

Presentation Overview

- ▶ Basics of Stormwater Pollution Prevention
- ▶ Finding and Fixing Stormwater Hotspots
- ▶ Assessing Streets and Storm Drains
- ▶ Neighborhood Source Assessment
- ▶ Pulling it all Together

Urban Subwatershed Restoration Manual Series

1

An Integrated Framework to Restore Small Urban



Urban Subwatershed Restoration Manual Series

2

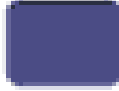
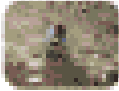
Methods to Develop Restoration Plans for Small Urban



Urban Subwatershed Restoration Manual Series

4

Urban Stream Repair



Urban Subwatershed Restoration Manual Series

8

Pollution Source Control



Urban Subwatershed Restoration Manual Series

10

Unified Stream Assessment: A User's Manual

Version 1.0



March 2004



CENTER FOR WATERSHED PROTECTION Manual 10

Urban Subwatershed Restoration Manual Series

11

Unified Subwatershed and Site Reconnaissance: A User's Manual

Version 1.0



March 2004



CENTER FOR WATERSHED PROTECTION Manual 11

Urban Subwatershed Restoration Manuals

www.cwp.org

Center for Watershed Protection

What is Stormwater Pollution Prevention?

- ▶ Changing everyday operations and practices to reduce the amount of pollutants entering the storm drain system
- ▶ Part of larger community stormwater education program
- ▶ An opportunity to use municipal facilities and operations to demonstrate good practices

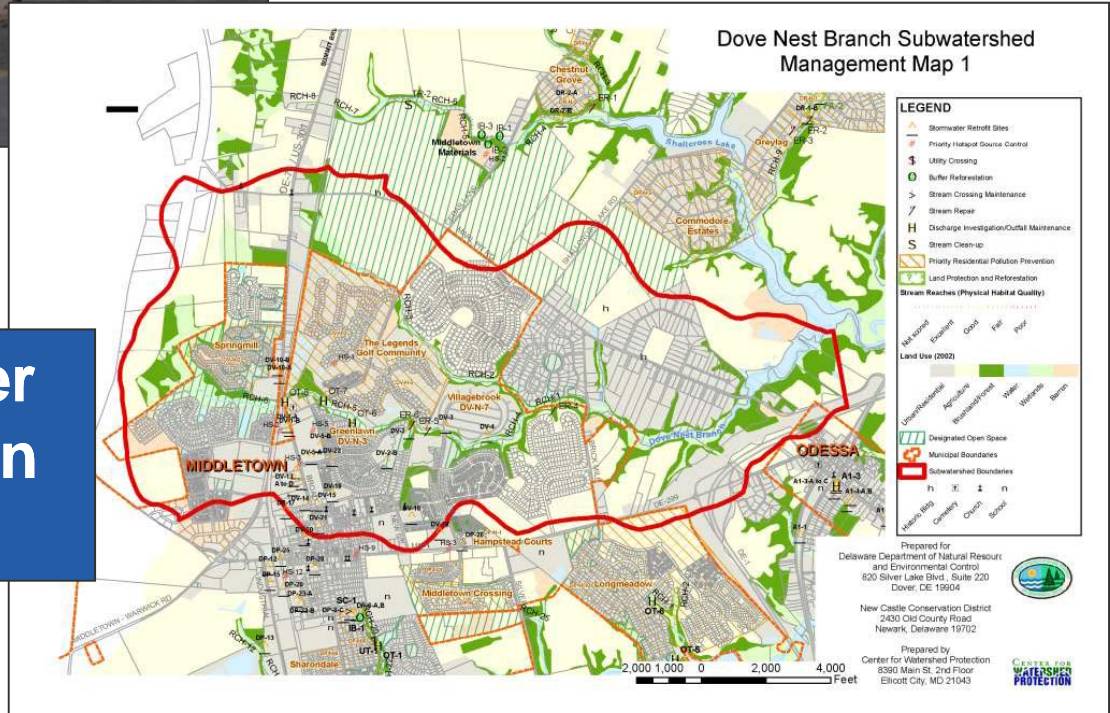
Benefits of Pollution Prevention

- ▶ Extremely cost effective at avoiding the creation of pollutants
- ▶ Most good housekeeping techniques are easily implemented
- ▶ Minimizes health risks to residents and workers
- ▶ Reduces future liability and avoids costly clean up in the future



Identifying individual pollution prevention opportunities

Integrating into a larger subwatershed pollution source control plan



What is the USSR?

Rapid surveys to find:

- ▶ Potential pollution sources
- ▶ Actions or operations that generate pollutants
- ▶ Identify practices to control them at their source



Components of the USSR...

Neighborhood Source Assessment



Hotspot Site Investigation



Pervious Area Assessment



Streets and Stormdrains



What are Hotspots?

**Residential
Commercial
Industrial
Institutional or
Municipal Operations**



Produce **higher levels of pollutants**

AND / OR

Present **higher potential risk for spills, leaks, or illicit discharges**

Field Guide to Hotspots: Commercial

Commercial car washes
Vehicle maintenance and repair
Fast food restaurants
Nurseries/garden centers
Gas stations
Building material stores
Construction companies
Petroleum wholesalers



