

# Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands

## Purpose

This document describes the process for setting nitrogen, phosphorus and sediment pollutant reduction targets for federal facilities consistent with the 2010 Chesapeake Bay TMDL (Bay TMDL) and the *Executive Order 13508 Strategy for Protecting and Restoring the Chesapeake Bay Watershed* (EO 13508 Strategy). The EO 13508 Strategy builds off the 2009 Executive Order, titled “Chesapeake Bay Protection and Restoration.” This Protocol was developed by the Federal Facilities Targets Action Team (FFTAT) as part of the Chesapeake Bay Program (CBP) partnership to assist the Bay jurisdictions<sup>1</sup> with setting federal facility targets and to assist the federal agencies with using the Chesapeake Bay Facility Assessment Scenario Tool (BayFAST) to develop implementation plans to meet those targets. EPA developed BayFAST to facilitate facility-level planning. It is understood that a federal agency may have already expended resources to develop planning tools or models prior to the rollout of BayFAST that are similar or equivalent. Where this is the case, the federal agency is encouraged to transition as soon as possible to BayFAST to enable consistency in federal agency planning.

The pollutant estimates and the best management practice (BMP) scenarios assessed using BayFAST may not exactly match the Bay TMDL allocations, the Phase II Watershed Implementation Plans (WIP) planning targets or CBP Watershed Model outputs, because of the fine spatial scale at the facility level and the user-specified land uses in BayFAST. Targets developed prior to the 2017 Midpoint Assessment and modeling calibration should be considered interim as they may change with future model revisions. The intent, therefore, is to assist federal agencies with initial planning, programming, budgeting and implementing requirements. This protocol is also expected to move the partnership forward in support of the 2014 Chesapeake Bay Watershed Agreement and enable any needed refinements in 2018 when the Bay jurisdictions develop their Phase III WIPs.

In accordance with EO 13508, the federal government should lead the effort to restore and protect the Chesapeake Bay. Federal agencies continue to demonstrate commitment to this effort in accordance with the EO and accompanying strategy. However, in terms of regulatory compliance, federal agencies must ultimately be treated in the same manner (i.e. load calculations and pollutant target reductions) and the same extent (i.e. implementation schedule) as any other entity. Thus, federal facilities are expected to achieve at least the same level of effort as nongovernmental entities. Some agencies are following a strategic approach that emphasizes compliance with permit requirements along with reduction of pollution from non-permitted sources as funds are made available.

## Background

The EO 13508 Strategy states that “Federal agencies with property in the watershed will provide leadership and will work with the Bay jurisdictions in the development of their Watershed

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<sup>1</sup> The Bay jurisdictions are Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia.

Implementation Plans” and that “states would establish explicit load reduction expectations for individual federal facilities as part of the WIP process.” As part of the Phase II WIP process, EPA expected the states and the District of Columbia to refine Phase I WIPs in collaboration with local partners since a significant portion of the necessary controls to meet the Bay TMDL would be necessary from all sources at the local level. The *Guide for Chesapeake Bay Jurisdictions for the Development of Phase II Watershed Implementation Plans* indicates the purpose of the Phase II WIPs was to facilitate implementation by dividing the Bay TMDL State and District allocations into local area targets. By definition, local area targets “are not finer scale wasteload and load allocations in the Bay TMDL, but when added together are expected to equal the relevant state-basin TMDL allocation caps.” Therefore, since the Bay TMDL report describes the expectation that a Phase III (WIP) will be developed by each of the Bay jurisdictions in 2018, EPA also expects local area targets to be developed by the Jurisdictions. Federal facility-specific targets for federal lands are a component of local area targets.

In the EO 13508 Strategy, Federal agencies also agreed to establish two-year water quality milestones starting in 2012, in coordination with the Jurisdictions, to show that planned progress toward the goal of having all measures needed to restore water quality are in place by 2025. As part of EPA’s evaluation of the 2012-2013 milestones, needed improvements for federal facility BMP planning and progress reporting were identified. The CBP Management Board recommended an exploration of options for improvements, including the use of federal targets to quantify loads and expected load reductions from federal facilities. The Management Board and the Principals’ Staff Committee requested a proposal for consideration at their November 13, 2014 and December 2014 meetings, respectively. EPA provided the Federal Leadership Committee-Designees (FLC-D) a draft conceptual approach to establish the framework to set target loads for federal facilities and agreed to establish a joint federal and jurisdictional workgroup. At its December 2014 meeting, the Principals’ Staff Committee endorsed the Management Board’s recommendation to establish the Federal Facilities Targets Action Team (FFTAT) with representatives from the Bay jurisdictions and federal agencies to resolve concerns and develop a target setting protocol. The FFTAT agreed the protocol would include key elements related to identification of the federal facilities where targets will be assigned, data needed from federal facilities, methodologies for development of targets, expectations for implementing reductions, progress reporting processes, and linkages to two-year water quality milestones. For the purposes of this protocol, federal facilities are defined as buildings, installations, structures, land, and property owned by the Federal government.

