James River and Tributaries
Bacteria TMDL Redevelopment Study
Technical Advisory Committee Meeting

Region 2000 Local Government Council
828 Main Street, 12th Floor
Lynchburg, VA

Tuesday, October 25, 2016
10:00 a.m. – 12:00 p.m.

Attending:
A full list of meeting attendees is provided as Attachment 1.

Meeting Summary

1. Introductions
   Kelly Hitchcock welcomed members of the TMDL TAC and proceeded with attendee introductions. A full list of attendees is provided as Attachment 1.

2. Meeting Purpose
   Craig Lott, DEQ, provided a brief project background. Lott noted that important project work had taken place over the last two years since the January 23, 2014 first TAC meeting. Lott pointed out that activities included the March 4, 2014 Public Meeting and that the remaining time period had been devoted to an extensive evaluation of source load estimates to ensure that the model would best reflect sources in the watershed. This included some detailed evaluation scenarios from the City and re-evaluation of source loads from wildlife, farming, and residential. Lott noted that source number evaluation, which in most cases resulted in reduction of original numbers, was done in coordination with local agencies/stakeholders including Department Health and Extension Staff.

   Lott noted that the pending Public Meeting would provide an opportunity for all stakeholders to comment on the Draft document and that Jim Kern would provide a summary of the pending Public Meeting, proposed presentation and then respond to comments on the Draft TMDL Document provided to the TAC prior to the meeting.

3. Draft TMDL Redevelopment Study Presentation
   Jim Kern, MapTech Inc., provided a summary of the proposed TDML Public Meeting presentation. The following captures the primary questions/comments provided by the TAC during the presentation review. A copy of the Draft Presentation is Attachment B.

   - Kern noted that time was spent responding to source number questions from the first meeting including – incorporation of direct comments, responded to question on bio-solids, numbers of single family home permits verified, an impaired segment of James added, and detailed allocation review that better incorporated CSO/Updated Long Term Control Plan (LTCP) was included.

- Dan French, Amherst County Service Authority asked if single family permits are included as surface water discharge, Kern noted they are reflected in the model.

- It was noted that 7-Hills Butchery was in the Fishing Creek and this should be included in the TMDL.
  Action: Add Seven Hills Permit to Fishing.

- Kern noted the upstream segment was added as it has been added to the 303(d) list as impaired and the opportunity to include was appropriate.

- Pat Calvert, James River Association, asked if Glasgow Town Sewage Treatment Plant discharge at the Maury River was included as it is upstream of the confluence. It was noted that this was not included.

- It was agreed the watershed map should move the key to the side to be more readable and that it would be helpful to public to include some primary roadways or some other features to get a sense of the watershed locations
  Action: Adjust map to be more readable and recognizable

- TAC wanted to know why there are not 100% reductions for straight pipes given they are illegal. This led to a discussion of reasonable assurances and measure of safety in the model to ensure reaching water quality goal. The model incorporates reasonable assurances to reflect that you can't assure 100% compliance.

- It was questioned why Harris Creek was not given pasture reductions but included livestock. Model runs showed that after 80% reduction of straight pipe there was no necessity to reduce pasture land. It was also noted that the SWCD were also contacted and have noted that there is an influx of funding but still need additional funding match to add value to local landowners. Lott pointed out that pasture BMP options can be included within 319 fund use with justification. This will allow for multiple BMP options that reflect watershed farmer practice use. It was noted that these options need to be shared and understood at the SWCD level.

  Discussion noted that generating the best estimates for loads and the impact of using similar approaches on watersheds and getting different results is a recognized and something that is considered during allocation options. Erin Hawkins, Lynchburg, noted the value of tracking implementation to what is actually happening on the ground. Lott noted that "adaptive management" was a term used as it does reflect the education that is taking place in the field.

- Ashley Hall, Stantec, requested that in the Draft Document that all footnotes be adjusted to accurately reflect MS4 Waste Load Allocations and somehow cite the updated data (2006 imagery) more clearly.
  ACTION: Update document tables to reflect uniform language and incorporate all MS4.

- Amanda Winks, DEQ, questioned what would happen to the Training Center Permit when it closes? There was some discussion of how a similar issue was handled in Northern VA TMDL. It was suggested this load would get put into the future load.

It was questioned how this would be accurately represented due to the aggregated load? Lott noted that DEQ uses aggregation for MS4 WLAs in general with the TMDL program. DEQ does not focus on individual loads but rather percentage of reductions throughout the watershed.