Field Guide to Hotspots: Industrial

11 SIC code
“Heavy” Industries

Auto recyclers

Boat building /
repair facilities

Recycling centers /
scrapyards

Warehouses



Field Guide to Hotspots: Institutional

Cemeteries

Corporate office
parks

Hospitals

Colleges

Private golf
courses



Field Guide to Hotspots: Municipal

Fleet storage/school bus
depots

Landfills/solid waste
facilities

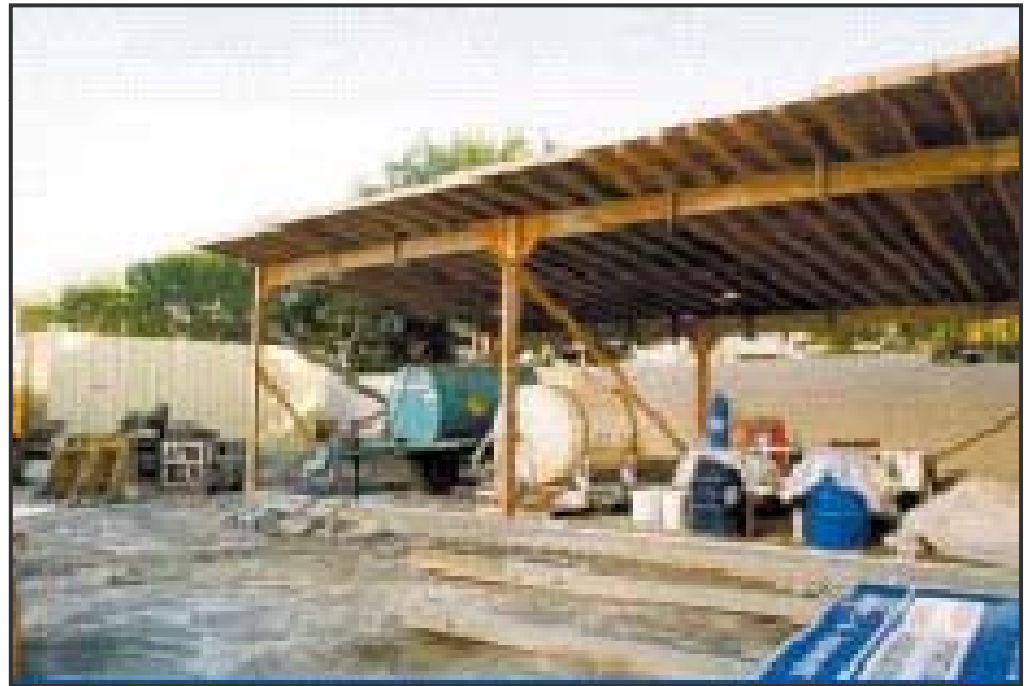
Public works yards

Public schools

Maintenance depots

Public golf courses

Wastewater treatment
plants



Field Guide to Hotspots: Transport

Airports

Bus depots

Ports

Railroads and bulk
shipping

Highway maintenance
facilities

Trucking companies and
distribution centers

Rental car lots



Field Guide to Hotspots: Oddballs

Construction

Marinas

Hobby farms

Fairgrounds
/racetracks

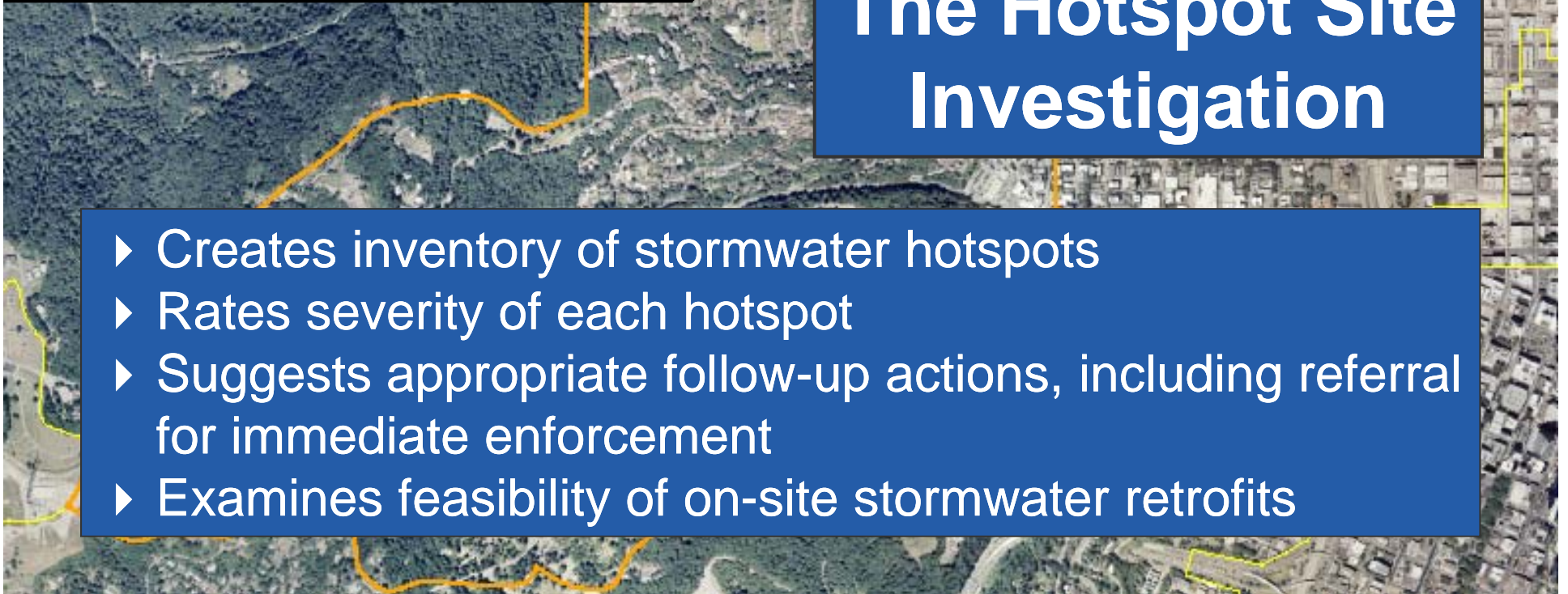
Restaurants





The Hotspot Site Investigation

- ▶ Creates inventory of stormwater hotspots
- ▶ Rates severity of each hotspot
- ▶ Suggests appropriate follow-up actions, including referral for immediate enforcement
- ▶ Examines feasibility of on-site stormwater retrofits



WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE: / /		ASSESSED BY:		CAMERA ID:	
MAP GRID:		LAT ° ' "		LONG ° ' "	
A. SITE DATA AND BASIC CLASSIFICATION		Pic#:		LMK #	
Name and Address:		Category: <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Institutional <input type="checkbox"/> Municipal <input type="checkbox"/> Golf Course <input type="checkbox"/> Transport-Related <input type="checkbox"/> Marina <input type="checkbox"/> Animal Facility			
SIC code (if available):		Basic Description of Operation:			
NPDES Status: <input type="checkbox"/> Regulated <input type="checkbox"/> Unregulated <input type="checkbox"/> Unknown		INDEX*			
B. VEHICLE OPERATIONS <input type="checkbox"/> N/A (Skip to part C)		Observed Pollution Source?			
B1. Types of vehicles: <input type="checkbox"/> Fleet vehicles <input type="checkbox"/> School buses <input type="checkbox"/> Other: _____					
B2. Approximate number of vehicles: _____					
B3. Vehicle activities (circle all that apply): Maintained Repaired Recycled Fueled Washed Stored		○			
B4. Are vehicles stored and/or repaired outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
Are these vehicles lacking runoff diversion methods? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
B5. Is there evidence of spills/leakage from vehicles? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
B6. Are uncovered outdoor fueling areas present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
B7. Are fueling areas directly connected to storm drains? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
B8. Are vehicles washed outdoors? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
Does the area where vehicles are washed discharge to the storm drain? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C. OUTDOOR MATERIALS <input type="checkbox"/> N/A (Skip to part D)		Observed Pollution Source?			
C1. Are loading/unloading operations present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
If yes, are they uncovered and draining towards a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C2. Are materials stored outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell If yes, are they <input type="checkbox"/> Liquid <input type="checkbox"/> Solid Description: _____		○			
Where are they stored? <input type="checkbox"/> grass/dirt area <input type="checkbox"/> concrete/asphalt <input type="checkbox"/> bermed area		○			
C3. Is the storage area directly or indirectly connected to storm drain (circle one)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C4. Is staining or discoloration around the area visible? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C5. Does outdoor storage area lack a cover? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C6. Are liquid materials stored without secondary containment? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
C7. Are storage containers missing labels or in poor condition (rusting)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
D. WASTE MANAGEMENT <input type="checkbox"/> N/A (Skip to part E)		Observed Pollution Source?			
D1. Type of waste (check all that apply): <input type="checkbox"/> Garbage <input type="checkbox"/> Construction materials <input type="checkbox"/> Hazardous materials		○			
D2. Dumpster condition (check all that apply): <input type="checkbox"/> No cover/Lid is open <input type="checkbox"/> Damaged/poor condition <input type="checkbox"/> Leaking or evidence of leakage (stains on ground) <input type="checkbox"/> Overflowing		○			
D3. Is the dumpster located near a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
If yes, are runoff diversion methods (berms, curbs) lacking? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		○			
E. PHYSICAL PLANT <input type="checkbox"/> N/A (Skip to part F)		Observed Pollution Source?			
E1. Building: Approximate age: _____ yrs. Condition of surfaces: <input type="checkbox"/> Clean <input type="checkbox"/> Stained <input type="checkbox"/> Dirty <input type="checkbox"/> Damaged		○			
Evidence that maintenance results in discharge to storm drains (staining/discoloration)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know		○			

*Index: ○ denotes potential pollution source; □ denotes confirmed polluter (evidence was seen)

ing Lot: Approximate age _____ yrs. Condition: <input type="checkbox"/> Clean <input type="checkbox"/> Stained <input type="checkbox"/> Dirty <input type="checkbox"/> Breaking up	○
ce material <input type="checkbox"/> Paved/Concrete <input type="checkbox"/> Gravel <input type="checkbox"/> Permeable <input type="checkbox"/> Don't know	○
ownspouts discharge to impervious surface? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know <input type="checkbox"/> None visible	○
Are downspouts directly connected to storm drains? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know	○
ence of poor cleaning practices for construction activities (stains leading to storm drain)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell	○
/LANDSCAPING AREAS <input type="checkbox"/> N/A (skip to part G) Observed Pollution Source?	
site with: Forest canopy _____ % Turf grass _____ % Landscaping _____ % Bare Soil _____ %	○
the turf management status: <input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	○
ence of permanent irrigation or "non-target" irrigation <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell	○
ndscaped areas drain to the storm drain system? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell	○
andscape plants accumulate organic matter (leaves, grass clippings) on adjacent impervious surface? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell	○
M WATER INFRASTRUCTURE <input type="checkbox"/> N/A (skip to part H) Observed Pollution Source?	
storm water treatment practices present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown If yes, please describe: _____	○
private storm drains located at the facility? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown	○
is trash present in gutters leading to storm drains? If so, complete the index below.	○

