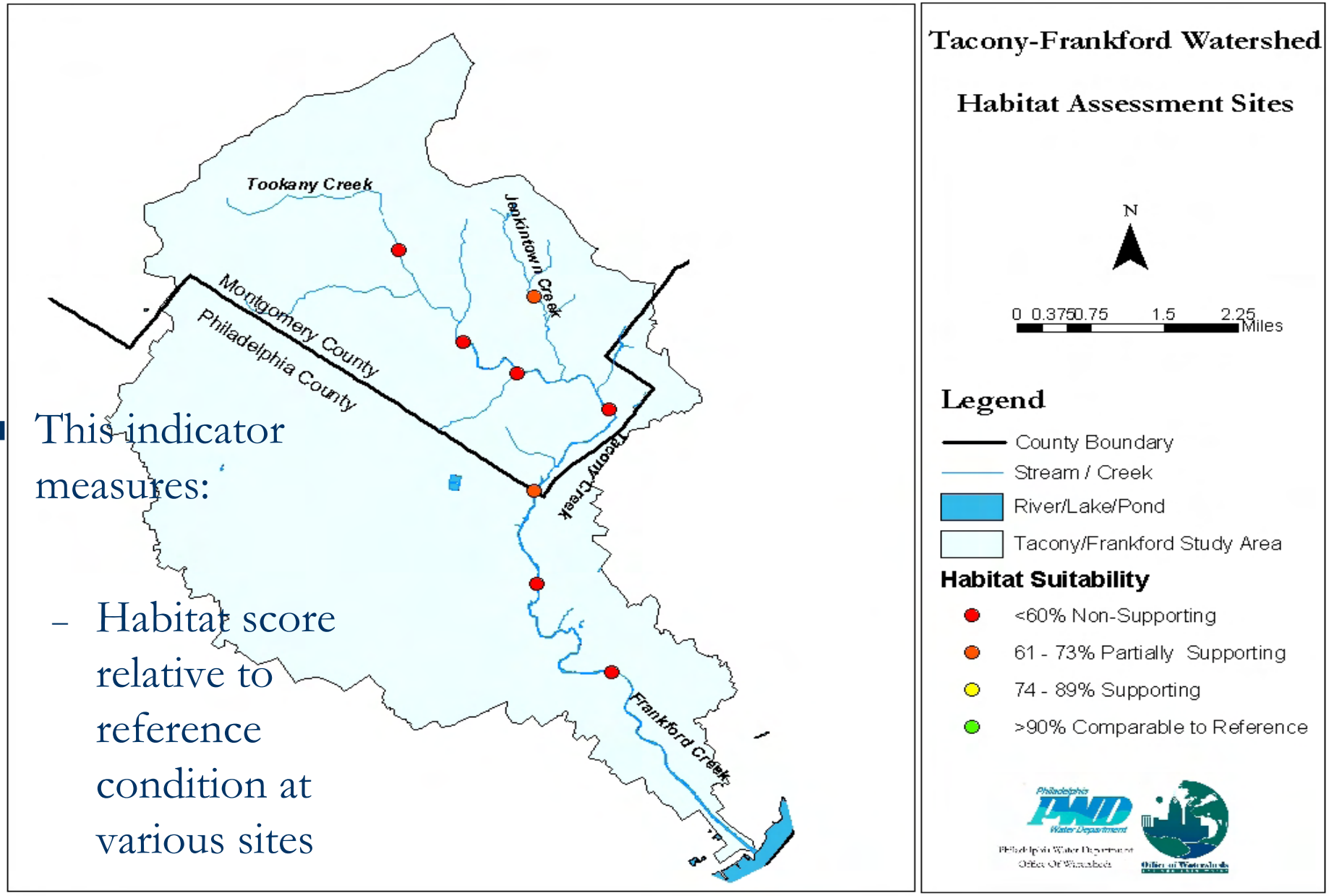
- Fish, Biological, and Habitat indices developed to assess conditions.
- In most cases, habitats were "non-supporting"
- Fish index was "poor"
- Biological conditions were moderately to severely impaired

Stream Ecology (Benthic, Fish, and Habitat)



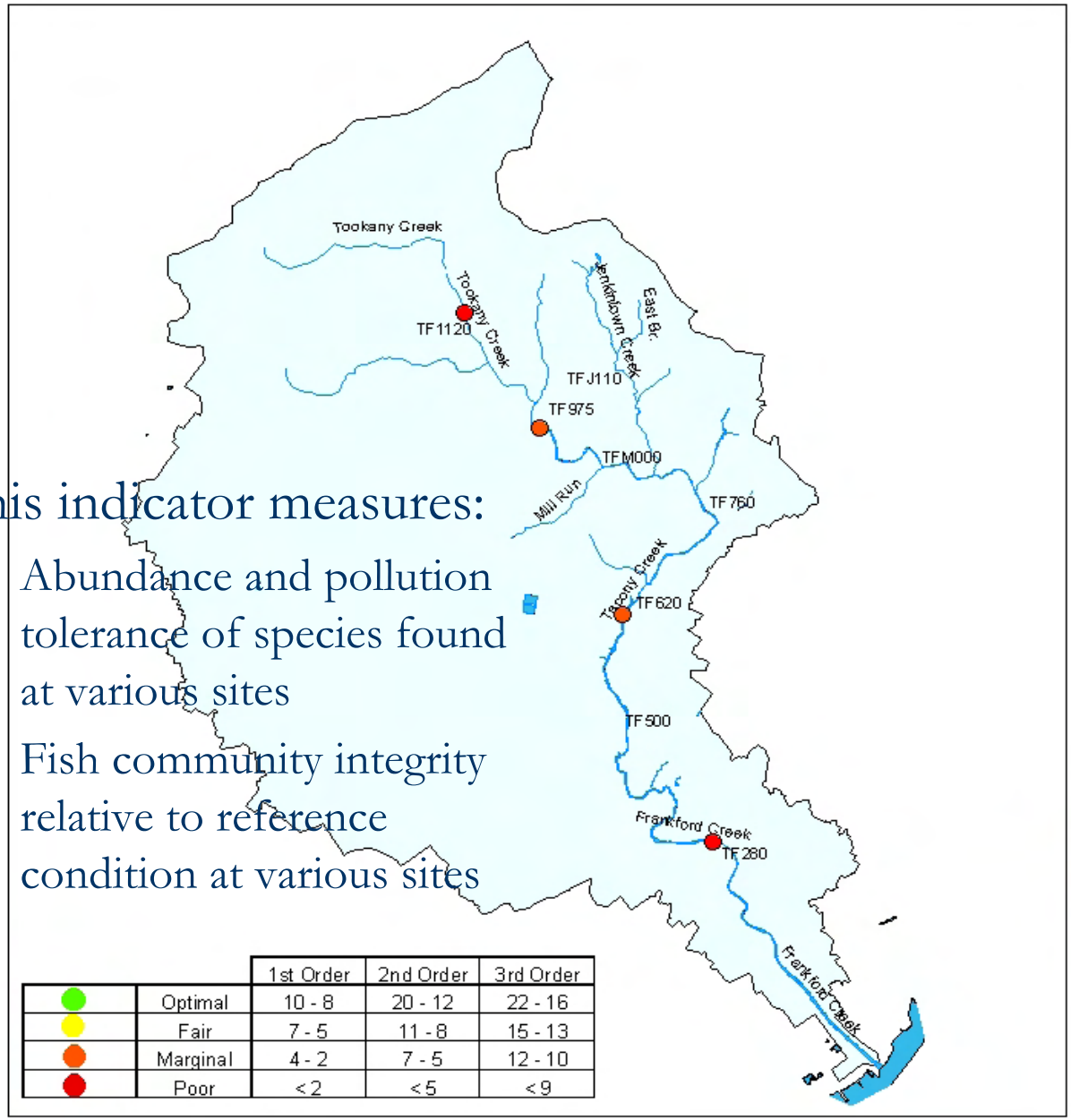
Indicator 3: Stream Channels and Aquatic Habitat

- This indicator measures:
  - Habitat score relative to reference condition at various sites