Federal facility targets developed by the jurisdictions will be a combination of the pollutant reductions associated with lands that are regulated by NPDES permits and lands that are not subject to NPDES permits. Federal facilities are expected to demonstrate their achievement of the targets. In no way do the targets supersede or modify, federal agencies’ obligations under statutes, regulations, policies, or executive orders. This protocol does not establish any new requirement or rights for the federal agencies or its facilities.

EPA also expects federal agencies to enhance their reporting to the jurisdictions of planned actions that support the next set of two year water quality milestones to be submitted in January 2016 for the 2016-2017 milestone period.

## Jurisdiction and Federal Agency Responsibilities in Setting Pollutant Reductions

The responsibilities for setting reductions are summarized below separately for Bay jurisdictions and federal agencies.

The Bay jurisdictions are expected to set federal targets, consistent with the CWA, for the federal facilities within their respective jurisdictions. The general approach is:

1. Identify the federal facilities for which targets will be set, consistent with the CWA, and communicate the intent to provide them with targets, the methodology that will be used to develop load estimates and expected reduction levels, and steps for interim reporting in 2015 and 2016 to document progress toward the 2017 targets. Outline clear expectations for pollutant load reductions consistent with local area targets.
2. Set numeric targets following this Protocol for the 2025 Bay TMDL target goal and the 2017 interim goal. This will require acquiring land use information from federal facilities.
3. Communicate these targets in writing to federal agencies.
4. Provide a reporting format to federal facilities, as is currently done with the spreadsheets developed for this purpose.
5. Report BMPs implemented on federal facilities using the National Environmental Information Exchange Network (NEIEN) as part of the annual progress review to develop the Reducing Pollution Indicator.
6. Develop 2016-2017 milestones that include the federal plans and submit to EPA.

Using BayFAST, federal agencies are able to calculate their current loads and create a plan for each facility to identify the reduction levels needed to meet a target. Alternative methods are acceptable as long as EPA determines that they are consistent with the Bay TMDL and they are acceptable to the jurisdiction and federal agencies with regard to equity. The following steps provide a general methodology when using BayFAST:

1. Create a parcel for each facility that is assigned a target (does not need to be contiguous) and, if known, specify the acres of each land use within the parcel, following the CBP Partnership's definitions of the land uses. The land use should be for 2010 unless otherwise specified by the Bay jurisdiction.
2. Create a baseline scenario for the facility using BayFAST by not specifying any BMPs. No BMPs are used in this scenario because the baseline is specified as the 2010 conditions without BMPs (commonly referred to as the "2010 No Action scenario"). The 2010 no-BMP condition should be the default approach; other approaches consistent with the Bay TMDL may be provided by the Bay jurisdictions and are referenced in Appendix A.
3. Create a plan to meet the 2017 target provided by the Bay jurisdictions by adding current and planned BMPs, including land use change BMPs, until the loading target or loading reduction is met. Where land was developed, the facility land use will need to be updated, but any land use changes will not change the federal targets. Plans to meet the 2025 target can also be created to facilitate long-range planning.
4. Report implemented BMPs to Bay jurisdiction(s) and CBPO annually using the spreadsheet template provided by the jurisdiction and CBPO.
5. Follow the Basinwide BMP Verification Framework approved and adopted in September 2014 by the CBP Principals' Staff Committee and verification protocols developed by each Bay jurisdiction.

EPA will:

1. Assist the Bay jurisdictions and federal agencies by working with the Federal Leadership Committee (FLC), Federal Office Directors (FOD) and Federal Facilities Team to provide support for implementing this protocol and secure top-level support from federal agency management.
2. Continue to provide contract support for any changes needed to BayFAST including making federal facilities currently delineated by the CBP Partnership a selectable layer in BayFAST and incorporating targets into BayFAST.
3. Offer additional BayFAST training and support to federal agencies and jurisdictions.

## Setting Targets by the Bay Jurisdictions or EPA

The Bay jurisdictions are expected to finalize targets, consistent with the CWA, for federal facilities for nitrogen, phosphorus and sediment. These targets will help Bay jurisdictions meet their Bay TMDL allocations. This section describes general principles. EPA or the jurisdictions will communicate their targeting methodology to federal agencies through the FFTAT and then establish targets following the agreed-upon methodology in Appendix A of this Protocol. EPA will set targets for federal facilities, if a Bay jurisdiction chooses not to set targets, after discussion with the jurisdiction.

