DATA-DRIVEN STRATEGIC PLANNING FOR GREEN INFRASTRUCTURE IN WASHINGTON, DC

Tracking and Evaluating Program Implementation with DC's Stormwater Database

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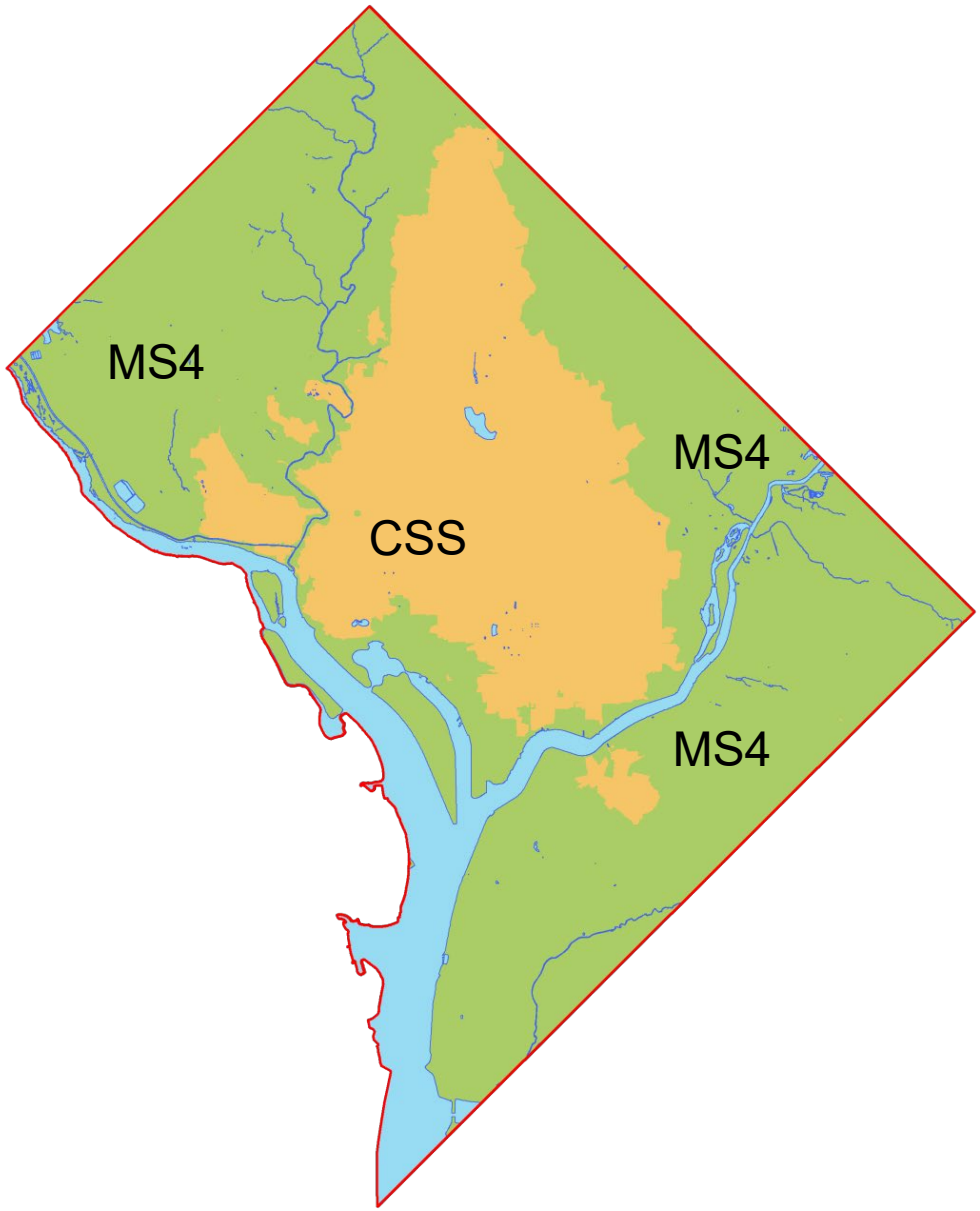
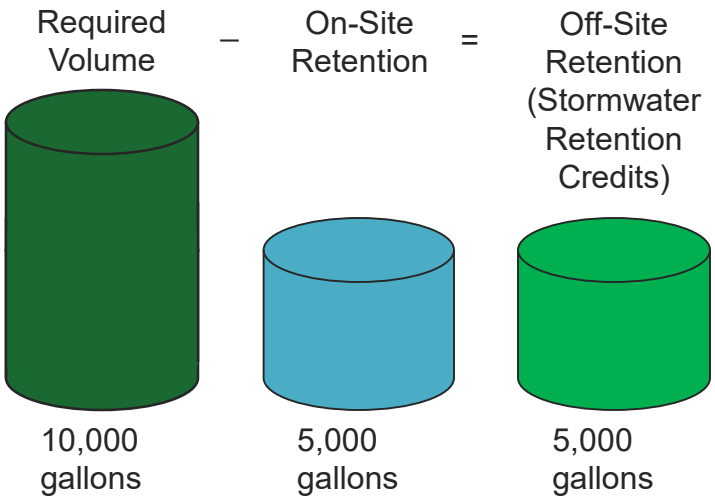
MURIEL BOWSER, MAYOR

DC CONTEXT FOR GREEN INFRASTRUCTURE PROGRAMS



IMPERVIOUS SURFACES AND STORMWATER IN WASHINGTON, DC

- 43% Impervious surface
- 1/3 drains to Combined Sewer System (CSS)
  - $2.6B capital project to reduce Combined Sewer Overflows (CSOs)
- 2/3 drains to Municipal Separate Storm Sewer System (MS4)
  - $7B+ green infrastructure build-out
  - $10M/year budget
  - Retrofit will occur over decades