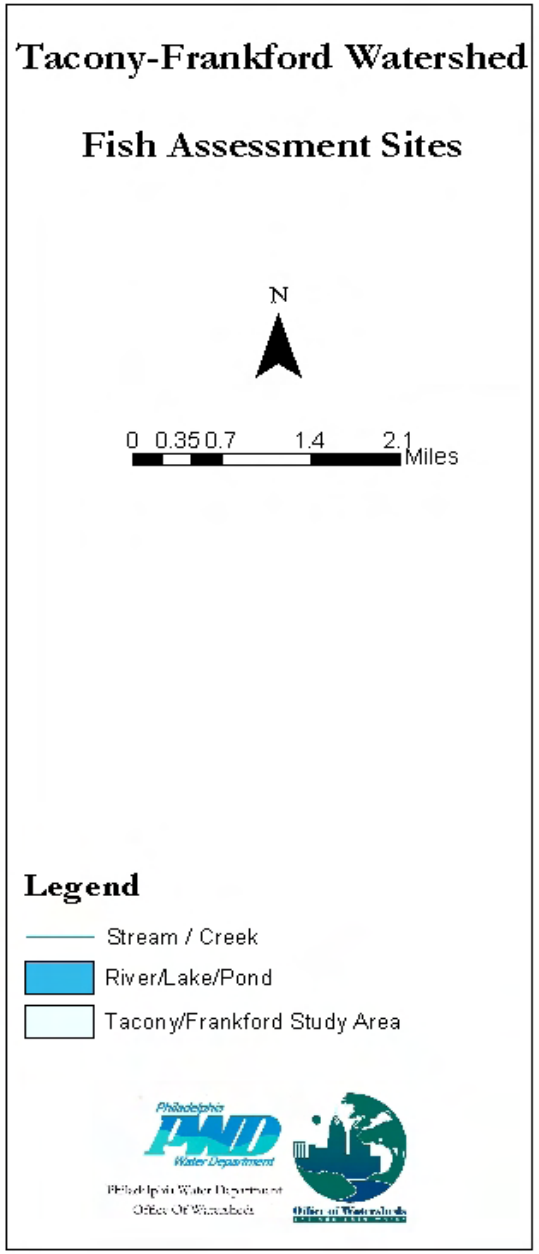


Indicator 5: Fish

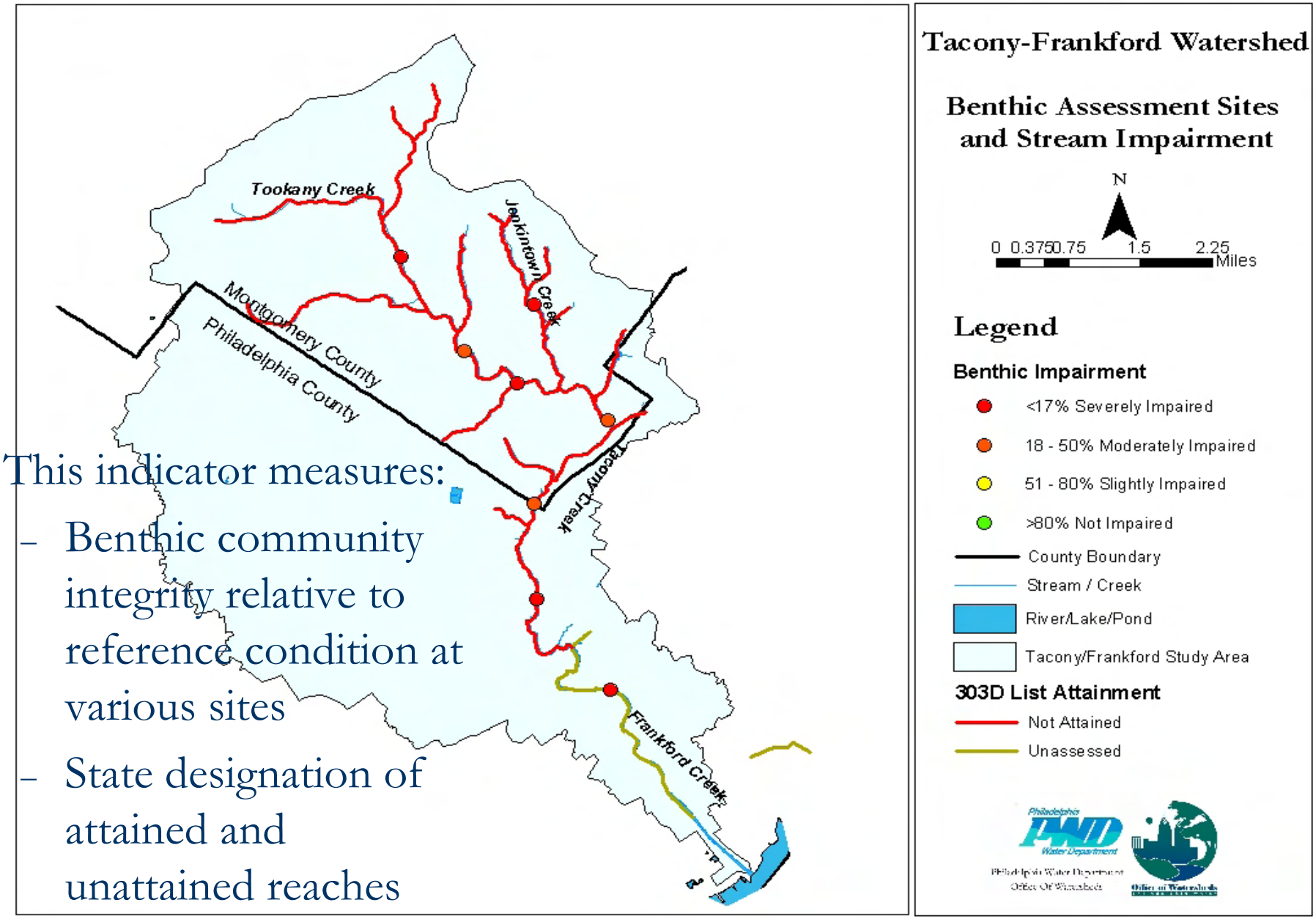
- This indicator measures:
  - Abundance and pollution tolerance of species found at various sites
  - Fish community integrity relative to reference condition at various sites



		1st Order	2nd Order	3rd Order
	Optimal	10 - 8	20 - 12	22 - 16
	Fair	7 - 5	11 - 8	15 - 13
	Marginal	4 - 2	7 - 5	12 - 10
	Poor	< 2	< 5	< 9



Indicator 6: Benthos



This indicator measures:

- Benthic community integrity relative to reference condition at various sites
- State designation of attained and unattained reaches

Causes of Biological and Habitat Impairment

- Typical of urban watersheds
- Extreme hydrologic response to dry and wet weather (high storm flows, low base flows)
- Erosion and sedimentation associated with altered flow patterns
- Loss of instream habitat (riffle, pool)
- Construction in riparian corridor
- Temperature pollution
- Toxic pollution

Biological and Habitat Impairment: Potential Solutions

- Improve DO through control of nutrients and physical impediments (e.g., outfall scour pools, dams, etc.)
- Targeted habitat restoration for stream channel, bank, and riparian areas
- Creation of refuges for fish during high flows through restoration
- Improved stormwater management to reduce erosive velocities
- Increased stream shading

Partnership Updates
(Paul Racette, PEC)

PARTICIPATING ORGANIZATIONS

- PA Dept. of Environmental Protection
- County of Philadelphia, PWD
- Bucks & Montgomery Counties Planning Departments
- Bucks and Montgomery Counties Conservation Districts
- Watershed Municipalities
- Watershed Organizations
- NRCS, PennDOT, PA Fish & Boat Com., etc.
- NTM Engineering, PEC, Jeff Featherstone

ACT 167 Overview
(Jennifer Kehler, DEP)

Poquessing Creek Act 167 Scope of Work

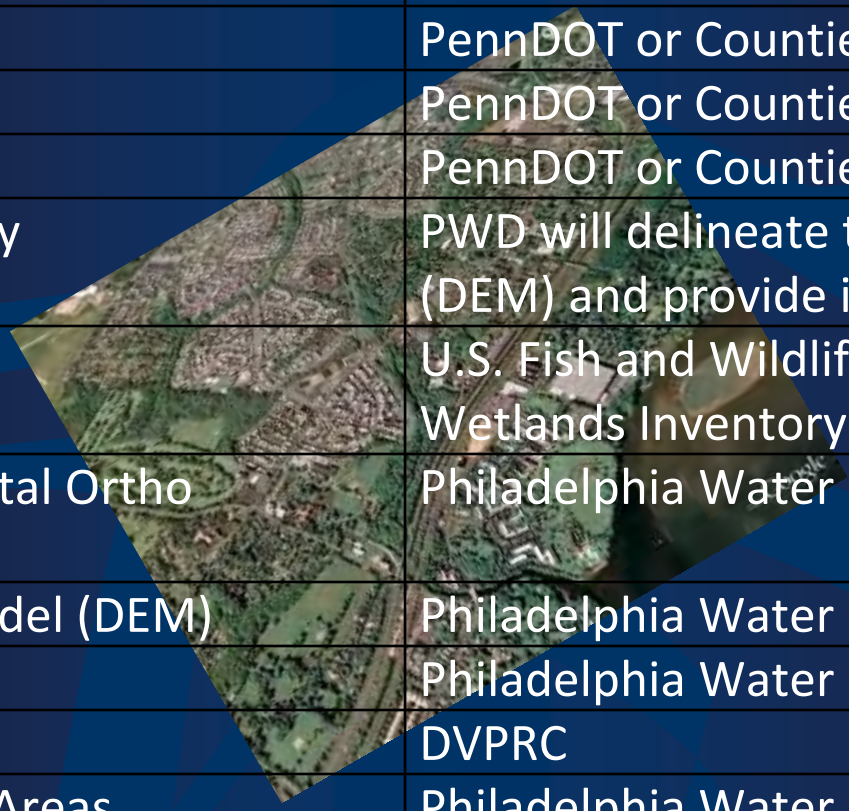
(Paul DeBarry, NTM)

