James River Bacteria Implementation Plan - Summary of Important Issues & Unresolved Items

- Summary includes items from 1st Steering Committee Meeting held on 1/12/11, the Residential and Agriculture Final WG meetings held on 1/24/11, and the Gov't/Urban Final WG meeting held 1/26/11
- A copy of meeting minutes, handouts, and agendas for all WG meetings and the 1st Steering Committee meeting are available at: http://www.deq.virginia.gov/tmdl/ipproj.html
- "Unresolved Items" for which DEQ/MapTech are waiting for answers/confirmation from individuals on the steering committee are marked with an * while the "Important Issues" are listed for your reference.

****PLEASE NOTE** Information to be included in the draft IP will be accepted through 3/23/11 !**
We must adhere to this deadline in order to provide Steering Committee members with a 1st draft IP document one week prior to the next Steering Committee meeting – which is tentatively scheduled for week of April 11th.

Important Issues from 1st Steering Committee Meeting on 1/12/11:

1. Due to questions regarding the modeling of SW BMPs (mostly for BMPs in which we do not have explicit bacteria efficiencies because they are aimed at the reduction of flow), Megan provided a write-up to explain how the modeling would be done on 1/24/11. It is included with this summary as an attachment titled, "Email Correspondence to WG Members dated 1/24/11 regarding SW BMP Modeling" should you need to review it.

2. A question stated in the minutes: *"Ms. LeRose stated that two samples at stations RC3 and RC4 in 2010 occurred while a sewer line break was present, was this included?"* **RESPONSE:** DEQ provided MapTech with the 2010 RC3 and RC4 station data. The sample dates for these two stations span from 2/20/10- 10/16/10. This data was not included in the TMDL but was included in the revised scenario for Reedy Creek which will appear in the IP.

Important Issues/Unresolved Items from Agriculture Workgroup Meeting on 1/24/11:

1. *Verification of livestock population in Almond and Powhite Creek watersheds is needed. We need the local SWCD or locality personnel to provide DEQ/MapTech with a confirmation that what we have for the current livestock population is correct.
   - Almond Creek has 28 Beef Adult, 27 Beef Calves, 0 Dairy Calves, 0 Dairy Dry, 0 Dairy Milkers, 1 Hog, 30 Horses, and 6 Sheep/Goats. Almond Creek is sub-watershed #18.
   - Powhite Creek has 12 Beef Adult, 7 Beef Calves, 0 Dairy Calves, 0 Dairy Dry, 0 Dairy Milkers, 3 Hogs, 20 Horses, and 1 Sheep/Goats. Powhite Creek is sub-watershed #17

   Please provide correction or verification of these numbers by 3/23/11!

2. *Verification of horse population in Chesterfield County is needed. We need the local SWCD or locality personnel to provide DEQ/MapTech with an updated number for the horse population for the following Chesterfield sub-watersheds:

   JR Riverine sub-shed: 4
   JR Tidal sub-sheds: 11-15, 30-31, 34
   Bernards Creek: 16
   Powhite Creek: 17
   Falling Creek: 20, 21, 22
   No Name Creek: 23
   Reedy Creek: 41

   Please provide correction or verification of these numbers by 3/23/11!

3. * Goochland said some of the formerly agricultural zoned areas are now part of wetland banks. Megan asked for the amount of converted wetland acreage, so that land use in the model could be revised. Goochland and Monacan SWCD stated they would provide the converted wetland acreage.
   Please provide acreages of converted wetland bank by 3/23/11.

4. *Goochland and Monacan SWCD also stated that they thought stream fencing estimates are high and would review the watershed maps for pasture and hay land acreage.
Please provide your reviews and corrections of the stream fencing estimates by 3/23/11.

5. *New BMP of "pasture-dragging" where a piece of fence is dragged behind farm-equipment to spread manure in pasture fields. Megan was unable to find efficiency data for this practice; therefore, unless information is provided regarding efficiency by 3/23/11, it cannot be modeling in the IP and will be included in the text only as a "promotable" BMP.
Please provide any cost information you find related to this BMPs by 3/23/11.

6. ***In the Ag-WG Handout we requested an estimate for the number of "Small Horse Manure Shed" needed. It was said in the meeting that such a BMP might be useful. We request the SWCD or locality personnel provide an estimated number as stated in question 6 (given the horse populations in each watershed).
Please provide information regarding the number of "waste storage-horse" BMPs to include as well as a cost estimate to DEQ by 3/23/11.

Important Issues/Unresolved Items from Residential Workgroup Meeting on 1/24/11:

1. *There was a discussion of a "sewer-connection BMP" and the need for localities Chesterfield (who has done pilot study), Henrico, Powhatan, and Goochland to evaluate areas within their jurisdiction where septic failures have occurred to determine feasibility and potential of sewer connections in those areas. Locality would provide DEQ with an estimated number of homes to be connected and approximate cost per home to connect. Stage I of IP would include those homes which would be biggest bang for the buck while Stage II of IP would include those homes that are further from sewer mains and more expensive to connect (for example).
Please provide information regarding your locality's estimated number of "sewer-connection" BMPs as well as estimated costs to DEQ by 3/23/11.