### Options for expressing reduction goals

The baseline default is defined as the 2010 land use with no BMPs. Jurisdictions may specify a different baseline that is consistent with the Bay TMDL allocations where it is consistent with the jurisdiction's planning target methodology. EPA will evaluate other baseline proposals for consistency with the Bay TMDL.

The federal facility targets may be specified in any of three ways at the discretion of the jurisdiction:

- A per acre percent reduction from the baseline. For example, 45% per acre reduction in pounds of nitrogen.
- Total pounds per acre reduced from the baseline. For example, calculated from a baseline load of 220 pounds of nitrogen per acre with a 2025 target of 210 pounds per acre the target would be set at 10 pounds of nitrogen reduced per acre; (e.g. 220 minus 210 equals 10 pounds/acre).
- Total allowable load in terms of pounds of nitrogen, phosphorus, and sediment per acre. For example, 210 pounds of nitrogen per acre.

### Consistency with permits and TMDLs

The targets established by the Bay jurisdictions are expected to be consistent with the Bay TMDL including the pollutant reduction strategies identified in their Phase II WIPs, National Pollutant Discharge Elimination System (NPDES) permits, and any local TMDLs for water bodies that receive loads from federal facilities. NPDES permits must comply with water quality standards and be consistent with all applicable TMDL wasteload allocations. Permits, such as those for stormwater, may cover only a portion of a federal facility. Federal facilities are expected to comply with permits that cover the facility or a portion of the facility and to act consistently with relevant local TMDLs and the Bay TMDL. Where there are also local TMDLs for nitrogen, phosphorus and sediment, the more stringent of the TMDLs will apply.

## Target years

Federal facility targets should be set for 2025, with an interim goal specified for 2017. Where the default baseline of 2010 No Action is used, an equivalent 60% 2017 reduction can be determined by calculating the ratio of the 2017 load to the 2025 load and applying that ratio to the federal facility's 2025 calculated target. Other methods that achieve an equivalent 60% are acceptable so long as EPA determines that it is consistent with the Bay TMDL. EPA expects the Bay jurisdictions to submit 2016-2017 milestone commitments that meet the 2017 target and include federal commitments in January 2016.

## Spatial scale and land use

Targets for federal facilities are expected to be established with the same level of implementation effort as targets for the state-major basin in which the facility is located (e.g., Virginia Potomac). A smaller spatial scale than a state-major basin may be used at the jurisdiction's discretion. For example, all of the District of Columbia is in the Potomac River basin, and the District may choose to set targets for each Watershed Model land-river segment. Where a federal facility spans states or major basins (e.g., Potomac and Susquehanna), there may need to be a separate plan for the area of the facility in each state basin.

The targets may be calculated based on the land use within each state major basin. For example, a state may specify the load for a land use group (e.g., agricultural, urban, and forest) within a state major basin. This load does not need to be specified for each of the agricultural land uses such as hay with nutrients, pasture, hightill with manure, etc. Rather, the load can be a composite of all the agricultural land uses. Alternatively, targets may be set on a per acre basis for each facility regardless of the land use. For example, a target for a specific federal facility could be developed using that facility's land use and would be specified as 10 pounds of nitrogen per acre for a particular federal facility. Jurisdictions will need updated land use for each federal facility to set the target and that information can be shared by the federal facility using various methods (i.e. BayFAST, spreadsheet).<sup>2</sup> Facilities may choose to gather more detailed land use information than the categories currently available in BayFAST that may support more detailed land use categories included in the Phase 6 Watershed Model and future versions of BayFAST.

## Details for Creating a Federal Facility Planning Scenario in BayFAST

For federal facility managers using BayFAST to initiate an understanding of their current loads and develop an implementation plan, parcels are initially created in the tool using the acreages for each land use. The scenario created in BayFAST will inform the Bay jurisdictions' targets, since the target is specific to loading rates from each land use or major land use class (e.g., agriculture, developed, forest).

### Information needed to create a scenario:

- Location of the facility
- Total area of each facility
- Acres of land use within each facility, if known. The land uses are the same as those used in the Chesapeake Bay Program Watershed Model. Definitions are available online at [www.BayFAST.org/documentation](http://www.BayFAST.org/documentation).

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<sup>2</sup> Note that this land use update would be in addition to updates that federal facilities are providing directly to the Chesapeake Bay Program Office or through the Federal Facilities Editor Tool for the Phase 6 Watershed Model data inputs.

Using BayFAST at [www.BayFAST.org](http://www.BayFAST.org), federal facility managers first create a username to gain access to the system. Once established, the manager can create parcel for each federal facility. This requires identifying the location of the facility on a map and drawing a polygon around the general area of the facility. This polygon does not need to be exact; it can be an approximation of the facility outline. The polygon serves solely to identify the general location of the facility within a modeled river segment with associated Bay-delivered and edge of stream loads. Load calculations are based on the data entered in tabular land use form, rather than on the polygon.

