

**Virginia Stormwater
Management Program (VSMP)
Permit No. VA0088579**

Arlington County Chesapeake Bay TMDL Action Plan



2013 – 2018 Permit Cycle
Approved September 1, 2015
Technical revisions September 3, 2015

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1 Overview

2 This Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan is developed to meet the
3 requirements of by Part I.D of Arlington County’s Municipal Separate Storm Sewer System
4 (MS4) Permit, VA0088579, issued June 26, 2013. The permit requires this Action Plan to
5 document a minimum 5.0% reduction during this 5-year permit cycle of the total Bay TMDL
6 pollutant of concern (POC) reductions required for Arlington County’s MS4 service area.

7
8 The numbered sections in this Action Plan correspond with the numbered sections in Part VI of
9 the DEQ Chesapeake Bay TMDL Special Condition Guidance document, items 1 through 10,
10 issued by the Virginia Department of Environmental Quality (DEQ) and relied upon by Arlington
11 in developing this plan. Letters in parentheses track Arlington’s MS4 permit, Section I.D.1.b.1,
12 items a through l.

13
14 **1. Current Program and Existing Legal Authority (a)**

15 Arlington has reviewed its current MS4 Program Plan and has determined that the authority
16 as stated in the current MS4 Program Plan is sufficient for compliance with this special
17 condition. Please refer to the MS4 Program Plan at Section A.2, pp. 4-6, for a list of relevant
18 existing legal authority.

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21 **2. New or Modified Legal Authority (b)**

22 As described in item 1 above, existing authority is sufficient for compliance with this special
23 condition. Therefore, no new or modified legal authority beyond that described in the MS4
24 Program Plan at Section A.2, pp. 4-6, is considered necessary to meet the requirements of
25 this special condition.

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28 **3. Means and Methods to Address Discharges from New Sources (c) and 6. Means and
29 methods to offset increased loads from new sources initiating construction between
30 July 1, 2009 and June 30, 2014 (g)**

31 This section describes Arlington’s comprehensive and conservative accounting methodology
32 addressing all regulated development activity within Arlington’s MS4 Service Area in
33 accordance with DEQ’s VSMP Regulations and Arlington’s Stormwater Management
34 Ordinance. Most development activity in Arlington is redevelopment with less than one (1)
35 acre of land disturbance. Arlington is applying TMDL POC load reduction credit for all
36 redevelopment activity that disturbs at least 2,500 square feet of land (the regulatory
37 threshold set for Chesapeake Bay Preservation Act localities). For full accounting for
38 pollutant load changes associated with all regulated development activity within Arlington’s
39 MS4 Service Area, whether new development or redevelopment and whether land
40 disturbance exceeded the one (1) acre threshold or not, the County applied the accounting
41 methodology described below under 3.A. This methodology is more conservative than

42 required by the County's MS4 permit because it includes new development with less than
43 one (1) acre of land disturbance—which is below the regulatory threshold.

44
45 Applying this accounting methodology as shown in Table 1. below, the projects subject to
46 "new source" requirements and potential offsetting generated a net POC reduction for this
47 time period. Therefore, no offsets are required to achieve compliance with this condition.

48 **A. July 1, 2009, to June 30, 2014:**

49 For all regulated development and redevelopment activity within Arlington County
50 ($\geq 2,500$ square feet of land disturbance) and not located on a Permitted facility or on
51 State/Federal Property¹:

- 52 • Sum pre-development impervious and pervious area and compute TP, TN, and
53 TSS loading rates using MS4 permit loading table.
- 54 • Sum post-development impervious and pervious area and compute TP, TN, and
55 TSS loading rates using MS4 permit loading table.
- 56 • Compute TP, TN, and TSS load change (increase or decrease) associated with
57 land use change.
- 58 • For BMPs² associated with regulated development activity:
 - 59 ○ Compute TP, TN, and TSS loads to each BMP using MS4 permit loading
60 table.
 - 61 ○ Determine whether BMP is RR or ST system.
 - 62 ○ For RR systems, determine whether BMP was designed for 0.5" or 1" water
63 quality volume (WQV)
 - 64 ▪ Apply 0.5" or 1" WQV value to RR Retrofit Adjustor Curves to
65 determine TP, TN, and TSS removal efficiencies.
 - 66 ▪ Apply removal efficiencies to loads to BMP
 - 67 ▪ Determine TP, TN, and TSS loads removed by BMP
 - 68 ○ For ST filtering systems (e.g., Stormfilter, etc.), which are designed using a
69 flow rate rather than a WQV design value, a 0.5" runoff depth treated was
70 used with the ST Retrofit Adjustor Curves to determine TP, TN, and TSS
71 removal efficiencies.
 - 72 ▪ The 0.5" runoff depth treated is the WQV value used in the past in
73 DEQ regulatory programs, and proprietary filtering systems like the
74 Stormfilter were assigned a TP efficiency of 50% in the previous
75 DEQ 'Blue Book' – equivalent to a bioretention system designed for a
76 0.5" WQV in the Blue Book.

¹ For purposes of this accounting element, load increase for regulated activities not located on a Permitted facility or on State/Federal Property have been assumed by Arlington County whether or not in the County's MS4 service area, along with the corresponding credit for BMP load removal.

² In its policies, specifications, reports, and plans, the County uses the term 'stormwater management facility' (SWMF) to describe engineered systems that provide stormwater pollutant removal, rather than the term 'Best Management Practice' or 'BMP.' However, in this document, the term 'BMP' is used for consistency with the terminology in the DEQ Chesapeake Bay TMDL Action Plan guidance document.

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- This results in a slightly conservative efficiency for these systems (41% TP vs 45%-50% TP in BMP Clearinghouse and 50% TP in previous DEQ 'Blue Book').
- For ST hydrodynamic systems, a 0.5" runoff depth treated value is not appropriate (removal efficiencies too high).
 - Instead, a runoff depth treated value was determined that, when used with the TP curve, produced the 20% TP removal efficiency for the hydrodynamic systems published in the BMP Clearinghouse and DEQ 'Blue Book'.
 - This depth was then used with the TN and TSS ST Retrofit Adjustor Curves to determine the TN (13%) and TSS (26%) removal efficiencies.

Compute net TP, TN, and TSS load change (increase or decrease) by comparing total BMP loads removed with total load change associated with regulated development	Pollutant	Existing Development Conditions for Projects from 7/1/2009 to 6/30/2014 Acres	2009 EOS Loading Rate (lbs/ac)	Load	Post Development Conditions for Projects from 7/1/2009 to 6/30/2014 Acres	2009 EOS Loading Rate (lbs/ac)	Load	Load Increase	Total Load Increase	Reduction from BMPs drain to MS4	Reduction from BMPs that do not Drain to MS4	Difference
Regulated Urban Impervious	Nitrogen	124.30	16.86	2095.72	147.56	16.86	2487.90	392.18	157.94	273.26	6.77	-122.08
Regulated Urban Pervious		184.61	10.07	1859.01	161.35	10.07	1624.77	-234.24				
Regulated Urban Impervious	Phosphorus	124.30	1.62	201.37	147.56	1.62	239.05	37.68	28.15	33.34	0.67	-5.87
Regulated Urban Pervious		184.61	0.41	75.69	161.35	0.41	66.15	-9.54				
Regulated Urban Impervious	Total Suspended Solids	124.30	1171.32	145596.38	147.56	1171.32	172842.45	27246.07	23156.79	27991.6	502.78	-5337.59
Regulated Urban Pervious		184.61	175.80	32454.24	161.35	175.80	28364.96	-4089.28				

90 Table 1. Load Changes from Sources initiating Construction between July 1, 2009, and June 30,
91 2014 with Load Reductions for BMPs

92
93 Table 1. includes projects where construction was completed between July 1, 2009 and June
94 30, 2014. Projects that started construction, but were not completed before June 30, 2014,
95 will be computed using the same methodology described here and accounted for in the post
96 June 30, 2014 accounting.