STORMWATER PROGRAMS

Green Infrastructure (GI):

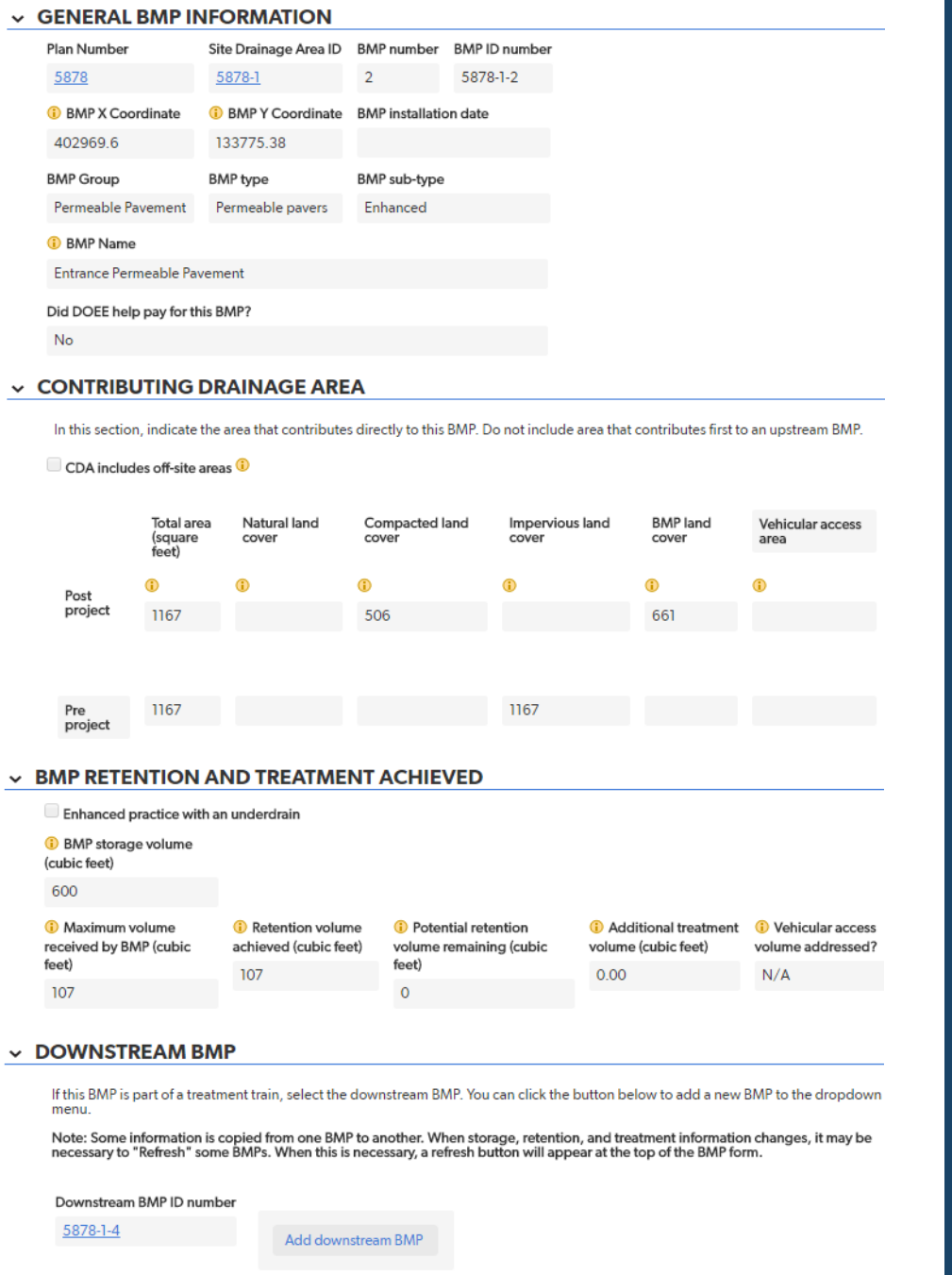
- Runoff reduction
- Installed through combination of regulatory and voluntary programs

2013 stormwater rule and credit trading program:

- Requires GI for development activity (reduces runoff compared with pre-project baseline)
- Trading program was enabling factor and maximizes benefits

Voluntary incentive programs:

- Grants, rebates, education, and other voluntary programs funded by DOEE



GENERAL BMP INFORMATION

Plan Number	Site Drainage Area ID	BMP number	BMP ID number
5878	5878-1	2	5878-1-2

BMP X Coordinate	BMP Y Coordinate	BMP installation date
402969.6	133775.38	

BMP Group	BMP type	BMP sub-type
Permeable Pavement	Permeable pavers	Enhanced

BMP Name: Entrance Permeable Pavement

Did DOEE help pay for this BMP? No

CONTRIBUTING DRAINAGE AREA

In this section, indicate the area that contributes directly to this BMP. Do not include area that contributes first to an upstream BMP.

CDA includes off-site areas

	Total area (square feet)	Natural land cover	Compacted land cover	Impervious land cover	BMP land cover	Vehicular access area
Post project	1167		506		661	
Pre project	1167			1167		

BMP RETENTION AND TREATMENT ACHIEVED

Enhanced practice with an underdrain

BMP storage volume (cubic feet): 600

Maximum volume received by BMP (cubic feet)	Retention volume achieved (cubic feet)	Potential retention volume remaining (cubic feet)	Additional treatment volume (cubic feet)	Vehicular access volume addressed?
107	107	0	0.00	N/A

DOWNSTREAM BMP

If this BMP is part of a treatment train, select the downstream BMP. You can click the button below to add a new BMP to the dropdown menu.

