

Outcomes Estimation Tools Training Webinar Series

Michelle Perez, PhD
Water Initiative
Director

Aysha Tapp Ross
Water & Soil
Health Scientist

Kinzie Reiss
Ag Conservation
Innovations Program &
Communications
Manager

Featuring:
**Pollution Load
Estimation Tool (PLET)**
October 4, 2023
Noon to 1:30 pm eastern

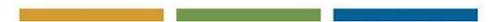
Agenda



- Welcome, Poll (5 min)
- PLET Presentation (35 min)
- PLET Demonstration (35 min)
- Q&A (15 min)



WALTON FAMILY
FOUNDATION



Zoom Webinar Reminders

- Use Q&A Box - last 15 minutes (Vote up!)
- Use Zoom Direct Message feature to Aysha if having technical difficulties
- Email with resources to follow each webinar
- Recordings posted on the webinar series site the following Monday
- **Evaluation survey in the Chat Box**
 - **Complete to be entered to win a \$25 gift card!!**



Time for 3 polls!

Tools in 2023 Trainings*

May 3: Webinar Launch & PCOC (recording)

June 7: Model My Watershed (recording)

July 12: Nutrient Tracking Tool (NTT) (recording)

August 2: NRCS Cover Crop Economics Tool (economic) (recording)

September 6: FieldPrint Platform (recording)

 **October 4: EPA PLET (water quality)**

 November 1: PTMApp Web Tool (water quality)

December 6: AFT Retrospective-Soil Health Economics (R-SHEC) Tool (economic)

Tools in 2024 Trainings*

January 10: SIPES Method/SIDMA Tool (social)

February 7: Fast-GHG (climate)

March 6: Cool Farm Tool (climate)

April 3: TBD

May 1: COMET-Farm & COMET-Planner (climate)

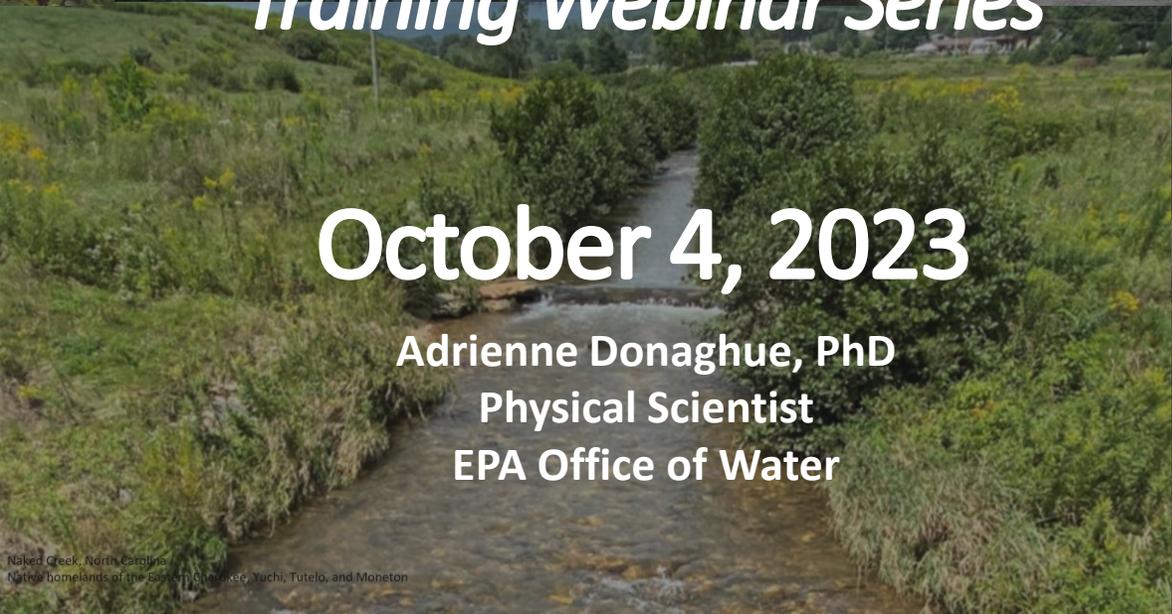
June 5: CAST Tool (water quality)

July 3: TBD

*Subject to change



Pollutant Load Estimation Tool *Outcomes Estimation Tools Training Webinar Series*



October 4, 2023

Adrienne Donaghue, PhD
Physical Scientist
EPA Office of Water

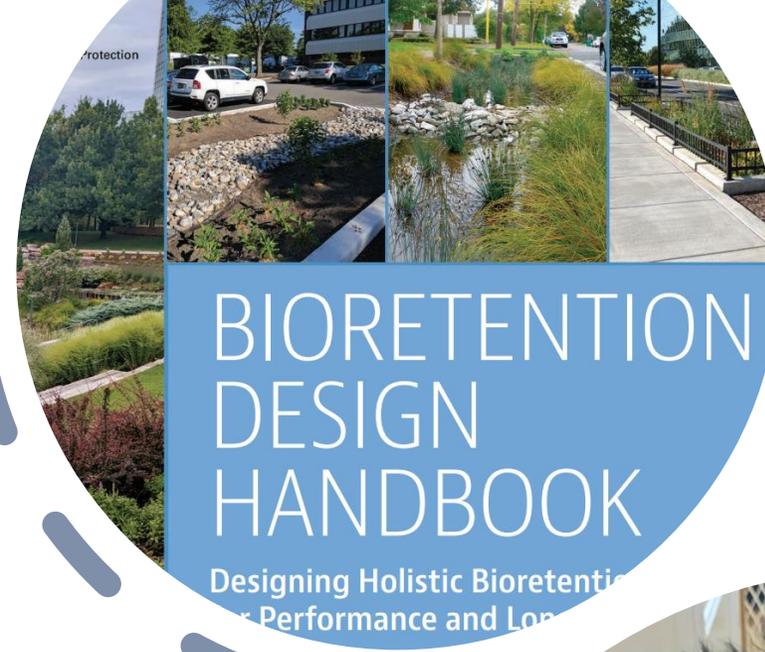


Naked Creek, North Carolina
Native homelands of the Eastern Chickasaw, Yuchi, Tutelo, and Moneton
Colvin Run, VA
Native land of the Powhatan and Manahoac

Presenter Background:

Adrienne Donaghue

- **Physical Scientist in the Nonpoint Source Management Branch within EPA's Office of Water**
- **Role:** PLET, urban & hydromodification NPS measures, and quantifying environmental co-benefits
- **Education**
 - BA in Civil and Environmental Engineering, Villanova University
 - MS in Water Resources and Environmental Engineering, Villanova University
 - PhD in Environmental Engineering, Temple University



Coming soon!



Agenda

Tool Background

Model Interface and Modules

“Quick Guide” Demo

Big picture

Agenda

Tool Background

- Describe the underlying structure, input data sources, strengths, and limitations

Model Interface and Modules

“Quick Guide” Demo

Big picture

Agenda

Tool Background

- Describe the underlying structure, input data sources, strengths, and limitations

Model Interface and Modules

- Provide an overview of how to navigate the tool interface

“Quick Guide” Demo

Big picture

Agenda

Tool Background

- Describe the underlying structure, input data sources, strengths, and limitations

Model Interface and Modules

- Provide an overview of how to navigate the tool interface

“Quick Guide” Demo

- Apply the PLET User Guide “Quick Guide” to an example scenario at the field and HUC12 scale
- Introduce the BMP calculator

Big picture

Agenda

Tool Background

- Describe the underlying structure, input data sources, strengths, and limitations

Model Interface and Modules

- Provide an overview of how to navigate the tool interface

“Quick Guide” Demo

- Apply the PLET User Guide “Quick Guide” to an example scenario at the field and HUC12 scale
- Introduce the BMP calculator

Big picture

- Showcase example of other project types
- Show where to learn more
- Highlight future updates

Tool Background

Pollutant Load Estimation Tool (PLET)



Web-based tool that **estimates** annual, long-term **nutrient and sediment loads** from cropland, pastureland, feedlots, forest and urban land uses and load reductions resulting from BMP implementation