	Index Rating for Accumulation in Gutters				
	Clean	2	3	4	Filthy
ment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
nic material	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

h basin inspection - Record SSD Unique Site ID here: _____ Condition: Dirty Clean

AL HOTSPOT STATUS - INDEX RESULTS

hotspot (fewer than 5 circles and no boxes checked) Potential hotspot (5 to 10 circles but no boxes checked)

rmmed hotspot (10 to 15 circles and/or 1 box checked) Severe hotspot (>15 circles and/or 2 or more boxes checked)

Action:

for immediate enforcement	
st follow-up on-site inspection	
or illicit discharge	
le in future education effort	
to see if hotspot is an NPDES non-filer	
non-residential retrofit	
us area restoration; complete PAA sheet and record	
Unique Site ID here: _____	
ule a review of storm water pollution prevention plan	

6 Common Hotspot Operations

Stormwater Infrastructure

Turf and Landscaping

Waste Management

Physical Plant

Outdoor Materials

Vehicle Operations

See Tables 6 & 7 in handout

Vehicle Operations
Outdoor Material
Waste Management
Physical Plant
Turf / Landscaping Areas
Unique Operations

HSI: Vehicle Operations

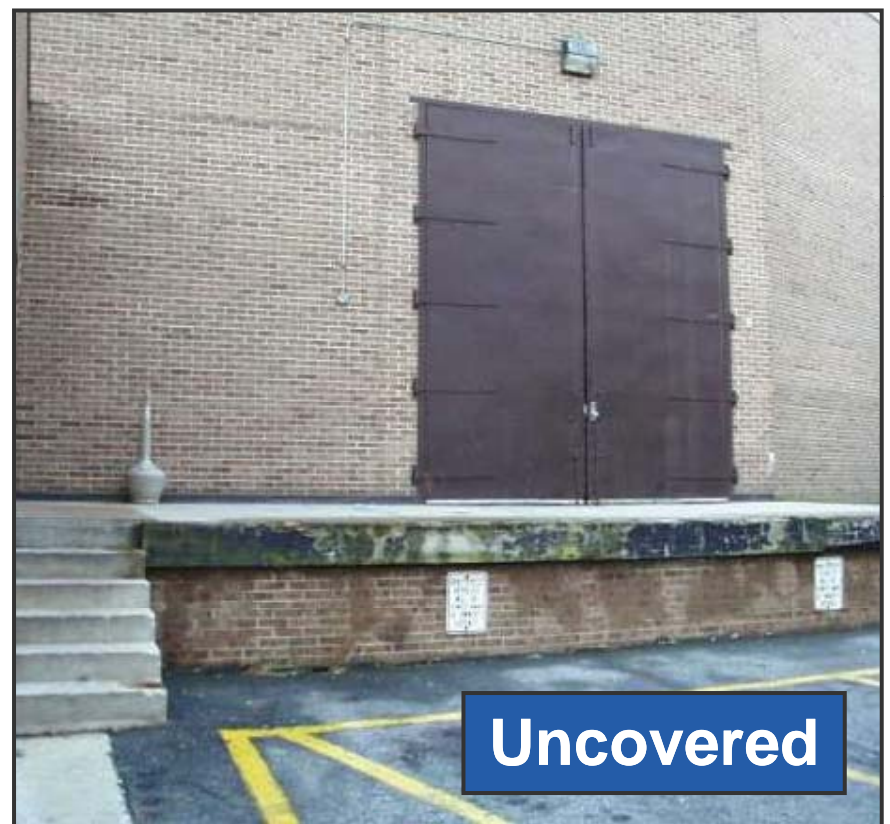
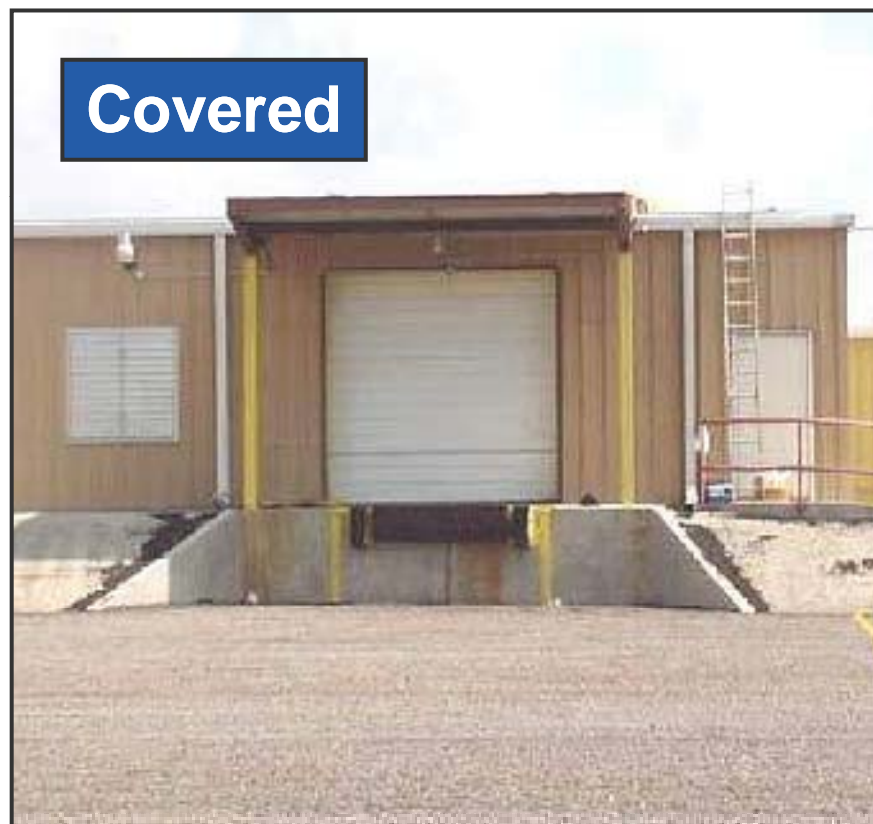


**Dedicated truck wash site
with runoff controls
(Source: US DOE)**

**Unknown Leak From Repair of a Vehicle
(Source: City of Memphis)**



HSI: Outdoor Materials



HSI: Outdoor Materials, cont.



Inadequately Labeled Storage Containers (Source: City of Memphis)



Direct Connection to Storm Drains

HSI: Waste Management



**Evidence of
Dumpster Juice**

HSI: Physical Plant



Downspout Discharge



Parking Lot Condition

HSI: Turf / Landscaping Areas



HSI: Stormwater Infrastructure



HSI: Stormwater Infrastructure, cont.



