

# West Easton Borough NPDES Permit Renewal

## Pollution Reduction Plan (PRP)

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PUBLIC PRESENTATION

JULY 24, 2017

PAG-13

NPDES

PERMIT

## Purpose of Presentation

- To provide overview of the Borough's current PAG-13 NPDES Permit
- Review upcoming changes to this Federal Mandated MS4 program
- Proposed measures to meet the new 2018 – 2023 permit requirements

## What Does MS4 Mean?

- MS4 = Municipal Separate Storm Sewer System
- How the Borough manages its infrastructure to collect, convey and discharge stormwater

## Why Care?

- Flooding issues
- Pollutants reaching surface waters
- Recharge of groundwater
- Volume and velocity of runoff
- Compliance with Federal Mandate



## MS4 Basics

### Permit Timeline

#### Important Upcoming MS4 Dates and Tasks:

2013 – 2018 **West Easton's Current MS4 NPDES permit**

**7/24/17** **Public Presentation of PRP  
Public Comment Period**

**8/30/17** Revised and Final PRP Plan from comments received

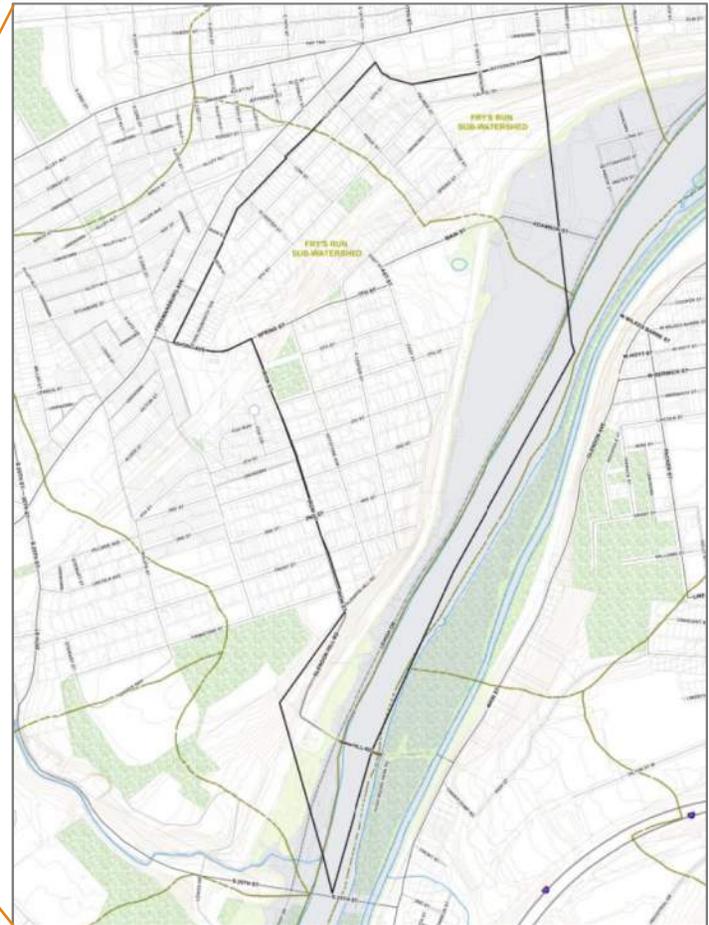
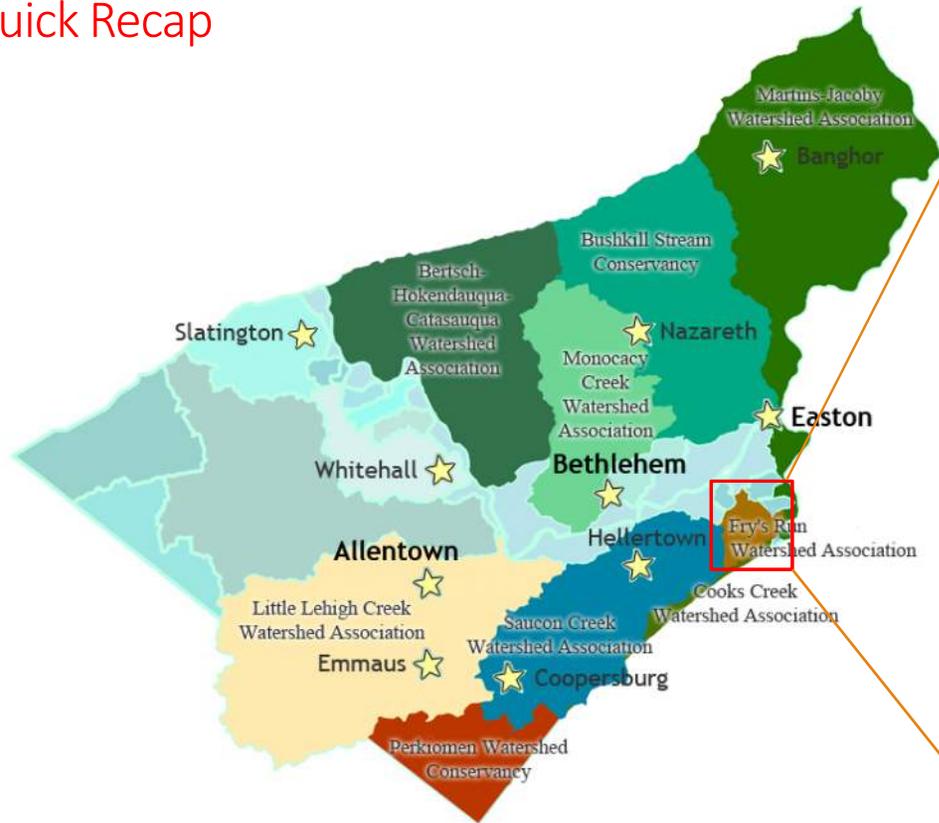
**9/15/17** **MS4 NPDES Renewal Permit due to DEP**  
Pollution Reduction Plan (PRP) due  
Updated Stormwater Map due