Note: Some information is copied from one BMP to another. When storage, retention, and treatment information changes, it may be necessary to "Refresh" some BMPs. When this is necessary, a refresh button will appear at the top of the BMP form.

Downstream BMP ID number: 5878-1-4

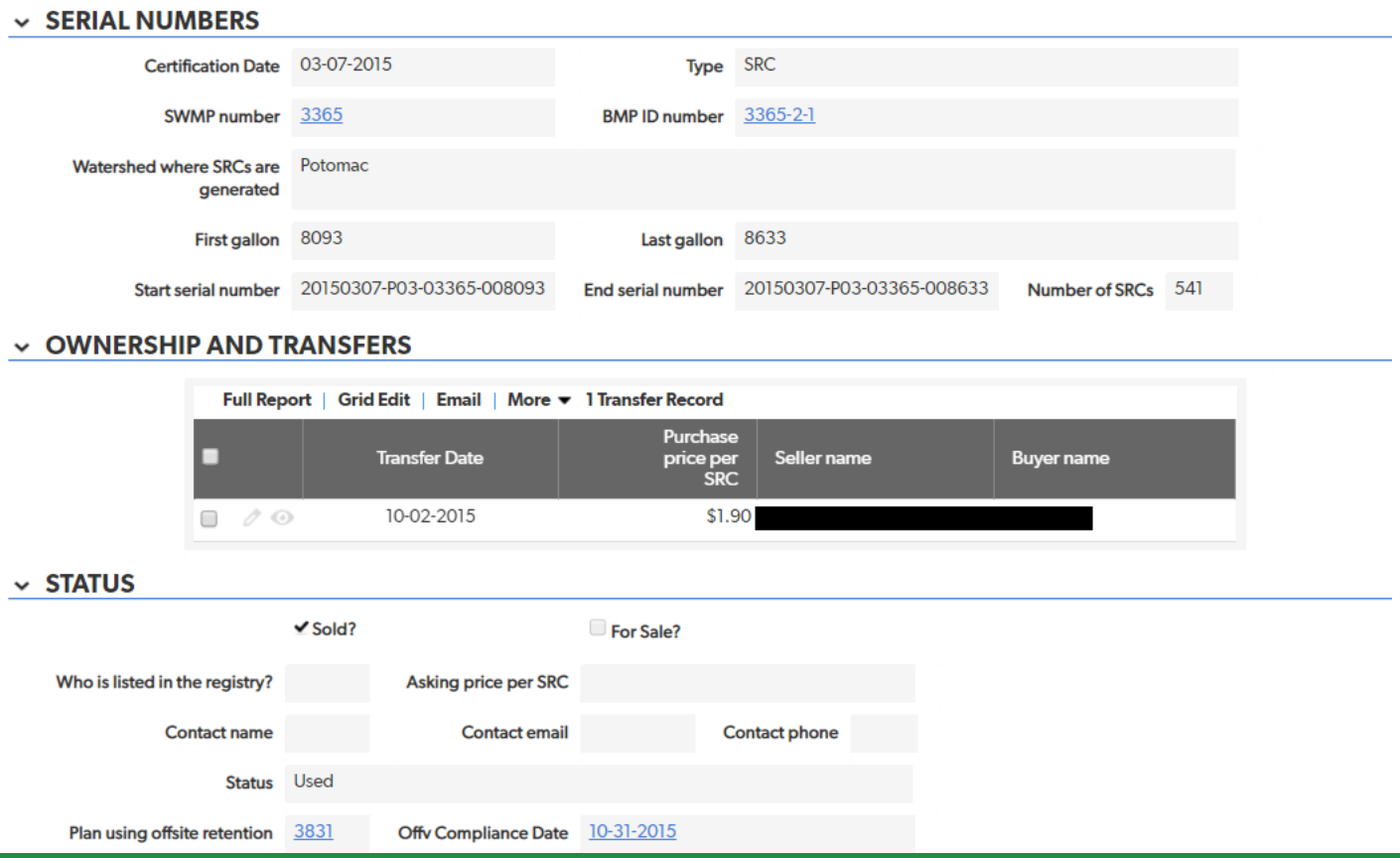
Add downstream BMP

GREEN INFRASTRUCTURE DATA REQUIREMENTS

- Unique ID, including GI type and location
- Area managed
- Size, including calculation of runoff-reduction
- Downstream GI (if applicable)
- Installation date and maintenance status

STORMWATER CREDIT DATA REQUIREMENTS

- Date and location of certification and use
- Ownership and sale information



SERIAL NUMBERS

Certification Date	03-07-2015	Type	SRC		
SWMP number	3365	BMP ID number	3365-2-1		
Watershed where SRCs are generated	Potomac				
First gallon	8093	Last gallon	8633		
Start serial number	20150307-P03-03365-008093	End serial number	20150307-P03-03365-008633	Number of SRCs	541