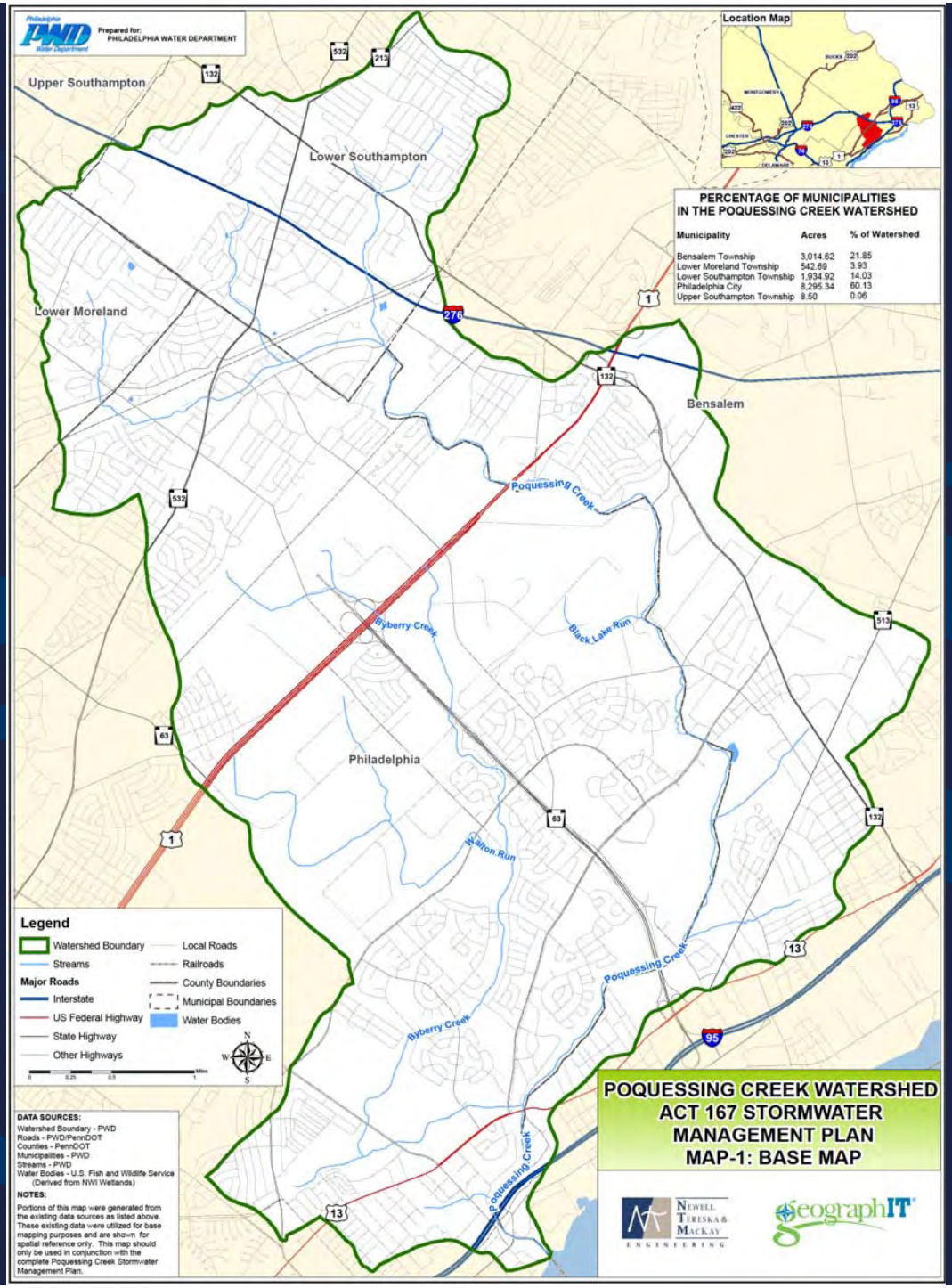
Task 1 – Data collection and analysis

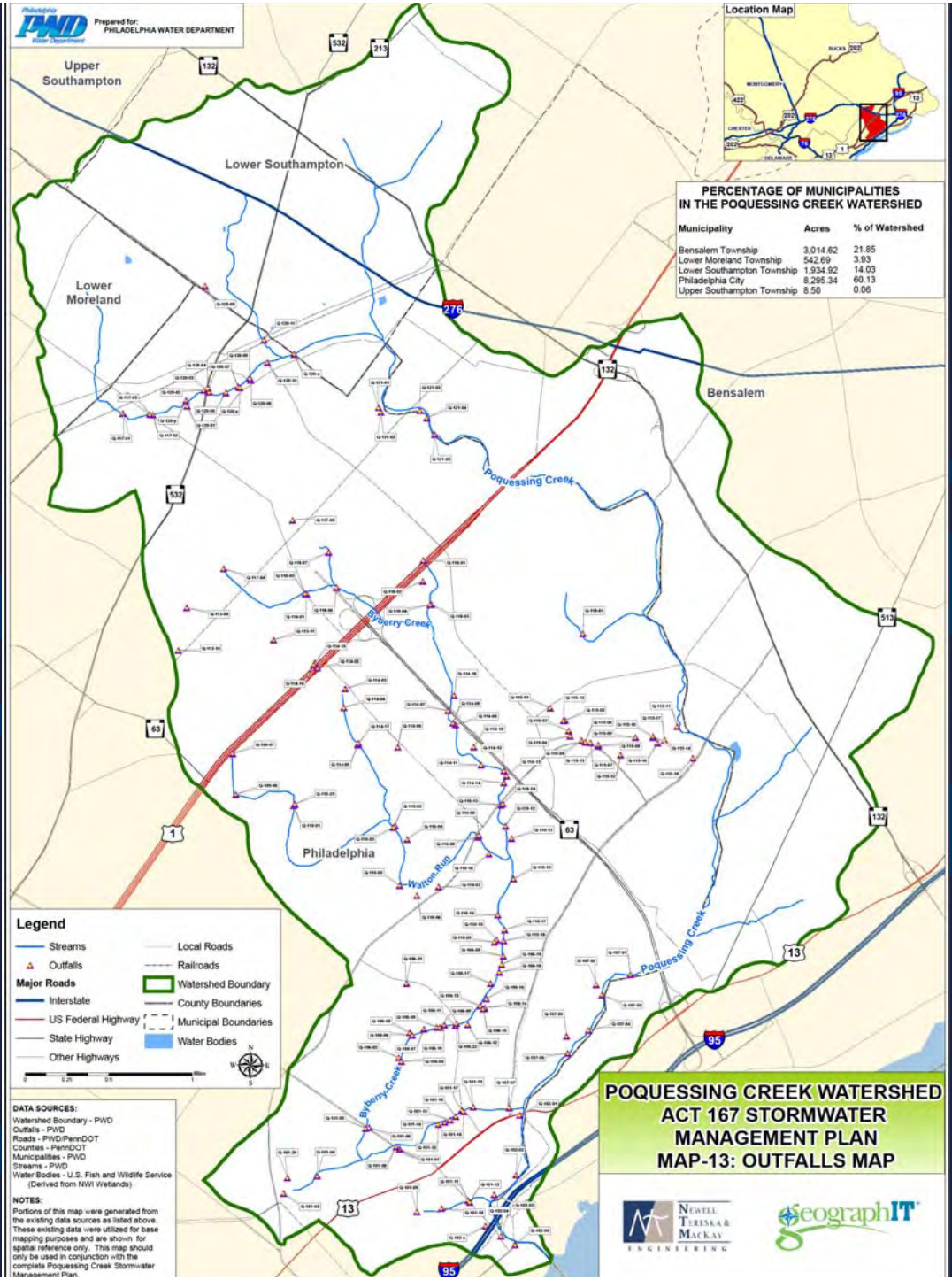
- Past reports / studies
- Detention basins,
- Municipal data collection,
- Obstructions

Task 2 – GIS Mapping

GIS Data	Likely Source
County and municipal boundaries	PennDOT or Counties
Road centerlines	PennDOT or Counties
Streams	PennDOT or Counties
Water bodies	PennDOT or Counties
Watershed boundary	PWD will delineate the watershed from (DEM) and provide it to NTM.
Wetlands	U.S. Fish and Wildlife Service National Wetlands Inventory (NWI)
High Resolution Digital Ortho Photographs	Philadelphia Water Dept. or DVPRC
Digital Elevation Model (DEM)	Philadelphia Water Dept.
Existing Land Use	Philadelphia Water Dept.
Future Land Use	DVPRC
Impervious Surface Areas	Philadelphia Water Dept.
Hydrologic Soil Groups	Philadelphia Water Dept.
Geology	Philadelphia Water Dept.
Obstructions	Philadelphia Water Dept.
Floodplains (FEMA Q3)	PASDA




Prepared for:
PHILADELPHIA WATER DEPARTMENT
Location Map
Upper Southampton
Lower Southampton
Lower Moreland
Bensalem
Philadelphia
Poquessing Creek
Byberry Creek
Black Lake Run
Walton Run
PERCENTAGE OF MUNICIPALITIES IN THE POQUESSING CREEK WATERSHED
Municipality | Acres | % of Watershed
Bensalem Township | 3,014.62 | 21.85
Lower Moreland Township | 542.69 | 3.93
Lower Southampton Township | 1,934.92 | 14.03
Philadelphia City | 8,295.34 | 60.13
Upper Southampton Township | 8.50 | 0.06
Legend
Watershed Boundary
Streams
Major Roads
Interstate
US Federal Highway
State Highway
Other Highways
Local Roads
Railroads
County Boundaries
Municipal Boundaries
Water Bodies
DATA SOURCES:
Watershed Boundary - PWD
Roads - PWD/PennDOT
Counties - PennDOT
Municipalities - PWD
Streams - PWD
Water Bodies - U.S. Fish and Wildlife Service (Derived from NWI Wetlands)
NOTES:
Portions of this map were generated from the existing data sources as listed above. These existing data were utilized for base mapping purposes and are shown for spatial reference only. This map should only be used in conjunction with the complete Poquessing Creek Stormwater Management Plan.
POQUESSING CREEK WATERSHED
ACT 167 STORMWATER
MANAGEMENT PLAN
MAP-1: BASE MAP
Newell Tereska & Mackay Engineering
GeographIT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PHILADELPHIA WATER DEPARTMENT
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POQUESSING CREEK WATERSHED
ACT 167 STORMWATER MANAGEMENT PLAN
MAP-13: OUTFALLS MAP
Newell Teriska & Mackay Engineering
GeographIT

Task 3 – Technical Analysis, Standards and Criteria

- Modeling for standards development
- Land development impacts on runoff quantity, velocity, and quality
- Identify existing and proposed stormwater improvements
- Prepare a 10-year schedule and method for financing the development, construction, and operation of potential new or retrofitted stormwater facilities
- Develop criteria and standards from the modeling efforts for the control of storm runoff from new development

Task 4 – Report

- Draft report including model SW ordinance
- Municipal review of draft report and ordinance
- Final report including model SW ordinance

Task 5 – PAC Meetings

TOOKANY/TACONY-FRANKFORD
WATERSHED STORMWATER MANAGEMENT
ORDINANCE

Implementing the Requirements of the Tookany/Tacony-Frankford
Watershed Stormwater Management Plan

ORDINANCE NO._____ OF _____

[Municipality] [County] COUNTY,
PENNSYLVANIA

Adopted at a Public Meeting held on
_____, 20__ /

Summary of Phase II Tasks

- Determining specific areas/problems to evaluate
- Develop Plan of action, prioritization and costs for implementation
- Develop standards and criteria for new development
- Develop Model Stormwater Management Ordinance

Primary WPAC Members:

Bucks County
- Bensalem Township
- Lower Southampton Township
- Upper Southampton Township

Montgomery County:
- Lower Moreland Township

Philadelphia County
- City of Philadelphia

Watershed / Citizen groups

Conservation Districts

Others

Additional Member Suggestions ???

Municipal Participation

–

Data Collection Forms

(Paul DeBarry, NTM)

Form	Symbol	Description	Types of Examples	Sources of Information
A		Stormwater Problem Areas	Flooding, Drainage, Erosion/Sedimentation	Existing studies or reports, Township Documentation, Personal memory, Township engineer
B		Obstructions	Bridges. Culverts, Fill, Structures	Owner or structure, township files, subdivision applications, roadmaster, township engineer
C		Existing Flood Control Projects	Channel excavation, rip-rap, floodwalls, etc.	Township records, township engineer, owner of facilitiy
D		Proposed Flood Control Projects	Channel excavation, rip-rap, floodwalls, etc.	Township records, township engineer, owner of facilitiy
E		Existing Stormwater Control Facilities	Detention basins, recharge basins, roof-top stroage	Subdivision files, township engineer, owner of facility
F		Proposed Stormwater Control Facilities	Detention basins, recharge basins, roof-top stroage	Subdivision files, township engineer, owner of facility
G		Existing Stormwater Collection Systems	Storm sewers, man-made channels, diversions	Existing plans, township engineer, owner of system
H		Proposed Stormwater Collection Systen	Storm sewers, man-made channels,	Existing plans, township engineer, owner of

Problems in the Watershed

- Floodplain encroachment
- Undersized storm drains
- Undersized stream channels
- Erosion/Sedimentation
- Water Quality/Pollution
- Existing Ordinances
- Others ????

Flooding

Undersized or Blocked Storm Drains

Obstructions

Erosion / Sedimentation Problem Area

Water Quality Problem Area

Problem Area Survey

FORM A - STORM WATER PROBLEM AREAS SHEET_____ OF _____

WATERSHED	FORM COMPLETED BY	Before Filling Out Form, See Instructions On Back
Name:	Name:	
Municipality:	Telephone:	For County Use: **A-1**
County:	Date:	

MAP NO. *	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-
Types of Storm Water Problems												
Flooding												
Accelerated Erosion												
Sedimentation												
Landslide												
Groundwater												
Water Pollution												
Other (Explain)												
Explanation Line No. (On Back)												
Cause (s)												
Storm Water Volume												
Storm Water Velocity												
Storm Water Direction												
Water Obstruction												
Other (Explain)												
Explanation Line No. (On Back)												

Frequency												
Year of Most Recent Occurrence												
Year of First Known Occurrence												
Occurs More Than Once Per Year												
Occurs Less Than Once Per Year												
Only During Major rainfall events (e.g. Hurricane)												
Total occurances in 2003												
Duration (If Applicable)												
Less Than 1 Day												
1 Day + (Enter Days)												
Damage												
Loss of Life/Personal injuries												
Private Property: Damage to Structures (houses/businesses)												
Major Road Closures												
Sinkhole Development												
Minor Road Closures												
Utilities/Infastructure Damage												
Number of Properties Affected												
10 or less												
more than 10												
Public Facilities (schools, parks etc.)												
Solutions												
Planned or Underway												
Explanation(Line No.)												

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

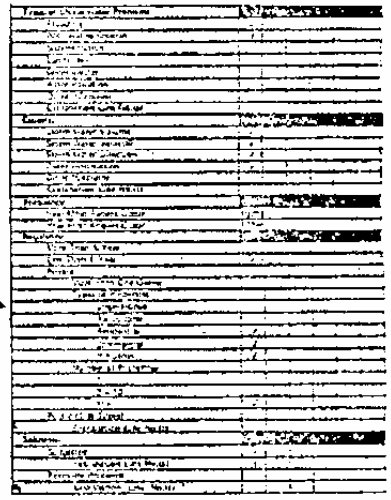
For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification number.