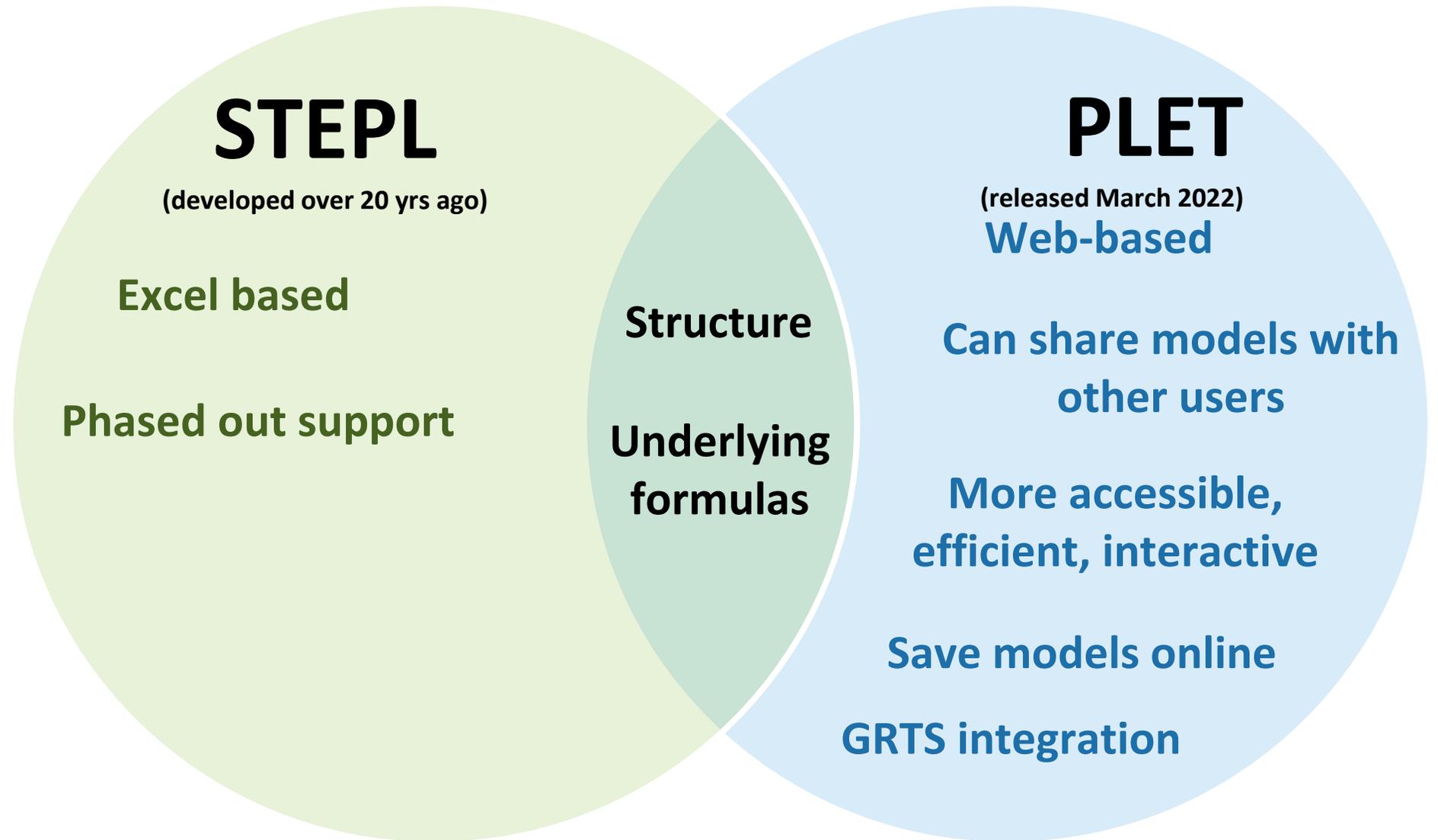
Section 319 subgrantees, watershed planners, academics, conservation districts (30 different counties), and others



Report annual load reductions* and planning purposes (i.e. watershed-based plans)

*319 grant recipients report load reductions in the Grants Reporting and Tracking System (GRTS)

What is the difference between STEPL and PLET?



STEPL = Spreadsheet Tool for Estimating Pollutant Loads

PLET Snapshot Summary

Features	Description
Scale	Field, county level, and HUC12; multiple fields and HUC12s can be considered simultaneously
Outcomes	<p>Long-term annual loads pre and post BMP implementation</p> <ul style="list-style-type: none"> Nitrogen, Phosphorus, Biological Oxygen Demand (BOD): lbs/year Sediment: tons/year <p>Volume Reductions</p> <ul style="list-style-type: none"> Applies to select urban BMPs: gallons/year
Conservation Practices	<p>Includes more than 30 BMPs for Cropland and Pastureland such as:</p> <ul style="list-style-type: none"> Conservation tillage, contour farming, cover crops, nutrient management, critical area planting, rotational grazing, prescribed grazing, forest and grass buffers
Land uses	<p>Cropland, Pastureland, Urban*, Forest, Feedlots, and User Defined</p> <p>*9 different urban land use types</p>
Coverage	States and U.S. Territories (American Samoa, Guam, Puerto Rico)
Time and Data Demands	<p>Simple</p> <p>Most inputs are auto populated for the HUC12 scale</p>

PLET Strengths and Limitation

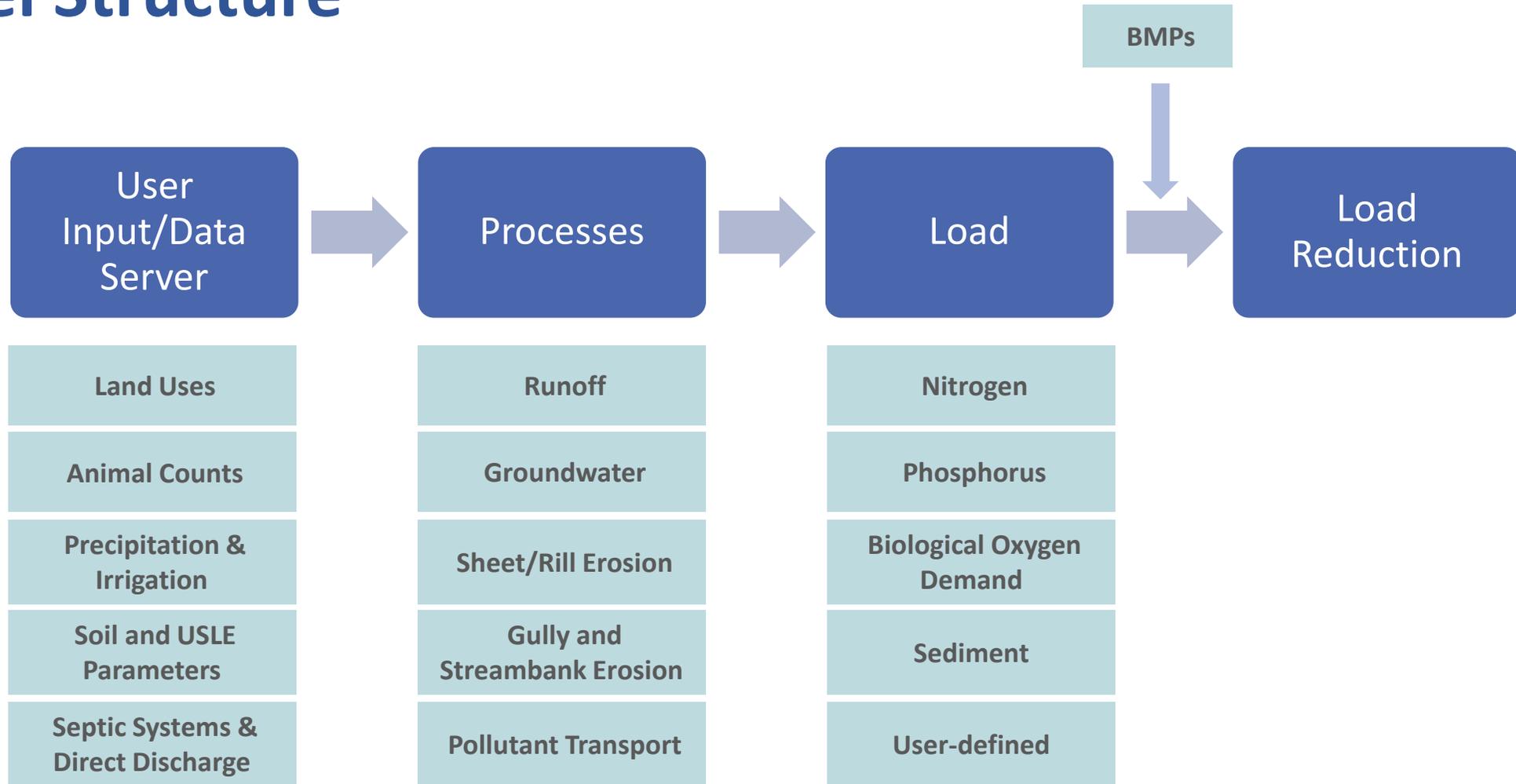
Strengths

- Appropriate for planning and screening level
- Share models with other users
- Include territories
- Customizable:
 - User-defined land use
 - Custom BMP
 - Combined BMP efficiencies (parallel and in series)
 - Other pollutants

Limitations

- Does not include point sources
- Is a stand-alone web-based application
- Does not reflect subsurface flow of tile drains
- Not appropriate for design of BMPs
- For multiple HUC12, weather data is based on the primary watershed

Model Structure



User Inputs and Data Server



PLET Input Tab: Tables 1-5 populated based on selected HUC12

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor:
 Raindays Correction Factor:
 Rainfall Initial Abstraction:

Inputs	BMPs	Total Loads	Additional Reference Tables
--------	------	--------------------	-----------------------------

Mandatory Inputs NOTE: Required fields are highlighted in red

1. Watershed Land Use Area (ac) and Precipitation (in)

Double-click on the "HSG" field to select a Hydrologic Soil Group category [NOTE: hover over the "HSG" column header for more information].