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98 See Appendix B for computations for BMP loads removed.

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B. Post June 30, 2014:

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For all development activity regulated under the new VSMP regulations and local ordinance³ constructed after June 30, 2014, the methodology described in 3.A⁴ above will be used with the following modifications:

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Please note that, because FY 2015 is not yet completed, the 'Post June 30 2014 data' will be reported starting with the FY 2015 annual report.

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Linear development projects conducted by the County will be administered and tracked as follows consistent with 9VAC25-870-69.A.4, 9VAC25-870-76, and 9VAC25-870-92 upon approval of this Plan:

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- Pollutant load changes will be computed as described in 3.A.

³ Development activity regulated under the previous local ordinance but completed after July 1, 2014, will be accounted for as described in 3.A.

⁴ Note that the Runoff Reduction Method loading rates differ from the permit loading rates and therefore the methodology in 3.A will be used for consistency with the permit.

⁵ Note that this is conservative because the depth treated includes pervious and impervious drainage area. Actual runoff depth treated for only impervious area treated will be higher when the drainage area also includes pervious lands.

- Retrofit opportunities will be evaluated for each project, using the screening and selection criteria applied and described in the adopted Stormwater Master Plan.
- Retrofit projects that meet the screening criteria and are determined by Arlington to be feasible and cost-effective will be implemented with specific linear development projects. Pollutant load reductions from retrofit projects will be computed as described in Section 5.
- In cases where retrofit projects are not feasible and cost-effective for a particular linear project, any POC load increases that might occur for that project will be addressed by larger overall POC load reductions in place or added through TMDL action plan implementation.

In the above manner Arlington, as the MS4 operator and the construction site operator for its linear development projects, will implement linear projects and retrofit projects in a manner that achieves the most TMDL POC reduction for the least cost, while fully accounting for load changes that occur with linear development project activity consistent with the DEQ Chesapeake Bay TMDL Special Condition Guidance.⁶

4. Estimate Existing Sources Loads and Calculated Total Pollutant of Concern (POC) Required Reductions for the Potomac River Basin (d) and (e)

Existing sources for Arlington County have been determined using Planimetric data developed from Ortho-rectified Aerial Photography taken in 2009. Polygons for impervious surfaces include the following:

1. Structures – excludes most outbuilding less than 100 square feet
2. Bridges – roadway and pedestrian
3. Airport runways
4. Alleys
5. Driveways
6. Parking lots
7. Paved Medians
8. Roadways
9. Sidewalks – including handicap ramps, and bike/pedestrian trails (excludes most lead walks and patios in residential areas. See additional information below.)
10. Hard surface sports courts including but not limited to: tennis, handball and basketball

To determine the amount of impervious area associated with lead walks and patios in single family residential areas three sample sites were selected. Lead walks and patios were digitized from photograph in each sample site. The percent impervious increase in these

⁶ Note that in some cases impervious cover (and loads) increase and in some cases these variables decrease. All load changes from linear development projects (increases and decreases) will be accounted for in the County's Bay TMDL tracking and reporting.

169 area ranged from 1.53% to 1.89%. Single family residential areas were determined using
 170 zoning classifications. The following zoning classification were considered residential for this
 171 analysis; R2-7, R-5, R-6, R-8, R-10T, R-10, and R-20. To account for the impervious area
 172 associated with lead walks and patios in residential areas 2% was added to the impervious
 173 surface in areas with single family zoning classifications.

174
 175 The estimated 2009 impervious area in Arlington County was then computed. See Appendix
 176 A for the detailed explanation of the MS4 Service Area delineation methodology, which,
 177 combined with the 2009 impervious area computation, produced the 'Regulated Urban
 178 Impervious' and 'Regulated Urban Pervious' acres served by the MS4 shown in Table 2
 179 (corresponds with Table 1 in Section I.D.1 of the permit).