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.

If storm water problem occurred during and after Agnes, describe the frequency of the problem after Agnes.

Use the explanation lines to list the types of public property damages ,e.g.roadways, hospitals, etc.

Enter the line no. (s) used to list the map ID no. (s) for the proposed facilities.



Definitions

Storm Water Problem Area
An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater
Water in the ground below the water table.

Accelerated Erosion
The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation
The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction
Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)

DETERMINE LOCAL VERSUS REGIONAL PROBLEMS AND PROPOSED SOLUTIONS

TABLE 1: SUMMARY OF RESPONSE ITEMS FROM MUNICIPAL QUESTIONNAIRE

Municipality	Problems/ Concerns Identified (A)	Causes of Storm Water Problems (B)	Frequency of Occurrence Incurred (C)	Types of Damages
Bucks County				
Upper Southampton Township	1 & 4	1, 2, 3 & 4	4	Private Property
Lower Southampton Township	1	1 & 2	4	Private & Public Property
Bensalem Township	1, 2 & 5	1, 2, 3 & 4	1, 3 & 4	Private & Public Property
Montgomery Co.				
Lower Moreland Township		2, 3 & 4	4	Private & Public Property
City of Phila.	1, 2, 3, 4	1, 2, 3, 4, 5	2	Private & Public Property

(A) Problems/Concerns Identified

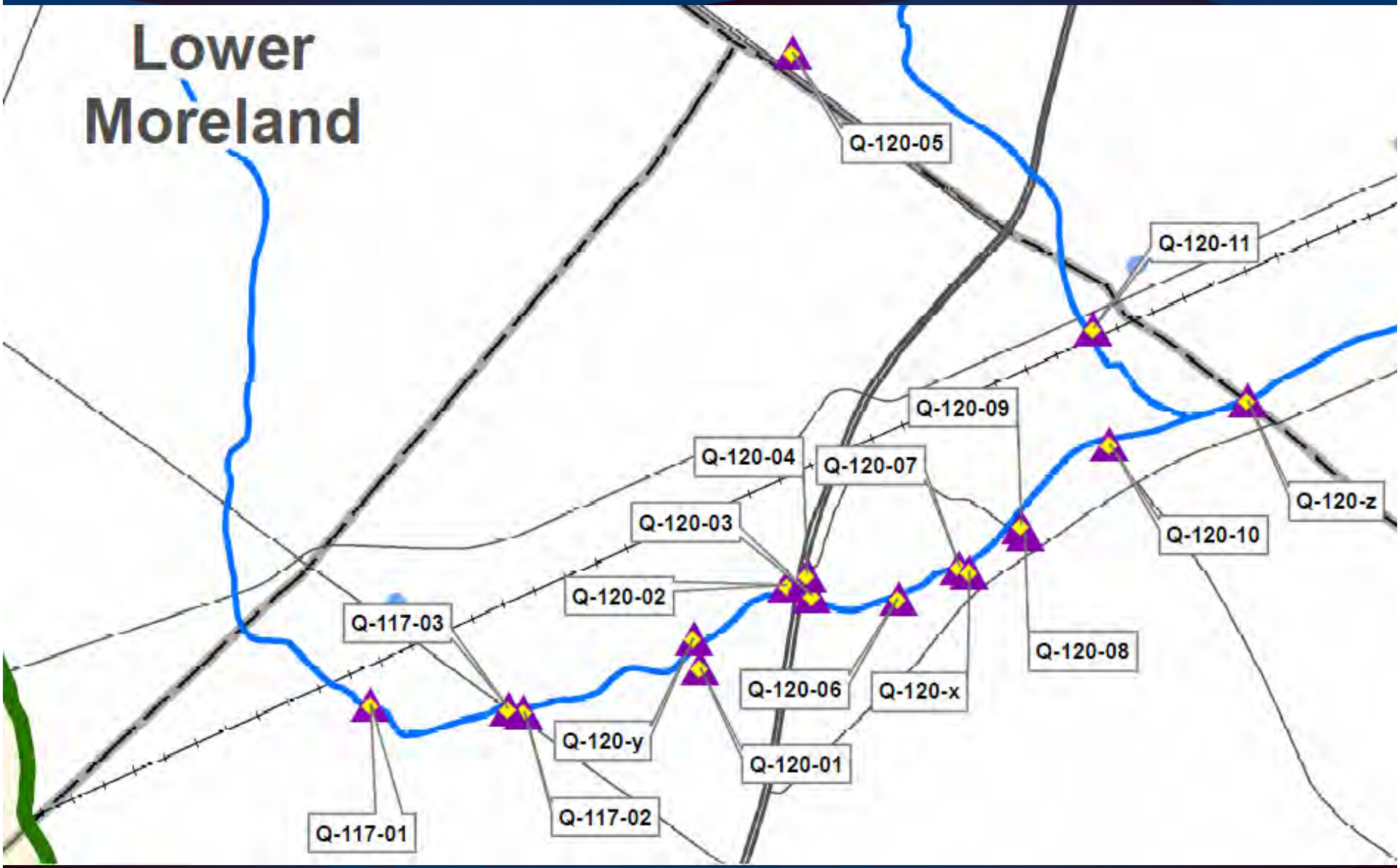
1. Stream flooding
2. Street flooding
3. Soil washoff
4. Stormwater pollution
5. Other

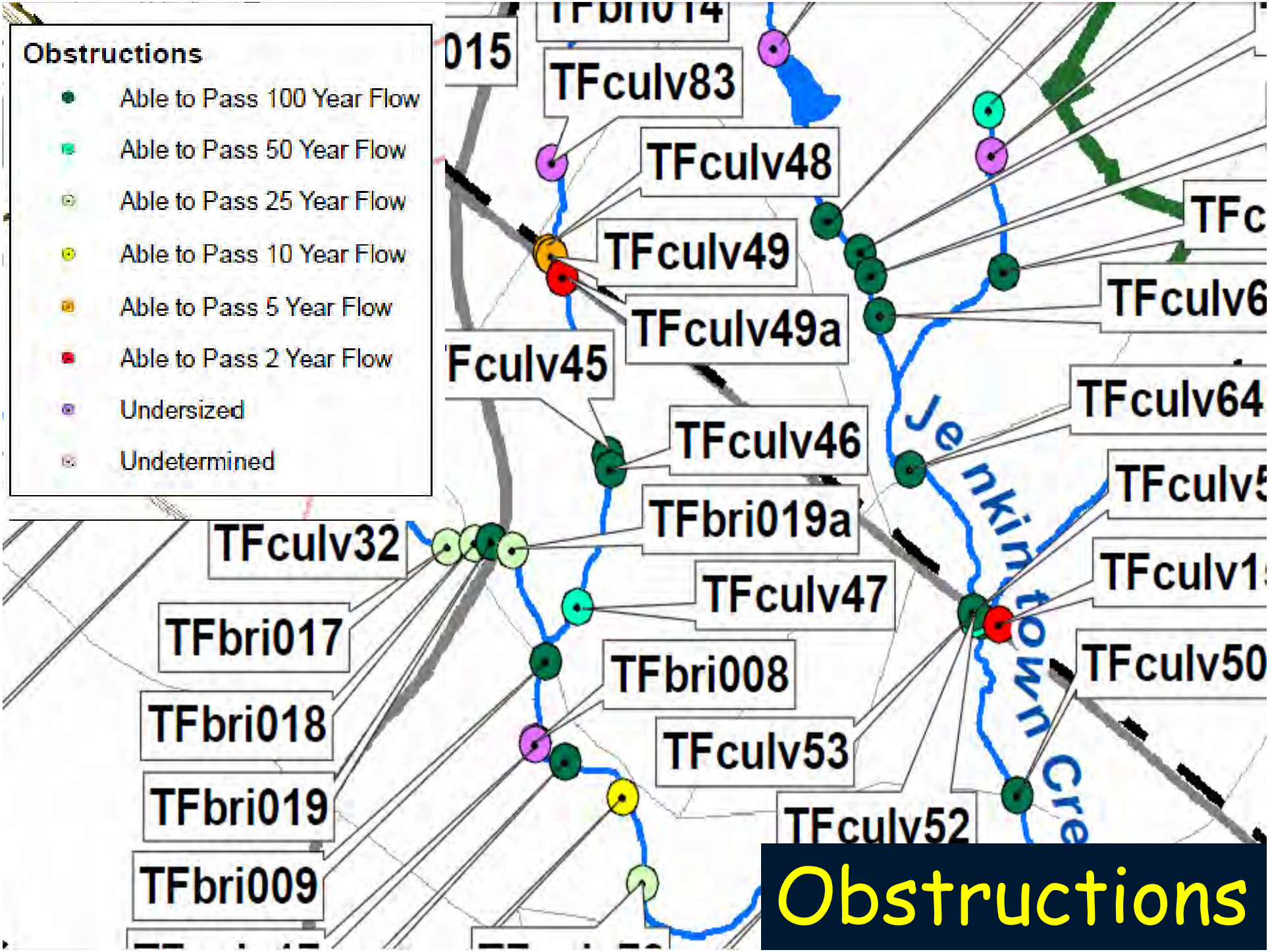
(B) Causes of Stormwater Problems

1. Too large an increase in uncontrolled runoff
2. Uncontrolled runoff from upstream municipalities
3. Inadequate drainage system

(C) Frequency of Occurrences

1. Every rain
2. More than 10 times per year
3. More than 1 time per


Lower
Moreland
Q-120-05
Q-120-11
Q-120-09
Q-120-04
Q-120-07
Q-120-03
Q-120-z
Q-120-10
Q-120-02
Q-117-03
Q-120-08
Q-120-06
Q-120-x
Q-120-y
Q-120-01
Q-117-02
Q-117-01


Obstructions
Able to Pass 100 Year Flow
Able to Pass 50 Year Flow
Able to Pass 25 Year Flow
Able to Pass 10 Year Flow
Able to Pass 5 Year Flow
Able to Pass 2 Year Flow
Undersized
Undetermined
TFculv83
TFculv48
TFculv49
TFculv49a
TFculv45
TFculv46
TFculv64
TFculv32
TFbri019a
TFculv47
TFbri017
TFbri008
TFculv50
TFbri018
TFculv53
TFbri019
TFculv52
TFbri009
Jenkintown
Obstructions

Dec-81 EXISTING FLOOD CONTROL PROJECT FORM C. SHEET _____ OF _____

WATERSHED	FORM COMPLETED BY	TYPICAL TYPES OF FLOOD CONTROL PROJECTS		
Name: _____	Name: _____	Channel Excavation / Widening	Levee	Dams
Municipality: _____	Telephone: _____	Channel Realignment	Gabions	Floodwall
County: _____	Date: _____	Rock Riprap	Pipe Channel	Concrete Lining

For County Use:

Map ID No.	Type of Flood Control Project	Year Constr Built	Expected Life Yrs.	Design Flood Frequency Yrs.	Design Flood Discharge C.F.S. (if known)	Owner Name, Address, and Phone
C-						
C- 1	Levee	1986	100	100		