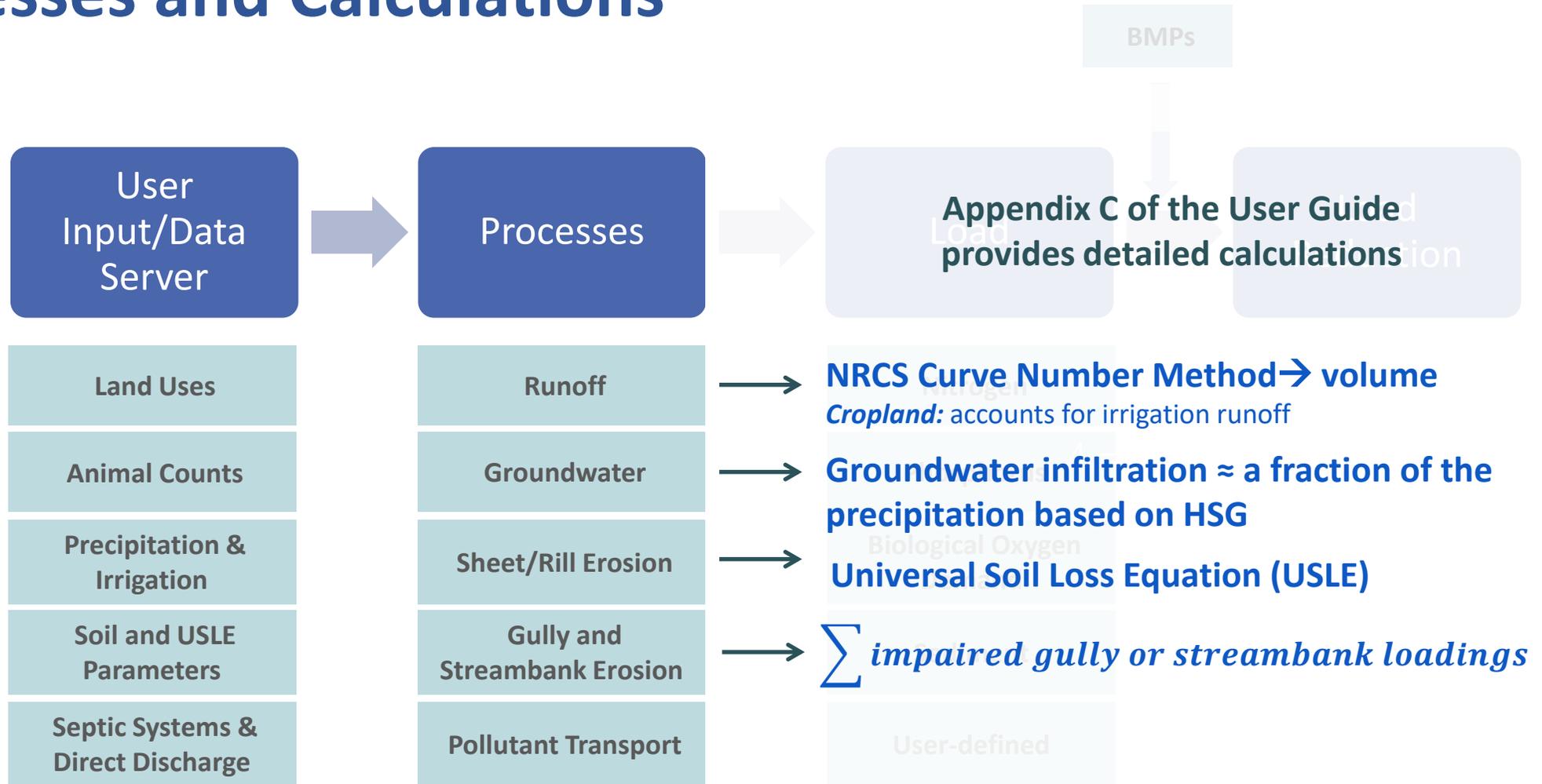
Watershed	HSG	Urban	Cropland	Pastureland	Forest	User Defined	Feedlots	Total	Feedlots Percent Paved	Annual Rainfall	Rain Days	Average Rain/Event
020503020402 - Halfmoon Creek	B	1159.79	2729.45	2668.73	8694.97	0.00	1000.00	16252.94	0-24%	41.83	120.43	0.5756

2. Agricultural Animals (Animal Count)

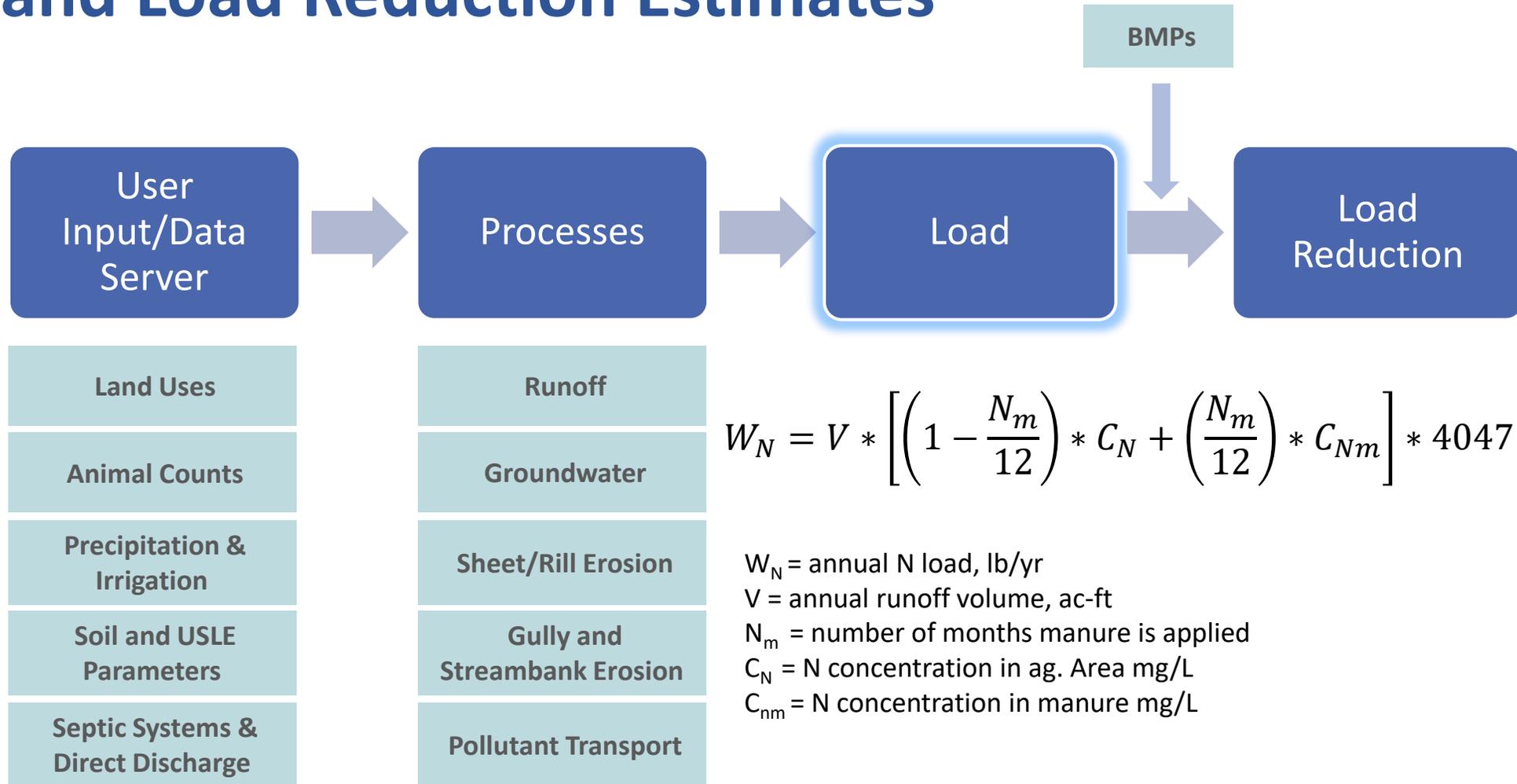
Watershed	Beef Cattle	Young Beef	Dairy Cattle	Young Dairy Stock	Swine (Hog)	Feeder Pig	Sheep	Horse	Chicken	Turkey	Duck	# Of Months Manure Applied to Cropland	# Of Months Manure Applied to Pastureland
020503020402 - Halfmoon Creek	827.00	0.00	472.00	0.00	314.00	0.00	75.00	137.00	1158.00	87.00	12.00	0.00	0.00

Values in red = required

Processes and Calculations



Load and Load Reduction Estimates



$$W_N = V * \left[\left(1 - \frac{N_m}{12} \right) * C_N + \left(\frac{N_m}{12} \right) * C_{Nm} \right] * 4047 * \frac{0.3048}{454}$$