**Gutter Accumulation
Rating of 1**

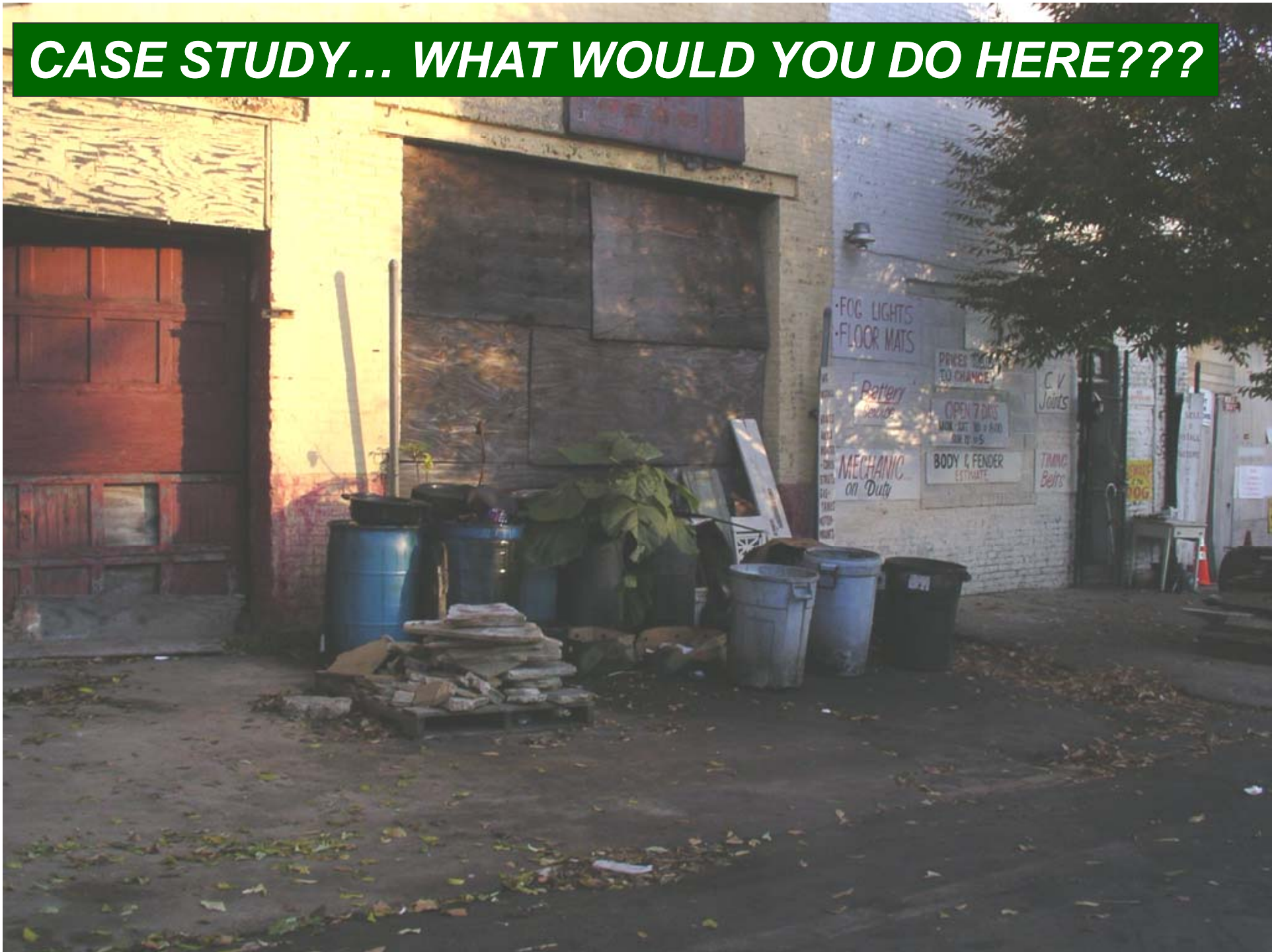


**Gutter Accumulation
Rating of 3**



**Gutter Accumulation
Rating of 5**

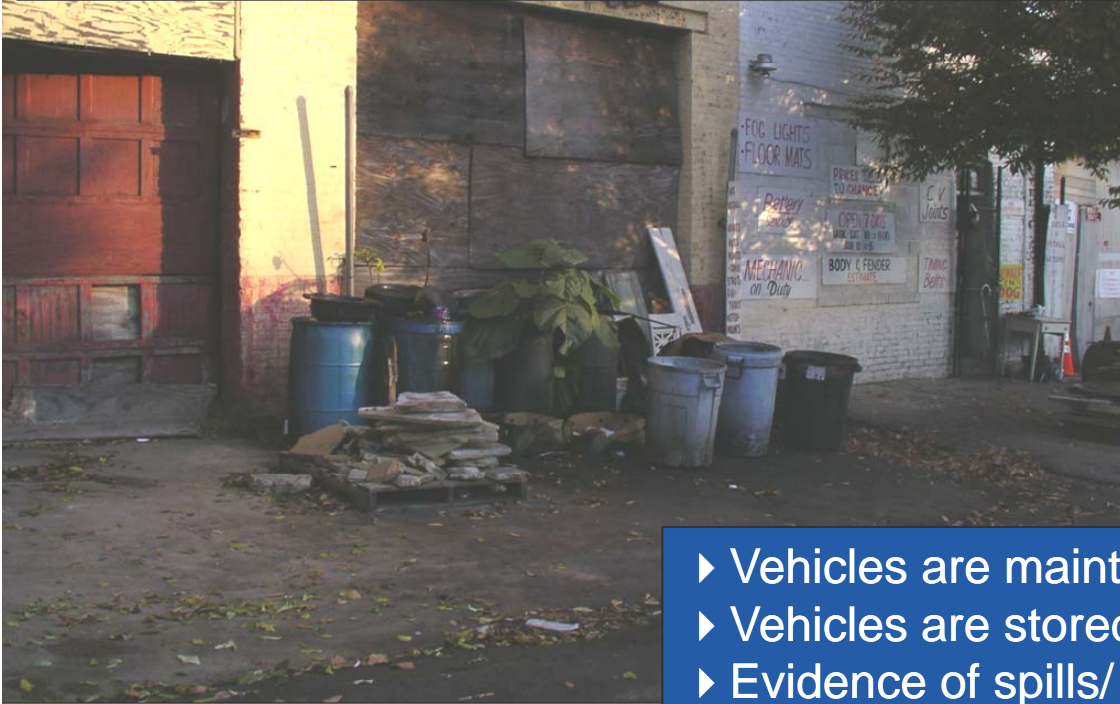
CASE STUDY... WHAT WOULD YOU DO HERE???



What Would You Do Here?



CASE STUDY... WHAT WOULD YOU DO HERE???



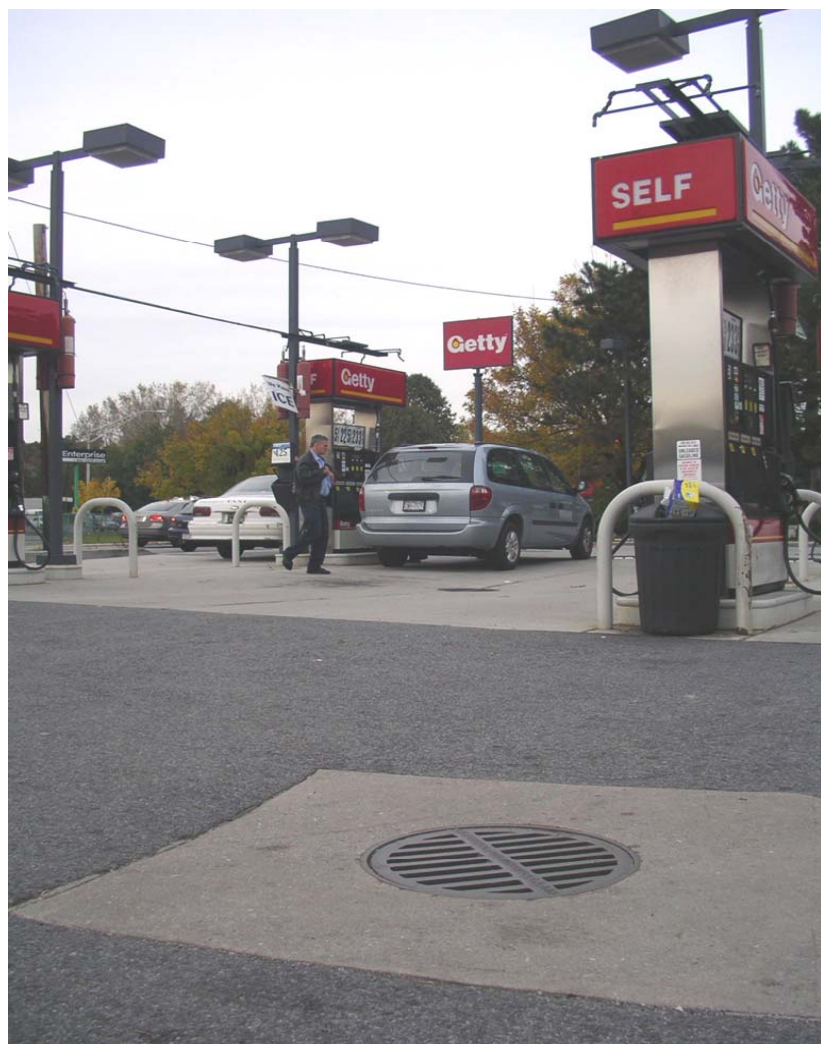
- ▶ Vehicles are maintained and repaired
- ▶ Vehicles are stored/ repaired outside
- ▶ Evidence of spills/ leakage from vehicles
- ▶ Materials stored outside on paved surface
- ▶ Storage area directly connected to storm drain
- ▶ Evidence of staining / discoloration around storage area
- ▶ Outdoor storage area lacks cover
- ▶ Liquid materials stored without secondary containment
- ▶ Hazardous materials present
- ▶ Dumpster has no cover, is leaking, and located near storm drain inlet
- ▶ No stormwater treatment practice is present