OWNERSHIP AND TRANSFERS

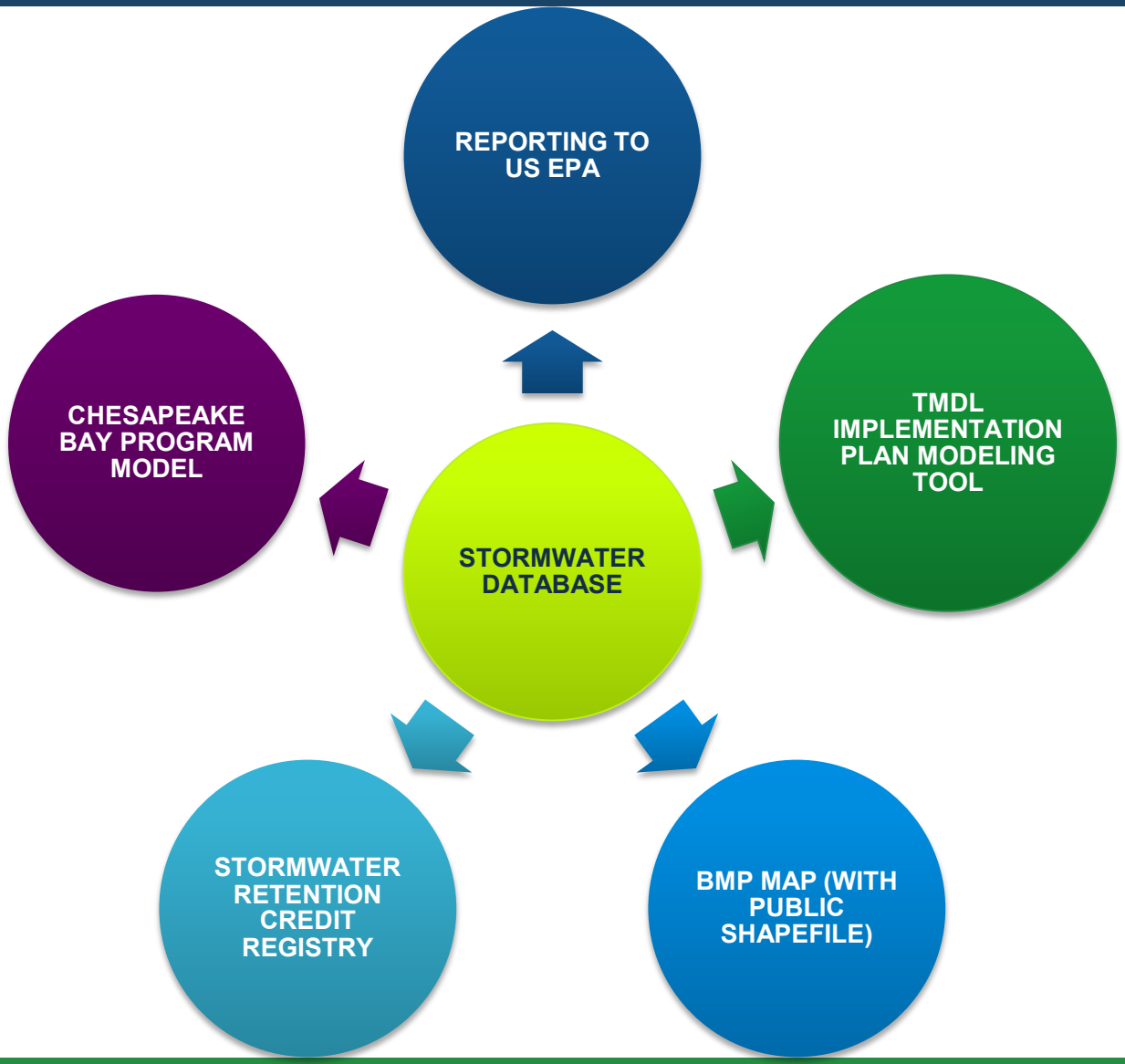
Full Report | Grid Edit | Email | More | 1 Transfer Record

	Transfer Date	Purchase price per SRC	Seller name	Buyer name
	10-02-2015	$1.90	[redacted]	

STATUS

	✔ Sold?		For Sale?		
Who is listed in the registry?		Asking price per SRC			
Contact name		Contact email		Contact phone	
Status	Used				
Plan using offsite retention	3831	Offv Compliance Date	10-31-2015		

REQUIRED REPORTING AND ANALYSIS



DEVELOPING THE STORMWATER DATABASE

Why the Stormwater Database?

SWDB development was driven by:

- MS4 Permit issued by EPA
- New stormwater regulations
- Requirements to track, report on, and model data for several programs