2. Tuckahoe Creek will be included in the IP. The 3 subwatershed segments of 26, 27, and 28 have been removed from the" James River Riverine" segment and re-assign as Tuckahoe Creek.

3. "Septic-pumpout" BMPs were discussed in regard to the fact that pumpouts are already mandatory for Richmond and Chesterfield. WG suggested the pumpout BMPs only be included for watershed areas of Powhatan and Goochland which don't fall under the mandatory 5-yr pumpout requirements of CBA.

4. *What areas already have pet waste stations and how many stations are installed? Richmond City has provided their information (thanks!)
Chesterfield, Henrico, Powhatan, or Goochland - please provide DEQ with locations of pet-waste stations for watersheds in your jurisdiction by 3/23/11.

5. * If localities have "green-spaces" (parks or high recreational use areas) which would be good candidates for pet-waste station BMPs, please provide general locations and an approximate number of stations which would be necessary to provide coverage at each location.
Please provide DEQ with any areas (either in shapefiles or outlined in a map) as candidates along with estimated # of stations needed for each location by 3/23/11.

6. * Chesterfield County mentioned that they are made aware of large-residential complexes and if we would like to know those locations. These areas could be targeted for pet-waste stations & localities could offer incentives for the installation. Rest stops and "community areas" could be identified as areas for pet-waste stations as well.
Please provide locations (either in shapefiles or maps) and estimated # of BMPs for each by 3/23/11.

7. Richmond City provided their "pet-waste pick-up" ordinance – link to the code: (http://library.municode.com/HTML/16118/level4/PTIICICO_CH106UT_ARTVIIIST_DIV3ILDICO.html#PTIICICO_CH106UT_ARTVIIIST_DIV3ILDICO_S106-823THDI). Henrico and Chesterfield said they did not have an ordinance. DEQ suggested an ordinance would be beneficial.

8. *Handouts question said "What organization/municipalities/agencies could install, maintain, and empty trash cans for pet-waste stations?" It was noted that the maintenance of pet-waste stations in Oregon Hill - which were purchased and installed by nearby homeowners is now handled by the James River Parks system. Links to station equipment and information on biodegradable pet-waste bags:

   http://www.ecoanimal.com/poopbags.html http://www.pethabitats.com/
   http://www.gabpproperty.com/paw-pal-refill-bags http://www.biobagusa.com/biobag_dog.htm
   http://www.petwasteeliminator.com/refill-program

   Pet-Waste sign: http://www.pbp1.com/Property/Product/SN309

   "How to Set Up a Pet Waste Survey":

   http://des.nh.gov/organization/divisions/water/wmb/coastal/documents/pet_survey_guide.pdf

   Please indicate who'd be responsible for the maintenance of new pet stations. Be <u>as specific as possible</u> and provide this information by 3/23/11.

9. *WG members advocated the use of large-scale social media campaigns for education of pet-waste. Margaret is consulting with those who have implemented such campaigns to see if it is possible to include a "large-scale pet-waste education media campaign" in the IP.

   If you would like to be involved in the development of a social-media campaign for pet waste, have ideas, or know of potential funding sources, please let DEQ know. These discussions will continue to occur outside of SC meetings.

10. *In Table 3, a cost estimate for "Educational Booth at community Events" and "Education to Vet Clinics/SPCAs/Pounds/Shelters/Hunt Clubs" was not offered by the workgroup – however the inclusion of these BMP types came at their recommendation.

    If you would like to recommend a cost estimate for either of these two BMPs, please provide by 3/23/11.

11. DCR has recommended "Doggy-Dooley" systems (pet waste composters) in previous IPs – however some WG members do not view this as a practice which provides measureable goals. Because many WG members were doubtful that the pet-composters would be effectively used, in Creeks where they are necessary, they have been placed in "Stage II" of the IP.

12. *Group discussed "Difficulty of Installation" - there was disagreement in regards to pervious pavers and grass swales. For pervious pavers – WG members stated the difficulty depended on whether you were talking about those used on driveways (easy) or road surfaces (difficult – requires engineered approved design). For grass swales – one WG member said the installation was easy, but another said that due to their experience of having seen many grass swales "butchered" due to inadequate design (perhaps an engineer was not consulted in those cases) so for proper install some engineering is required which makes them at a minimum, "medium" difficulty.

    If you would like to recommend further refinement of the BMPs listed in Table 4 of the handout, please provide suggestions to DEQ by 3/23/11.

13. * WG was asked to indicate which of the included SW BMPs (table 4) they would like to see included in the IP. Of the BMPs listed there were none that were asked to be removed, however, DEQ would like to remind the Steering Committee that there was a practice called "Other Innovative Projects" included in this table. There is still time to include other SW BMPs.

    If you would like to recommend additional Residential or Urban SW BMPs which are not currently included – provide by 3/23/11. If you provide suggestions, please also include information regarding their applicability, where they should be installed, etc.