180
 181 The GIS methodology described above was also used to compute impervious areas in
 182 drainage area computations associated with watershed retrofit and stream restoration
 183 projects.

184
 185 Table 3 provides the total 5% POC reduction required during the permit cycle using the
 186 'corrected' DEQ load reduction rates from DEQ's final Action Plan guidance document. As
 187 compared with the load reduction rates in Table 2 in Section I.D.1 of the permit, the
 188 corrected rates result in slightly lower reduction requirements for TN (-3.4%) and very
 189 slightly higher reduction requirements for TSS (0.02%) but significantly higher reduction
 190 requirements for TP (31.6%).

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<u>Source</u>	<u>Pollutant</u>	<u>Total Existing Acres Served by MS4 (6/30/09)</u>	<u>2009 EOS Loading Rate (lbs/ac)</u>	<u>Estimated Total POC Load Based on 2009 Progress Run</u>
Regulated Urban Impervious	Nitrogen	5,201.34	16.86	87,694.51
Regulated Urban Pervious		6,078.05	10.07	61,205.98
Regulated Urban Impervious	Phosphorus	5,201.34	1.62	8,426.16
Regulated Urban Pervious		6,078.05	0.41	2,492.00
Regulated Urban Impervious	Total Suspended Solids	5,201.34	1,171.32	6,092,427.71
Regulated Urban Pervious		6,078.05	175.8	1,068,521.54

192 Table 2. Estimated Existing Source Loads
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<u>Subsource</u>	<u>Pollutant</u>	<u>Total Existing Acres Served by MS4 (6/30/09)</u>	<u>First Permit Cycle Requiring Reduction in Loading Rate (lbs/ac)</u>	<u>Estimated Total POC Load Based on 2009 Progress Run</u>	<u>Total Reduction Required During First Permit Cycle (lbs)</u>
Regulated Urban Impervious	Nitrogen	5,201.34	0.07587	394.63	578.24
Regulated Urban Pervious		6,078.05	0.03021	183.62	
Regulated Urban Impervious	Phosphorus	5,201.34	0.01296	67.41	76.44
Regulated Urban Pervious		6,078.05	0.00148625	9.03	
Regulated Urban Impervious	Total Suspended Solids	5,201.34	11.7132	60924.28	65599.06
Regulated Urban Pervious		6,078.05	0.769125	4674.78	

196 Table 3. Total 5% POC Reduction Required During Permit Cycle

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198 Table 3.A computes the total POC reductions for the end of the next permit cycle (40%
 199 cumulative requirement), based on the "seven times" the current permit cycle reductions for
 200 the draft 2nd phase TMDL Action Plan required by Section I.D.1.d.5.b of the permit. Table
 201 3.A also computes, for planning purposes for the 3rd permit cycle, 100% of the POC
 202 reductions based on Virginia's adopted three permit cycle phased approach described in
 203 Appendix I of the Chesapeake Bay TMDL Special Condition Guidance, which states: "*The*
 204 *Commonwealth in its Phase I and Phase II Chesapeake Bay TMDL Watershed*
 205 *Implementation Plans (WIP) committed to a phased approach for MS4s, affording MS4*
 206 *operators up to three full five-year permit cycles to implement necessary reductions.*"

	TN	TP	TSS
40% cumulative POC reduction	4625.9	611.5	524792.5
100% cumulative POC reduction	11564.9	1528.9	1311981.2

207 Table 3.A. Cumulative 40% and 100% POC Reductions.

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5. Means and Methods to Meet the Required Reductions and Schedule (f)

The County has an existing and comprehensive water quality improvement program. The means and methods implemented to date include watershed retrofit projects, stream restoration projects, redevelopment-based reductions, and 2006-2009 'historical BMPs.' The means and methods expected to be implemented moving forward include additional watershed retrofit projects, stream restoration projects, and redevelopment-based reductions, along with street sweeping program credits (anticipated when the expert panel completes its work).⁷