This led to further discussion on how the land use within the MS4 area was determined. Lott noted that the permittee determines their reduction BMP locations within their Action Plans. Hawkins noted that the City has a much better determination of land use than that based on the 2006 imagery (released in 2011). Tim Mitchell, Lynchburg, noted there is a clear explanation within the LTCP and that it opted to remove in the LTCP and in the permit.

Ashley Hall noted that the adjustment in data and the work that the City did to improve the land use information needs to be more clearly articulated throughout the Draft Document.

ACTION: Where ever new data is used, it should be referenced.

- Ashley Hall also requested the purpose of footnote #4.
  The first footnote addresses the LTCP and 93% is not really the performance but is dependent on a specific hydrologic period. It was suggested that a time period be added and suggest alternative language used to link the TMDL to the LTCP.

  Lin Liang, Greeley & Hanson, asked that the paragraph from the June allocation comments be included. Lott noted that the TMDL is not exclusively for permit writers, and DEQ staff decided that referencing the language from the LTCP would be sufficient for DEQ Staff and that it should not overcomplicate the TMDL with LTCP language. DEQ staff wants a clear footnote in the table to explain the connectivity/basis of TMDL modeling is the LTCP modeling outputs, but it should be fine to better reflect the dependence of LTCP modeling to a specific hydrologic time period. Hall reiterated that the paragraph noted by the City should be added. DEQ Staff indicated they do not object strongly to adding the paragraph since TAC stakeholders indicate it will help clarify the relationship between the TMDL and the LTCP. There were no objections, so the paragraph will be added.

  ACTION: Add the June paragraph to text, and propose language for Footnote which references the LTCP, to Table 4.

- Hall also noted that throughout the document and the tables there needed to be uniform use of terms/use of fecal bacteria/E.Coli/bacteria references.

  ACTION: Check and utilize uniform terminology within the document.

- Pat Calvert, JRT, asked if there were any incorporation of concentrations at dams or reflection of loads in the TMDL or LTCP. Lin Ling noted the LTCP uses a two-dimensional model and will meet both sides of the James. It was agreed removal of the dam would make it better but, the CSO is modeled with the dam in place. The TMDL utilizes LTCP modeling so the dam is in the TMDL in place.

  Calvert noted that he thinks the Glasgow dam should also be included. It was questioned if the dam or Glasgow facility is included in the Maury. Jim Kern noted that he can look at making an

additional comment about Glasgow facility.

- When viewing Fishing Creek reductions, the TAC was reminded of the earlier comments that a pipe break in Fishing that had been fixed by the City. Mitchell noted that the City is still trying to find additional sources and undergoing investigations to determine if load is animal or human based.

- It was noticed there is no goal for cattle exclusion in the lower James and believed this is not going to be received well, especially Harris Creek. Calvert noted he applauds 80% straight pipe reductions but, need to see more cattle exclusion in Harris. Lott noted that he had checked with Charlie Lunsford who had previous success working with EPA to help apply for 319 funding to help get cattle out of the creeks even in complicated situations like this. It was agreed that a statement could be added describing the source not previously described in the text, and that that could help cover the opportunity and need to reduce all sources.

  ACTION: Kern will develop a statement before the allocations that notes that other sources could be addressed.

- It was agreed that the document map and for the public meeting purposes needs to have some location references and should move the key to be larger and easier readability.

  ACTION: Provide geographical references on the project watershed map and enlarge key.

- There was a short discussion on the IP and what the follow up process will be.
  How does DEQ anticipate tracking success and BMP implementation? How will the public be provided an understanding of tracking and improvements? It was agreed that the matrix and a connection to the existing TMDL IP, that presents BMPS be presented.

- Calvert questioned if there were other TMDLs that showed 80% for straight pipe reduction? DEQ noted that there are. But that as straight pipes are illegal it is always the expectation that we try for 100% removal, but that because they are illegal, sometimes, they are difficult to find and fix all of them.

- Erin Hawkins noted that according to VDH there are no straight pipes in Fishing Creek watershed.

- It was noted that at the Public Meeting the public will probably want some update of the CSO program. Mitchell agreed the City would provide a fact sheet on the CSO program for the meeting.
  ACTION: City will develop CSO Fact Sheet handout/update for TMDL Public Meeting.

4. <u>Recap of Document Edits and Action Items.</u>
   Paula Main confirmed the primary draft document and public meeting presentation comments provided by the TAC. Items correspond to Action Items noted in the meeting summary.