W_N = annual N load, lb/yr

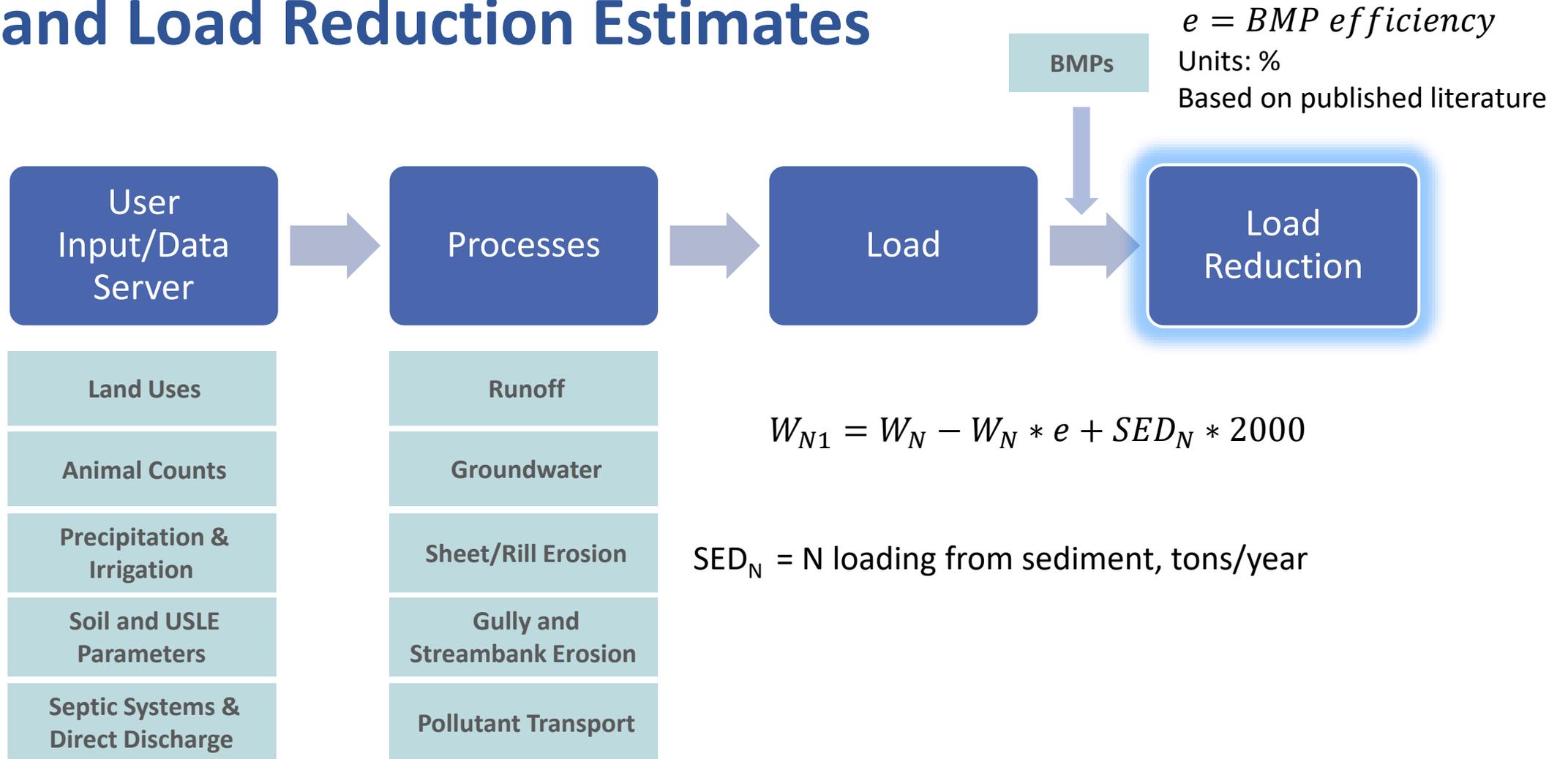
V = annual runoff volume, ac-ft

N_m = number of months manure is applied

C_N = N concentration in ag. Area mg/L

C_{nm} = N concentration in manure mg/L

Load and Load Reduction Estimates



Model Interface & Modules

Model interface

Primary Watershed: determines county and weather stations

[View PLET Training Video](#)
[View PLET User Guide](#)
[BMP Efficiency References](#)

Pollutant Load Estimation Tool Help  Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor: Raindays Correction Factor: Rainfall Initial Abstraction:

Add watersheds in addition to primary watershed

Add urban BMPs here for 9 different land use type

Model interface

Primary Watershed: determines county and weather stations

[View PLET Training Video](#)
[View PLET User Guide](#)
[BMP Efficiency References](#)

The screenshot shows the 'Pollutant Load Estimation Tool' interface. A blue header bar contains the title 'Pollutant Load Estimation Tool' on the left and 'Help' and 'Logout (ADONAGHU)' on the right. A 'Manure Application' modal window is open in the center, displaying a table with columns 'Area' and 'Number of Months'. The table has three rows with values (700, 4), (800, 8), and (1229, 0). Below the table, it shows 'Total Land Use Acres: 2729' and '# of Months: 3'. At the bottom of the modal, there are dropdowns for 'Watershed' (020503020402 - Halfmoon Creek) and 'Landuse' (Cropland), with an 'Apply to selected watershed' button. In the background, the main interface has a 'Weather Station' dropdown set to 'PHILIPSBURG 8 E', a 'Raindays Correction Factor' of 0.5358, and a 'Rainfall Initial Abstraction' of 0. A green 'Manure Application' button is highlighted with a red box. A red arrow points from the 'Add watershed' button in the left sidebar to the 'Add watershed' text below. Another red arrow points from the 'Primary Watershed' text to the 'Weather Station' dropdown. A third red arrow points from the 'Manure Application' button to the 'Calculates the average number of months...' text.

Add watersheds in additional watersheds

Calculates the average number of months for manure application per year with varying application frequencies across the watershed

Model interface

Primary Watershed: determines county and weather stations

[View PLET Training Video](#)
[View PLET User Guide](#)
[BMP Efficiency References](#)

Pollutant Load Estimation Tool Help  Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor: Raindays Correction Factor: Rainfall Initial Abstraction:

Inputs | **BMPs** | Total Loads | Additional Reference Tables

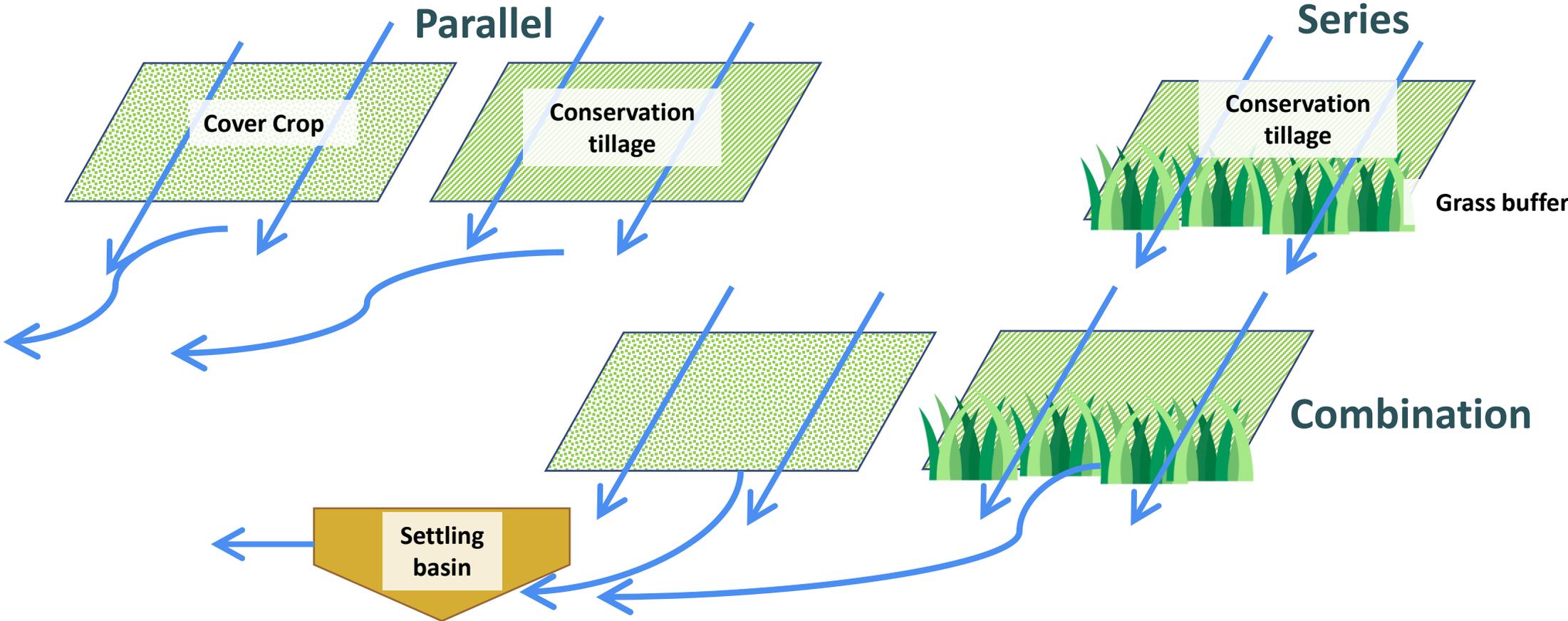
Add watersheds in addition to primary watershed

Add urban BMPs here for 9 different land use type

Calculates combined BMP efficiency to account for multiple BMPs on a single land use

Calculates the average number of months for manure application per year with varying application frequencies across the watershed

Multiple BMPs applied to one land use can be configured in *parallel*, *series*, or a *combination*



Inputs Module

There are 10 input tables

- Tables 1-5 are populated based on input server data
- Tables 6 – 10 are default values
- All values can be customized

Pollutant Load Estimation Tool Help ▾ Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Optional Inputs

6. Reference Runoff Curve Number

SHG	A	B	C	D
Urban	83.00	89.00	92.00	93.00
Cropland	67.00	78.00	85.00	89.00

6a. Detailed Urban Reference Runoff Curve Number

SHG	A	B	C	D
Commercial	89.00	92.00	94.00	95.00
Industrial	81.00	88.00	91.00	93.00
Institutional	81.00	88.00	91.00	93.00

BMPs module

- Provides a single table where the BMPs are entered for all watersheds
- All land uses are included in the BMPs module (except urban): cropland, feedlots, pasture, forest, and user-defined

Pollutant Load Estimation Tool Help ▾ Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor
 Raindays Correction Factor
 Rainfall Initial Abstraction

BMPs and Efficiencies

Once you have added a BMP record, **double-click on the empty "BMPs" field** to select a Best Management Practice that will be applied.