Table 4 provides a summary of the in-place reductions for each type/category of practice for this permit cycle through FY 2014⁸. At this time, the 5% POC reduction requirement for this permit cycle has been met for TP and TSS and nearly met for TN, with additional credits from reductions in FY 2015 expected to push TN progress past the 5% requirement. Reduction progress beyond the 5% requirement is shown in Table 4 as creditable to the next permit cycle additional 35% POC reductions. These additional reductions will be included in the draft 2nd phase TMDL Action Plan required by permit section I.D.1.d.5.b.

	In place			
Project Type	TN	TP	TSS	ACTUAL COST
Watershed retrofits	56.7	6.5	5291.3	\$ 892,112
Stream restoration	227.6	226.2	148046.2	\$ 2,066,343
Redevelopment Jul 09 - June 14	122.1	5.9	5337.6	\$ -
2006-2009 'Historical BMPs'	140.3	18.4	16101.3	\$ -
Street sweeping	0.0	0.0	0.0	\$ -
SUBTOTAL	546.7	257.0	174776.3	\$2,958,456
Percent of first permit cycle POC load reduction	94.5%	336.2%	266.4%	
Credit toward first permit cycle POC load reduction	546.7	76.4	65599.1	
Credit toward second permit cycle POC load reduction	0.0	180.5	109177.3	
GRAND TOTAL	546.7	257.0	174776.3	\$2,958,456
Percent of estimated total POC load reduction	4.7%	16.8%	13.3%	

Table 4. In-Place POC Reductions by Practice Type/Category

⁷ Though in practice Arlington is not likely to utilize trading as a means or method of compliance during this permit cycle, this plan includes the option to transfer and apply credits from the County's wastewater treatment facility for any applicable POC.

⁸ Because the Action Plan document drafting process began in early FY 2015, data through FY 2014 is included in this document. Progress updates will be included in each annual report.

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Table 5 provides a summary of the reductions for each type/category of practice for projects scheduled for completion during the remainder of this permit cycle. The actual combination, timing and extent of project type/category of practices may vary in the County’s discretion from Table 5 and the supporting summaries below. Updates will be provided in each annual report as well as with the draft 2nd phase TMDL Action Plan. As shown in Table 5, POC reductions from these projects will be applied to the additional 35% POC reduction progress requirement for the next permit cycle (40% cumulative reduction).

	Scheduled			
Project Type	TN	TP	TSS	EST. COST
Watershed retrofits	1296.4	147.6	120178.0	\$ 5,563,551
Stream restoration	119.9	124.6	81147.9	\$ 1,787,737
Redevelopment Jul 14 - June 18	97.7	4.7	4270.1	\$ -
Street sweeping	0.0	0.0	0.0	\$ -
SUBTOTAL	1514.0	276.9	205595.9	\$ 7,351,288
In-place credits through Jul 14	546.70	256.97	174776.35	\$ 2,958,456
TOTAL CREDITS	2060.7	533.9	380372.3	\$ 10,309,744
Percent of estimated total POC load reduction	17.8%	34.9%	29.0%	

Table 5. Scheduled POC Reductions by Practice Type/Category

Project summaries are provided below.

The ‘Scheduled’ reductions shown for the redevelopment category are placeholders based on pro-rated estimates for the four year FY15 through FY18 period (through year 5 of the permit cycle) using the same reduction rate achieved in the FY09 through FY14 period. These placeholder values are not guaranteed; actual reductions from FY 2015 and beyond will be reported with the FY 2015 annual report and subsequent reports.

Watershed Retrofits

Appendix C provides the drainage area, pollutant removal, and cost details for each of the watershed retrofit projects summarized in Tables 4 and 5. The County used the ‘retrofit adjustor curve’ method outlined in the Urban Stormwater Retrofits Expert Panel Report and the DEQ TMDL Action Plan guidance methodology to compute pollutant removal efficiencies and POC reductions from each project.