5. <u>Public Meeting Dates</u>

After review of schedules, agreement of all parties to complete the agreed upon Action Items, and the required public register dates, it was agreed that the TMDL Public Meeting could be held on either December 5th, 6th, 8th or 12th.

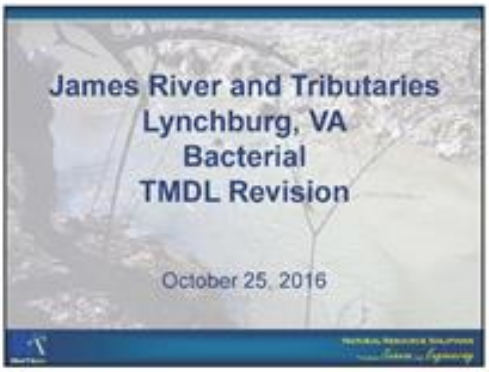
ACTION: Main and Hitchcock will confirm Public Meeting date and location.

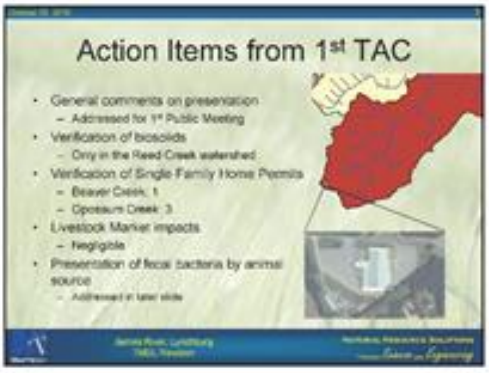
6. Meeting Adjourned at approximately 11:55 a.m.

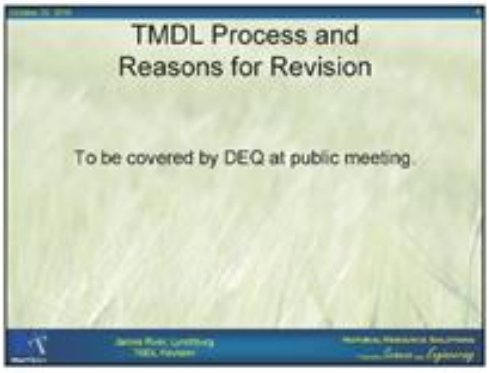
Attachment A
Meeting Attendees

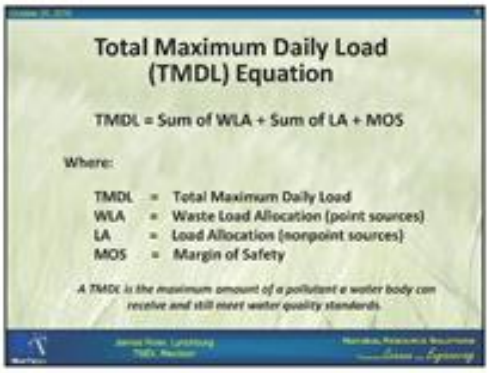
First Name	Last Name	Agency/Locality	Email
Pat	Calvert	James River Association	pcalvert@jrava.org
Rob	Campbell	James River Association	rcampbell@jvava.org
Kevin	Crider	DEQ - Lynchburg	kevin.crider@deq.virginia.gov
Dan	French	Amherst County Service Authority	acsava@acsava.com
Ashley	Hall	Stantec	ashley.hall@stantec.com
Erin	Hawkins	City of Lynchburg	erin.hawkins@lynchburgva.gov
Kelly	Hitchcock	Region 2000 LGC	khitchcock@region2000.org
Bob	Hopkins	Amherst County Service Authority	rhopkins@acsava.com
Jim	Kern	MapTech Inc.	jkern@maptech-inc.com
Lin	Ling	Greely-Hansen/City of Lynchburg	lliang@greeley-hansen.com
Craig	Lott	DEQ-Richmond	craig.lott@deq.virginia.gov
Paula	Main	DEQ - Lynchburg	paula.main@deq.virginia.gov
Kate	Miller	Bedford County-Division of Natural Resources	k.miller@bedfordcountyva.gov
Tim	Mitchell	City of Lynchburg	timonthy.mitchell@lynchburgva.gov
Austin	Mitchell	Amherst County	armitchell@countyofamherst.com
Megan	Scott	VDOT - Western Region	megan.scott@vdot.virginia.gov
Brian	Stokes	Campbell County	brstokes@co.campbell.va.us
Jim	Talian	City of Lynchurg	james.talian@lynchburgva.gov
Amanda	Winks	DEQ-BRRO	bridget.winks@deq.virginia.gov
Don	Yancey	NRCS	don.yancey@va.usda.gov

Attachment B
Draft Public Meeting Presentation









How do we Determine the TMDLs?