Next, the facility manager enters the acres of each land use that were present in 2010 (or best available). Using the default baseline as an example, if a forested portion of the facility were developed in 2011, the acres of that developed area would be entered as forest, since that is the 2010 baseline condition.

This land use data is required for the jurisdictions to set the federal facility targets and may be shared multiple ways. In BayFAST, federal facility managers may share the facility data with a Bay jurisdiction by selecting the jurisdictional lead name on the option box labeled “share this scenario with”. The land use data for each federal facility may also be downloaded from BayFAST in spreadsheet form and sent to jurisdictions. Alternatively, land use data may be compiled and shared with jurisdictions outside of BayFAST, but the data will still need to be entered into BayFAST prior to creating a planning scenario. The next section discusses the baseline from which loads are calculated.

For the Phase 6 Watershed Model and the Phase III WIPs in 2018, there will be revised federal land use classifications which will help to identify the acres and loads associated with federal facilities.

## Baseline Definition

The default baseline year from which load reductions are calculated is 2010, since that is the year the Bay TMDL was established. The baseline conditions are the loads from the 2010 land use with no BMPs, even those BMPs that were in place in 2010. Thus, the load is the untreated load. Using BayFAST, this load may be calculated by creating a scenario, not adding any BMPs, and then calculating the resulting load. Where jurisdictions have already developed federal targets using an alternative baseline, that alternative baseline may be used so long as EPA determines that it is consistent with the Bay TMDL.

## Establishing Load Reduction Plans by Facility Managers

Federal facility managers using BayFAST can create individual scenarios for each federal facility by entering BMPs and determining if the load target or reduction target is achieved by calculating results. Where land use has changed since 2010, copy the facility scenario and update the table with the acres of each current land use.

EPA expects jurisdictions to submit 2016-2017 milestone commitments that meet their statewide 2017 target and include federal commitments in January 2016. Therefore, EPA expects federal agencies to provide their respective 2017 and future milestone plans to the Bay jurisdictions by November 1, 2015 and each subsequent odd year using BayFAST or the best available alternative (e.g. spreadsheet).

BayFAST provides the most consistency with the CBP Partnership Watershed Model at a facility scale. This method also provides flexibility to the federal facility managers to determine which and how many BMPs are best and most cost-effective for each facility. However, it is recognized that a federal agency

may have already expended resources to develop planning tools or models prior to the recent release of BayFAST that are similar or equivalent to the tool. Where this is the case, the federal agency can use their tools, but are encouraged to eventually switch to BayFAST to allow consistency in federal agency planning and reporting.

EPA expects federal agencies to account for and offset changes in facility loads due to growth. The use of BayFAST is intended to facilitate such adaptive management of sector load changes by allowing reanalysis of scenarios as needed.

## Reporting Progress by Facility Managers to the Bay Jurisdictions and Bay Jurisdictions to EPA

The Bay jurisdictions are expected to continue reporting progress toward meeting Bay TMDL allocations as outlined in the Chesapeake Bay Program Grant Guidance by reporting BMPs through the National Environmental Information Exchange Network (NEIEN). The annual reporting deadline for federal entities to Bay jurisdictions and CBPO is October 1<sup>st</sup>, unless otherwise noted.

The Bay jurisdictions, working with CBPO, developed spreadsheet templates to facilitate federal facility reporting of BMP implementation to jurisdictions. Federal facilities will report annual BMP implementation towards meeting these facility-specific targets to the jurisdictions and CBPO using the spreadsheet templates. The jurisdictions are expected to coordinate with the federal agencies to ensure the data submitted was received and incorporated for statewide progress reporting.

It is the Bay jurisdictions' responsibility to take this spreadsheet of BMP implementation data, merge it with non-federal implementation, and submit progress data via NEIEN. NEIEN allows the Bay jurisdictions to identify BMP data as federal or nonfederal.

EPA is committed to showing the load reductions that demonstrate progress toward the 2016-2017 two-year milestones and 2025 Bay TMDL allocations including significant progress that has been made through upgrades to federally-operated wastewater treatment plants. The loads are provided to the jurisdictions and can be broken out by federal and nonfederal loads in the current Phase 5.3.2 version of the Watershed Model. The Phase 6 version of the Watershed Model will enable the loads to be broken out by federal agency.

## Verification by Facility Managers and Jurisdictions

Federal agencies are expected to undertake BMP verification following the [Basinwide BMP Verification Framework](#) approved and adopted in September 2014 by the CBP Principals' Staff Committee and the protocols developed by each Bay jurisdiction.<sup>3</sup> As part of this framework, federal facilities also are expected to conduct an inventory of historic BMPs and wastewater treatment and discharges at their facilities, installations, and lands so they get credit for nutrient and sediment pollutant load reduction practices they have already put in place.