2018 – 2023 **Next MS4 NPDES Permit Cycle**  
Stormwater BMPs to be installed  
Stormwater Ordinance to be updated

MS4 Basics

Quick Recap

**LOCAL: Fry's Run Watershed & Lehigh River Watershed**



MS4 Basics

Quick Recap

## Ongoing MS4 NPDES Permit Requirements

### Minimum Control Measures

- Public Education
- Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post Construction Site Runoff Control
- Pollution Prevention and Good Housekeeping

MS4 Basics

Quick Recap

## So What's New for 2018-2023?

Focus on streams that are impaired due to different pollutant factors

*(sediment, low oxygen, metals, acid mine drainage, etc.)*

Water Quality Requirements

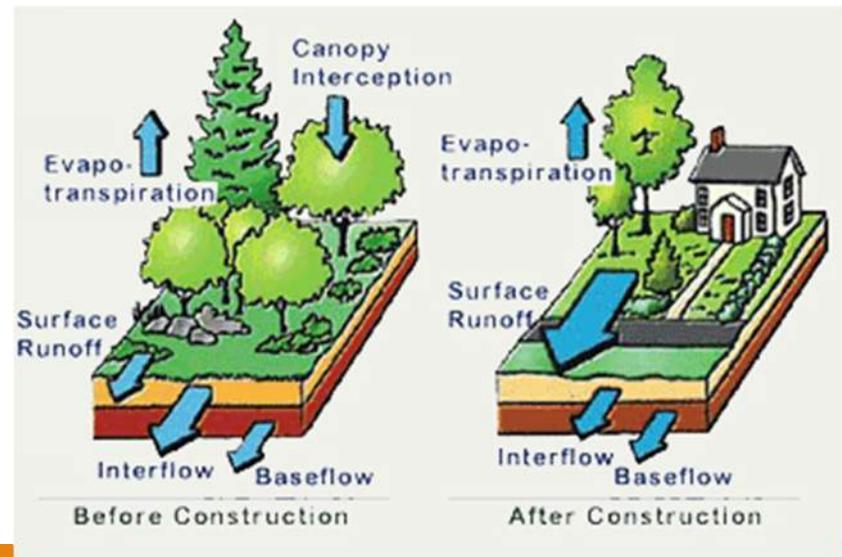
- reduce sediment loads being discharged by 10%

## Prepare a Pollution Reduction Plan (PRP)

Describes how the MS4 plans to address its impaired streams and meet its required pollutant reduction.

