

Estimate pollution reductions using BayFAST

This step takes us to another web-based tool called BayFAST. BayFAST stands for the Chesapeake Bay Facility Assessment Scenario Tool and is provided by the Chesapeake Bay Program to facilitate load reduction plans that are consistent with the methods used to develop the Bay TMDL and Watershed Implementation Plans. Loads are calculated for nitrogen, phosphorus, and sediment load reductions (in lbs/year). The tool works by comparing a scenario of existing environmental conditions (pre-construction) with a new scenario that includes the implementation of your BMP project (post-construction).

www.BayFAST.org



The instructions listed here are specific to the York County Stormwater Consortium's BMP reporting guidelines.

Tip: You only need to estimate pollution reductions if this is a New Proposal. To report on existing projects, return to the YCSWC BMP Reporting Tool and begin Task 5: Record Reductions.

These instructions have also been recorded in a webinar. To access the webinar, click this link: [Task 4: Estimate Pollution Reductions Using BayFAST, Task 5: Record Reductions in the YCSWC BMP Reporting Tool](#)

The York County Stormwater Consortium BayFAST User's Guide was made possible thanks to a partnership between:

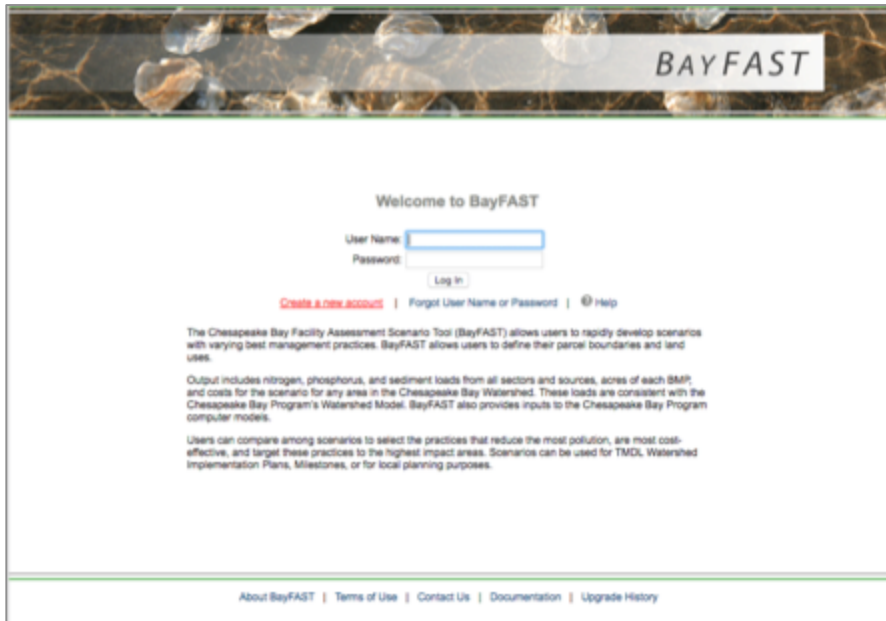


1. Open a separate tab or window in your browser, and go to www.BayFAST.org

If you already have a BayFAST, CAST, MAST, or VAST account, login using your existing account information, and skip to the “Add New Facility” step below.

If you are new to BayFAST, follow the instructions below.

- 1. Click Create a new account
- 2. Click No

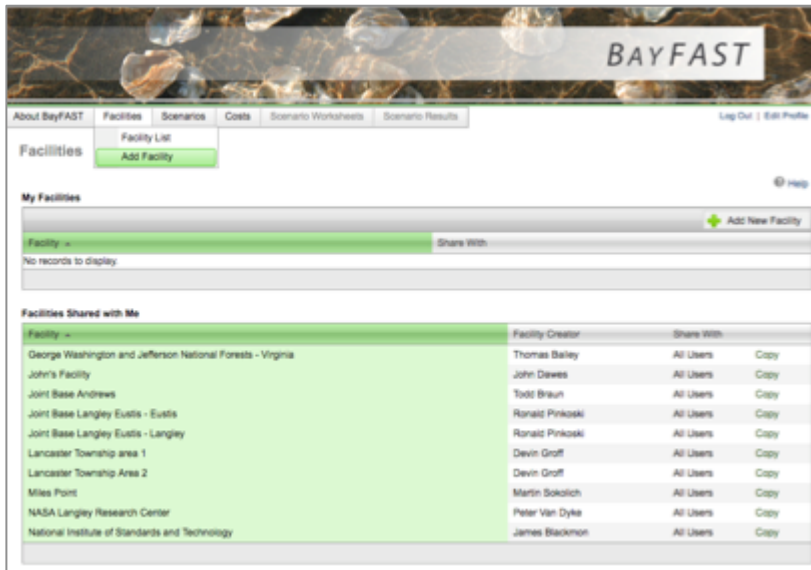


2. Add User Account

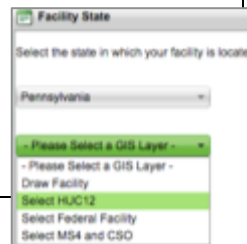
- 1. Enter your name, organization (municipality), and email address
- 2. Create a user name and password
- 3. Click Add