Watershed	BMPs	N	P	BOD	Sediment	% Area BMP Applied	Landuse
020503020402 - Halfmoon Creek	Conservation Tillage 1 (30-59% Residue)	.03	.0712	ND	.0806	20	Cropland
020503020402 - Halfmoon Creek	Forest Buffer (minimum 35 feet wide)	.0226	.02	ND	.02665	5	Pastureland

Total Loads module

Shows the final results of the modeled calculations in terms of watershed pollutant loads and load reduction from BMPs

Pollutant Load Estimation Tool Help ▼ Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor:
 Raindays Correction Factor:
 Rainfall Initial Abstraction:

Inputs | BMPs | **Total Loads** | Additional Reference Tables

1. Total load by subwatershed(s)

Watershed	N Load (No BMP) (lbs/year)	P Load (No BMP) (lbs/year)	BOD Load (No BMP) (lbs/year)	Sediment Load (No BMP) (tons/year)	N Reduction (lbs/year)	P Reduction (lbs/year)	BOD Reduction (lbs/year)	Sediment Reduction (tons/year)	N Load (With BMP) (lbs/year)	P Load (With BMP) (lbs/year)	BOD Load (With BMP) (lbs/year)	Sediment Load (With BMP) (tons/year)	% N Reduction	% P Reduction	% BOD Reduction	S
020503020402 - Halfmoon Creek	44221.93	9807.12	110266.71	4355.90	1365.20	449.91	1826.08	285.33	42856.73	9357.21	108440.63	4070.57	3.09	4.59	1.66	
Big Hollow	46774.53	8588.11	149726.36	2712.78	0.00	0.00	0.00	0.00	46774.53	8588.11	149726.36	2712.78	0.00	0.00	0.00	

Additional references module

Provides default values used in calculations in conjunction with input data to determine loads

Pollutant Load Estimation Tool Help ▼ Logout (ADONAGHU)

Title: State: Watershed: County: Weather Station:

Rainfall Correction Factor: Raindays Correction Factor: Rainfall Initial Abstraction:

1. animal weights used to calculate animal equivalent units
2. soil infiltration rates
3. feedlot nutrient ratios
4. septic overcharge pollutant concentrations reaching streams
5. wastewater nutrients and volume
6. BMP efficiency values

“Quick Guide” Demo

Getting started is easy...

- Visit the PLET landing page
 - <https://epa.gov/nps/plet>
- Scroll down to the “**Model Documentation**” section and click “**Link to PLET**”
- Enter your email to create an account

Create a new model



Model Documentation

PLET Version 1.0

- [Link to PLET](#) 
-  [User's Guide: Pollutant Load Estimation Tool \(PLET\) version 1.0 \(pdf\)](#) (6.34 MB, April 2022)
508 compliant user guide for the pollutant load estimation tool.
-  [BMP Descriptions \(pdf\)](#) (3.48 MB, April 2023)
This document provides definitions for best management practice (BMPs) used in the Pollutant Load Estimation Tool (PLET).

Step 1: Access the PLET model interface and click on the Create a New Model button in the upper right-hand corner

Models for **ADONAGHU**

Q Go Actions ▾

Created by = 'ADONAGHU'

Pollutant Load Estimation Tool Help ▾ Logout (ADONAGHU)

Title: AFT Example 2

State: Pennsylvania

Watershed: 020503020402 (Halfmoon Creek)

County: CENTRE

Weather Station: PHILIPSBURG 8 E

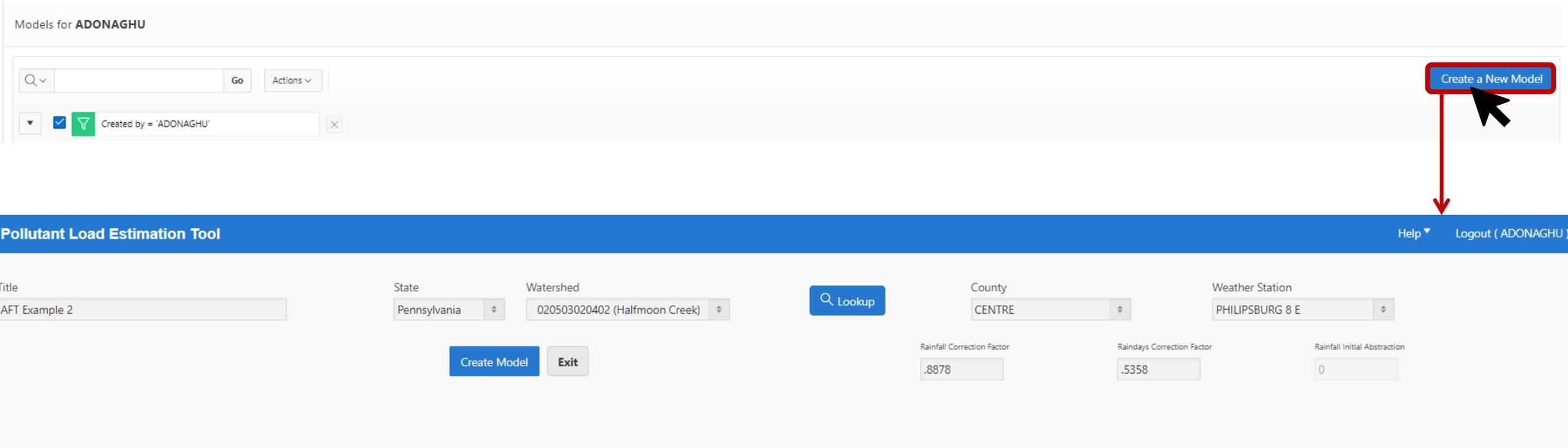
Lookup

Create Model Exit

Rainfall Correction Factor: .8878

Raindays Correction Factor: .5358

Rainfall Initial Abstraction: 0



Step 2: Name the model and select the state where the modeled area is located and the primary watershed

Models for **ADONAGHU**

Q Go Actions ▾

Created by = 'ADONAGHU'

Pollutant Load Estimation Tool Help ▾ Logout (ADONAGHU)

Title: AFT Example 2

State: Pennsylvania

Watershed: 020503020402 (Halfmoon Creek)

County: CENTRE

Weather Station: PHILIPSBURG 8 E

Rainfall Correction Factor: .8878

Raindays Correction Factor: .5358

Rainfall Initial Abstraction: 0

[Create Model](#) [Exit](#)

[Create a New Model](#)

Step 2: Name the model and select the state where the modeled area

is located and the primary Pollutant Load Estimation Tool model & HUC12 map

Models for **ADONAGHU**

Search: Go Actions ▾

Created by = 'ADONAGHU' X

Pollutant Load Estimation Tool

Title:

State:

Submit Exit

Current HUC12 Selected: **HALFMOON CREEK (020503020402)**

Weather station selected/highlighted: **PHILIPSBURG 8 E (PA366916)**



Step 3: Add as many watersheds or modeled areas as needed for the scenario.

Title: AFT Webinar Example Scenario
 State: Pennsylvania
 Watershed: 020503020402 (Halfmoon Creek) Lookup
 County: CENTRE
 Weather Station: PHILIPSBURG 8 E

Share Model | Copy Model | Delete Model | Download Input Data Server Data | Exit

Rainfall Correction Factor: 0.8878
 Rainsdays Correction Factor: 0.5358
 Rainfall Initial Abstraction: 0

Add watershed | Delete watersheds | Gullies and Streambanks | Urban BMP Tool | Manure Application | BMP Calculator

Inputs	BMPs	Total Loads	Additional Reference Tables
--------	------	--------------------	-----------------------------

Mandatory Inputs NOTE: Required fields are highlighted in red Download Inputs

1. Watershed Land Use Area (ac) and Precipitation (in)

Double-click on the "HSG" field to select a Hydrologic Soil Group category [NOTE: hover over the "HSG" column header for more information].

Watershed	HSG	Urban	Cropland	Pastureland	Forest	User Defined	Feedlots	Total	Feedlots Percent Paved	Annual Rainfall	Rain Days	Average Rain/Event
020503020402 - Halfmoon Creek	B	1159.79	2729.45	2668.73	8694.97	0.00	1.21	15254.1549	0-24%	41.83	120.43	0.5756
Big Hollow	B	5116.40	1192.26	1448.90	3170.46	0.00	0.64	10928.6561	0-24%	41.83	120.43	0.5756

2. Agricultural Animals (Animal Count)

Watershed	Beef Cattle	Young Beef	Dairy Cattle	Young Dairy Stock	Swine (Hog)	Feeder Pig	Sheep	Horse	Chicken	Turkey	Duck	# Of Months Manure Applied to Cropland	# Of Months Manure Applied to Pastureland
020503020402 - Halfmoon Creek	827.00	0.00	472.00	0.00	314.00	0.00	75.00	137.00	1158.00	87.00	12.00	0.00	0.00
Big Hollow	445.00	0.00	254.00	0.00	159.00	0.00	40.00	76.00	276.00	0.00	7.00	0.00	0.00

Step 4-7: If detailed information* is available, modify inputs in tables 1-10 as needed.

Title: AFT Webinar Example Scenario

State: Pennsylvania

Watershed: 020503020402 (Halfmoon Creek)

County: CENTRE

Weather Station: PHILIPSBURG 8 E

Buttons: Share Model, Copy Model, Delete Model, Download Input Data Server Data, Exit

Rainfall Correction Factor: 0.8878

Raindays Correction Factor: 0.5358

Rainfall Initial Abstraction: 0

Buttons: Add watershed, Delete watersheds, Gullies and Streambanks, Urban BMP Tool, Manure Application, BMP Calculator

Inputs, BMPs, Total Loads, Additional Reference Tables

7. Nutrient Concentration in Runoff (mg/L)

Landuse ↑	N	P	BOD
1. L-Cropland	1.90	0.30	4.00
1a. w/ manure	8.10	2.00	12.30
2. M-Cropland	2.90	0.40	6.10
2a. w/ manure	12.20	3.00	18.50
3. H-Cropland	4.40	0.50	9.20
3a. w/ manure	18.30	4.00	24.60
4. L-Pastureland	4.00	0.30	13.00
4a. w/ manure	4.00	0.30	13.00
5. M-Pastureland	4.00	0.30	13.00
5a. w/ manure	4.00	0.30	13.00
6. H-Pastureland	4.00	0.30	13.00
6a. w/ manure	4.00	0.30	13.00
7. Forest	0.20	0.10	0.50
8. User Defined	0.00	0.00	0.00

7a. Nutrient Concentration in Shallow Groundwater (mg/l)

Landuse	N	P	BOD
Urban	1.50	0.063	0.00
Cropland	1.44	0.063	0.00
Pastureland	1.44	0.063	0.00
Forest	0.11	0.009	0.00
Feedlots	6.00	0.07	0.00
User Defined	0.00	0.00	0.00

*Remember the input server is specific to the HUC 12 scale

For field-scale applications, local/site-specific data will be needed.