FORM C - EXISTING FLOOD CONTROL PROJECTS

C-1


Baeder and Wanamaker Roads TTF Watershed Jenkintown, PA
Flood Control Project

Dec-81 PROPOSED FLOOD CONTROL PROJECT FORM D. SHEET _____ OF _____

WATERSHED	FORM COMPLETED BY	TYPICAL TYPES OF FLOOD CONTROL PROJECTS		
Name: _____	Name: _____	Channel Excavation / Widening	Levee	Dams
Municipality: _____	Telephone: _____	Channel Realignment	Gabions	Floodwall
County: _____	Date: _____	Rock Riprap	Pipe Channel	Concrete Lining

For County Use:

Map ID No.	Type of Flood Control Project	Study Phase Begun			Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Flood		Map ID No. Form A*	Owner Name, Address, and Phone
		YES		N0				Frequency Yrs.	Discharge C.F.S.		
		Prelim.	Final								
D- 1	Dam	x	x		1998	2000	100	100	400	1	
D- 2	Dam	x		x	2000	2002	100	100	250	2	
D-											
D-											
D-											

* Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

FORM D - PROPOSED FLOOD CONTROL PROJECTS

D-1

Jan-82 EXISTING STORM WATER CONTROL FACILITIES FORM E. SHEET _____ OF _____

WATERSHED	FORM COMPLETED BY	DEFINITION
		Storm Water Control Facility
Name:	Name:	A natural / man-made device or structure specifically designed and / or
Municipality:	Telephone:	utilized to reduce the rate and / or volume of storm water runoff
County:	Date:	from a site or sites.
For County Use:		

Map ID No.	Type of Storm Water Control Facility	Year Built	Contact Person Name, Address and Phone	Comments
E-				
E- 1	Detention Basin	1978		
E-				
E-				
E-				
E-				
E-				
E-				

TYPICAL TYPES OF STORM WATER CONTROL FACILITIES

- Detention / Retention Basin
- Natural Pond or Wetland
- Parking Lot Pondling
- Roof-Top Storage
- Semi-Pervious Paving
- Infiltration Device (Seepage / Recharge Basin or Underground Tank)

FORM E - EXISTING STORM WATER CONTROL FACILITIES

E-1


MD_2
Montgomery

Jan-82					PROPOSED STORM WATER CONTROL FACILITIES FORM F.										SHEET _____ OF _____			
WATERSHED			FORM COMPLETED BY									**DEFINITION**						
												Storm Water Control Facility						
Name:			Name:									A natural / man-made device or structure specifically designed and / or						
Municipality:			Telephone:									utilized to reduce the rate and / or volume of storm water runoff						
County:			Date:									from a site or sites.						
For County Use:																		

Map ID No.	Type of Storm Water Control Facility	Proposed Constr. Dates Start	End	Map No. Form A*	Contact Person Name, Address and Phone	Comments
F-						
F-						
F-						
F-						
F-						
F-						
F-						
F-						

* Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

TYPICAL TYPES OF STORM WATER CONTROL FACILITIES

Detention / Retention Basin	Roof-Top Storage
Natural Pond or Wetland	Semi-Pervious Paving
Parking Lot Pondling	Infiltration Device (Seepage / Recharge Basin or Underground Tank)

FORM F - PROPOSED STORM WATER CONTROL FACILITIES

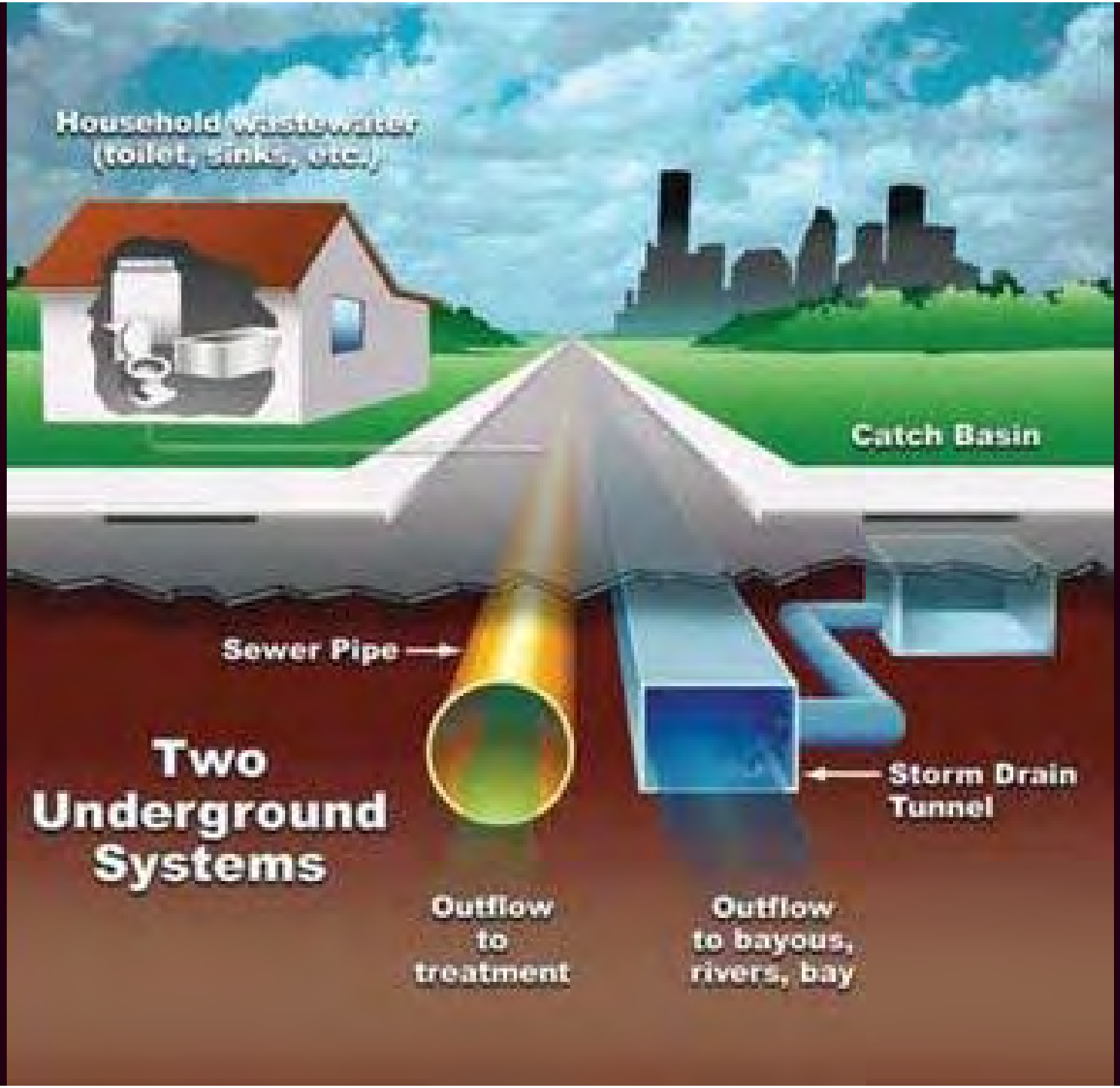
F-1

Dec-81					EXISTING STORM WATER COLLECTION FACILITIES - FORM G.								SHEET _____ OF _____	
WATERSHED			FORM COMPLETED BY					INSTRUCTIONS						
					Diagram each system on the appropriate map. Establish map points to show changes in system elements,									
Name:			Name:		pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific									
Municipality:			Telephone:		information on construction is available. Use a separate form for each system. Identify the points within a									
County:			Date:		system consecutively (ex. G-1,G-2,G-3). Start the first point in each additional system 20 numbers higher.									
					For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.									
Map I.D.		System's Elements (x)			Measurements *						Design		Name of Final	
No.					Pipe	Channel / Swale			Material	Year	Data	Contact Person	Ownership and	
From	To	Pipe	Open Channel	Swale	D	TW	B	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility	
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													
G-	G-													

* See measurement key on reverse side.

FORM G - EXISTING STORM WATER COLLECTION FACILITIES

G-1


Household wastewater
(toilet, sinks, etc.)
Catch Basin
Sewer Pipe
Storm Drain
Tunnel
Two
Underground
Systems
Outflow
to
treatment
Outflow
to bayous,
rivers, bay

Dec-81					PROPOSED STORM WATER COLLECTION FACILITIES - FORM H.									SHEET _____ OF _____		
WATERSHED			FORM COMPLETED BY					INSTRUCTIONS								
					On the map for proposed storm water collection systems, diagram each proposed system. Indicate a map point to show changes in system elements, pipe size, pipe direction and connections											
Name:			Name:		to existing systems. For proposed additions to existing systems, diagram only the additions and their connection point into the existing system. Complete a separate form for each proposed,											
Municipality:			Telephone:		new system and one for each existing system having one or more proposed additions. Identify the points within a system consecutively (ex. H-1, H-2, H-3). Start the first point in each											
County:			Date:		additional system 20 numbers higher (if H-3 ends one system, begin the next with H-23). Be sure to show the point where proposed additions connect into existing systems, using the map											
					point number from the existing system form and map. See Sample Diagrams and Form on Reverse.											
Map I.D.		System's Elements (x)			Measurements *					Map I.D.	Proposed		Design	Contact Person	Name of Final	
No.					Pipe	Open Channel / Swale			Material	Nos.**	Const. Dates		Data	Name and	Ownership and	
From	To	Pipe	Open Channel	Swale	D	TW	B	Depth		Form A	Start	End	Avail.	Phone	Maintenance Responsibility	
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															
H-	H-															

* See measurement key on reverse side. ** Enter the storm water problem areas' Map I.D. Nos., if proposed project will solve or reduce any / all of the drainage problems.