3. Add New Facility

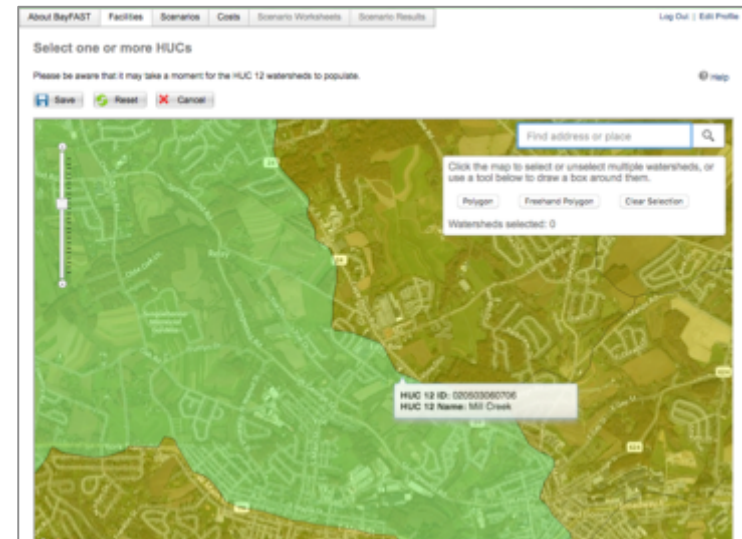
You will now identify a geographic area for your project. For the purpose of the YCSWC BMP Reporting, we will identify the watershed within which your project lies.



1. Click Add New Facility
2. Select Pennsylvania from the first drop-down menu
3. Select HUC12 from the second drop-down menu
4. Click Continue



5. Select one or more HUC
Select the watershed(s) within which your project footprint lies. You can type an address in the search bar, or navigate the map to find your project location. Only select multiple watersheds if your project footprint or treatment area appears to straddle the boundaries of multiple watersheds.
6. Click Save in the top left



7. Enter Facility Name
Use the Project Name from the YCSWC BMP Reporting Tool.
8. Enter Description
Use the Short Description from the YCSWC BMP Reporting Tool; add the date for your reference.
9. Select No Users
10. Click Add

Initial Conditions summary page

Make no changes here.

11. Click Save at the bottom of the page

Urban Land Uses	Agricultural Land Uses	Forest Land Uses
regulated pervious developed: 11144.824	animal feeding operations: 15.855	forest: 7417.599
nonregulated pervious developed: 560.140	concentrated animal feeding operations: 1.573	harvested forest: 74.925
regulated impervious developed: 4249.054	rightill with manure: 6512.524	
nonregulated impervious developed: 84.328	rightill without manure: 205.572	Water Land Use
regulated construction: 83.219	hay with nutrients: 1090.847	water: 68.456
regulated extractive: 268.806	hay without nutrients: 530.673	
nonregulated extractive: 0.000	alfalfa: 450.793	
CSS pervious developed: 0.000	pasture: 862.422	
CSS impervious developed: 0.000	degraded riparian pasture: 34.345	
CSS construction: 0.000	nursery: 28.118	
CSS extractive: 0.000		Total Acres: 33704.583

Septic Systems: 3248.330
Population on Septic: 8107.832

4. Add Baseline/Pre-Construction Scenario

You will now estimate the sediment and nutrient loads from the project area that exist currently—i.e. before the implementation of your BMP. This will be the baseline, or pre-construction scenario.

1. Hover over the Scenarios tab at the top of the page
2. Click Add New Scenario

3. Select Facility
Use the drop-down menu to select the Project Name
3. Enter Scenario Name
In this field, type "Baseline" or Pre-Construction"
4. Enter Description
In this field, type "Pre-Construction Scenario." Add the date for your reference.
5. Select No Users
6. Click Add

Urban Land BMP Worksheet

Make no changes on this page.

8. Click Scenario Results at the top of the page

Tip: Be sure to click “Scenario Results” at the top of the page. This will run the nutrient and sediment loading model and provide you with a baseline value to compare with your post-construction results.