Step 4-7: For scales smaller than a HUC12 scale, user can add a “custom watershed”.

Pollutant Load Estimation Tool Help ▾ Logout (ADONAGHU)

Title: AFT Field Scale Example

State: Pennsylvania

Watershed: [Custom Watershed]

County: BERKS

Weather Station: -Select Station-

Rainfall Correction Factor: 0

Raindays Correction Factor: 0

Rainfall Initial Abstraction: 0

[Create Model](#) [Exit](#) [Lookup](#)

Select custom watershed

Select county and closet weather station to determine rain data

Step 4-7: User will need to collect necessary data to populate required data fields.

Share Model Copy Model Delete Model Exit

Rainfall Correction Factor: 0.8956
 Rainsdays Correction Factor: 0.4953
 Rainfall Initial Abstraction: 0

Add watershed

Delete watersheds

Gullies and Streambanks

Urban BMP Tool

Manure Application

BMP Calculator

Inputs BMPs Total Loads Additional Reference Tables

Mandatory Inputs *NOTE: Required fields are highlighted in red*

Download Inputs

1. Watershed Land Use Area (ac) and Precipitation (in)

Double-click on the "HSG" field to select a Hydrologic Soil Group category [NOTE: hover over the "HSG" column header for more information].

Watershed	HSG	Urban	Cropland	Pastureland	Forest	User Defined
Custom Watershed	B	0.00	0.00	0.00	0.00	

2. Agricultural Animals (Animal Count)

Watershed	Beef Cattle	Young Beef	Dairy Cattle	Young Dairy Stock	Swine (Hog)	Feeder Pig	Sheep	Horse	Chicken	Turkey	Duck	# Of Months Manure Applied to Cropland	# Of Months Manure Applied to Pastureland
Custom Watershed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

As a starting place consider:

- Your state's pages for data and GIS files
- Google Maps
- Engage with land owner
- Ag Census Data
- Contact your Local Soil Water and Conservation Districts
- USGS SSURGO for soil data
- Literature and white papers for local land use runoff concentrations

Step 8: Add best management practices (BMPs) to the model scenario.

Title:
 State:
 Watershed:

 County:
 Weather Station:

Rainfall Correction Factor:
 Raindays Correction Factor:
 Rainfall Initial Abstraction:

BMPs and Efficiencies

Once you have added a BMP record, double-click on the empty "BMPs" field to select a Best Management Practice that will be applied.

Watershed	BMPs	N	P	BOD	Sediment	% Area BMP Applied	Landuse
 No data found							

Example Scenario:

Cropland Total Acreage: 2729

4 BMPs Implemented:

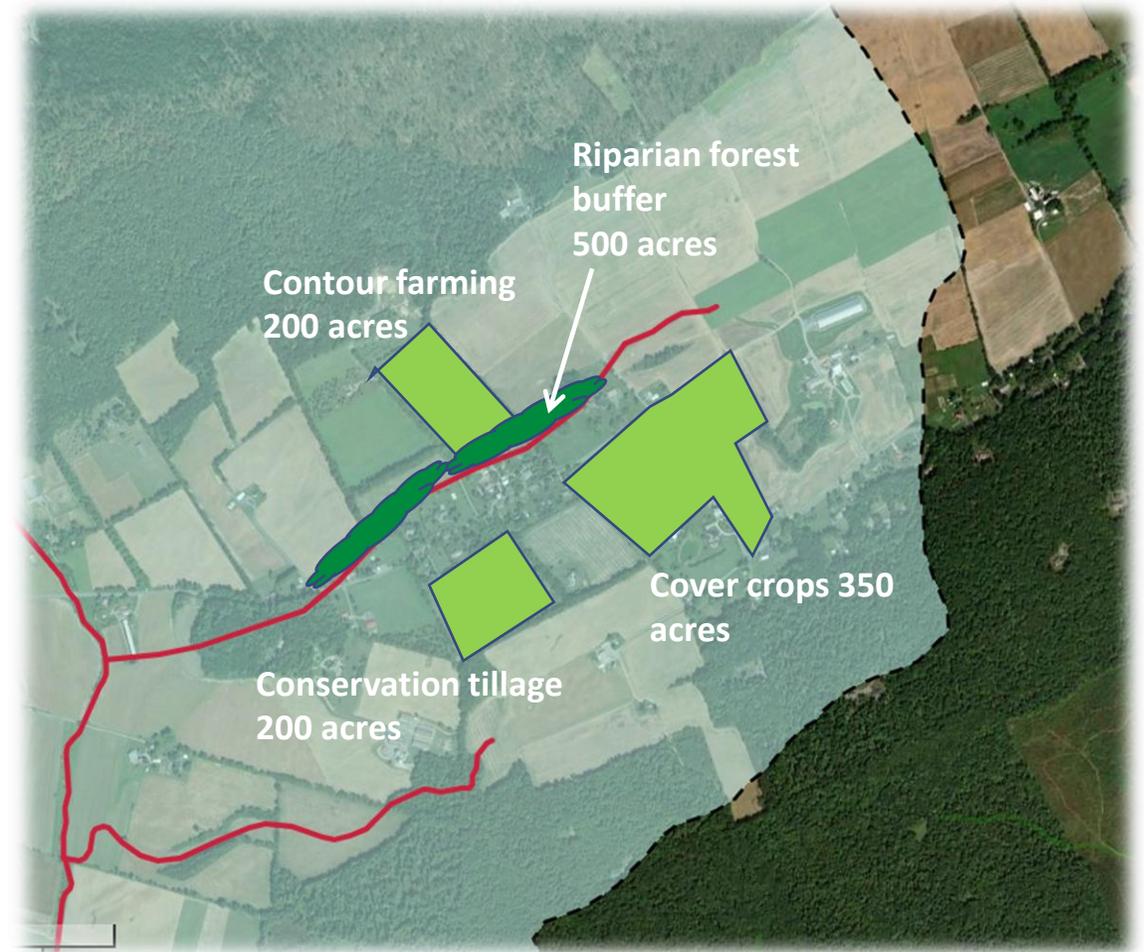
350 acres of cover crops

200 acres of conservation tillage

500 acres treated by Riparian Forest Buffer

200 acres of contour farming

$$\frac{1,050}{2,729} = 38\%$$



Step 8: Add best management practices (BMPs) to the model scenario.

Title: AFT Webinar Example Scenario State: Pennsylvania Watershed: 020503020402 (Halfmoon Creek) [Lookup](#) County: CENTRE Weather Station: PHILIPSBURG 8 E

[Share Model](#) [Copy Model](#) [Delete Model](#) [Download Input Data Server Data](#) [Exit](#)

Rainfall Correction Factor: 0.8878 Raindays Correction Factor: 0.5358 Rainfall Initial Abstraction: 0

[Add watershed](#) [Delete watersheds](#) [Gullies and Streambanks](#) [Urban BMP Tool](#) [Manure Application](#) **[BMP Calculator](#)**

Inputs **BMPs** **Total Loads** Additional Reference Tables

BMPs and Efficiencies [Create a User Defined BMP](#) [Delete BMP](#) [Add BMP](#)

Once you have added a BMP record, double-click on the empty "BMPs" field to select a Best Management Practice that will be applied.

Watershed	BMPs	N	P	BOD	Sediment	% Area BMP Applied	Landuse
No data found							

BMP Editor Configuration List BMP Efficiency Values

BMP Calculator

Watershed

020503020402 - Halfmoon

Landuse

Cropland

If nodes are appearing past the edge of the grid, please zoom in or out to make them visible

Contour Farming

- BMP Type - Cropland - Conto...
- Area - 200
- N Eff. - .279
- P Eff. - .398
- BOD Eff. - 0
- Sediment Eff. - .341

Create Node Submit Cancel Save Calculator ConfigurationNode Info **Delete Node**

Configuration Name

Node name

Contour Farming

BMP Type

Cropland - Contour Farming

Area (acres)

200

N Eff.

.279

P Eff.

.398

BOD Eff.

0

Sediment Eff.