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<sup>3</sup> The BMP Basinwide Framework is available here:

[http://www.chesapeakebay.net/channel\\_files/21753/cbp\\_bmp\\_verification\\_framework\\_final\\_draft\\_for\\_mb\\_review\\_08112014.pdf](http://www.chesapeakebay.net/channel_files/21753/cbp_bmp_verification_framework_final_draft_for_mb_review_08112014.pdf)

## Future Improvements Related to the Bay TMDL Midpoint Assessment

The Bay jurisdictions are expected to submit Phase III WIPs to EPA in 2018. The CBP partnership should complete changes to BayFAST and development of the Phase 6 Watershed Model in 2017. Changes to the Phase 6 Watershed Model will result in the availability of load estimates for individual federal agencies and updated land uses for all federal and nonfederal entities. These estimates will facilitate tracking progress by individual federal agencies. BayFAST and the Watershed Model updates are intended to increase the capacity for federal agency planning, reporting, and assessment of progress. Federal facility loading targets for 2025 and the supporting methodology may change as part of the Phase III WIP development process, new data incorporated into the Phase 6 Watershed Model, and/or other aspects of the Bay TMDL midpoint assessment.



## Appendix A: Jurisdictional Methods for Setting Federal Facilities' Targets

This Appendix outlines each jurisdiction's method for setting federal facility targets, consistent with the CWA, for nitrogen, phosphorus, and sediment. The specific method adopted by each jurisdiction is in accordance with the *Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands*. The methods described below meet the requirements of the *Protocol*.

### EPA Default Method

For jurisdictions that choose not to set targets for federal facilities, EPA will provide 2017 and 2025 targets consistent with the CWA. EPA will determine the loading rate for 2009 and also 2025 by state major basin for major land use groups. Major land use groups are defined as urban, agriculture and forest.

EPA will calculate the 2017 target as the loading rate of 60% of the 2009-2025 reduction using the 2025 Watershed Implementation Plan (WIP) and associated Chesapeake Bay TMDL for each state. The 2017 target is by land use group and state major basin and is 60% of the reduction between the 2009 TMDL baseline and the 2025 TMDL. The annual loading rate that achieves the 60% reduction will be applied to the baseline conditions established by federal facilities. This ensures that the level of effort for the federal facility is the same as non-federal lands in the state major basin (more information is available at [http://www.chesapeakebay.net/channel\\_files/22783/epatargetmethodexample\\_051515.pdf](http://www.chesapeakebay.net/channel_files/22783/epatargetmethodexample_051515.pdf)).

Federal facilities can establish their baseline by entering into BayFAST their land use and current BMPs. Using this approach, each federal facility would also need to enter the year of the scenario in the scenario description section. The most recent data can be used. Using this information, the annual loading rate (pounds/acre/year) to reach 2017 will be applied to the federal facility's baseline to establish the 2017 target.

#### Data required:

- 2009 and 2025 loads and land uses from jurisdictions' progress reporting and Phase 2 WIPs, as calculated by the Phase 5.3.2 Watershed Model
- Federal facility land use, BMPs, and year of the data.

### District of Columbia

The District Department of the Environment (DDOE) has opted to use the EPA default method to develop targets, described herein. Targets will be developed for all major DC facilities.

As part of the planning process to meet the 2017 target goal, federal facilities may choose to enter planned BMP implementation from master plans and other resources, where available, to compare load reductions from planned BMPs to the 2017 target goal.

#### Data required:

- 2009 and 2025 loads and land uses from jurisdictions' progress reporting and Phase 2 WIPs, as calculated by the Phase 5.3.2 Watershed Model
- Federal facility land use, BMPs, and year of the data.

## Maryland

### Background

Per EPA directive, the Maryland Department of the Environment (MDE) is estimating interim nutrient and sediment loading targets for federal facilities. MDE is estimating interim facility targets for the urban stormwater sector only. Agricultural activity on federal lands in Maryland is minimal, and forest, which comprises the majority of federal land in Maryland, represents a natural condition, from which no reductions are applied. These urban stormwater targets are consistent with the strategies for the urban stormwater source sector outlined in Maryland's Phase I and II Watershed Implementation Plans (WIPs). Maryland's Phase II WIP interim strategy for Phase II MS4s entails a 20% retrofit of developed urban land that has little or no stormwater management (SWM).

In 2011, as part of the development of Maryland's Phase II WIP, nutrient and sediment target loads for 2025 were set for all source sectors (i.e. urban, agricultural, wastewater and forest). The loading targets and reductions for federal facilities associated with the overall urban stormwater targets can be found on Maryland's TMDL Data Center at <http://www.mde.state.md.us/programs/Water/TMDL/DataCenter/Pages/index.aspx>, under the WLA search function. Search by the county a facility is located in and by permit type "Federal". The target loads and reductions presented on Maryland's TMDL Data Center for federal facilities are provided at the county-bay segment scale. Therefore, these target loads and reductions represent an aggregation of all federal facilities within the county and segment. The targets are considered long-term planning targets, and they will likely be updated in Maryland's Phase III WIP.