In-house database development

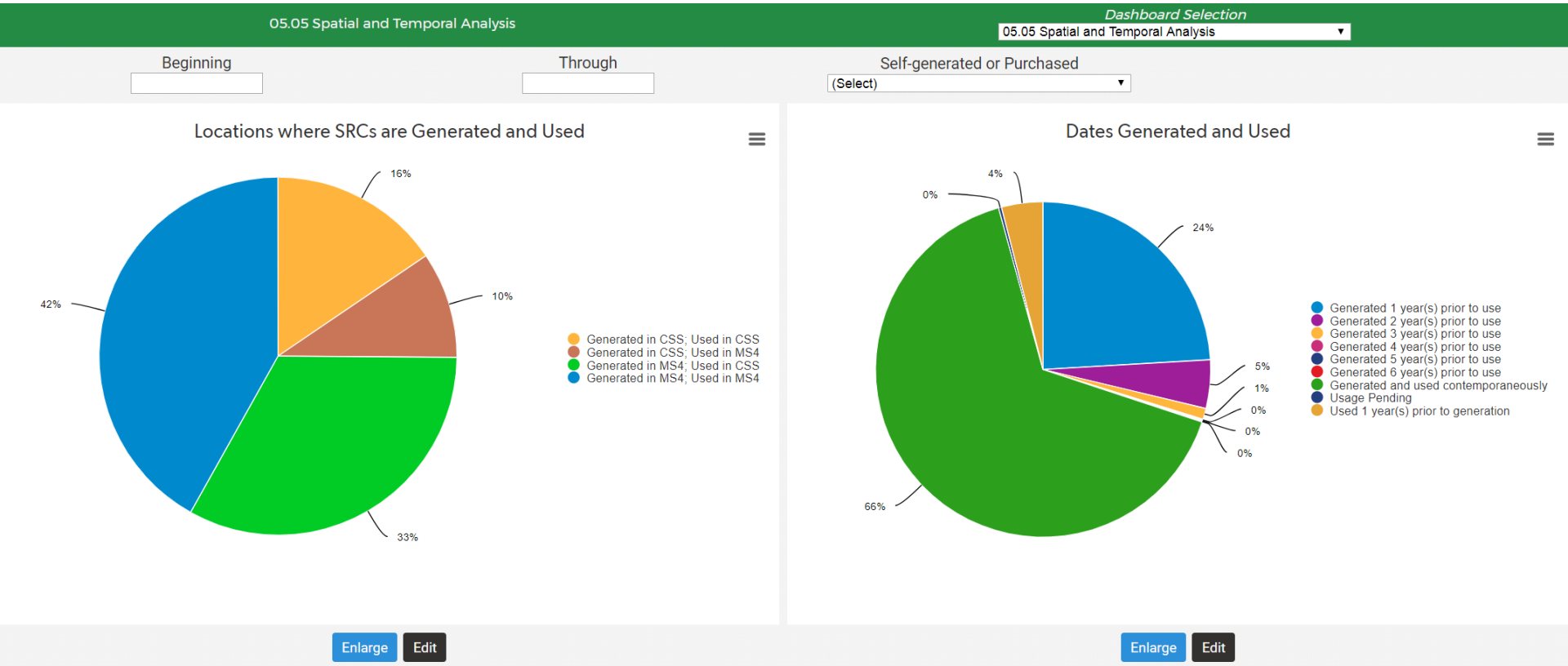
- DOEE created an interim database for some programs while the SWDB was under development
- Determined this was a good long-term solution

Ongoing adaptability

- DOEE can make on-the-fly changes as necessary to adapt to program changes

DETAILED, REAL-TIME DASHBOARDS

- DOEE is able to evaluate and respond to program trends to ensure desired environmental outcomes