.341

Save Node Changes

Node Connections

Select a Connection

Delete Node Connection

Load a Configuration

Config select

Use "Create Node"
to add a BMP type

Use the "Node Info" panel
to select a BMP type and
add acreage

BMP efficiencies will auto-
populate

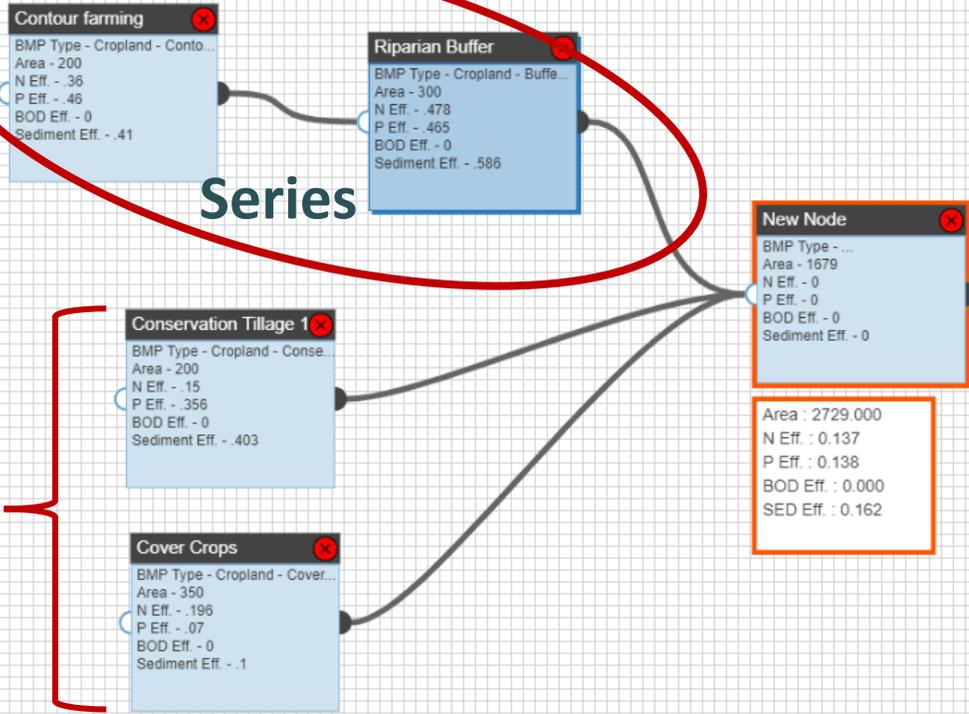
BMP Editor Configuration List BMP Efficiency Values

BMP Calculator

Create Node Submit Cancel Save Calculator Configuration

Watershed 020503020402 - Halfmoon Landuse Cropland

If nodes are appearing past the edge of the grid, please zoom in or out to make them visible



Node Info Delete Node

Configuration Name AFT Example

Node name Riparian Buffer

BMP Type Cropland - Buffer - Forest (100ft)

Area (acres) 300

N Eff. .478

P Eff. .465

BOD Eff. 0

Sediment Eff. .586

Save Node Changes

Node Connections

Select a Connection

Delete Node Connection

Load a Configuration

Config select AFT Example

BMP Calculator

Step 8: Add best management practices (BMPs) to the model scenario.

Title: AFT Webinar Example Scenario State: Pennsylvania Watershed: 020503020402 (Halfmoon Creek) County: CENTRE Weather Station: PHILIPSBURG 8 E

Buttons: Share Model, Copy Model, Delete Model, Download Input Data Server Data, Exit

Parameters: Rainfall Correction Factor: 0.8878, Raindays Correction Factor: 0.5358, Rainfall Initial Abstraction: 0

Tools: Add watershed, Delete watersheds, Gullies and Streambanks, Urban BMP Tool, Manure Application, BMP Calculator

Inputs: **BMPs**, Total Loads, Additional Reference Tables

BMPs and Efficiencies: Create a User Defined BMP, Delete BMP, Add BMP

Once you have added a BMP record, double-click on the empty "BMPs" field to select a Best Management Practice that will be applied.

Watershed	BMPs	N	P	BOD	Sediment	% Area BMP Applied	Landuse
020503020402 - Halfmoon Creek	<input type="text"/>	0	0	0	0	0	Cropland

- AFT Example
- BMW_Baseline
- Bioreactor
- Buffer - Forest (100ft wide)
- Buffer - Grass (35ft wide)
- Combined BMPs-Calculated
- Combined Urban
- Conservation Tillage 1 (30-59% Residue)
- Conservation Tillage 2 (equal or more than 60% Residue)
- Contour Farming
- Contour farming
- Controlled Drainage
- Cover Crop 1 (Group A Commodity) (High Till only for Sediment)
- Cover Crop 2 (Group A Traditional Normal Planting Time) (High Till only for TP and Sediment)
- Cover Crop 3 (Group A Traditional Early Planting Time) (High Till only for TP and Sediment)
- LC_Baseline
- Land Retirement
- Nutrient Management 1 (Determined Rate)
- Nutrient Management 2 (Determined Rate Plus Additional Considerations)

Apply to **100%** of cropland

Step 8: Add best management practices (BMPs) to the model scenario.

Title:
 State:
 Watershed:

 County:
 Weather Station:

Rainfall Correction Factor:
 Raindays Correction Factor:
 Rainfall Initial Abstraction:

BMPs and Efficiencies

Once you have added a BMP record, double-click on the empty "BMPs" field to select a Best Management Practice that will be applied.

Watershed	BMPs	N	P	BOD	Sediment	% Area BMP Applied	Landuse
020503020402 - Halfmoon Creek	AFT Example	0.13748	0.138299	0	0.162164	100	Cropland
Big Hollow	Prescribed Grazing	.0612	.03405	ND	.04995	15	Pastureland

Step 8: Add best management practices (BMPs) to the model scenario.

Urban BMP Tool

Urban Runoff (ac-ft)

Search: Go Actions ▾

Watershed	Commercial	Industrial	Institutional	Transportation	Multi Family	Single Family	Urban-Cultivated	Vacant	Open Space
020503020402 - Halfmoon Creek	214.47	106.55	106.55	265.02	88.29	138.84	30.42	44.14	20.38
Big Hollow	946.12	470.04	470.04	1169.14	389.49	612.51	134.2	194.74	89.92

1 - 2

Captured Flow Volume (gallon/year)

Search: Go Actions ▾

Watershed	Commercial	Industrial	Institutional	Transportation	Multi Family	Single Family	Urban Cultivated	Vacant	Open Space
020503020402 - Halfmoon Creek	-	-	-	-	-	-	-	-	-
Big Hollow	-	-	5987178.56	-	-	1950541.57	-	-	-

Parameter	Commercial	Industrial	Institutional	Transportation	Multi Family	Single Family	Urban Cultivated	Vacant	Open Space
TN	2	2.5	1.8	3	2.2	2.2	1.9	1.5	1.5
TP	.2	.4	.3	.5	.4	.4	.3	.15	.15
BOD	9.3	9	7.8	9.3	10	10	4	4	4
TSS	75	120	67	150	100	100	150	70	70

1 rows selected Total 4

Weather Station
PHILIPSBURG 8 E

Retention Factor:
Rainfall Initial Abstraction:

Application **BMP Calculator**

Create a User Defined BMP Delete BMP Add BMP

% Area BMP Applied	Landuse
100	Cropland

Step 9: View the estimates of loads and load reductions in the Total Loads Module.

Inputs BMPs **Total Loads** Additional Reference Tables

Loads Calculated

[Download](#)

Groundwater load calculation Treat all subwatersheds as part of a single watershed

1. Total load by subwatershed(s)

Watershed	N Load (No BMP) (lbs/year)	P Load (No BMP) (lbs/year)	BOD Load (No BMP) (lbs/year)	Sediment Load (No BMP) (tons/year)	N Reduction (lbs/year)	P Reduction (lbs/year)	BOD Reduction (lbs/year)	Sediment Reduction (tons/year)	N Load (With BMP) (lbs/year)	P Load (With BMP) (lbs/year)	BOD Load (With BMP) (lbs/year)	Sediment Load (With BMP) (tons/year)	% N Reduction	% P Reduction	% BOD Reduction	% Sediment Reduction
02050302040 - Halfmoon Creek	44221.93	9807.12	110266.71	4355.90	2727.44	820.24	3422.48	534.76	41494.49	8986.89	106844.24	3821.13	6.17	8.36	3.10	12.28
Big Hollow	46774.53	8588.11	149726.36	2712.78	464.39	57.10	138.20	22.33	46310.14	8531.01	149588.16	2690.46	0.99	0.66	0.09	0.82
TOTAL	90996.46	18395.23	259993.07	7068.68	3191.83	877.34	3560.68	557.09	87804.63	17517.89	256432.39	6511.59	3.51	4.77	1.37	7.88

2. Total load by land uses (with BMP)

Sources	N Load (lb/yr)	P Load (lb/yr)	BOD Load (lb/yr)	Sediment Load (t/yr)
Urban	34302.12	5272.44	130885.12	790.10
Cropland	23452.94	6847.26	50056.23	4327.73

- **Examples of project types (3)**
- **Where to learn more?**
- **Future updates**

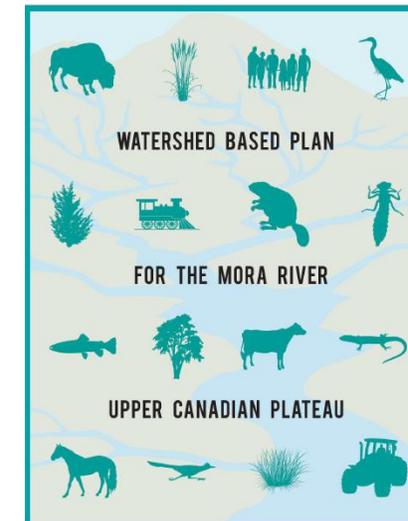
Examples of project types: watershed-base plans (WBPs)

Example: WBP for the Mora River Upper Canadian Plateau

- Pollutant loading rate determined using EPA's Better Assessment Science Integrating Point and Nonpoint Sources (BASINS)
- Load reductions for BMP implementation were calculated using STEPL

Table 19- Prioritized Nutrient Load Reductions required (lbs/day)

Priority	Reach ID	BASINS TN Load (lbs/day)	TN Load Reduction Required (lbs/day)	BASINS TP Load (lbs/day)	TP Load Reduction Required (lbs/day)
1 (TP) & 2 (TN)	Reach 4 (Mora below confluence with Wolf Creek including Wolf Creek subwatershed)	3.175	1.424	0.348	0.209



Conservation Tillage Conservation tillage on 50% or more* acres	Cover Crops Cover crops on 25% of acres	Nutrient Management Precision nutrient management on an additional** 50% of conservation tillage acres	Prairie Strips 5% of acres south of Green Bay treated with prairie strips	Rotational Grazing Rotational grazing on 25% of pasture acres	Regenerative Agriculture Combination of all previous scenarios
---	---	--	---	---	--

* If current adoption is greater than 50%, add an additional 10% of acres. Adoption rates based on 2021 conservation tillage adoption rates from the Operational Tillage Information System (OpTIS); data supplied by Regrow Ag.