255 These projects consist of three main categories:

256 ➤ *Green streets*

257 A 'green street' includes a vegetated system in the public right-of-way that reduces
258 stormwater volume and pollution. Projects include rain garden/bioretenion, dry swales and
259 stormwater planter systems. For more information see
260 <http://projects.arlingtonva.us/programs/stormwater-management/green-streets/> .

261
262 The County's adopted Stormwater Master Plan includes a list of 159 high priority watershed
263 retrofit projects that consist mostly of green streets projects. See
264 [http://arlingtonva.s3.amazonaws.com/wp-](http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/05/Appendix_C_HPP.pdf)
265 [content/uploads/sites/31/2014/05/Appendix_C_HPP.pdf](http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/05/Appendix_C_HPP.pdf)

266 ➤ *Municipal facilities*

267 Arlington began retrofitting its Trades Center facility in 2011 with two types of proprietary
268 systems – Stormfilters and Ultra-Urban Filters (catch basin insert system).

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270 For the Stormfilter system, the County applied the ST filtering system methodology
271 described in 3.A to compute removal efficiencies for TP, TN, and TSS.

272
273 For the Ultra Urban Filters, which are not in the Clearinghouse but which remove significant
274 amounts of sediment, the County:

- 275 • Applied the lowest TP removal for Bay program BMPs (10%) and computed the runoff
276 depth associated with this removal rate (0.09 inches).
- 277 • Used this depth with the TN and TSS ST Retrofit Adjustor Curves to determine the TN
278 and TSS removal efficiencies—7% and 13%, respectively.

279 ➤ *Larger-scale facilities*

280 These opportunities are limited in a dense urban area like Arlington. However, one large-
281 scale retrofit will be implemented during this permit cycle with the Ballston Pond constructed
282 wetland project. The County used the ST retrofit adjustor curves, along with the storage
283 volume of the pond (per the Urban Retrofit Expert Panel report), to compute the 'inches
284 treated' and pollutant removal efficiencies. The POC loads to the BMP and load reductions
285 were then determined, in accordance with the DEQ Chesapeake Bay TMDL Special Condition
286 Guidance. See Appendix D for computations.

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290 Stream Restoration Projects

291 See Appendix D for detailed computations using the DEQ Chesapeake Bay TMDL Special
292 Condition Guidance methodology and Appendix E for basin maps for each project. For the
293 four projects below, the County applied the 'interim revised' POC reduction credits because
294 the stream assessment and design process pre-dates the Chesapeake Bay Expert Panel
295 methods. The first two projects are currently scheduled for completion during the permit
296 cycle (the estimated POC reduction credits are included in Table 5). The second two
297 projects are 'historical' projects in-place and completed in 2006-2007 (included in Table 4).
298 Appendix F includes summary photos documenting existing degraded conditions and, for the
299 completed projects, post-construction conditions.

300 ➤ *Windy Run*

301 This stream restoration project is 525 linear feet and will help address severe stream erosion
302 threatening trees and sanitary sewer infrastructure along the stream as well as causing trail
303 and slope damage. "Natural channel design" principles will be used to create a new stream
304 channel in balance with the runoff it receives from the watershed. The stream will be
305 reconnected with a floodplain area. During higher flows, the stream can flow onto the
306 floodplain and the water will slow down and reduce its energy. In addition, step pool
307 structures will be added with rocks to help reduce the energy of the flow. Extensive native
308 vegetation plantings and invasive plant control will also be project elements. Several eroding
309 and damaged stormwater outfalls will also be repaired, and an exposed/elevated sanitary
310 sewer line will be re-routed to cross the stream under the new channel invert. For more
311 information see: <http://projects.arlingtonva.us/projects/windy-run-stream-restoration/>