## The Purpose of Mapping & Pollution Reduction Planning

- Understand how stormwater run-off is entering the Borough and where it is discharging.
- How is the water impacted when traveling through the Borough?
- Is it collected and conveyed by pipes, or directed to stormwater BMPs.
- How surrounding land uses are impacting the water quality of its storm run-off.



# MS4 Pollution Reduction Plan Components

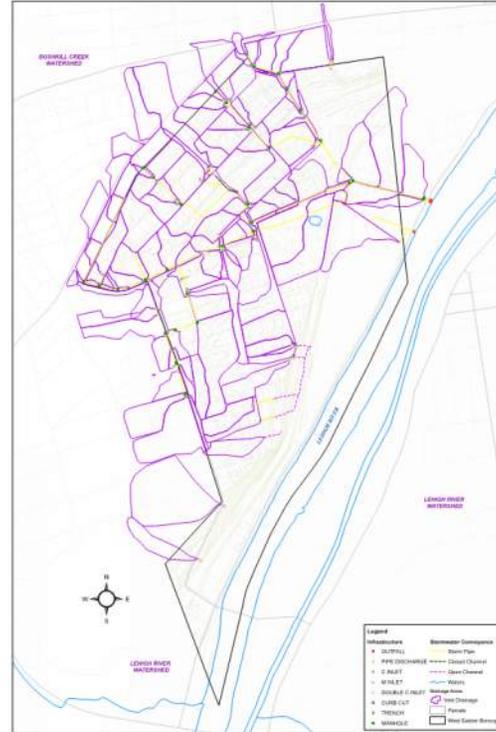
Understanding how stormwater travels through the Borough

## Putting the Puzzle Pieces Together



Storm Sewer System

Where and how is stormwater collected and conveyed



Drainage Areas

LIDAR topo downloaded to assist identifying drainage areas



Land Uses

WikiWatershed online program used to categorize land use areas

## Existing Pollution Loads - Lehigh River Discharge

MS4 Pollution  
Reduction Plan  
Components

Existing  
Pollution Load  
Calculations

LAND USE CATEGORY <sub>1</sub>	AREA (SF)	CONV. TO ACRES (AC)	STROUD TOOL IMPERV. (%)	EXISTING LOAD  IMPERVIOUS (AC)	SEDIMENT			
					LOADING RATE (LB/AC) <sup>2</sup>	EXISTING LOAD (LBS)	LOADING RATE (LB/AC) <sup>3</sup>	EXISTING LOAD (LBS)
OPEN WATER	704,465.23	16.17						
DEVELOPED, WOODED	1,514,651.34	34.77	0.00	0.00	241.88	0.00	0.327	0.00
DEVELOPED, OPEN SPACE	1,335,487.72	30.66	0.19	5.83	241.88	1408.98	0.327	1.90
DEVELOPED, LOW INTENSITY	2,153,577.14	49.44	0.49	24.23	241.88	5859.61	0.327	7.92
DEVELOPED, MEDIUM INTENSITY	1,143,369.07	26.25	0.79	20.74	241.88	5015.63	0.327	6.78
DEVELOPED, HIGH INTENSITY	1,298,542.13	29.81	1.00	29.81	241.88	7210.55	0.327	9.75
REMAINING STREETS/ROADWAYS	1,934,825.60	44.42	1.00	44.42	241.88	10743.70	0.327	14.52
<b>TOTALS:</b>					<b>SEDIMENT</b>	<b>30238.47</b>	<b>PHOS.</b>	<b>40.88</b>

Sources:

- 1 - Wiki Watershed, Model My Watershed Online Tool, Site Storm Model Scenario
- 2 - Wiki Watershed, Stream Reach Assessment Tool, Local Catchment Stats for Lehigh River, ( Sediment: 241.88 lbs/acre, TP: 0.327 lb/yr)



# MS4 Pollution Reduction Plan Components

DEP MS4 Requirement Table & Existing Pollution Load Calculations

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
West Easton Borough	PAG 132236	No		Lehigh River	Appendix E – Organic Enrichment/ Low D.O., Siltation, Suspended Solids	

## Required Pollutant Load Reductions

### Sediment (Siltation)

Existing Pollutant Load = 30,238 lb/yr

Required Reduction = 10%

Minimum Pollutant Reduction Required = 3,024 lb/yr

### Phosphorous (Organic Enrichment)

Existing Pollutant Load = 40.88 lb/yr

Required Reduction = 5%

Minimum Pollutant Reduction Required = 2.04 lb/yr

MS4 Pollution  
Reduction Plan  
Components

Assessing BMPs  
for Pollution  
Reduction

**Two methods used for assessing BMPs to meet the reduction requirements**  
Review existing drainage areas for improvements