The estimated interim target loads and reductions for federal facilities are based on a 20% retrofit of any untreated impervious surface at a facility. A 20% retrofit of untreated impervious surface provides a reasonable approximation of what restoration practices a facility could achieve in a relatively short time period. This approach for estimating loading targets is being applied to all federal facilities.

### Approach for Estimating Targets

MDE is estimating nutrient targets for federal facilities that are equivalent to a 20% retrofit of any untreated impervious area at a facility. The target only applies to the urban stormwater loads from federal facilities. There is minimal agricultural activity on federal lands in Maryland, and forest represents a natural condition. Therefore, reductions are not being estimated for these sectors, since they will have no bearing on the attainment of water quality standards in the Chesapeake Bay segments.

### Data Solicitation

Representatives from federal facilities have been working with MDE to provide the Department with better land-use and SWM implementation data, as available. At the onset of Phase 6 watershed model development, as part of the Chesapeake Bay Program's call for land-use data and historical Best Management Practice (BMP) data cleanup, MDE asked federal facilities to provide the Department with any available land-use and BMP data. The goal of this data solicitation was to improve model estimates of land-use acres and BMP implementation. Since MDE is now estimating target loads and reductions for federal facilities based on a facility's untreated impervious area, the Department can also use this BMP and land-use information to calculate a more accurate target. Therefore, MDE is recommending to facilities that have not previously done so, that they provide the Department with any available land-use and BMP data. The descriptions below outline what data MDE is recommending the facilities provide and how to provide it.

For baseline conditions, MDE recommends that facilities provide land-use acres and BMP information for 2009 or 2010, since this is the baseline condition for the Chesapeake Bay TMDL and Phase II WIP. If a facility cannot provide the information for the desired conditions, the Department asks that they still submit whatever data they may have. For instance, if a facility does not know how many acres of impervious and pervious urban there were in 2009 or 2010, but they do have current estimates of impervious and pervious urban acres, MDE recommends that the facilities provide the current acres. The same applies for conditions prior to 2009 or 2010.

There are two options for providing data to MDE. Facilities could provide data via BayFAST, or they could use Maryland's historic BMP clean-up spreadsheet. If using BayFAST, facilities should create a new "facility" and edit the land-use information to so as to reflect the correct land-use acres at the property. Then, they should create a new "scenario", which reflects the land-use acres treated by the BMPs present at the facility. MDE recommends that the name for the facility and/or baseline scenario indicate the year that the land-use and BMP information correspond to, e.g., "Aberdeen Proving Ground – 2010". The "Scenarios" and "facilities" should be shared with MDE's BayFAST account *mde\_swwla\_review*, and MDE's liaison for federal facilities should be notified. An example of how the data should be provided is outlined below.

- 2009 or 2010 impervious and pervious urban acres
  - When only impervious area is submitted, MDE shall assume the restoration of untreated impervious treats any adjacent pervious urban area, by default
    - Pervious urban is defined as turf grass and landscaped areas
  - 2009/2010 represent the base condition for the Chesapeake Bay TMDL and Maryland's Phase II WIP
- Impervious and pervious urban acres treated by specific stormwater BMPs
  - Only BMPs that have been maintained and are functioning properly
  - Maintenance and functionality be documented in proper triennial review
  - BMPs that are not maintained should not be credited toward loading reduction targets

Table 1 below provides an example of a data submission for a federal facility, for 2009 conditions, which would allow MDE to calculate a more accurate target for the facility (list of BMPs not all inclusive - could be many more types). Please note that for purposes of Phase 6 model development, pervious urban land-use is broken down into turf grass and urban tree canopy acres. The interim target will be calculated using the aggregate pervious urban land-use in the Phase 5.3.2 watershed model, but MDE is asking for more specific information for the Phase 6 model, if available. Please also note that while not presented in the table below, and while MDE is only providing interim targets to federal facilities for the urban stormwater sector, the Department is asking facilities to indicate their acres of other natural and agricultural land-use classifications, i.e., forest, crop, pasture, hay, etc., in MDE's historic BMP clean-up spreadsheet. This is for the purpose of informing the upcoming Chesapeake Bay Phase 6 watershed model.