312 ➤ *Donaldson Run Tributary B*

313 The stream restoration project is 1,355 linear feet and will also be restored using natural
314 channel design principles to address severe erosion from stormwater runoff. Floodplain
315 reconnection, step pool grade controls, native plantings and invasive plant controls, and
316 stormwater outfall repairs are key project elements. For more information see:
317 <http://projects.arlingtonva.us/projects/donaldson-run-stream-restoration-tributary-b/>

320 ➤ *Donaldson Run Tributary A*

321 This stream restoration project is a 'historical' project completed in 2006 with repair work
322 from a 100-year storm completed in 2007. The project consists of 2,890 linear feet restored
323 using natural channel design principles to address severe erosion from stormwater runoff.
324 Floodplain reconnection, step pool grade controls, native plantings and invasive plant
325 controls, and stormwater outfall and sanitary sewer repair and protection were all key
326 project elements.

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328 ➤ *Donaldson Run Headwaters*

329 This stream restoration project is a 'historical' project completed in 2007 and consists of 480
330 linear feet restored using natural channel design principles to address severe erosion from
331 stormwater runoff. Floodplain reconnection, step pool grade controls, native plantings and
332 invasive plant controls, and sanitary sewer repair and protection were all key project
333 elements.

334 ➤ *'Historical BMPs' from 2006 to 2009*

335 The County selected public and private stormwater quality management facilities
336 constructed between 1/1/2006 and 6/30/2009 with recorded maintenance agreements and
337 ongoing maintenance tracking. The methodology in 3.A above was then used to determine
338 the load reductions from these facilities, with the exception that the load changes from land
339 uses changes associated with these BMPs were not accounted for because these land use
340 conditions and loads are already reflected in the 2009 land use baseline.
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343 See Appendix B for summary information for computations for loads removed for 'Historical
344 BMPs.'

345
346 Potential Reductions

347 The following projects are included in this Plan as 'potential' reductions as explained in each
348 description below. Implementation and use of any particular project for compliance with the
349 POC reduction progress requirement applicable for this permit cycle or future cycles will be
350 determined subsequently. In that case, the project and additional analysis and
351 computations that are performed will be documented in future annual reports.

352 ➤ *Four Mile Run Tidal Restoration Project*

353 This project consists of rip-rap and invasive plant removal, living shoreline creation, and
354 streambank bioengineering along 4,200 linear feet of the tidal portion of the Four Mile Run
355 flood control project.

356 There will be nine living shoreline features created totaling approximately 1,428 linear feet
357 and 0.57 acres of planted tidal wetland. Based on the current draft Shoreline Management
358 expert panel methodology, Protocols 2, 3, and 4 appear to be applicable and could provide
359 the following approximate POC reduction credits: TN = 50 lbs.; TP = 3 lbs.; TSS = 4,000 lbs.

360 For more information see: <http://projects.arlingtonva.us/projects/four-mile-run-stream-restoration/>.

361
362 ➤ *Sparrow Pond BMP restoration*

363 This constructed wetland was completed in 2002, and receives runoff from approximately 80
364 acres of land. Significant erosion is occurring along the privately-owned stream channel that
365 flows into the wetland, resulting in a large amount of sediment deposition in the facility.

366 This project appears to be a candidate for incremental BMP restoration credit per the Expert
367 Panel Urban Stormwater Retrofits report and DEQ guidance.

368
369 An existing conditions survey is planned to document and compare the facility's current
370 volume to the design volume and then to compute the incremental POC reduction credits
371 that could result from restoring the design volume (and maintaining it over time). Planning-
372 level estimates indicate these credits could be significant: TN = 100 lbs.; TP = 10 lbs; TSS =
373 10,000 lbs.

374
375 **6. Means and Methods to Offset the Increase load from New Sources initiating**
376 **Construction between July 1, 2009 and June 30, 2014 (g)**

377 Accounted for with Item 3 above. Net POC reduction occurred during this time period from
378 all regulated land disturbing activity. No offsets required for TMDL accounting purposes.