Before (Existing)



After (Proposed)



MS4 Pollution  
Reduction Plan  
Components

Assessing BMPs  
for Pollution  
Reduction

## Methods used for assessing BMPs to meet the reduction requirements

Review types of BMPs for new installation projects



Infiltration Beds



Buffer Easements



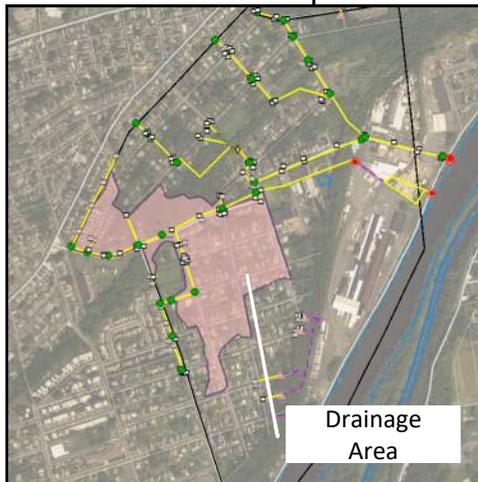
Rain Gardens



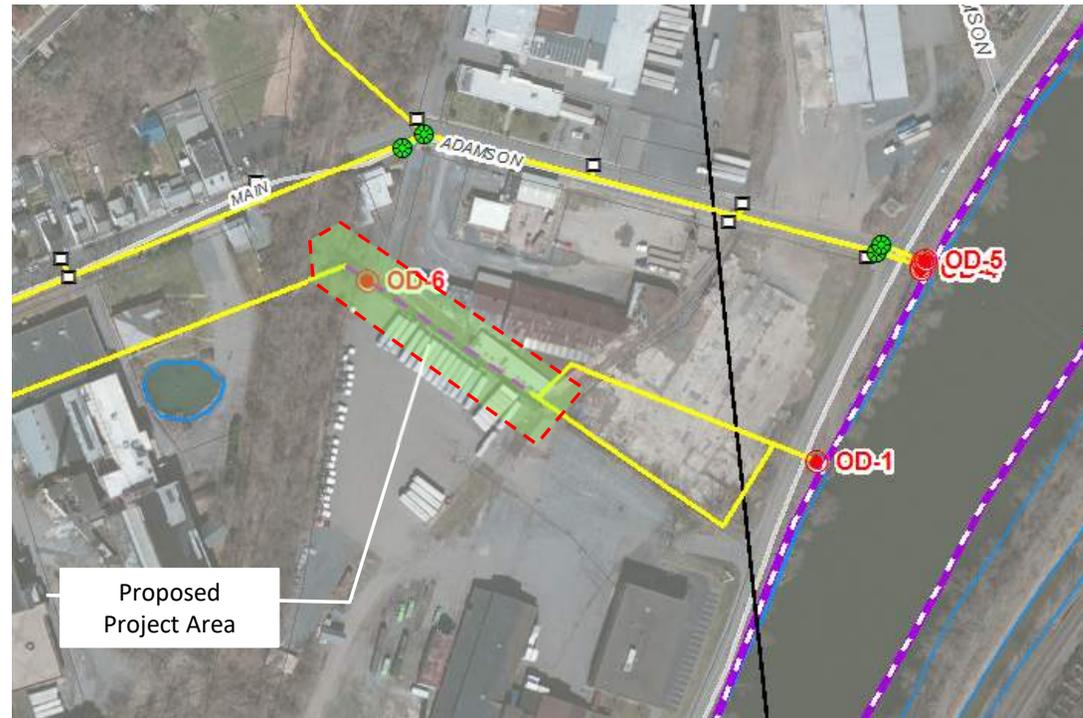
Wet Ponds

MS4 Pollution  
Reduction Plan  
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Proposed BMPs  
for Pollution  
Reduction



**Proposed BMP Option #1 – Open Channel Restoration**  
Industrial/Commercial Land Use (Private Property)



## Proposed BMP Option #1 – Open Channel Restoration Industrial/Commercial Land Use (Private Property)



- On private property and will require legal agreements and maintenance easement
- Stabilization of eroded slopes, in floodplain
- Clearing sediment from channel floor and clearing of debris
- Long term stream health can still be impacted by the adjacent parking lot