What Would You Do Here?



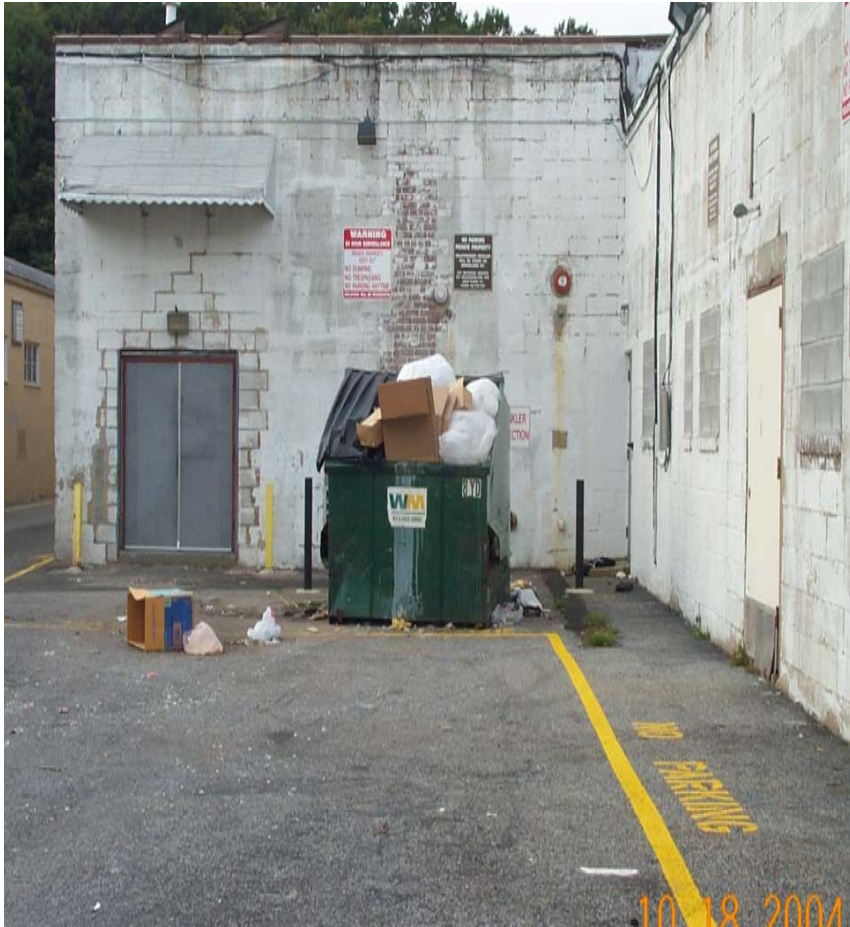
What Would You Do Here?



What Would You Do Here?



What Would You Do Here?



What Would You Do Here?




What Would You Do Here?



What Would You Do Here?





The Streets and Storm Drains Assessment

- ▶ Estimates the severity of pollutant accumulation on roads and within storm drain systems
- ▶ Assesses large parking areas for storm water retrofit potential
- ▶ Rates the feasibility of four municipal maintenance strategies

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID:
DATE: ___/___/___	ASSESSED BY:	CAMERA ID:
MAP GRID	RAIN IN LAST 24 HOURS <input type="checkbox"/> Y <input type="checkbox"/> N	PIC #
A. LOCATION		
A1. Street names or neighborhood surveyed:		
A2. Adjacent land use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Institutional <input type="checkbox"/> Municipal <input type="checkbox"/> Transport-Related		
A3. Corresponding HSI or NSA field sheet? If so, circle HSI or NSA and record its Unique Site ID here		
B. STREET CONDITIONS		
B1. Road Type: <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input type="checkbox"/> Alley <input type="checkbox"/> Other: _____		
B2. Condition of Pavement: <input type="checkbox"/> New <input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Broken		
B3. Is on-street parking permitted <input type="checkbox"/> Y <input type="checkbox"/> N If yes, approximate number of cars per block: _____		
B4. Are large cul-de-sacs present? <input type="checkbox"/> Y <input type="checkbox"/> N		
B5. Is trash present in curb and gutter? If so, use the index to the right to record amount.		
	Index Rating for Accumulation in Gutters	
	Clean	Filthy
Sediment	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Organic Material	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Litter	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
C. STORM DRAIN INLETS AND CATCH BASINS		
C1. Type of storm drain conveyance: <input type="checkbox"/> open <input type="checkbox"/> enclosed <input type="checkbox"/> mixed		
C2. Percentage of inlets with catch basin storage: <input type="checkbox"/> N/A		
Sample 1-2 catch basins per NSA/HSI	C3. Catch basin #1	C4. Catch basin #2
Latitude	° ' "	° ' "
Longitude	° ' "	° ' "
LMK #		
Picture #		
Current Condition	<input type="checkbox"/> Wet <input type="checkbox"/> Dry	<input type="checkbox"/> Wet <input type="checkbox"/> Dry
Condition of Inlet	<input type="checkbox"/> Clear <input type="checkbox"/> Obstructed	<input type="checkbox"/> Clear <input type="checkbox"/> Obstructed
Litter Accumulation	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
Organics Accumulation	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
Sediment Accumulation	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
Sediment Depth (in feet)	ft.	ft.
Water Depth	ft.	ft.
Evidence of oil and grease	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
Sulfur smell	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
Accessible to vacuum truck	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
D. NON-RESIDENTIAL PARKING LOT (>2 acres)		
D1. Approximate size: _____ acres		
D2. Lot Utilization: <input type="checkbox"/> Full <input type="checkbox"/> About half full <input type="checkbox"/> Empty		
D3. Overall condition of Pavement: <input type="checkbox"/> Smooth (no cracks) <input type="checkbox"/> Medium (few cracks) <input type="checkbox"/> Rough (many cracks) <input type="checkbox"/> Very Rough (numerous cracks and depressions)		
D4. Is lot served by a storm water treatment practice? <input type="checkbox"/> Y <input type="checkbox"/> N If yes, describe: _____		
D5. On-site retrofit potential: <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Poor		

E. MUNICIPAL POLLUTANT REDUCTION STRATEGIES

E1. Degree of pollutant accumulation in the system: High Medium Low None

E2. Rate the feasibility of the following pollution prevention strategies:

- Street Sweeping: High Moderate Low
- Storm Drain Stenciling: High Moderate Low
- Catch Basin Clean-outs: High Moderate Low
- Parking Lot Retrofit Potential: High Moderate Low

CATCH BASIN SKETCHES

#1

#2



If your streets look this, a different approach is needed

SSD: Street Conditions



Road Type



On-Street Parking



Condition of Pavement



Cul-de-Sacs

SSD: Street Conditions, cont.

Accumulation in Gutters...