Baseline/Pre-Construction Summary Results

Make no changes on this page.

Log Out | Edit Profile

Pre-Construction Summary Results

Description: Pre-Construction Scenario
 Facility: York Bioscience Project
 Date Created: 5/18/2016 4:43:47 PM

Download Results | Compare Scenarios

Total Loads

Load Type	Lbs Nitrogen		Lbs Phosphorus		Lbs Sediment	
	Edge of Stream	Delivered	Edge of Stream	Delivered	Edge of Stream	Delivered
Landuse	966,836.1	825,956.5	20,699.3	7,982.4	32,236,851.8	12,626,178.4
Septic	28,915.0	24,201.1	0.0	0.0	0.0	0.0
Total:	1,015,751.1	850,157.6	20,699.3	7,982.4	32,236,851.8	12,626,178.4

Total Annualized Costs

Sector	Total Annualized Cost
Urban Land	
Septic	
Forest Land	
Agricultural Land	
Animal Manure	
Total:	\$0

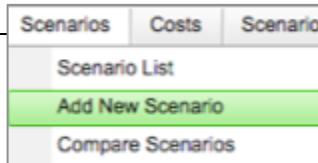
Land Use Loads

Land Use	Pre-BMP		Post-BMP		Lbs Nitrogen		Lbs Phosphorus		Lbs Sediment	
	Acres	Acres	Edge of Stream	Delivered	Edge of Stream	Delivered	Edge of Stream	Delivered	Edge of Stream	Delivered
Sector: Agriculture	9,752.7	9,752.6	596,728.9	485,967.8	11,829.9	4,562.0	21,869,030.0	8,573,256.0		

5. Add Post-Construction/BMP Scenario

You will now predict what the sediment and nutrient loads will be from the project area after your BMP project is implemented.

1. Hover your mouse pointer over the Scenarios tab at the top of the page
2. Select Add New Scenario
3. Select Facility
Use the drop-down menu to select the Project Name
4. Enter Scenario Name
In this field, type "Post-Construction, with BMPS"
5. Enter Description
In this field, type "Post-Construction Scenario"
6. Select No Users
7. Click Add



A screenshot of the 'Add New Scenario' form. It contains the following fields:

- Facility***: A dropdown menu with 'York Bioswale Project' selected.
- Scenario Name***: A text input field containing 'Post-Construction'.
- Description***: A text area containing 'Post-Construction Scenario'.
- Share this scenario with**: Radio buttons for 'No Users' (selected) and 'Selected Users'.

 At the bottom right is a green 'Add' button with a plus sign icon.

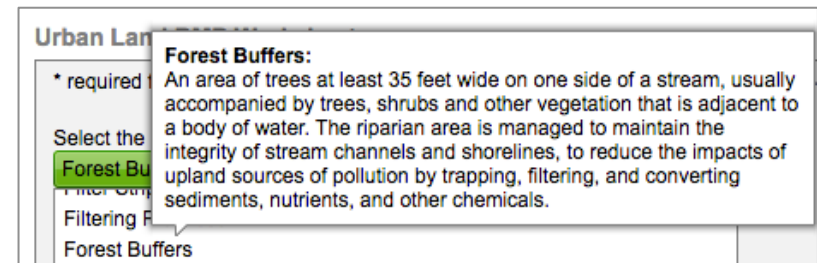
Urban Land BMP Worksheet

8. Select the BMP you would like to add

Use the drop-down menu to select your BMP. The list is long—your project is most likely one of the following:

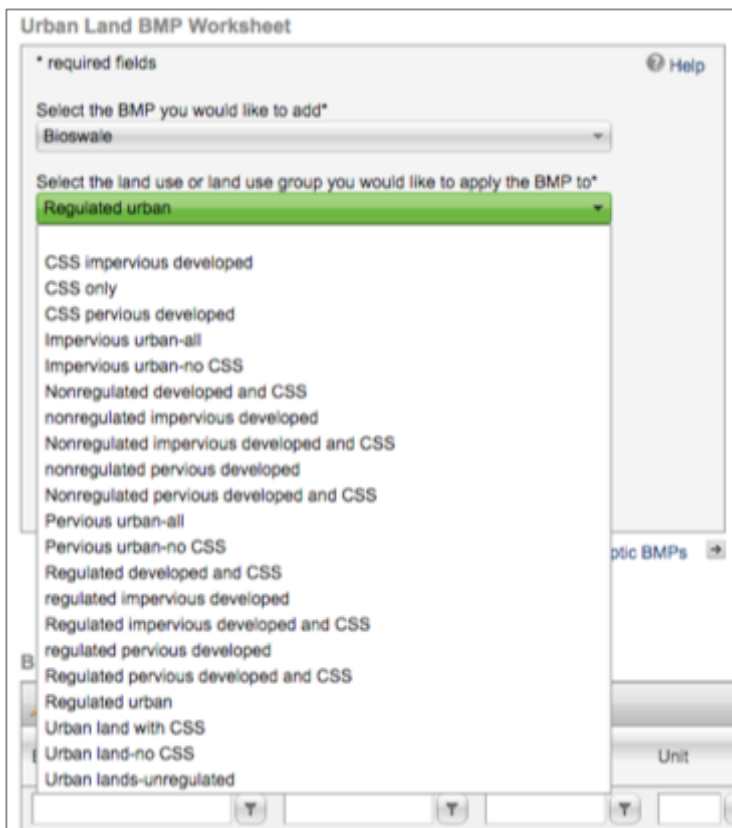
- Bioretention/Raingardens,
- Bioswale,
- Forest Buffers,
- Stream Restoration, or
- Wet Ponds and Wetlands.

Hover your mouse pointer over the options for more information.



Tip: If you're not sure about which BMP type to select, check out the BMP Reference Name document at <http://york.cicapps.org/documentation/>.

9. Select the land use or land use group you would like to apply the BMP to
This option varies depending on the type of BMP you selected. Use the guide below to determine which to use. If available, select "Regulated urban." If Regulated urban is not an option, select "regulated pervious developed." Hover your pointer over the options for more information.



10. Enter an amount and select a unit for the BMP
This option varies depending on the type of BMP you selected.

- *If "acres in buffers": Enter the Within project area (acres) listed in the YCSWC BMP Reporting Tool. You can find this information by clicking on the Reductions button.*
- *If "acres treated": Enter the Within treatment area (acres) listed in the YCSWC BMP Reporting Tool. You can find this information by clicking on the Reductions button.*
- *If any other option is listed, indicate the amount and unit that best describes your BMP project.*

11. Click Add

Grouped land use / land cover classes	Within project area (acres)	Within treatment area (acres)	Details
Regulated urban (pervious + impervious)	1.10	1.91	

Enter an amount and select a unit for the BMP*

1.10 acres in buffers percent

OR:

Enter an amount and select a unit for the BMP*

1.91 acres treated percent

OR:

Enter an amount and select a unit for the BMP*

1000 feet

Urban Land BMP Worksheet
Make no changes on this page.
12. Click Scenario Results at the top of the page
Post-Construction Summary Results
Make no changes on this page.

6. Compare Scenarios

1. Hover your mouse pointer over the Scenarios Tab at the top of the page
2. Click Compare Scenarios
3. Select Facility
Select your project
4. Select Scenario 1
Select "Pre-Construction"
5. Select Scenario 2
Select "Post-Construction"
6. Select Scenario 3
This is required—because we don't have a third scenario, simply select "Post-Construction" again
7. Click Compare

7. Calculate Reductions

Use the reduction loads reported in BayFAST to calculate the reduction in lbs/year of Nitrogen, Phosphorous, and Sediment Loads after your project is implemented. This step requires a little bit of math—it's probably easiest to write down the numbers on paper and use your calculator.

1. Scroll down to Nitrogen Loads (lbs) table
2. Find the Pre-Construction (Edge of Stream) and Post Construction (Edge of Stream) columns
3. From each column, find the Total Lbs (last line of the table)
4. Subtract Total Lbs Post-Construction (Edge of Stream) from Total Lbs Pre-Construction (Edge of Stream) to find the Total Nitrogen Reduction.
5. Do the same using the Phosphorus Loads (lbs) table, and Sediment Loads (lbs) table.

Tip: If this table has 0's instead of values, go back to the Scenarios page, select your scenarios, and click "Scenario Results" at the top of the page.

In this example, the post-construction the BMP reduced the phosphorus delivered to the edge of stream by 0.4 lbs per year.

Land Use	Pre-Construction (Edge of Stream)	Post-Construction (Edge of Stream)
> Sector: Agriculture		
	11,830.0	11,830.0
> Sector: Urban		
	8,347.6	8,347.1
> Sector: Forest		
	480.4	480.4
> Sector: Water		
	41.5	41.5
Total Lbs:	20,699.4	20,699.0

8. Now, write these numbers down! You'll now return to the YCSWC tool and enter them into your project proposal.

Return to Task 5 of the YCSWC BMP Reporting Tool User's Guide to enter the reduction values.