

Metropolitan Washington Airports Authority

Chesapeake Bay Total Maximum Daily Loads Action Plan

Small Municipal Separate Storm Sewer Systems General Permit
Dulles Toll Road
Permit Number VAR040120
Final - December 1, 2015

In accordance with the Small Municipal Separate Storm Sewer Systems (MS4) General Permit requirements, the Metropolitan Washington Airports Authority (Airports Authority) Dulles Toll Road (DTR) is required to develop and implement an Action Plan to comply with the Chesapeake Bay Total Maximum Daily Load (TMDL). As a special condition in the MS4 General Permit, the Commonwealth of Virginia in its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans committed to a phased approach for MS4s, allowing MS4 operators up to three full five-year permit cycles to implement the necessary reductions. As part of the Chesapeake Bay TMDL, there are three pollutants of concern (POC): total nitrogen, total phosphorus, and total suspended solids.

1. Current Program and Existing Legal Authority

The Airports Authority will utilize its Virginia Stormwater Management Program (VSMP) authority to ensure compliance with this special condition.

2. New or Modified Legal Authority

The Airports Authority does not foresee any development of new or modified legal authorities to comply with the Chesapeake Bay TMDL.

3. Means and Methods to Address Discharges from New Sources

The Airports Authority will adhere to the VSMP regulations for the implementation of post-development stormwater management facilities.

4. Estimated Existing Source Loads and Calculated Total POC Required Reductions

The Airports Authority calculated the total acres based on the total acreage of the DTR and Dulles Access Highway (DAAH) that is owned and operated by the Airports Authority. The average width of paved road and the number of miles of roadway for the DTR and DAAH were used to calculate the amount of impervious area. The Airports Authority calculated the estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The Airports Authority utilized the applicable table, see below (Table 1), from the MS4 General Permit based on the Potomac River Basin by multiplying the total existing acres served by the MS4 on June 30, 2009, and the 2009 Edge of Stream (EOS) loading rate:

Table 1				
Calculation Sheet for Estimating Existing Source Loads for the Potomac River Basin				
Sub-source	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/acre)	Estimated Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	286.9	16.86	4,837.13
Regulated Urban Pervious		389.1	10.07	3,918.24
Regulated Urban Impervious	Phosphorus	286.9	1.62	464.78
Regulated Urban Pervious		389.1	0.41	159.53
Regulated Urban Impervious	Total Suspended Solids	286.9	1,171.32	336,051.71
Regulated Urban Pervious		389.1	175.8	68,403.78

The table below (Table 2) from the MS4 General Permit was used to determine the total pollutant loading necessary to reduce the POC loads from existing sources.

Table 2				
Calculation Sheet for Determining Total POC Reduction Required During this Permit Cycle for the Potomac River Basin				
Sub-source	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/acre)	Total Reduction Required First Permit Cycle (lbs)
Regulated Urban Impervious	Nitrogen	286.9	0.07587	21.77
Regulated Urban Pervious		389.1	0.03021	11.75
Regulated Urban Impervious	Phosphorus	286.9	0.01296	3.72
Regulated Urban Pervious		389.1	0.00148625	0.58
Regulated Urban Impervious	Total Suspended Solids	286.9	11.7132	3,360.52
Regulated Urban Pervious		389.1	0.769125	299.27

5. Means and Methods to Meet the Required Reductions and Schedule

The Airports Authority will implement the following to achieve the 5.0% reductions required for existing development.

Stormwater Management Ponds

The primary method to achieve reductions of the POC used by the Airports Authority will be through the use of stormwater management ponds constructed as part of the Dulles Corridor Metrorail Project. As part of Phase I of the project, eight ponds were constructed and turned over to the Airports Authority in August 2014. Seven of these stormwater management ponds were designed to treat drainage from the DTR, DAAH, and the Metrorail. Each pond was oversized for the proposed future expansion of the DAAH.