**Table 1: Example Federal Facility Land-Use and BMP Reporting for Target Calculations**

Phase 5.3.2 Urban Land-Use	Phase 6 Urban Land- Use	Total (Acres)	BMPs (Acres Drained)			
			<i>Wetponds and Wetlands</i>	<i>Infiltration Practices</i>	<i>Filtering Practices</i>	<i>SW to the MEP**</i>
Impervious	Impervious	25	5	3	0	0
Pervious	Turf Grass	75	15	9	0	0
	Urban Tree Canopy*	25	5	3	0	0
	Total	100	20	12	0	0

\* Urban Tree Canopy = areas of contiguous tree canopy cover < 1 acre total size and < 120 ft. wide. Areas of contiguous canopy cover > 1 acre total size and > 120 ft. wide are classified as forest.

\*\* Stormwater to the Maximum Extent Practicable, i.e., Environmental Site Design (ESD)

If a facility cannot provide MDE with either land-use or BMP information, the Department can make certain assumptions regarding impervious and pervious urban acres and how many of these acres are treated by specific types of stormwater BMPs. These assumptions are as follows:

- Impervious acres based on Chesapeake Bay Program Phase 5.3.2 (CBP P5.3.2) watershed model federal land-river segment land-use data
  - Disaggregated by MDE to facility scale
- Pervious urban acres based on CBP P5.3.2 watershed model ratio of pervious urban to impervious urban area in Maryland
  - Ratio = 4:1
- All development prior to 2002 is considered untreated impervious surface
  - All development after 2002 is considered to be treated impervious surface
    - Treated impervious surface has adequate SWM applied, which controls not only for runoff volume but water quality as well
    - Maryland's stormwater regulations were updated in 2000. All development after 2002 should conform to these regulations.

#### **Interim Target Calculations**

Once federal facilities have submitted their data to MDE, the Department will base its target calculations on the loading rates presented in Table 2 below. The loading rates represent a statewide average for Maryland. The rates for urban developed land without adequate SWM are based on a CBP P5.3.2 watershed model *No Action* scenario, i.e., no BMPs applied. The rates for urban developed land with adequate SWM are based on applying Maryland's SWM by era (2002-2010) BMP reduction efficiency to the *No Action* loading rates.

**Table 2: Federal Facility Loading Rates for Target Calculations**

Scenario	TN (lbs/acre/yr)		TP (lbs/acre/yr)		TSS (lbs/acre/yr)	
	<i>Impervious</i>	<i>Pervious</i>	<i>Impervious</i>	<i>Pervious</i>	<i>Impervious</i>	<i>Pervious</i>
Untreated	15.3	10.8	1.7	0.4	1,117.7	175.6
Treated*	10.7	7.6	1.0	0.2	223.5	34.8

\*SWM by Era (2002-2010) efficiencies: TN = 30%; TP = 40%; TSS = 80%. If facilities provide detailed BMP data, these rates will correspond to the efficiencies for the specific BMPs provided.

The loading rates presented in Table 2 will be applied to the land-use acres (with and without adequate SWM – as determined by the BMP information) provided to MDE by the federal facilities. Subsequently, reductions will be applied to 20% of the untreated impervious and pervious urban lands at the facility. The reductions will be based on an average estimated reduction efficiency for BMPs that could be implemented by the facilities to restore the urban area. The efficiencies represent an average of the estimated removal rates for both structural practices and ESD practices for treating 1 inch of rainfall (required depth for impervious surface retrofit), per Table 6 in MDE-Water Management Administration's (WMA) *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated*.

An example of the target calculation is provided below. The example uses the land-use and BMP acres provided in Table 1 of this appendix.

- **TN Baseline Load**
  - $1,322 \text{ lbs/yr} = [17 \text{ acres} \times 15.3 \text{ lbs/acre/yr}] + [8 \text{ acres} \times 10.7 \text{ lbs/acre/yr}] + [68 \text{ acres} \times 10.8 \text{ lbs/acre/yr}] + [32 \text{ acres} \times 7.6 \text{ lbs/acre/yr}]$
- **TN Target Load**
  - $TN \text{ Retrofit Load} + TN \text{ Non-retrofit Load} = 109 \text{ lbs/yr} + 1,123 \text{ lbs/yr} = 1,233 \text{ lbs/yr}$ 
    - *TN Retrofit Load*
      - $109 \text{ lbs/yr} = [0.2 \times 17 \text{ acres} \times 15.3 \text{ lbs/acre/yr} \times (1 - 0.45)] + [0.2 \times 68 \text{ acres} \times 10.8 \text{ lbs/acre/yr} \times (1 - 0.45)]$
    - *TN Non-retrofit Load*
      - $1,123 \text{ lbs/yr} = [0.8 \times 17 \text{ acres} \times 15.3 \text{ lbs/acre/yr}] + [8 \text{ acres} \times 10.7 \text{ lbs/acre/yr}] + [0.8 \times 68 \text{ acres} \times 10.8 \text{ lbs/acre/yr}] + [32 \text{ acres} \times 7.6 \text{ lbs/acre/yr}]$
- **TN Reduction**
  - $TN \text{ Baseline Load} - TN \text{ Target Load} = 1,322 \text{ lbs/yr} - 1,233 \text{ lbs/yr} = 89 \text{ lbs/yr}$ 
    - = 7% Reduction

## New York

The Department of Environmental Conservation (DEC) has opted to use EPA as a resource to develop targets using the EPA default method, described herein. Targets will be developed for all major NY facilities.