SSD: Storm Drain Inlets & Catch Basins

Current Condition (Wet / Dry)
Condition of Inlet (Clear / Obstructed)

Litter Accumulation

Organics Accumulation

Sediment Accumulation

Sediment Depth

Water Depth

Evidence of oil and grease

Accessible to vacuum truck



SSD: Non-Residential Parking Lot

Size

Lot Utilization

Pavement Condition

Existing STP

Retrofit Potential



SSD: Municipal Pollutant Reduction Strategies

Degree of Pollutant Accumulation

Street Sweeping

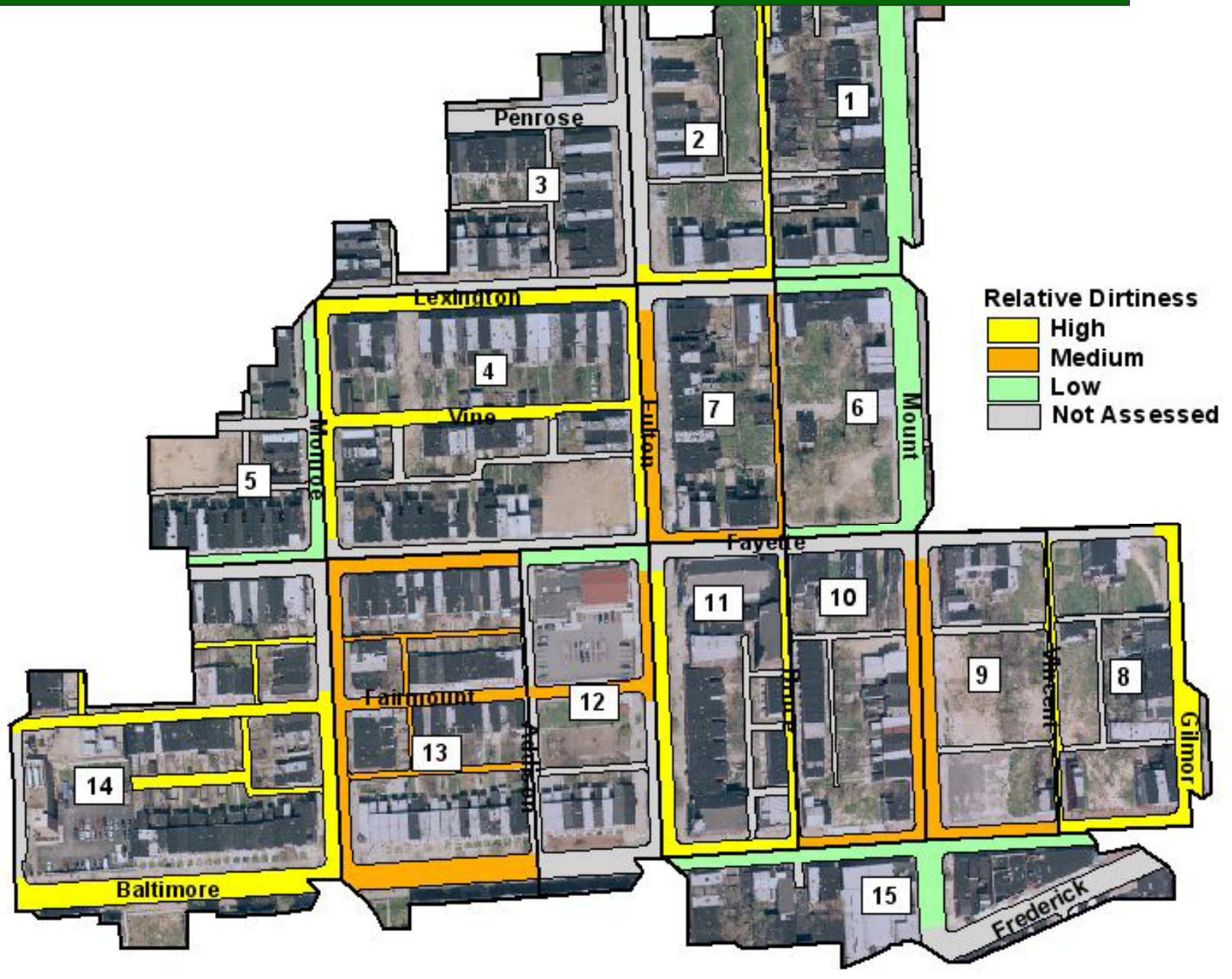
Storm Drain Stenciling

Catch Basin Clean-outs

Parking Lot Retrofit Potential



CASE STUDY... WHAT WOULD YOU DO HERE?



Neighborhood Source Assessment



Neighborhood Source Assessment

Assess for each neighborhood:

- ▶ Yards & Lawns
- ▶ Driveways, Sidewalks & Curbs
- ▶ Rooftops
- ▶ Common Areas

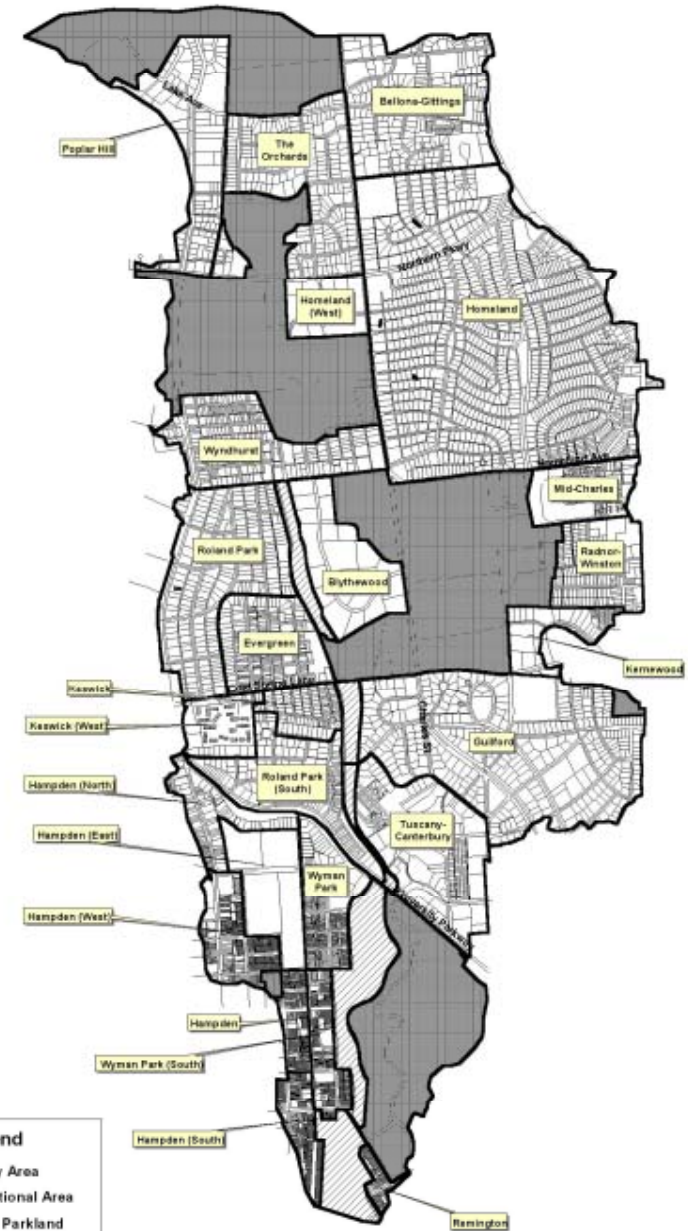
Also complete:

- ▶ Neighborhood Characterization
- ▶ Initial Assessment & Recommendations

Each neighborhood is different:

- ▶ Age
- ▶ Lot Size
- ▶ Turf and Forest Cover
- ▶ Housekeeping
- ▶ Pollution Sources