FORM H - PROPOSED STORM WATER COLLECTION FACILITIES

H-1

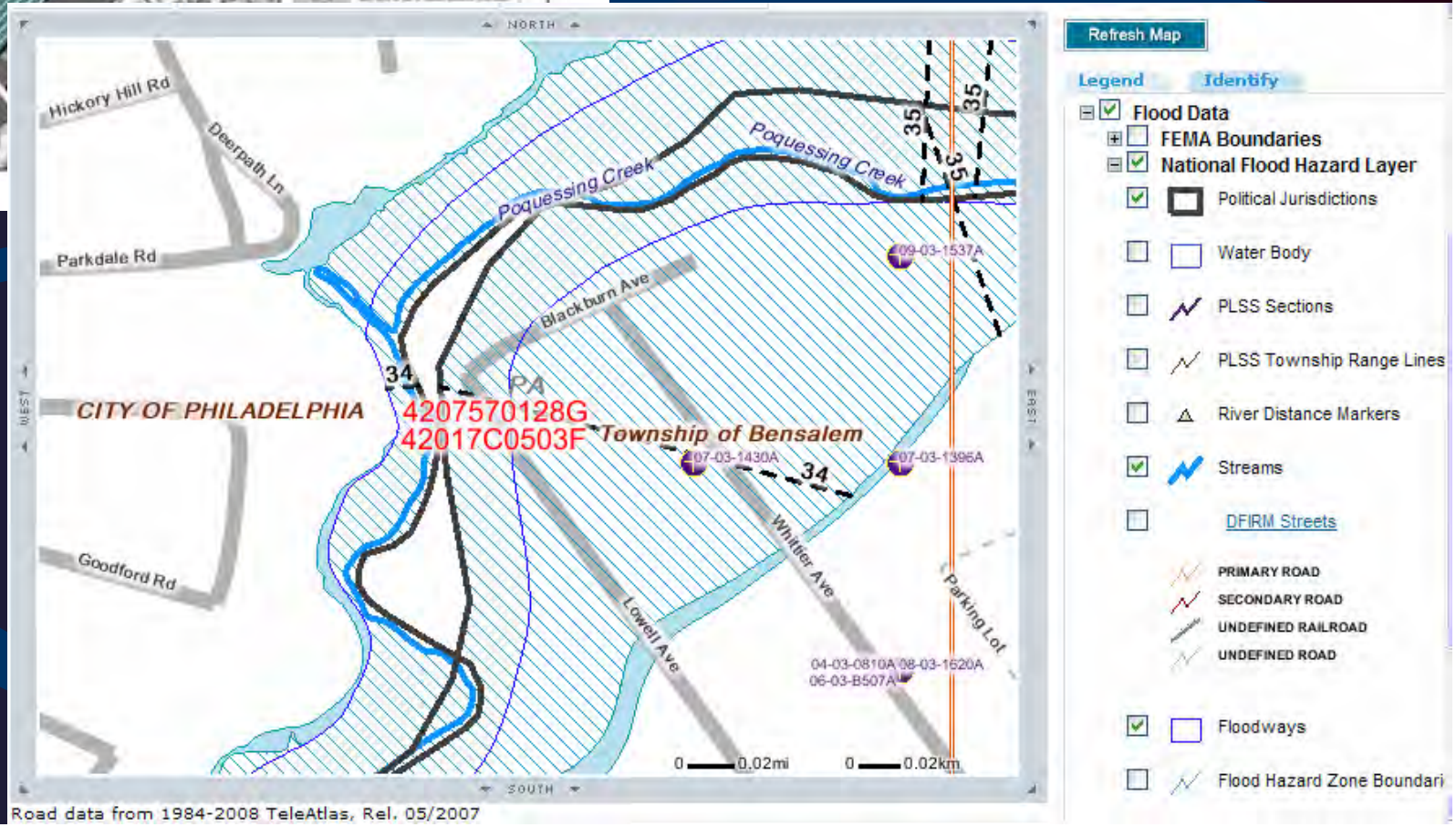
Dec-81 PRESENT & PROJECTED DEVELOPMENT IN THE FLOOD HAZARD AREA (FORM 1) SHEET _____ OF _____

WATERSHED	FORM COMPLETED BY	DEFINITION
Name: _____	Name: _____	FLOOD HAZARD AREA:
Municipality: _____	Telephone: _____	A NORMALLY DRY LAND AREA THAT HAS BEEN OR IS
County: _____	Date: _____	SUSCEPTABLE TO BEING INUNDATED BY THE
		100-YEAR FLOOD.
For County Use:		

Map ID No.	TYPE OF DEVELOPMENT	Year Built	Contact Person Name, Address and Phone	Comments
I -				
I -				
I -				
I -				
I -				
I -				
I -				

Form I - Development in the flood hazard area.


MAP SCALE 1" = 500'
FIRM
FLOOD INSURANCE RATE MAP
CITY OF
BANGOR,
MAINE
PENOBSCOT COUNTY
ZONE X
ZONE A1
ZONE A


NORTH
SOUTH
WEST
EAST
Hickory Hill Rd
Deerpath Ln
Parkdale Rd
Goodford Rd
Poquessing Creek
Poquessing Creek
Blackburn Ave
Whittier Ave
Lowell Ave
Parking Lot
CITY OF PHILADELPHIA
PA
4207570128G
42017C0503F
Township of Bensalem
34
35
09-03-1537A
07-03-1430A
07-03-1396A
04-03-0810A 08-03-1620A
06-03-B507A
0 0.02mi
0 0.02km
Road data from 1984-2008 TeleAtlas, Rel. 05/2007

Refresh Map
Legend
Identify
Flood Data
FEMA Boundaries
National Flood Hazard Layer
Political Jurisdictions
Water Body
PLSS Sections
PLSS Township Range Lines
River Distance Markers
Streams
DFIRM Streets
PRIMARY ROAD
SECONDARY ROAD
UNDEFINED RAILROAD
UNDEFINED ROAD
Floodways
Flood Hazard Zone Boundari

FORM J - WATER QUALITY PROBLEM AREAS

Dec-81	WATER QUALITY PROBLEM AREAS FORM J. SHEET_____ OF _____											
WATERSHED				FORM COMPLETED BY								
Name:				Name:								
Municipality:				Telephone:								
County:				Date:								
SITE	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-
Types of Water Quality Problems												
High Community Tolerence												
High Temperature												
High Turbidity												
Hydrocarbon Pollution												
Low Community Diversity												
Low Dissolved Oxygen												
Low pH												
Nutrient Enrichment												
Poor Habitat												
Other/Explanation Line No.												
Potential Cause(s)												
Agriculture												
Construction Site												
Erosion												
Lake Discharge												
STP Outfall												
Other/Explanation Line No.												
Freguency												
Year Most Recent Occurence												
Year First Known Occurence												
Source of Information												

J-1

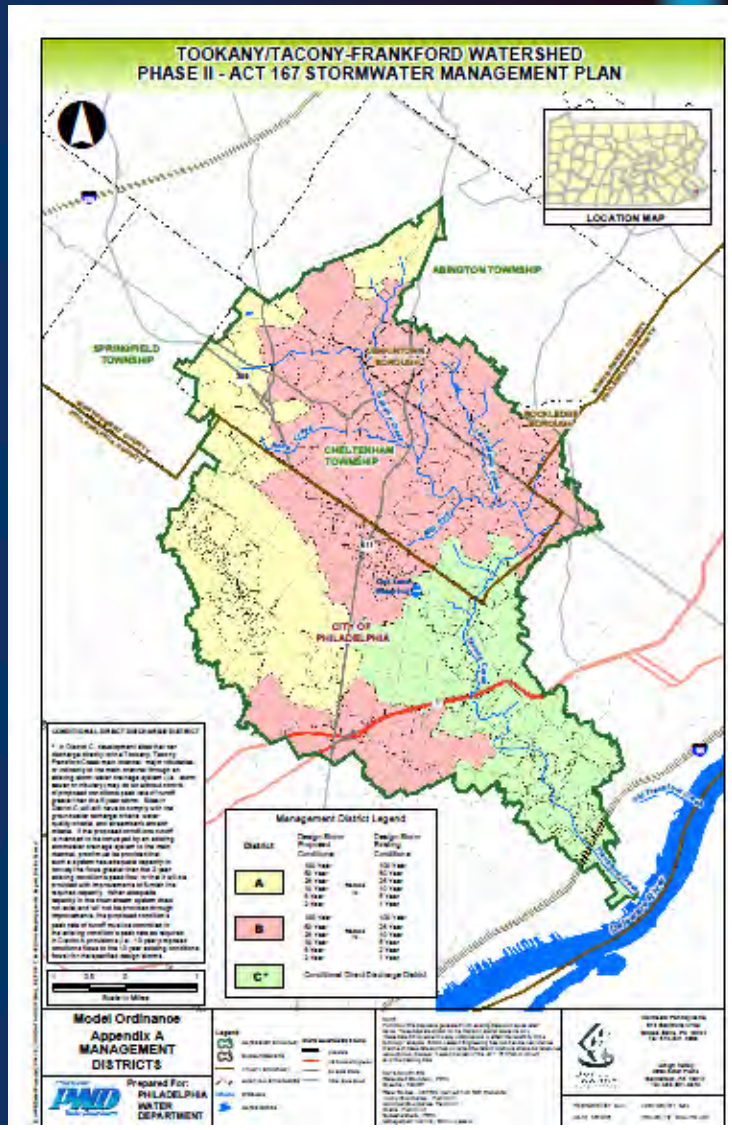
Final Products:

-Inventory of detention basins with proposed retrofits

- Inventory of problem areas with proposed solutions

- Final report

- Model Stormwater Mgmt Ordinance



Coordination with the Pennypack Act 167 Plan

(Jeff Featherstone)

Timeline / Schedule

(Paul DeBarry, NTM)

Task Completion Schedule

	TASK	2009			2010												2011											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.1	Det. basin survey; identify potential areas for regional SWM																											
1.2	Data collection forms																											
1.3	Review obstructions																											
2.1	GIS data collection - compilation																											
2.2	GIS map generation and production																											
3.1	Model coordination																											
3.2	Assess land development patterns																											
3.3	ID stormwater improvements																											
3.4	Develop schedule																											
3.5	Criteria and standards																											
4.1	Progress reports																											
4.2	Draft report and ordinance																											
4.3	Final report and ordinance																											
5.1	Presentation material																											
5.2	PAC presentations																											

Questions

? ? ? ?

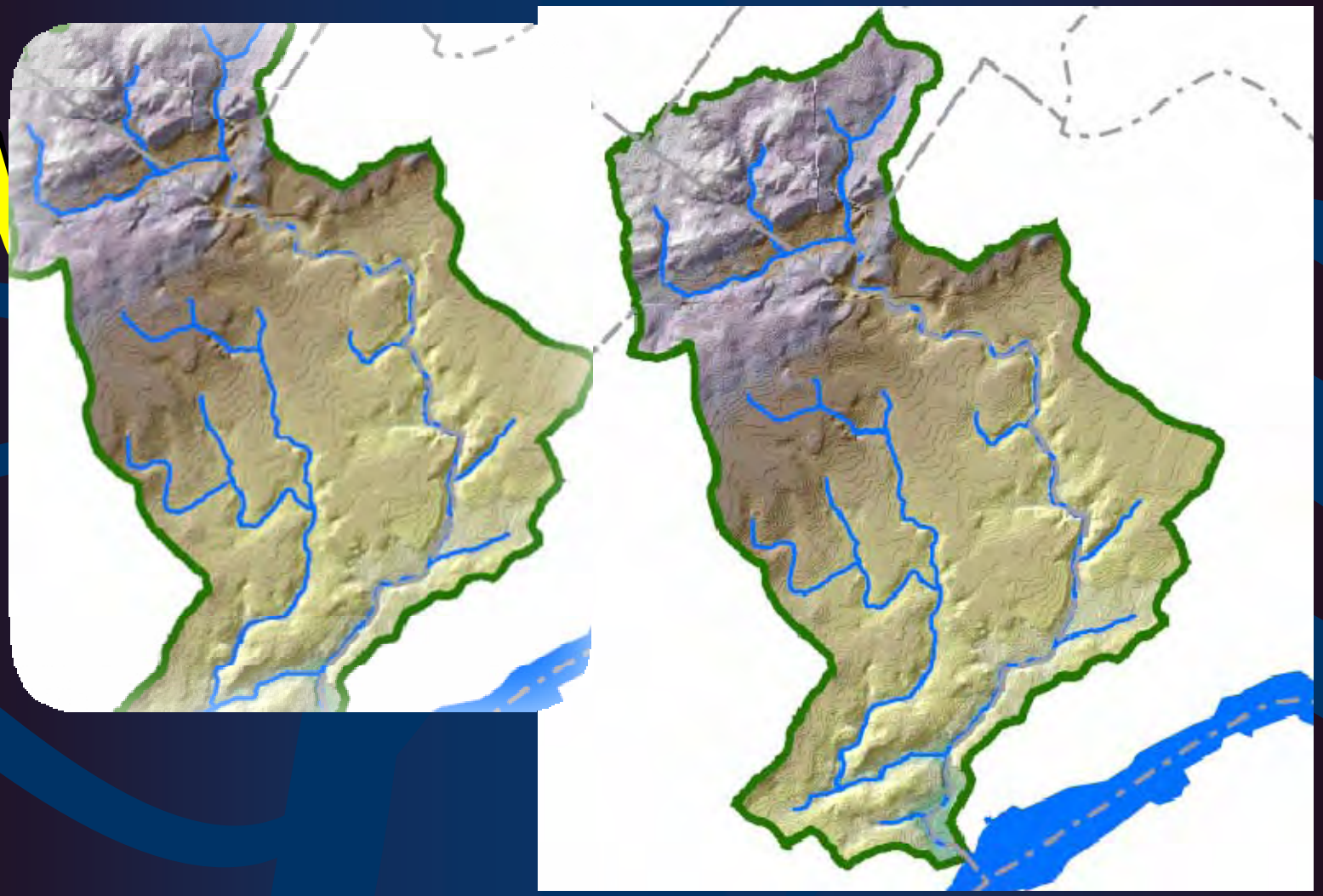
Timeline:

Phase II - Plan

Begin – October, 2009
Sample NPDES Ord. Feb. 2010
Plan Complete June 30, 2011

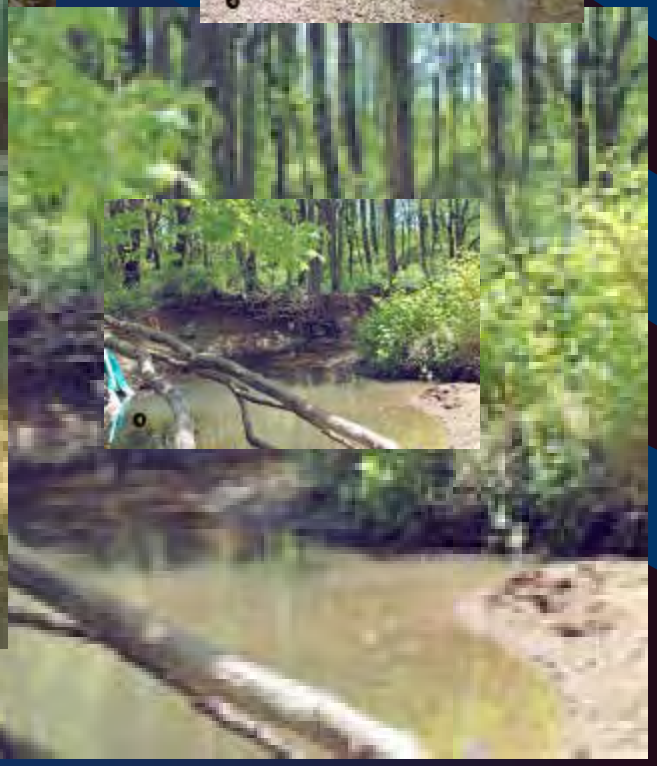
Implementation

Municipalities adopt ordinance
update w/in 6 months of Plan adoption



VII

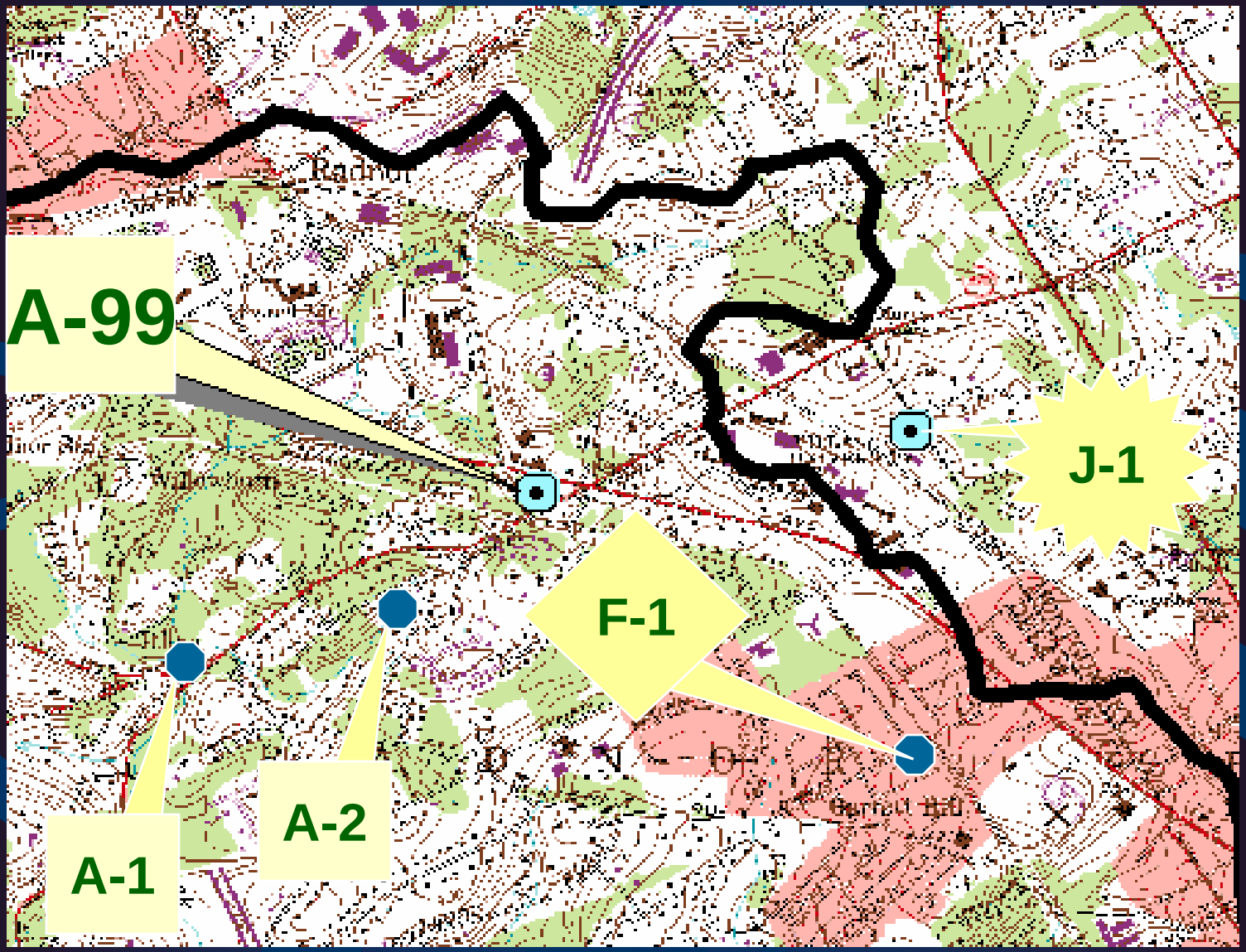


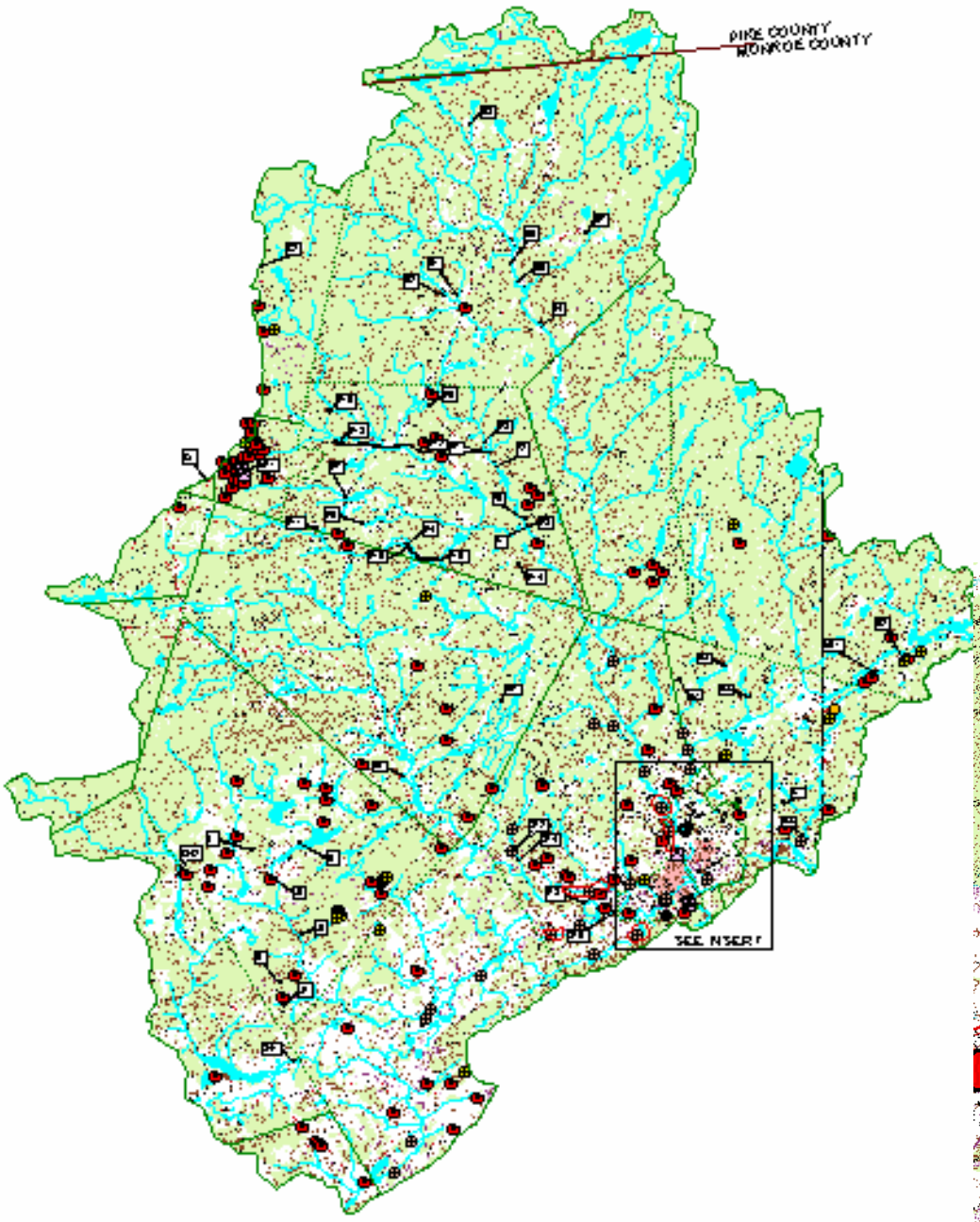




2005 3 4

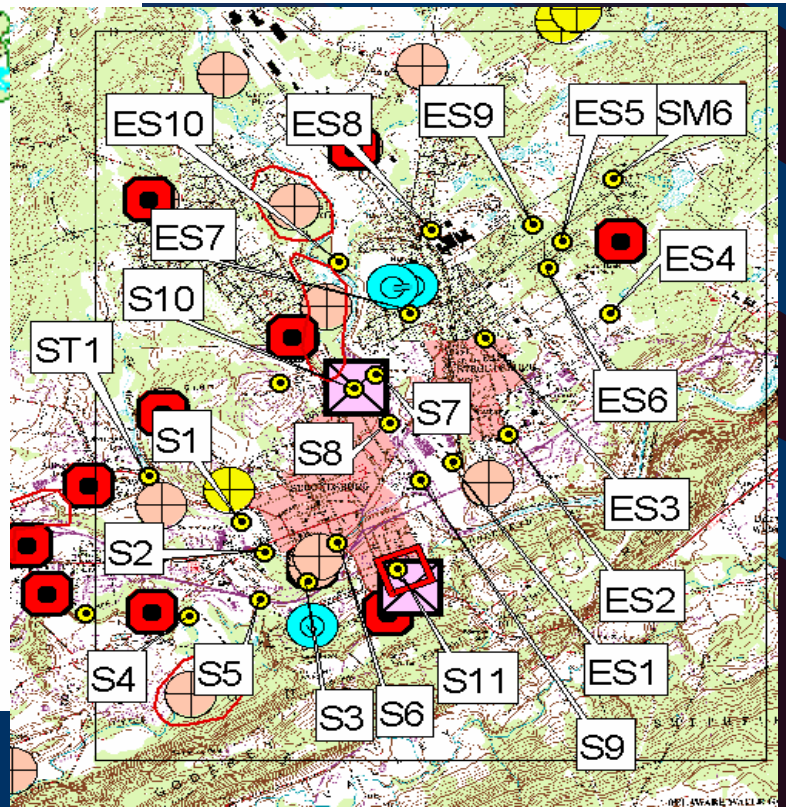
Sample Location of Information from Data Collection Forms on the Municipal Map





Legend

- Problem Areas
- Existing Flood Control Project
- Proposed Flood Control Projects
- Existing Stormwater Control Facilities
- Proposed Stormwater Control Facilities
- Existing Stormwater Collection System
- Present and Projected Development in the Flood Hazard Area
- Water Quality Problem Areas
- Proposed Stormwater Collection Systems



GIS

THE OVERLAYING PROCESS

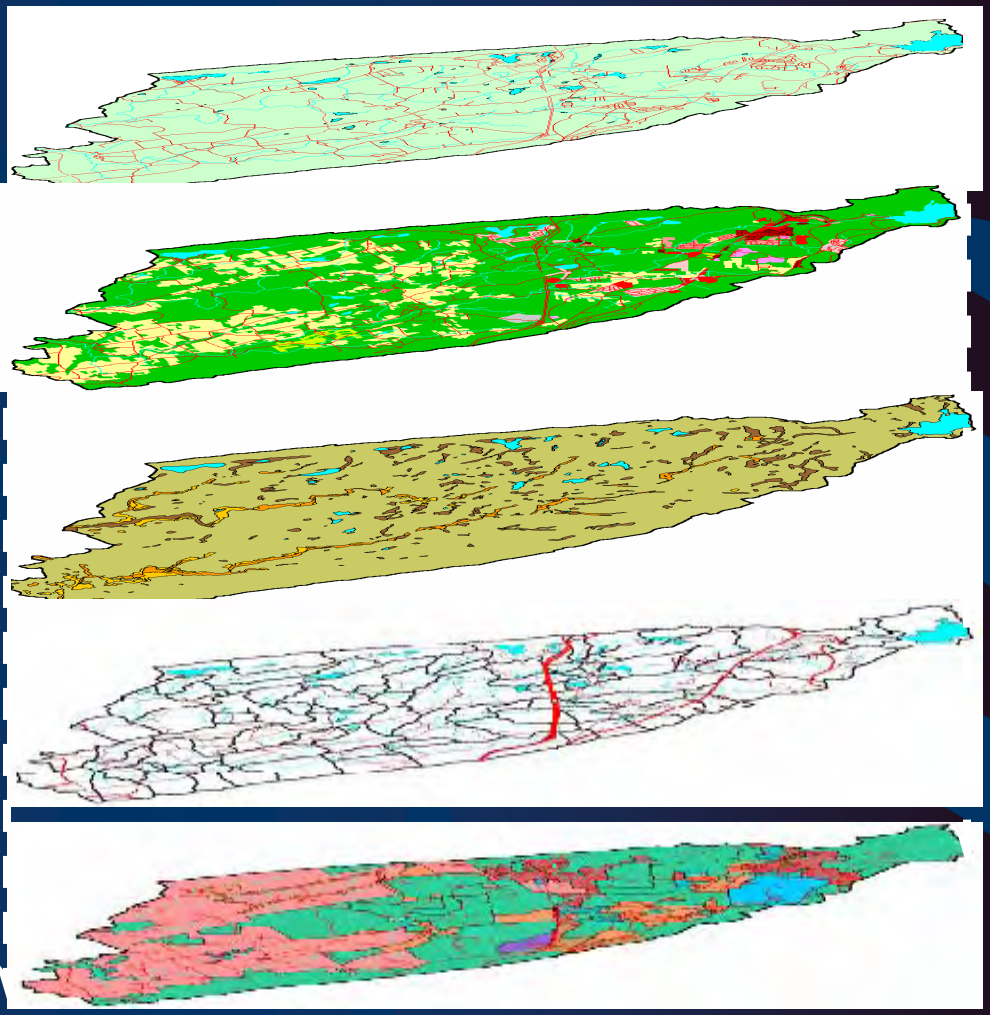
BASE INFORMATION

LAND USE

HYDROLOGIC SOIL GROUPS

SUBWATERSHED BOUNDARIES

SCS CURVE NUMBERS



PHASE II - Plan Preparation

- GIS Database Compilation
  Existing Land Use, Soils,
  Future Land Use, Obstructions,
  Problem Areas
- Water Quantity Modeling (Flooding)
- Coordinate with MS4 Requirements
- Develop Standards & Criteria
- Develop Model Ordinance
- WPAC Participation

Figure 5-7. Stream Gauge

Figure 5-8. Stream Gauge Photo

Legend


Problem Areas


Existing Flood Control Project


Proposed Flood Control Projects


Existing Stormwater Control Facilities