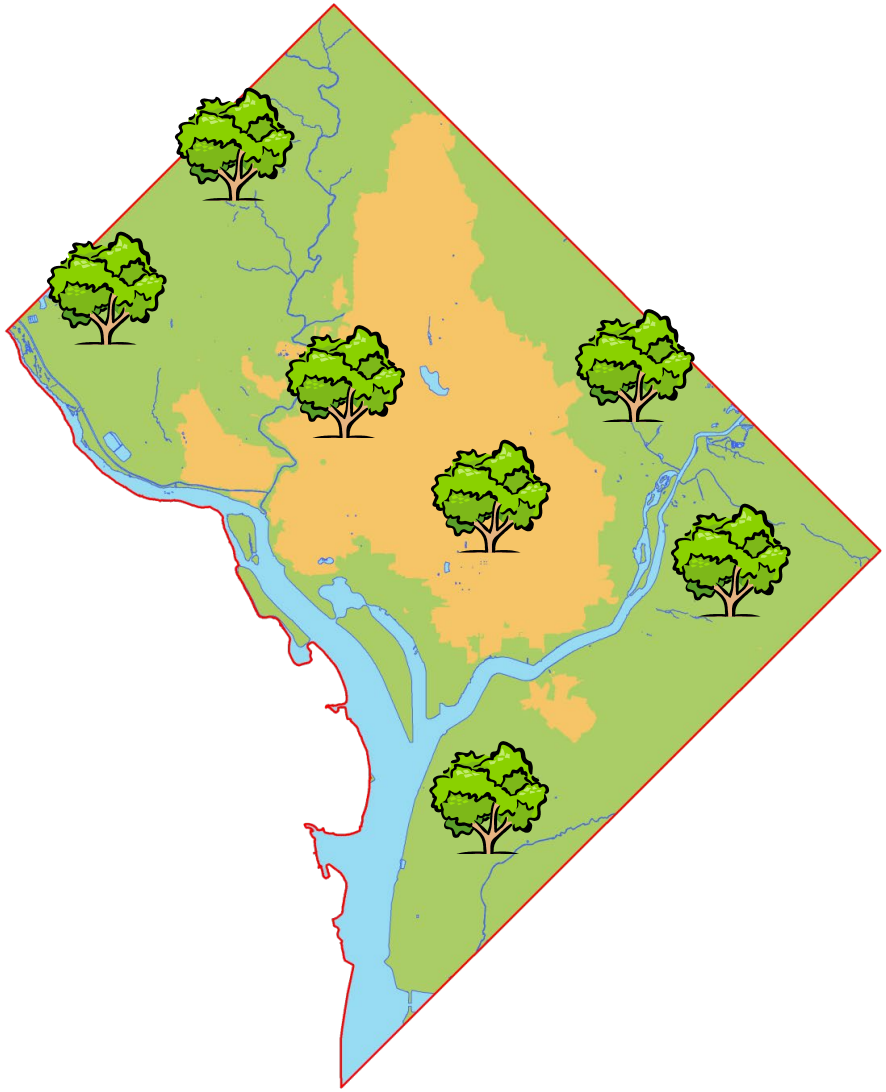


PROGRAM EVALUATION

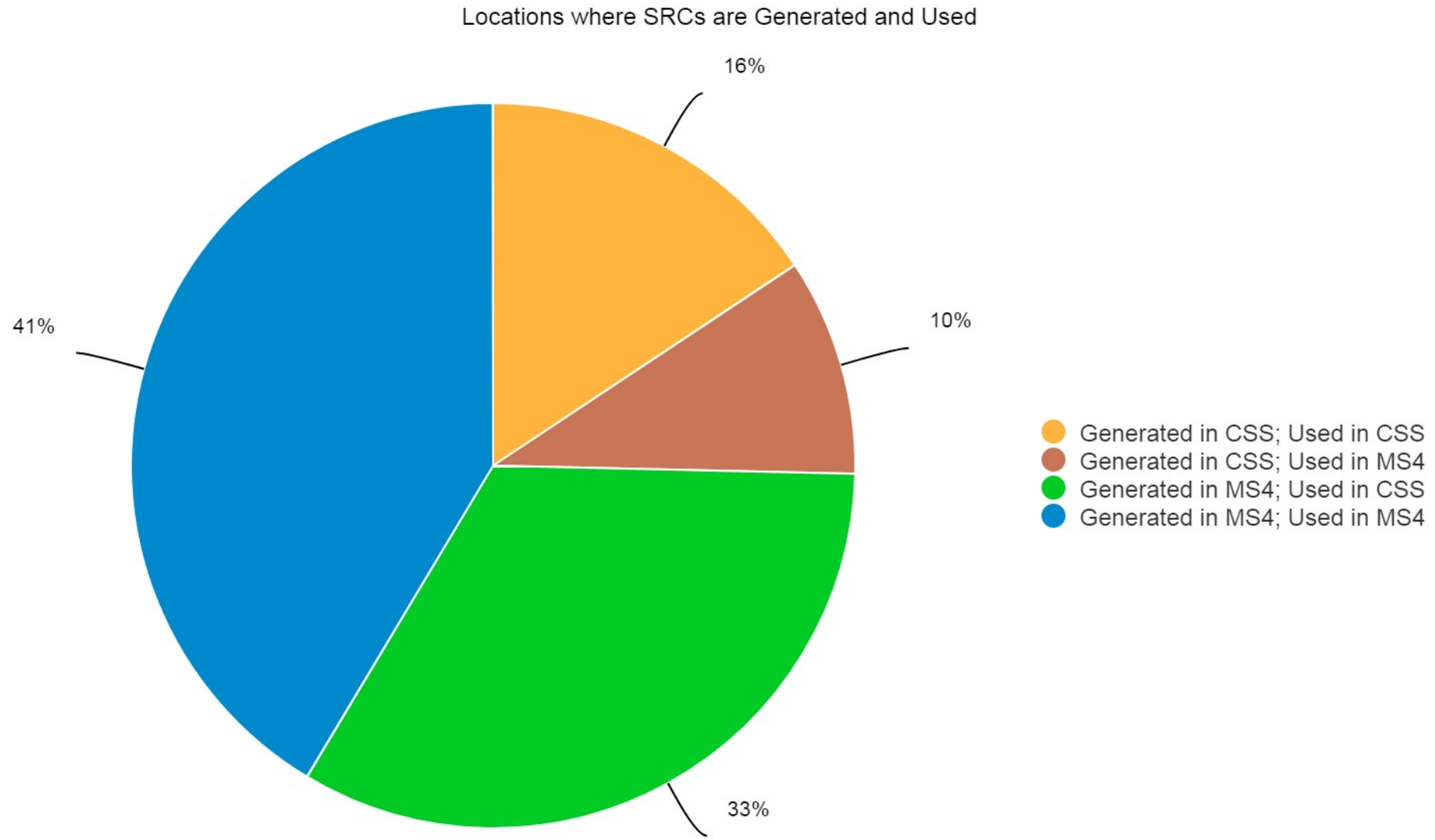
STORMWATER TRADING ACROSS SEWERSHEDS

Developers may meet stormwater performance requirements off-site, which has potential to be:

- More cost-effective way to encourage GI in high-priority areas
- Better for waterbodies
- Cheaper for developers
- Better for environmental justice outcomes