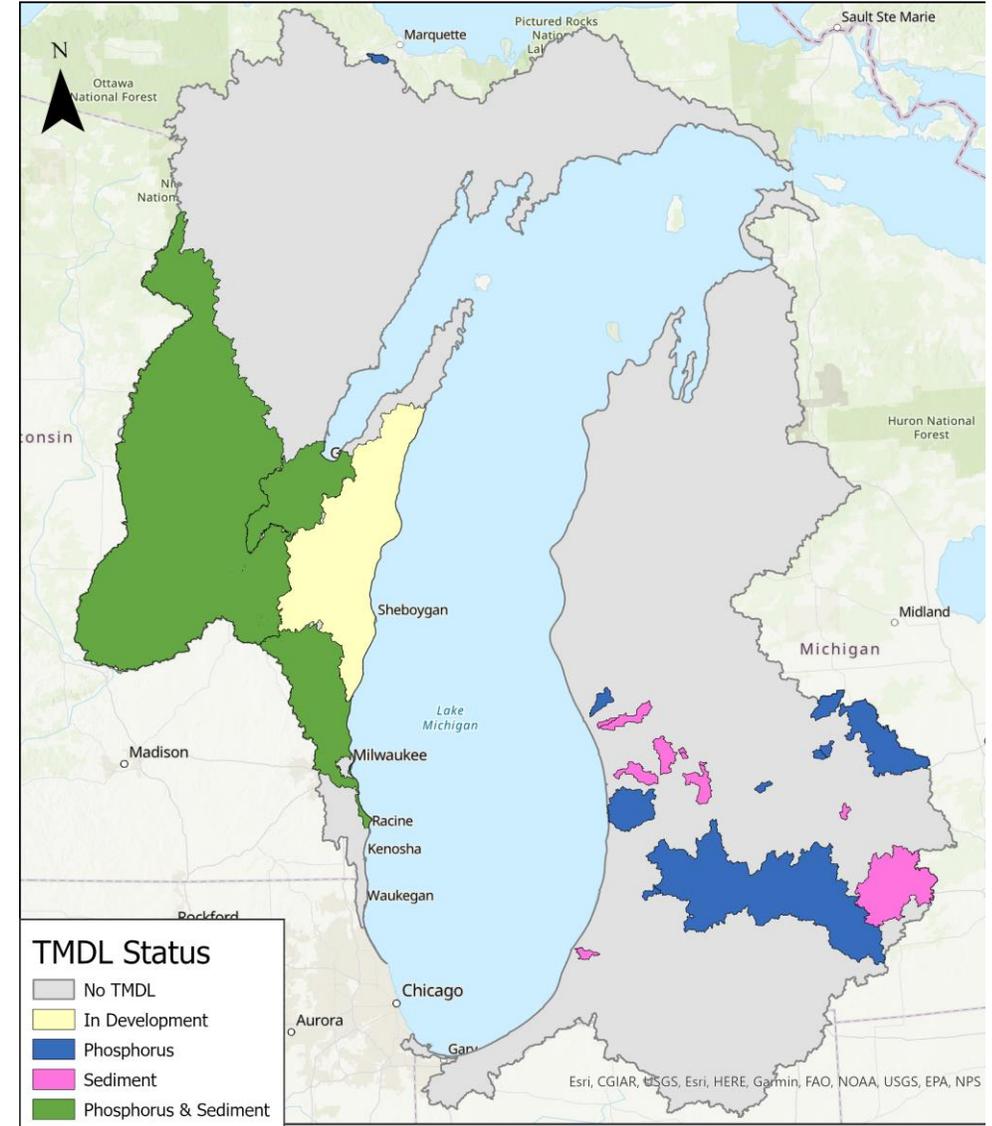
** We assumed that all row crop acres using cover crops or no-till practices also use precision nutrient management.

Groups involved:



Examples of project types: evaluating the impact of regenerative ag practices

- Considering 6 different BMP adoption scenarios (above)
- Current focus includes the **Phosphorus** and **Sediment** TMDLs
- Anticipated outcomes: estimation of Phosphorus load reductions and comparison to water quality goals



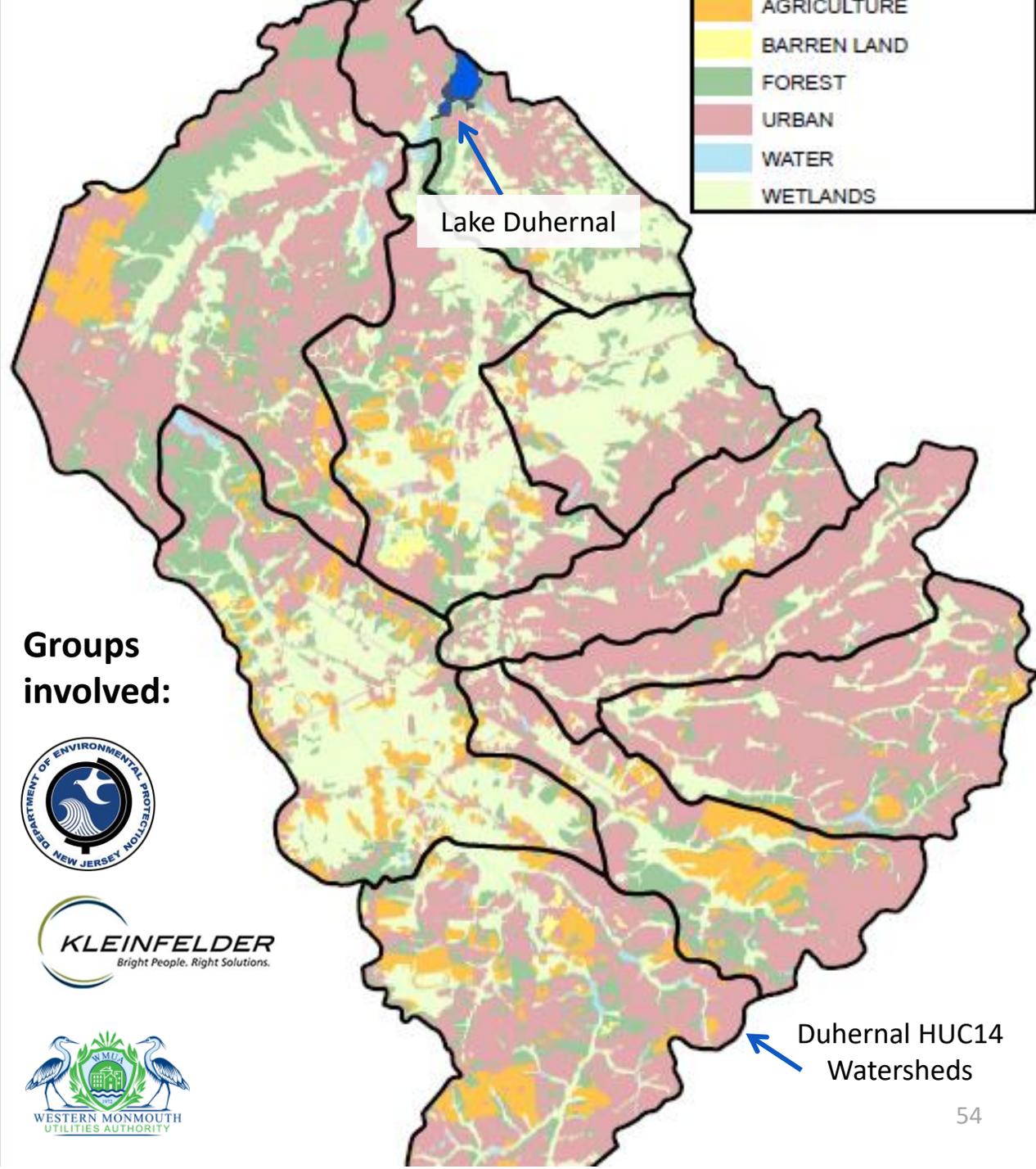
Lake Michigan Basin

Special thanks to Haleigh Summers, Sand County Foundation for sharing this project!

Examples of project types: watershed and lake protection plan

- Evaluating the use of PLET to determine nonpoint source loads to Lake Duhernal
- Conducting **wet weather sampling** to determine current **event mean concentrations (EMCs)** for land uses for comparison with model calculated nonpoint source loads.
- Future phases of the project will determine candidate locations for BMPs and associated TP load reductions

Special thanks to Erin Dovel, Kleinfelder for sharing this project!



Groups involved:



Looking ahead

Be on the look out for new release coming soon!

We are always evaluating opportunities to update and improve

- Water quality outcomes of protection work
- Integrating the most recent data into the input data server
- Refining BMP efficiencies based on the latest science
- Suggestions from you—the user

Stay in touch!

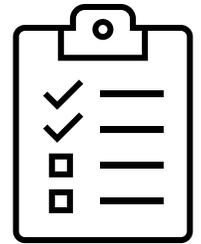
- Email: donaghue.adrienne@epa.gov



Questions?

Next steps in our outcomes estimation journey

- Join November 1st for the PTMApp Web Tool webinar
- Fill out the 6-question (2-min) online evaluation survey
- Schedule a free “coaching” session with us
 - Email atappross@farmland.org, RE: Coaching Request
- Order a free print copy of the OET Guide
 - Keyword: “AFT outcomes tools”



*Please keep in touch:
outcomestools@farmland.org*