\+ Watershed data

TMDL

Bacteria Impairment

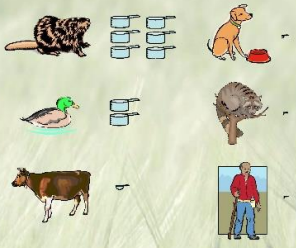
- Fecal Bacteria in James River and tributaries
  - What are Fecal Bacteria?
    - Bacteria associated with feces from warm blooded animals (fecal coliform, *E. coli*)
  - Why should we care?
    - Pathogens (including some strains of *E. coli)*
    - Parasites
  - Water Quality Standard
    - Swimming & Fishing Use
    - Instantaneous: 235 cfu/100 ml *E. coli*
    - Monthly Geometric Mean: 126 cfu/100 ml *E. coli*

How much waste fouls a bathtub?

= 1 cup

= 1 Tbsp

= 1 tsp



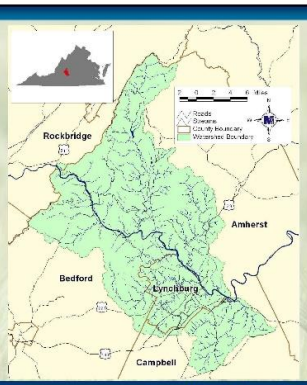
How many beaver equal a cow?

Fecal Bacteria Production Ratios

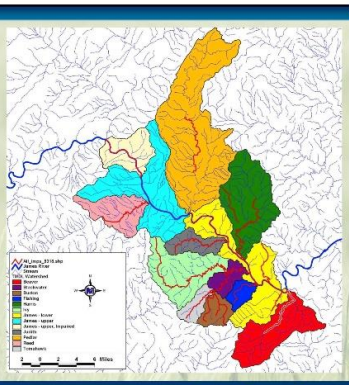
Source	Ratio to one Beef Cow	Source	Ratio to one Beef Cow
Beef Cattle	1	Goose	41
Goat	1.2	Horse	79
Sheep	1.2	Deer	95
Dairy Cattle*	1.3	Layers	243
Dairy Heifer	3	Raccoon	292
Dog	8	Wild Turkey	355
Mallard	14	Turkey	355
Wood Duck	14	Broilers	485
Human	22	Muskrat	1,320
		Beaver	165,000

* Milked or Dry Cow

Project Area



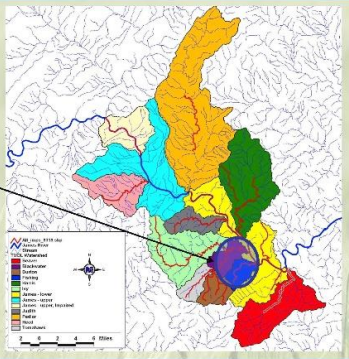
Impaired Watersheds



Impaired Watersheds

Area impacted by CSO outfalls

- Blackwater Cr
- Fishing Cr
- James R - Lower



E.coli Impairments

TMDL Watershed	Impairment ID	Initial Listing Year	2010 River Miles	2012 Listing Violation%	Impairment Location Description
James River - Upper	James River VAW-H01R_JMS04A00	1998	7.42	17%	James River from Balcony Falls Dam downstream to the mouth of Petery Creek.
James River - Lower	James River VAC-H03R_JMS01A00	1996	3.84	25%	James River mainstem from the Business Route 29 bridge downstream to the mouth of Williams Run.
	James River VAC-H03R_JMS04A02	1998	4.11	25%	James River mainstem from Reservers dam downstream to Business Route 29.
	James River VAC-H05R_JMS04A00	1996	2.58	25%	James River mainstem from the upper watershed boundary at the confluence of Williams Run downstream to the mouth of Archer Creek.
	Opossum Creek VAC-H05R_OPP01A00	2010	3.01	13%	Opossum Creek mainstem from its mouth on the James River upstream to the Rt. 669 crossing.
	Williams Run VAC-H03R_WLM01A02	2006	6.37	13%	Williams Run from its confluence with the James River upstream to it headwaters.