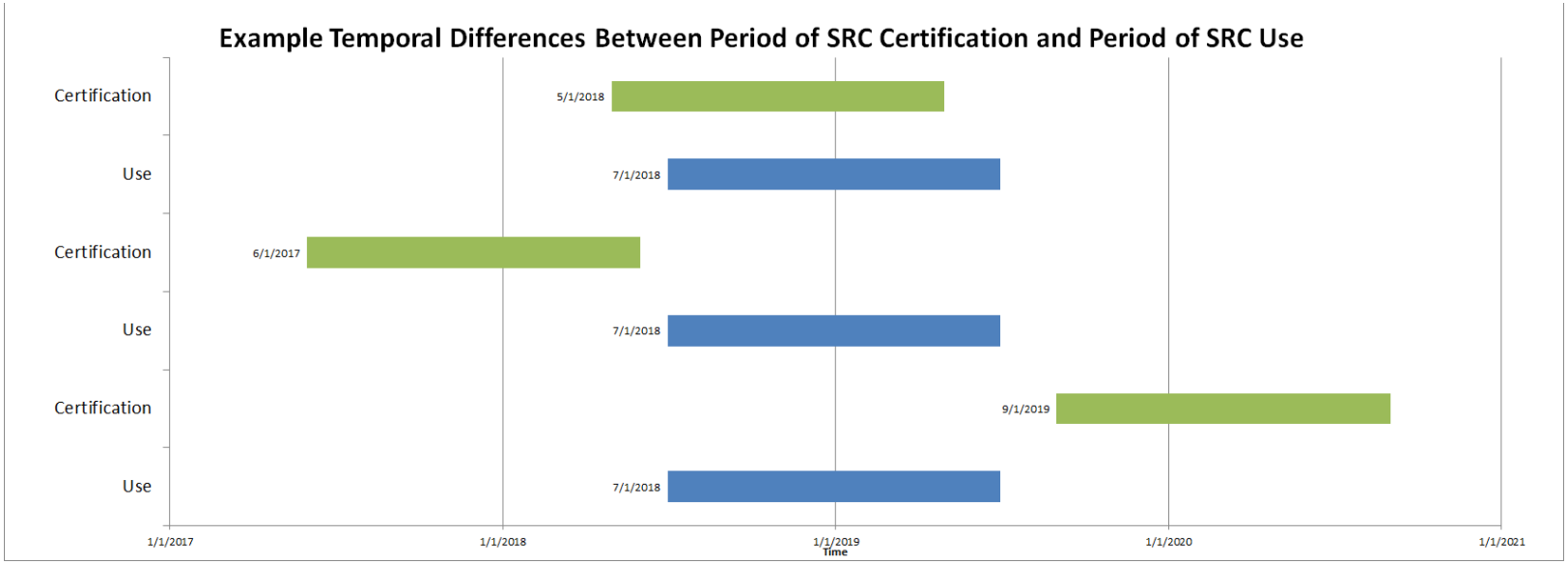


RESULTS: TRADING ACROSS SEWERSHEDS



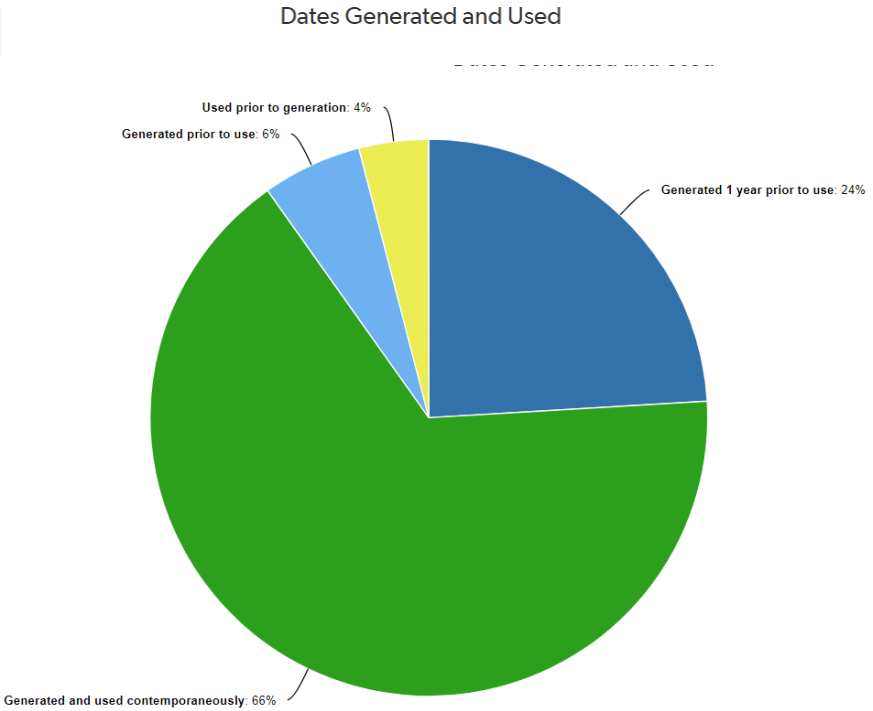
CREDIT BANKING

- Each credit represents a one-year time period
- Credits can be banked indefinitely
- What portion of credits are generated and used contemporaneously? What are the tradeoffs?



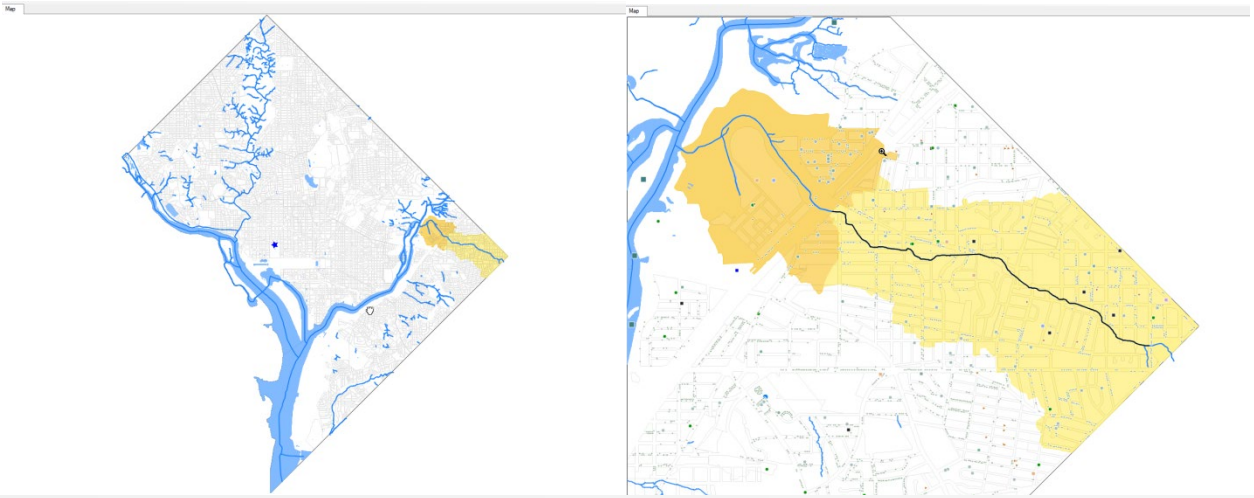
RESULTS: CREDIT BANKING

- Most credit use has been contemporaneous or within 1 year of certification
- Most compliance has been achieved in 1-year increments
- If projects comply for longer time periods, it will be more likely that the period of certification occurs prior to the period of use