To achieve the 5.0% reductions of the POC required under the first permit cycle, the treatment capacity of each pond allocated to treat drainage from the current configuration of the DTR and DAAH will be used, along with the use of the established efficiencies of Chesapeake Bay Program BMPs provided in the Chesapeake Bay TMDL Special Condition Guidance. Table 3 contains the drainage areas of the DTR and DAAH contributing runoff to each Phase 1 stormwater management and the estimated reduction in POCs attributable to the DTR and DAAH for each pond.

Table 3					
Estimated Pollutant Reductions for POC per Stormwater Management Facility					
Stormwater Management Facility	Type	Acres of DTR and DAAH Treated Pervious/Impervious	Reduction Total Nitrogen (lbs)	Reduction Total Phosphorus (lbs)	Reduction Total Suspended Solids (lbs)
Pond #1	Extended Detention Dry Pond with Sediment Forebay	0.48/2.15	8.21	0.74	1561.63
Pond #2	Extended Detention Dry Pond with Sediment Forebay	0/0.96	3.24	0.31	674.68
Pond #3	Extended Detention Dry Pond with Sediment Forebay	0.32/1.64	6.17	0.56	1186.33
Pond #4	Extended Detention Dry Pond with Sediment Forebay	0.45/1.60	6.30	0.56	1171.93
Pond #5	Extended Detention Dry Pond with Sediment Forebay	0.78/0.36	2.79	0.18	335.98
Pond #10	Extended Detention Dry Pond with Sediment Forebay	0.96/0.60	3.96	0.27	522.94
Pond #11	Extended Detention Dry Pond with Sediment Forebay	0/1.96	6.61	0.64	1377.47
Total POC Reductions			37.28	3.26	6830.96

Fifteen stormwater management ponds are to be constructed during Phase II of the Dulles Corridor Metrorail Project. Even though Phase II of the Dulles Corridor Metrorail Project was grandfathered under the VSMP technical criteria found in Part II C, the fifteen stormwater management ponds are being designed in accordance with the VSMP technical criteria found in Part IIB and will meet the Chesapeake Bay TMDL requirements.

Street Sweeping

The Airports Authority has a contract to provide street sweeping of the DTR at a frequency of three (3) times a year. The contractor collects an average of ten tons of material per year. The table (Table 4) below shows the estimated reduction for each POC from street sweeping per year based on the mass loading approach provided in the Chesapeake Bay TMDL Special Condition Guidance:

Table 4			
Estimated Pollutant Reductions for POC by Street Sweeping			
Dry Weight of Material Collected	Reduction Total Nitrogen (lbs)	Reduction Total Phosphorus (lbs)	Reduction Total Suspended Solids (lbs)
14,000 lbs.	35.0	14.0	4,200.0

6. Means and Methods to Offset Increased Loads from New Sources Initiating Construction between July 1, 2009 and June 30, 2014

The major construction project occurring on the DTR between July 1, 2009 and June 30, 2014 was Phase I of the Dulles Corridor Metrorail Project. Stormwater management ponds were installed to offset the increase of impervious area due to the proposed Metrorail and the future DAAH third lane, which was not constructed as part of this project, in accordance with the VSMP requirement. In addition, the increase in impervious area for each segment could have been met by a vegetated filter strip or a grassed swale to comply with VSMP requirements; however, extended detention ponds were installed, which provide additional removal efficiency. Thus, no additional reductions are necessary for this project.

7. Means and Methods to Offset Increased Loads from Grandfathered Projects that begin Construction after July 1, 2014

There are no projects grandfathered in accordance with 9VAC25-870-48 associated with the DTR.

8. A List of Future Projects, and Associated Acreage that Qualify as Grandfathered

There are no projects grandfathered in accordance with 9VAC25-870-48 associated with the DTR.

9. An Estimate of the Expected Cost to Implement the Necessary Reductions

The cost of construction of the new stormwater management facilities is included in the cost for the Dulles Corridor Metrorail Project. The Airports Authority spends approximately \$37,000 per year for street sweeping.

10. Public Comments on Draft Action Plan

The Airports Authority will post a copy of the Action Plan on the DTR Stormwater Management web page. The Airports Authority will address any comments received.