Proposed Stormwater Control Facilities

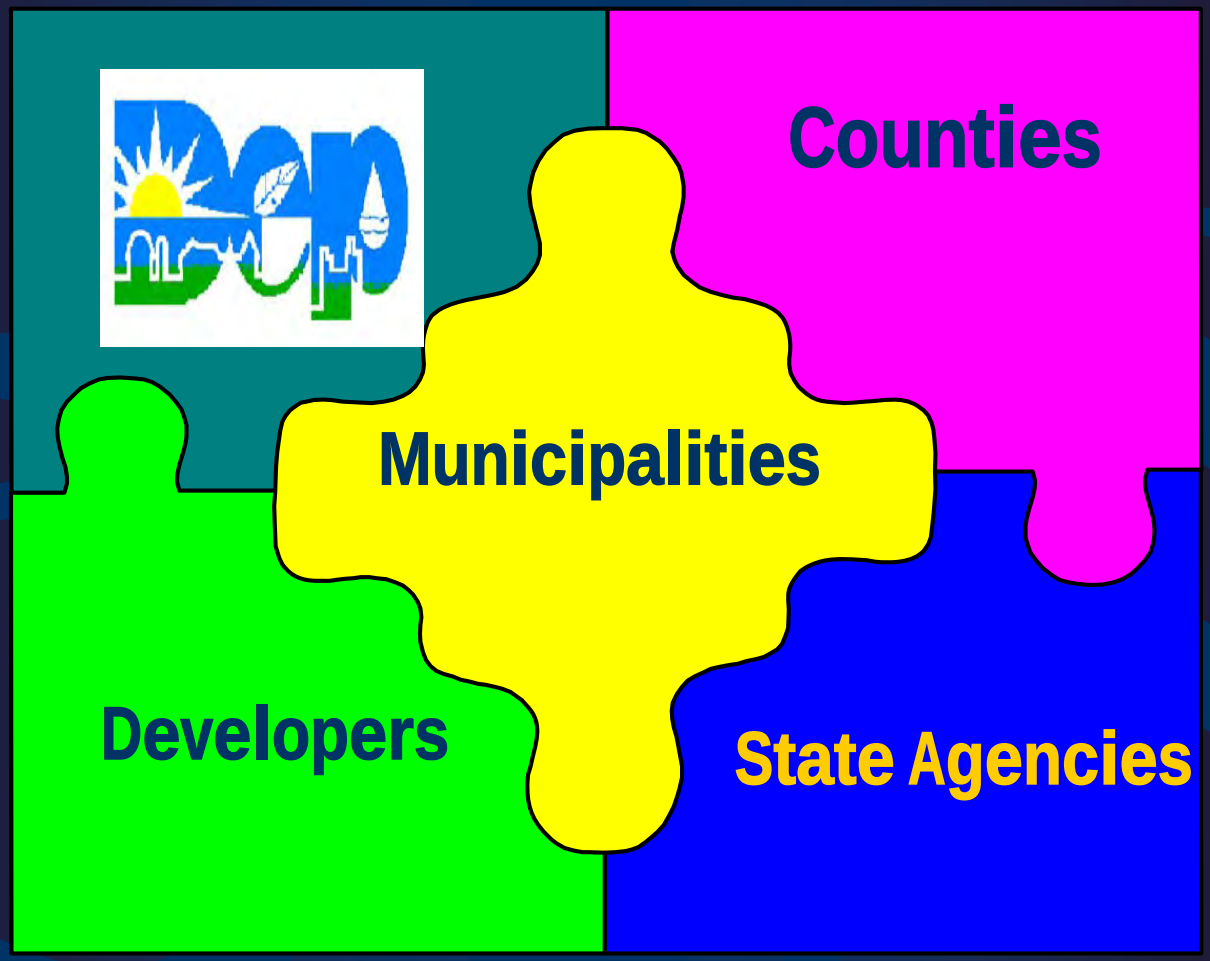

Existing Stormwater Collection System


Present and Projected Development in the Flood Hazard Area


Water Quality Problem Areas


Proposed Stormwater Collection Systems

Responsibilities



DEP Responsibilities:

- Advises Throughout the Process
- Technical Input
- Approves Plan
- 75 % funding

Typical County Responsibilities

- Data Collection (flood insurance studies, ordinances, GIS, obstructions)
- Advise on Plan and review Ordinance
- WPAC meetings/minutes
- Administration

Typical Municipal Responsibilities

- Aid in data collection
- Have WPAC representative attend and participate in WPAC meetings
- Model ordinance review
- Adopt Stormwater Ordinance consistent with the Watershed Plan

Municipal Obligation Under Act 167 Program

- Act 167 stormwater plans which provide the post-construction stormwater control standards must be implemented by all municipalities in the watershed

- Municipalities MUST Enact, administer and enforce SW Regulations, within 6 months of DEP Approval of the SW Plans

ROLE OF THE PLAN ADVISORY COMMITTEE (PAC)

- Aid in Data Collection (flood insurance studies, ordinances, obstructions, problem areas)
- Advise County Throughout Planning Process
- Evaluate Policy and Project Alternatives
- Coordinate Watershed Plan with other Mun. Programs / Peers
- Review Watershed Plan Prior to Adoption and Provide Input