### Data required:

- 2009 and 2025 loads and land uses from jurisdictions' progress reporting and Phase 2 WIPs, as calculated by the Phase 5.3.2 Watershed Model
- Federal facility land use, BMPs, and year of the data.

## Pennsylvania

The Department of Environmental Protection has opted to use EPA as a resource to develop targets using the EPA default method, described herein. Targets will be developed for all major PA facilities.

### Data required:

- 2009 and 2025 loads and land uses from jurisdictions' progress reporting and Phase 2 WIPs, as calculated by the Phase 5.3.2 Watershed Model
- Federal facility land use, BMPs, and year of the data.

## Virginia

The Department of Environmental Quality (DEQ) is setting targets as the total pounds of each pollutant required to be reduced by each facility. The target setting method requires calculating the average of the loading rate (pounds per acre) for each major basin and land use group necessary to meet the Bay TMDL 2025 allocation. Similarly, DEQ will calculate the average of the loading rates (pounds per acre) for each major basin and land use group for the 2010 no BMP scenario. The difference between the two is the required reduction rate for each basin and land use for 2025. The acres of each land use for a facility, provided by each facility to DEQ, is multiplied by the appropriate basin average land use reduction rate to produce the load reduction (pounds) required for that land use. The required load reductions for each land use are then summed to represent the Facility load reduction target for 2025.

The 2017 load reduction target will be calculated as 60% of the Facility load reduction target for 2025 as calculated from the 2010 no BMPs scenario and described above. This approach is not consistent with the Bay Program's approach which uses the 60% of 2025 reductions compared to 2009. However, the absence of historical BMP records for federal facilities in the Bay Program modeling system precludes using a consistent approach. This approach is easy to calculate and gives the federal facilities the ability to count their full history of BMPs toward achieving the 2017 target. This historical BMP implementation should be reported to DEQ, using the established reporting template, in draft by June 15th and final no later than September 1, 2015, to support the calibration of the Phase 6 model. Failure to report historical BMPs through this process will disadvantage facilities when these targets are reevaluated using the Phase 6 model in 2017.

An estimation of facility land uses is required to complete this calculation. The federal facilities are to provide to DEQ land uses in classifications consistent with the Chesapeake Bay Program land use classifications. Each of these classifications are documented and defined in the Source Data spreadsheet which can be found on the [Documentation page of BayFAST.org](http://Documentation%20page%20of%20BayFAST.org). Land uses classes may be provided for each classification or grouped to include at a minimum: agriculture, pervious urban, impervious urban, and natural (forest, unfertilized grass, wetlands, water).

Federal facilities are expected to comply with permits that cover the facility or a portion of the facility and to act consistently with relevant local TMDLs and the Bay TMDL. Where there are also local TMDLs for nitrogen, phosphorus and sediment, the more stringent of the TMDLs will apply. To ensure consistency of these federal targets with MS4 permit requirements, Federal facilities in Virginia that have MS4 permits should provide the load calculations, including the land use acres, for their permitted area based on the MS4 guidance. The 5% reduction loads for the first permit cycle will be used instead of the above 2017 target calculation approach for the regulated area. The 100% MS4 reduction load (twenty times the 5% reduction load) will be substituted for the 2025 target calculation approach for the regulated area.

**Data required:**

- Loads for Virginia's 2025 Watershed Implementation Plan scenario that includes loads by major land use and state-major basin (CBPO/Virginia - Completed)
- Loads for a scenario with no BMPs using 2010 land use, septs, and animal populations by major land use and state-major basin (CBPO/Virginia - Completed)
- Calculated differences between the WIP 2025 and 2010 No Action scenarios by major land use and state-major basin (Virginia - Completed)
- Acres of each land use on each federal facility (Federal Facilities/Agencies)
- Acres of each land use and calculated 5% first permit cycle reduction on each federal facility MS4 area (Federal Facilities with MS4 permits)

## West Virginia

The Department of Environmental Protection (DEP) has established permits that overlap some of the federal facilities. DEP has indicated that those facilities with the greatest urban load are already under permits that require reductions consistent with the Bay TMDL. Where permits do not include numeric reductions, numeric targets can be provided using the WIP, as described in the EPA default method. If WV chooses not to develop targets, EPA will develop targets and provide them to federal facilities in WV using the EPA default method. EPA is still having discussions with WVDEP on this issue.

## Delaware

Not applicable: no federal lands identified.