* Multiple monitoring stations

E.coli Impairments

TMDL Watershed	Stream Name Impairment ID	Initial Listing Year	2010 River Miles	2012 Listing Violation%	Impairment Location Description
Blackwater Creek	Blackwater Creek VAC-H03R_BKW01A00	1996	10.3	33% & 20%*	Blackwater Creek mainstem from the confluence of Tomahawk and Burton Creeks downstream to the Blackwater Creek confluence on the James River.
Tomahawk Creek	Tomahawk Creek VAC-H03R_THK01A06	2006	5.89	33% & 20%*	Tomahawk Creek from it's headwaters to its confluence with Burton Creek.
Burton Creek	Burton Creek VAC-H03R_BUN01A06	2006	3.45	42%	Burton Creek from its headwaters to the confluence with Tomahawk Creek.
	Burton Creek N-Trib VAC-H03R_XXA01A08	2008	3.43	33%	Burton Creek Unnamed Tributary from its headwaters to its mouth on Burton Creek.
	Dreaming Creek VAC-H03R_DMG01A08	2008	4.69	25%	Dreaming Creek from its headwaters to its mouth on
Ivy Creek	Ivy Creek VAC-H03R_IVA01A00	1998	20.8	21%, 17%, 17% & 13%*	Ivy Creek mainstem from its headwaters downstream to its confluence with Blackwater Creek.

* Multiple monitoring stations

E.coli Impairments

TMDL Watershed	Stream Name Impairment ID	Initial Listing Year	2010 River Miles	2012 Listing Violation%	Impairment Location Description
Harris Creek	Harris Creek VAC-H04R_HAZ02A08	2002	7.72	22%	Harris Creek from its confluence with Falling Rock Creek to just upstream of the Amherst County USA secondary water intake.
	Graham Creek VAC-H04R_GRA02A02	2002	5.17	67%	Graham Creek mainstem from the Graham Creek Reservoir backwaters upstream to its headwaters.
Pedlar Creek	Pedlar River VAC-H02R_POL02A00	2006	2.46	13%	Pedlar River mainstem from the Little Cedar Creek mouth upstream to the mouth of an unnamed tributary located just downstream of the Rt. 610 crossing and upstream of the Little Dancing Creek mouth.
	Pedlar River VAC-H02R_POL03A02	2006	7	13%	Pedlar River mainstem from an unnamed tributary's confluence with the Pedlar River, just downstream of the Rt. 610 crossing upstream to the mouth of Enchanted Creek.
Judith Creek	Judith Creek VAC-H03R_JTH01A06	2006	10.51	11% & 22%*	Judith Creek from its headwaters to the confluence with the James River.
FishingCreek	Fishing Creek VAC-H03R_FSG01A00	1998	5.44	42%	Fishing Creek mainstem from its confluence with the James River upstream to its headwaters.

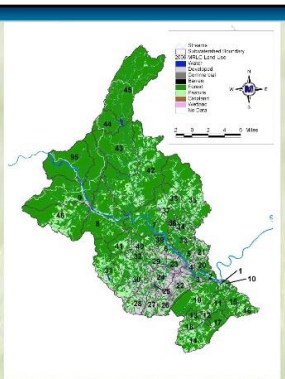
* Multiple monitoring stations

E.coli Impairments

TMDL Watershed	Stream Name Impairment ID	Initial Listing Year	2010 River Miles	2012 Listing Violation%	Impairment Location Description
Beaver Creek	Beaver Creek VAC-H05R_BCR01A00	2004	8.5	13%	Beaver Creek mainstem from its mouth on the James River upstream to an unnamed tributaries mouth at the Rt. 501 Bridge.
Reed Creek	Reed Creek VAW-H01R_RED01A00	2004	8.37	33%, 100% & 17%*	Reed Creek mainstem from its mouth on the James River upstream to the intersection of State Routes 638 and 764.