DATA MODELING

- GI data syncs with TMDL Modeling tools to make plan for future restoration



Export View Close

Time Scale: Annual TMDL Segment: Watts Branch X

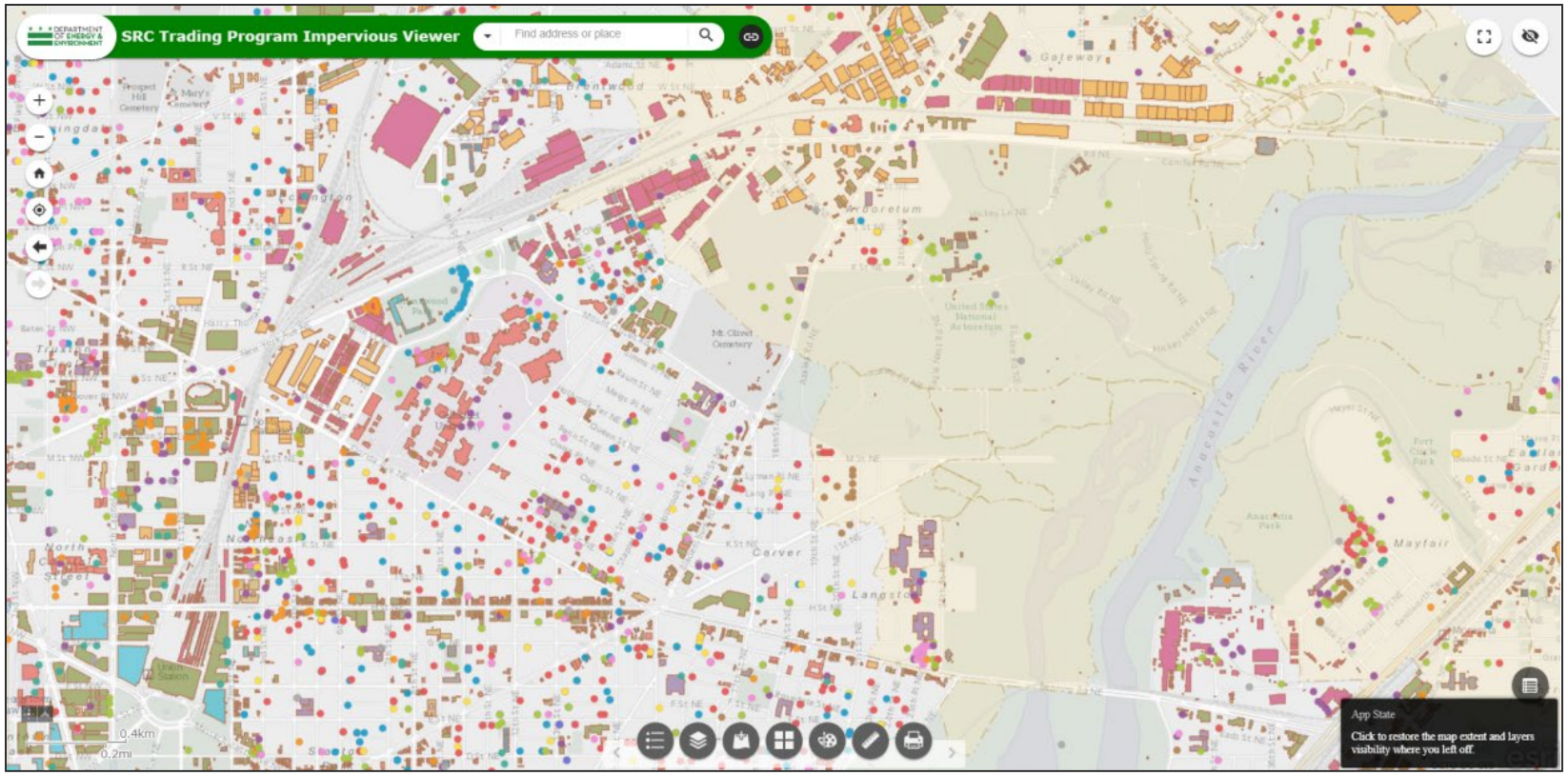
Allocation: WLA X Pollutant: X

Gap Analysis | Gap Analysis Summary Chart | Summary

TMDL Segment	Parameter Name	Allocation Type	Units	TMDL Allocation	Baseline Loads	Current Load	Additional Reduction Needed	Percent Reduction Needed to Meet Allocation
Watts Branch	BOD	WLA	lbs_year	14300	163000	163000	149000	91.2
Watts Branch	Total Nitrogen	WLA	lbs_year	1730	15100	15000	13300	88.5
Watts Branch	Total Phosphorus	WLA	lbs_year	248	1730	1640	1390	84.8
Watts Branch	TSS	WLA	lbs_year	48400	333000	330000	282000	85.4

PUBLIC TOOLS

- DOEE publishes green infrastructure data so market participants can make informed decisions about where to pursue projects



WHAT'S NEXT?

ADDITIONAL TYPE OF PROGRAM EVALUATION

- Scenario analysis of on-site vs off-site regulatory compliance
- Tracking of co-benefits achieved (e.g. urban heat island reduction, habitat creation)
    - Requires a method to measure co-benefits

MORE INFORMATION

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Stormwater Database
doee.dc.gov/swdb