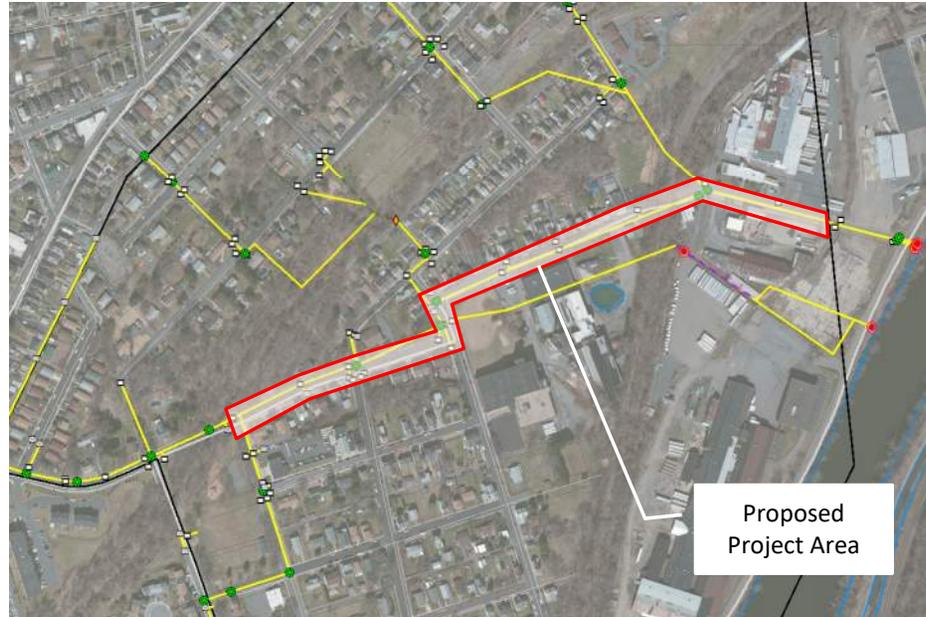
MS4 Pollution  
Reduction Plan  
Components

Proposed BMPs  
for Pollution  
Reduction

### Proposed BMP Option #1 – Open Channel Restoration Industrial/Commercial Land Use (Private Property)

LAND USE CATEGORY <sup>1</sup>	AREA (SF)	CONVERSION ACRES (AC)	STROUD TOOL IMPERVIOUS (%)	IMPERVIOUS (AC)	LOADING RATE (LB/AC) <sup>2</sup>	EXISTING LOAD (LBS)	LOADING RATE (LB/AC) <sup>3</sup>	EXISTING LOAD (LBS)
DEVELOPED, WOODED	193,663.56	4.45	0.00	0.00	241.88	0.00	0.327	0.00
DEVELOPED, OPEN SPACE	42,699.02	0.98	0.19	0.19	241.88	45.05	0.327	0.06
DEVELOPED, LOW INTENSITY	447,710.09	10.28	0.49	5.04	241.88	1218.16	0.327	1.65
DEVELOPED, MEDIUM INTENSITY	363,763.23	8.35	0.79	6.60	241.88	1595.72	0.327	2.16
DEVELOPED, HIGH INTENSITY	-	-	1.00	0.00	241.88	0.00	0.327	0.00
REMAINING STREETS/ROADWAYS	294,512.71	6.76	1.00	6.76	241.88	1635.37	0.327	2.21
<b>TOTALS:</b>					SEDIMENT	4494.31	PHOS.	6.08

## Proposed BMP Option #2 – Adamson & Main St Streetscape Road Improvements



- Rainwater to travel through vegetated and stone bed along curb
- Curb cuts allow flow from road into channel, and place for snow in winter
- Sidewalks preserved, gives buffer between traffic and pedestrians
- Road width appears reduced which slows vehicles through Main Street

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Proposed BMPs  
for Pollution  
Reduction

### Proposed BMP Option #3 – Keystone Ave & Ridge Street Property Streetscape and Bioretention Area



- Same streetscape benefits as mentioned on Main Street
- Ridge St property owned by Borough, space for bioswale or large rain gardens
- Capture and treat the rainwater from Ridge St before it reaches Spring St
- Need more survey information on the existing pipes, depths and connections