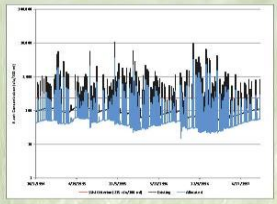
* Multiple monitoring stations

Land Use

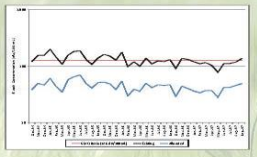


Allocation Runs

Daily Average *E. coli* Values



Monthly Geometric Mean *E. coli* Values



Reductions Needed

TMDL Watershed	Percent Reductions to Existing Bacteria Loads: Wildlife Loads[5] – Wildlife Direct	Wildlife Loads[5] – Barren[1], Commercial, Forest	Agricultural Loads – Livestock Direct	Agricultural Loads – Cropland, Pasture, LAS[2]	Human and Pet Loads – Straight Pipes	Human and Pet Loads – Residential	VADEQ *E. coli* Standard Violations[3] – % > GM	VADEQ *E. coli* Standard Violations[3] – %>SSM
James River - Upper	0	0	0	0	80	0	0	0
Pedlar Creek	0	85	99	90	100	90	0	2
Harris Creek	0	0	0	0	80	0	0	5
Judith Creek	0	0	0	50	80	50	0	9
Ivy Creek	0	0	0	70	80	70	0	9
Tomahawk Creek	0	0	0	40	80	40	0	10
Burton Creek	0	0	0	10	80	10	0	10
Blackwater Creek	0	0	0	70	80	70	0	9
Fishing Creek	0	0	0	20	N/A	20	0	9
Beaver Creek	0	0	60	60	80	60	0	0
James River - Lower	0	0	0	0	80	0	0	4

LTCP implemented. SSOs eliminated. Partially identified source in Fishing Creek eliminated.

TMDL Tables

TMDL Watershed	WLA (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
James River - Upper	**2.27E+11**	**4.41E+15**	*Implicit*	**4.41E+15**
Future Load	*2.27E+11*			
Pedlar River	**7.86E+11**	**3.85E+13**	*Implicit*	**3.93E+13**
Future Load	*7.86E+11*			
Harris Creek	**1.02 E+13**	**4.15E+14**	*Implicit*	**4.25E+14**
VAR040015 (MS4-VDOT)	*1.60E+12*			
VA0063657	*2.61E+10*			
VA0082546	*2.61E+10*			
VA0027618	*6.97E+10*			
Future Load	*8.50E+12*			

TMDL Tables (cont.)

TMDL Watershed	WLA[1] (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
Judith Creek	**3.26E+11**	**7.85E+12**	*Implicit*	**8.18E+12**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)*	*1.36E+11*			
VA0091162	*2.61E+10*			
Future Load	*1.64E+11*			
Ivy Creek	**4.07E+12**	**7.24E+13**	*Implicit*	**7.64E+13**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)*	*2.54E+12*			
Future Load	*1.53E+12*			

TMDL Tables (cont.)

TMDL Watershed	WLA (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
Tomahawk Creek	**1.01E+12**	**9.85E+12**	*Implicit*	**1.09E+13**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)*	*7.87E+11*			
Future Load	*2.18E+11*			
Burton Creek	**3.47E+12**	**5.22E+12**	*Implicit*	**8.69E+12**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)* *VAR040118 (MS4-CVCC)*	*3.29E+12*			
Future Load	*1.74E+11*			

TMDL Tables (cont.)

TMDL Watershed	WLA (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
Blackwater Creek	**3.61E+14**	**1.96E+14**	*Implicit*	**5.57E+14**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)*	*6.81E+13*			
VA0024970 (CSO)	*2.82E+14*			
Future Load	*1.11E+13*			

TMDL Tables (cont.)

TMDL Watershed	WLA (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
Fishing Creek	**3.76E+13**	**1.86E+13**	*Implicit*	**5.62E+13**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)*	*1.49E+13*			
VA0024970 (CSO) [3]	*2.16E+13*			
Future Load	*1.12E+12*			
Beaver Creek	**3.26E+11**	**1.38E+13**	*Implicit*	**1.41E+13**
VA0062031	*4.18E+10*			
VAG407278	*1.74E+09*			
Future Load	*2.82E+11*			

TMDL Tables (cont.)

TMDL Watershed	WLA (cfu/yr)	LA (cfu/yr)	MOS	TMDL (cfu/yr)
James River - Lower	**1.33E+15**	**2.55E+15**	*Implicit*	**3.88E+15**
VAR040008 (MS4-Lynchburg) *VAR040015 (MS4-VDOT)* *VAR040121 (MS4-CVTC)*	*4.78E+12*			
VA0061042	*6.10E+10*			
VA0027553	*6.88E+10*			
VA0003026	*6.97E+10*			
VA0024970 (WWTP)	*3.83E+13*			
VA0024970 (CSO) [3]	*1.25E+15*			
VAG402011	*1.74E+09*			
VAG407324	*1.74E+09*			
VAG407341	*1.74E+09*			
Future Load	*3.22E+13*			

Next Steps

- Public Meeting
- Public Review (30-days)
- Submit to EPA
- State Approval

Contact Information

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- MapTech, Inc.
  - James Kern
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  - (540) 961-7864