Stony Run Watershed Reconnaissance
Survey Areas





COMMON AREAS

Pet Wastes
Storm Water Practices
Stream Buffers
Storm Drains

DRIVEWAYS

Car Washing
Hosing/Blowing
Winter Deicing
Fluid Changing

ROOFTOPS

Downspout Retrofits
Add/Subtract IC
Household Haz Wastes

YARDS

Fertilization
Pesticide Use
Lawn Watering
Landscaping
Tree Canopy Cover
Yard Waste
Soil Reclamation
Erosion Control
Septic Systems
Swimming Pools



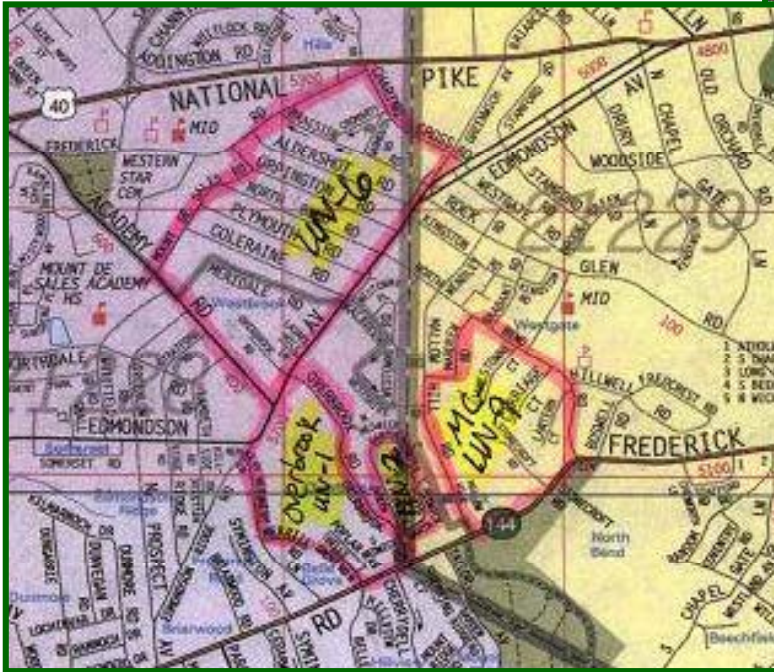
What are the differences in pollutants sources between neighborhood A

and B?



Delineate the neighborhoods before you head to the field...

**Using aerial
photographs**



or street maps

NSA: Yard and Lawn

**% of lot with impervious cover?
% of lot with turf grass?
% of lot with landscaping?
% of lot with bare soil?**



NSA: Yard & Lawn

Proportion of total neighborhood turf lawns with the following management status:



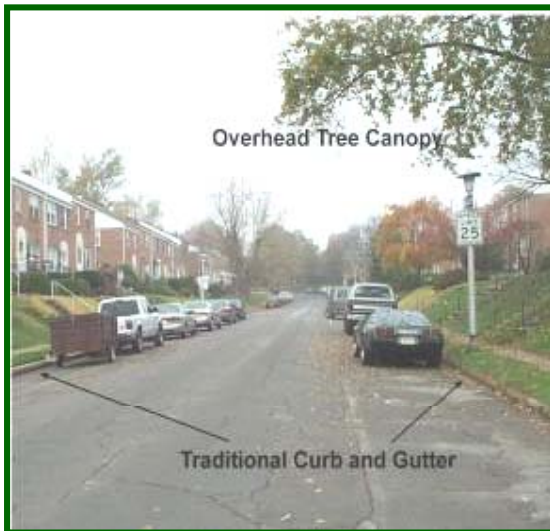
NSA: Driveways, Sidewalks & Curbs



**% of driveways that are impervious?
Are driveways clean? Stained? Dirty? Breaking up?**

NSA: Driveways, Sidewalks & Curbs

**Sidewalks present? One side or both sides?
Spotless? Lawn clippings/ leaves? Irrigation?
Distance from street?
Pet waste in tree lawn?
Curb and gutter present? Condition?**



NSA: Rooftops

% Directly Connected?



% Discharge to Pervious Area?



Room for a Rain Garden?



% Directed to Impervious Surface?



% Discharge to Rain Barrel?



NSA: Common Areas

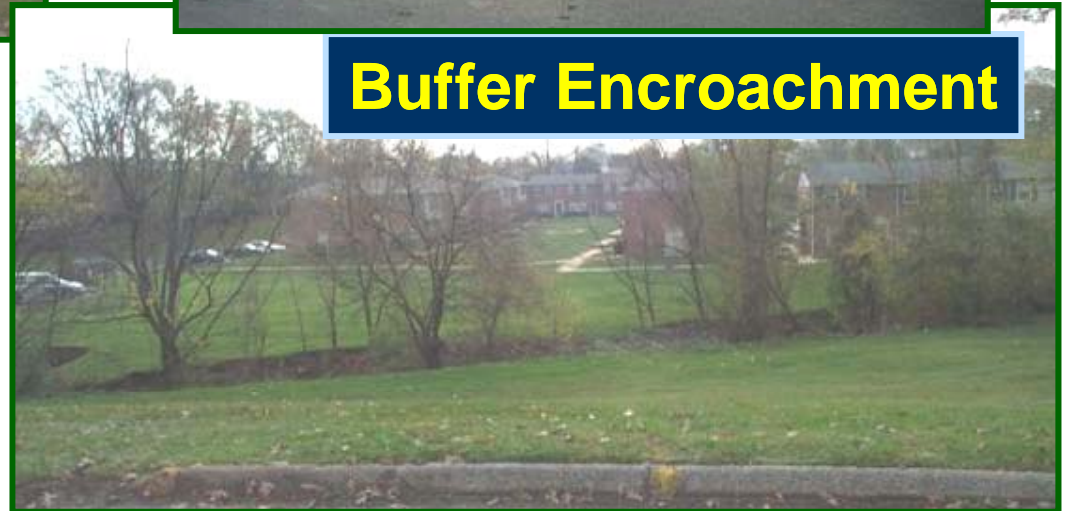
Designated Use



Undesignated Use



Buffer Encroachment



**Open space present?
Pet waste? Dumping?**

Yards and Lawns



Stewardship Technique

Reduced fertilizer use

Reduced pesticide use

Xeriscaping

Natural landscaping

Tree planting

Yard waste composting

Erosion repair

Single lot control

Septic system clean-outs

Safe pool discharge

Driveways, Sidewalks, and Curbs



Stewardship Technique

- Safe car washing
- Driveway sweeping
- Car fluid recycling
- Pet waste pick-up

Rooftops



Stewardship Technique

Downspout disconnection
or treatment

Common Areas



Stewardship Technique

Pet waste education

Stormwater maintenance

Reforestation

Storm drain stenciling

Streetscaping

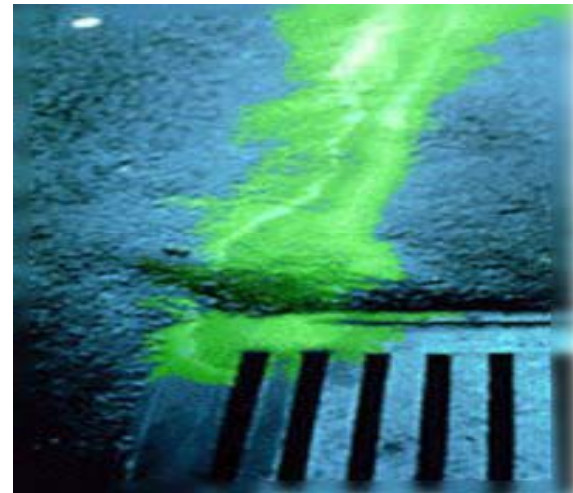
Dumping prevention/removal

What Would You Do Here?