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MS4 Pollution  
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Reduction

## Proposed BMP Option #4 – Ridge Street & Industrial Property Road and Parking Lot Improvements

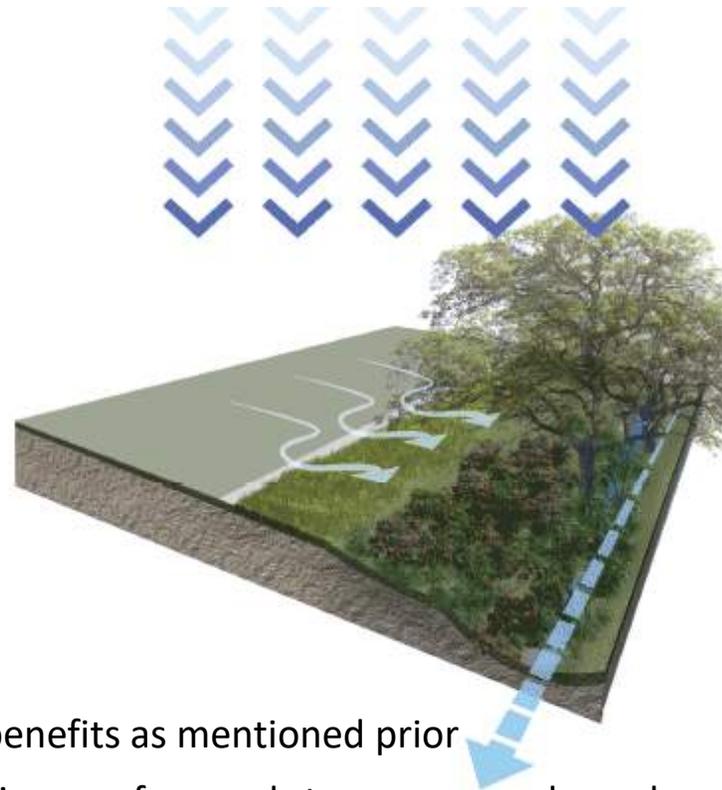


- Same Ridge St benefits as mentioned prior
- Remove impervious surface and storage areas along channel in parking lot
- Install 30' wide vegetated filter strip along channel edge (increase pervious area)
- Requires agreements with private property owner

MS4 Pollution  
Reduction Plan  
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Proposed BMPs  
for Pollution  
Reduction

### Proposed BMP Option #4 – Ridge Street & Industrial Property Road and Parking Lot Improvements



- Same Ridge St benefits as mentioned prior
- Remove impervious surface and storage areas along channel in parking lot
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MS4 Pollution  
Reduction Plan  
Components

Summary of  
Proposed  
Sediment  
Reductions

Required Pollutant Load Reduction = 3,024 lb/yr

LEHIGH RIVER – BMP OPTION #1 IMPROVEMENTS		OPEN CHANNEL			
PROPOSED	Proposed Load	BMP Effectiveness Value	Sediment Load Reduction	BMP Effectiveness Value	Phosphorous Load Reduction
Open Channel Improvements	4494.31 lb/yr	70%	3146.0 lb/yr	45%	2.73 lb/yr

LEHIGH RIVER– BMP OPTION #2 STREETScape		ADAMSON/MAIN ST			
PROPOSED	Proposed Load	BMP Effectiveness Value	Sediment Load Reduction	BMP Effectiveness Value	Phosphorous Load Reduction
Main Street Filter Beds	1791.99 lb/yr	80%	1257.93 lb/yr	75%	2.28 lb/yr
Inlet Filter Bags (27)	1766.57 lb/yr	80%	1413.26 lb/yr	-	-

MS4 Pollution  
Reduction Plan  
Components

Summary of  
Proposed  
Sediment  
Reductions

Required Pollutant Load Reduction = 3,024 lb/yr

LEHIGH RIVER – BMP OPTION #3		KEYSTONE AVE & RIDGE ST			
PROPOSED	Proposed Load	BMP Effectiveness Value	Sediment Load Reduction	BMP Effectiveness Value	Phosphorous Load Reduction
Keystone Ave Streetscape Filter Beds	958.12 lb/yr	80%	766.49 lb/yr	85%	1.10 lb/yr
Rain Gardens or Bioswale	1672.49 lb/yr	80%	1337.99 lb/yr	75%	1.70 lb/yr
Inlet Filter Bags (27)	1766.57 lb/yr	80%	1413.26 lb/yr	-	-
			<b>3517.74 lb/yr</b>		<b>2.80 lb/yr</b>