379 **7. Means and Methods to be Utilized to Offset the Increase Load from Grandfathered**
380 **/Projects that Begin Construction after July 1, 2014 (h)**

381 Per the DEQ Chesapeake Bay TMDL Special Condition Guidance, this requirement pertains to
382 grandfathered projects that disturb one acre or greater that began construction after July 1,
383 2014, where the project utilizes an average land cover condition greater than 16%
384 impervious cover in the design of post-development stormwater management facilities.

385
386 All grandfathered projects will be required to meet the County's Chesapeake Bay
387 Preservation Ordinance requirements in effect prior to July 1, 2014. This ordinance used a
388 16% average land cover condition, although a partial fee-in-lieu program existed prior to
389 2011. However, load changes (increases or decreases) associated with grandfathered
390 projects will be computed using the same methodology described under Item 3 and
391 therefore accounted for completely.

392
393 It is expected that any offset loads that may be computed for specific grandfathered
394 projects will be significantly less than the POC reductions that will result from redevelopment
395 projects during the permit cycle (as occurred in the 2009-2014 accounting period).
396 Therefore, no separate grandfathered project offsetting will likely be required. This will be
397 documented in the accounting described in Item 3.

399 **8. A list of future projects, and associated acreage that qualify as grandfathered (i)**

400 The new development projects on record that qualify as grandfathered are listed below. As
401 noted in Item 7, load changes will be computed as described under Item 3.

Name	Address	Site Plan	Site Area (Acres)
Potomac Yard - Land Bay C	Jefferson Davis Hwy	346	4.36
Potomac Yard - Land Bay D-West	Jefferson Davis Hwy	346	1.44

402 **9. An estimate of the expected cost to implement the necessary reductions (j)**

403 See Tables 4 and 5 in Item 5 above.
404

405 **10. Public Comments on Draft Action Plan**

406 (b. PHASE I PERMIT REQUIREMENTS) (k) and (l)

407 Arlington County has received public comment on the County's Bay TMDL Action Plan in
408 several ways. The County Board adopted an updated Stormwater Master Plan in September
409 2014 through a comprehensive civic engagement process. The Master Plan outlined and
410 described the County's overall strategy to meet the Chesapeake Bay TMDL requirements,
411 which includes a combination of stream restoration, watershed retrofits, trading, and street
412 sweeping.
413

414 The County conducted an extensive public process for the Stormwater Master Plan, with
415 multiple public meetings, public hearings, newspaper and web advertisements, and press
416 releases. Public comments were received on the plan and revisions to the plan were made
417 to address the comments. [The summary of public comments received on the Stormwater
418 Master Plan is available online.](#)
419

420 In addition, the County made the draft Bay TMDL Action Plan available for comment on the
421 web during May 2015 and advertised the plan through a public announcement in a local
422 newspaper. The County also publicized the plan via announcements on the web and
423 distribution through email listservs to residents, and presented an overview of the plan to
424 the County's Environment and Energy Conservation Commission at a public meeting. The
425 summary of comments received and the County's response (including any changes to the
426 action plan document) is included as Appendix G.
427

432 Appendices

- 433 **A. ARLINGTON COUNTY MS4 SERVICE AREA DELINEATION**
- 434 **B. 2009-2014 BMP ACCOUNTING AND 2006-2009 HISTORICAL BMP ACCOUNTING**
- 435 **C. WATERSHED RETROFIT COMPUTATIONS**
- 436 **D. STREAM RESTORATION AND LARGE SCALE PROJECTS COMPUTATIONS**
- 437 **E. STREAM RESTORATION AND LARGE SCALE PROJECTS BASIN MAPS**
- 438 **F. STREAM RESTORATION PROJECTS DOCUMENTATION**
- 439 **G. SUMMARY OF PUBLIC COMMENT/RESPONSE**

440

441