Emergency Referrals

Bring phone numbers to deal with violations



Mapping USSR Data



STEP 1: Pick your pollutant of concern

STEP 2: Link pollutant to key subwatershed indicators

STEP 3: Locate specific pollutant source areas in the subwatershed

STEP 4: Identify and understand priority outreach targets

STEP 5: Develop overall source control strategy

STEP 6: Craft a clear and simple message

STEP 7: Select the most effective outreach techniques

STEP 8: Choose the mix of source control practices

STEP 9: Estimate subwatershed source control budget

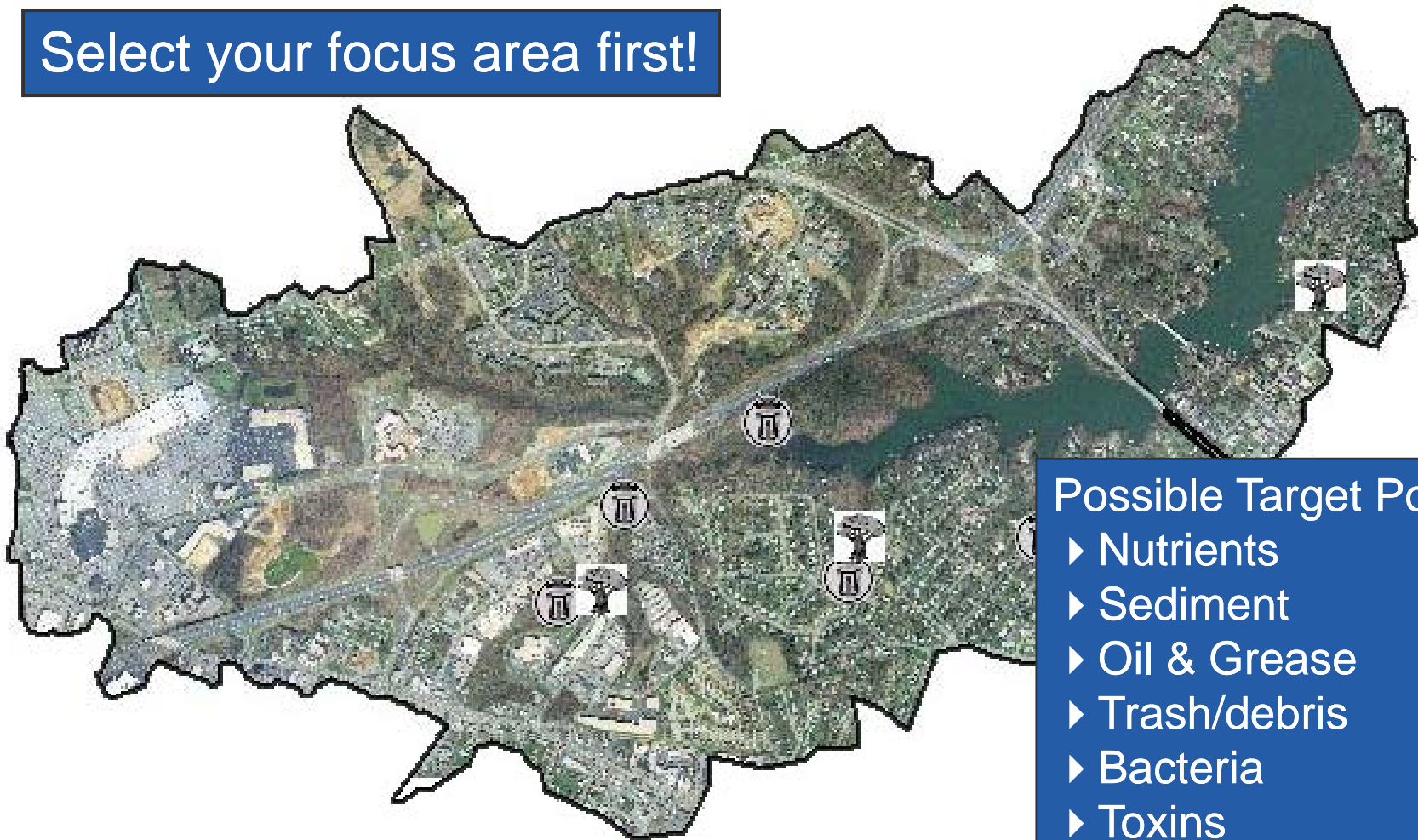
STEP 10: Put together partnership to distribute the practices

STEP 11: Evaluate progress in Implementation

ELEVEN STEPS OF A SOURCE CONTROL PLAN

Step 1: Pick Your Pollutant of Concern

Select your focus area first!



Possible Target Pollutants:

- ▶ Nutrients
- ▶ Sediment
- ▶ Oil & Grease
- ▶ Trash/debris
- ▶ Bacteria
- ▶ Toxins
- ▶ Runoff

Step 2: Link Pollutant to Key Subwatershed Indicators

For example, oil & grease

- ▶ Vehicle fueling and repair
- ▶ Parking lot stains
- ▶ Catchbasin oil sheens
- ▶ Auto recyclers/storage
- ▶ Restaurants
- ▶ Outdoor car maintenance

**Can you think
of any others?**

Step 3: Locate Specific Source Areas

Look for these in the subwatershed:

- ▶ Hotspot clusters
- ▶ High counts of similar operations
- ▶ Large facilities
- ▶ Stormwater NPDES permit facilities

HSI & SSD data is counted, mapped and analyzed

Step 4: Identify and Understand Priority Outreach Targets

Who is engaging in poor practice and why?

- ▶ Lack of training?
- ▶ Economics?
- ▶ Interference with business operations?
- ▶ Inconvenient?
- ▶ Low wage and hi turnover employees?

What might motivate a minimum wage, non-English speaking, seasonal worker to practice better dumpster management?

Step 5: Develop Overall Source Control Strategy

Choose the right mix of carrots and sticks to change behaviors, based on:

- ▶ Receptivity of population
- ▶ Hit rate
- ▶ Adoption rate
- ▶ Start-up cost
- ▶ Ongoing cost
- ▶ Expertise needed

Step 6: Craft a Clear and Simple Message

- ▶ Link it to recognized business problem
- ▶ Never presume much awareness
- ▶ Keep it uncluttered and jargon free
- ▶ Make it direct, simple, and humorous
- ▶ Package in small, slick, and durable units
- ▶ Make sure its in the right language

Craft a message to auto repair shop employees

Step 7: Select Most Effective Outreach Techniques

- ▶ Define size of target population for outreach
- ▶ Estimate number of exposures and timing of the messages
- ▶ Choose a mix of outreach techniques to get maximum recall (10 to 30%)

How many exposures do you think are needed to train car repair shop employees on proper practice?

Step 8: Choose the Mix of Source Control Practices

15 different hotspot pollution prevention practices profiled in USRM 8

- ▶ Description
- ▶ Training targets
- ▶ Application
- ▶ Implementation
- ▶ Resources



Profile sheets available
in Manual 8 and SI
website

Step 9: Estimate Source Control Budget

- ▶ How long should the campaign be (_ years)
- ▶ How much are direct outreach costs (advertising)
- ▶ How much does each source control practice cost
- ▶ What staff costs are needed to administer / coordinate the plan

Step 10: Assemble Partnerships to Deliver Outreach Practices

A single person can't do much – need partners:

- ▶ Business groups
- ▶ Watershed groups
- ▶ Chamber of Commerce
- ▶ Trade associations
- ▶ Water / sewer utilities
- ▶ State NPDES enforcement agency
- ▶ Local media

Who might be some private sector allies to enlist?

Step 11. Evaluate Progress in Implementation

Need to quantify changes in behavior, and hopefully, pollutant reductions, through:

- ▶ Employee surveys
- ▶ Follow-up inspections
- ▶ plan compliance
- ▶ Site monitoring

Pollution Prevention Resources

On the SI Web:

- ▶ Pollution Prevention Internet Resources
- ▶ Excerpts from USRM 8: Pollution Source Control Practices
- ▶ Hotspot Site Investigation Field Sheets
- ▶ Streets and Storm Drains Assessment Field Sheets
- ▶ Hotspot Pollution Prevention Practice Profile Sheets

SPI/SDI Web Resources

- ▶ Go to CWP's main webpage:
www.cwp.org
- ▶ Click link that says "November 2005 SI Attendees" to get to login page
- ▶ Login: **cwp** password: 2005SI

Questions?