LEHIGH RIVER– BMP OPTION #4 PARKING LOT		RIDGE ST & TRUCK			
PROPOSED	Proposed Load	BMP Effectiveness Value	Proposed Load Reduction	BMP Effectiveness Value	Phosphorous Load Reduction
Rain Gardens or Bioswale	1672.49 lb/yr	80%	1337.99 lb/yr	75%	1.70 lb/yr
Truck Parking Filter Strip	716.42 lb/yr	80%	573.136 lb/yr	65%	0.58 lb/yr
Inlet Filter Bags (27)	1766.57 lb/yr	80%	1413.26 lb/yr	-	-
			<b>3324.38 lb/yr</b>		<b>2.28 lb/yr</b>

Funding

## Identify Potential Funding Sources



Show DEP where funding may come from in order to install and maintain each BMP

Source/ Group	Type
<b>BMP OPTION 1 – Channel Restoration</b>	
DEP – Growing Greener Grant	FUNDING SOURCE - Conservation & Environmental Projects focused on water quality for planning and installation, requires 15% match
PENNDOT – Stormwater Management Grant	FUNDING & PLANNING SOURCE – (alternative to DEP grant source) Stream channel stabilization projects eligible, in addition to mitigating hazards in flood prone areas.
PENN VEST – Green Initiatives	FUNDING SOURCE – encourage innovative green solutions for water quality management, including projects to reduce sediment and nutrient contamination
Fry’s Run Watershed Association	PLANNING & EDUCATIONAL OUTREACH SOURCE – Work with the watershed association in achieving goals outlined in their comprehensive plan; utilize watershed staff for educational handouts and materials on the project
Private Property Owner and West Easton Borough	PLANNING & MAINTENANCE RESOURCE - Preparation of a stormwater management agreement between the property owner and the Boroi
Lehigh Valley Greenways Conservation Landscape (D&L National Heritage Corridor)	FUNDING SOURCE – Mini Grant for restoring stream buffers and best management practices, requires 1:1 match
Borough of West Easton	FUNDING SOURCE - Budget funds



Funding

## Identify Potential Funding Sources



Show DEP where funding may come from in order to install and maintain each BMP

Source/ Group	Type
<b>BMP OPTION 2 &amp; 3 - Streetscape &amp; Stormwater Filter Beds</b>	
PENNDOT – TAP Grant Transportation Alternatives Program	FUNDING SOURCE – Eligible projects include improvements to pedestrian and bicycle facilities, promoting safety and mobility, environmental mitigation and stormwater improvements
PENN VEST – Green Initiatives	FUNDING SOURCE – encourage innovative green solutions for water quality management, including projects to reduce sediment and nutrient contamination
Chamber Foundation MSLV	FUNDING SOURCE – Maximum Grant \$2000, for the visual improvements to traditional neighborhoods, including landscaping
Lehigh Valley Master Watershed Steward Program Volunteers	LABOR SOURCE - Volunteers to assist with the installation of plantings
Boy Scouts and Girl Scout Troops	LABOR SOURCE - Volunteers to assist with the installation of plantings
Business/Company Sponsorship	FUNDRAISING SOURCE – opportunity for local businesses and organization donate towards plantings
Borough of West Easton	FUNDING SOURCE - Budget funds



## Operations & Maintenance of the BMPs

Prepare a list of anticipated maintenance tasks to keep the BMPs working efficiently



- Identify the party(ies) responsible for ongoing Operations and Maintenance (O&M)
- The activities involved with O&M for each BMP proposed
- The frequency at which O&M activities will occur
- If the Borough has a third party fulfill a portion of their O&M duties, a maintenance agreement shall be prepared between the Borough and the third party.

West Easton Borough shall identify on the O&M activities conducted in its Annual MS4 report to DEP



## When does the work need completed?

The MS4 has 5 years to complete the installation of the BMPs laid out in the Pollution Reduction Plan

Work needs to be completed by September 2023

The MS4 shall prepare a summary report on how the required pollution load reduction was satisfied and submit that report to DEP

# Questions?