<u>Important Issues/Unresolved Items from Gov't/Urban Workgroup Meeting on 1/26/11:</u>

1. *During the meeting, there was a request for an updated list of BMP efficiencies which would be used for in the modeling of the IP. Megan will provide this document which will include references for efficiencies in the SC# 2 meeting on 3/9/11.

   Provide literature regarding BMP efficiencies which you think should be considered by 3/23/11.

2. Question was asked regarding rain barrel efficiencies. The efficiencies available for the practice are specific to 1 year storms – so how would a 10 year storm be quantified? Craig Lott is looking into an answer for this question.

3. *Regarding the "Questions for the Group" on page 4 of the handout, which asked, "*Of these Stormwater BMPs, are any more likely to be answered than others?*", "*Are any Stormwater BMPs missing from the list*?", "Do you have costs for any SW BMPs?","*Are there any stormwater BMPs (not part of the Richmond LTCP) installed in the watershed? How much/many?*" Some WG members stated that because the efficiencies of some BMPs are so variable, it is difficult for recommendations to be made. One WG member said green-roofs were very expensive - it is easier to rule them out. There was also the question of including SW BMPs in watershed where there were no CSOs – it was a nice goal and that SW BMPs are in general a good practice, however, SW BMPs are not aimed at reducing bacteria levels. For costs, one member recommended DEQ use the costs included in the blue book or online data clearinghouse (hosted by VA Water Resources Research Center at VT).
If you would like to provide additional comments/answers to these questions, please provide by 3/23/11.

4. *In light of the issues in item 4 above, there was a brief discussion whether or not it was appropriate to include a "range" instead of a single efficiency number for BMPs that tend to have variable efficiencies. DEQ has decided that it is not feasible to include "high" and "low" numbers for BMPs, meaning it is not possible to use an efficiency range in the IP. A single efficiency number will be used for each BMP type – DEQ will be conservative in the choice of that number.
If you would like to provide input regarding what #'s for efficiencies should be used, please provide by 3/23/11.

5. *Related to item 4 above, Chesterfield suggested the addition of "stream restoration" as a BMP, the goal of which would be to improve substrate and to get the flow more into the floodplain (and offered to work w/ Richmond City). They offered that they could submit a description of the problem including how it would reduce bacteria. MapTech stated that there is no bacteria efficiency information regarding stream restoration but Mr. Lott mentioned that if it included a stream buffer – the restoration area could be considered as an extension of a "vegetative buffer BMP" for which efficiency information exists. One WG member supported the idea but stated concerns regarding the cost ($300/linear ft).
If proposing information regarding a stream restoration BMP –tied with the efficiencies of "vegetative buffer BMP" please submit by 3/23/11.

6. * Again, in relation to item 4 above, a WG member asked is "street sweeping" could be included as a BMP. Megan and Craig have located two citations of bacteria efficiency removal for street sweeping. One of which comes from a report by USGS (2003) in Massachusetts (to view report vist: http://pubs.usgs.gov/wri/wri024220 /pdfs/wrir024220.pdf). The report states, "The lower estimated load reduction from combined street sweeping and structural controls from non-CSO sources downstream of Watertown Dam, was 14 percent for suspended solids, 11 percent for total lead, 4.9 percent for total phosphorus, and 7.5 percent for fecal coliform bacteria." WG members mentioned that they were aware of some literature sources and would provide them.
DEQ would like to know your opinion of this study or if you have found additional instances where bacteria efficiencies for street sweeping has been demonstrated. Please provide your input to DEQ by 3/23/11.

7. * If your locality has a street sweeping program, please submit information to DEQ regarding the roads included and frequency in which roads are swept (any other relevant information would also be appreciated). MapTech would like total lane miles in County/City swept (average/year would suffice).
Please provide street sweeping information for your locality to DEQ by 3/23/11.

8. *DEQ is aware of the pet-waste pick-up ordinance in the City of Richmond but would like to know what measures are provided to encourage the compliance with this ordinance. If other localities have programs or methods to encourage "responsible pet ownership" we would like to know about them as they may be applicable to the IP.
DEQ would like to know if there are specific pet-waste programs of any type in Richmond, Chesterfield, Henrico, Powhatan, or Goochland Counties. Please indicate whether there are any such type programs to DEQ by 3/23/11.

9. The group stated their interest in the development of a wildlife management plan for the watershed. Craig Lott is working on this and will keep the steering committee members posted. The development of a wildlife management

plan may extend beyond the time frame allotted for IP development; however, it can be mentioned in the text of the IP.

10. * Presentation by Chesterfield Co – sewer connection pilot. DEQ does not yet have the final recommendations from Chesterfield regarding number of homes to connect or a cost but indicated they should have that available soon. When DEQ receives this information, DEQ will place it on the website for other localities to review. VDH and Powhatan Co have geocoded the homes with septic failures in the last 10 years (for their subsheds of the James) but it is unknown whether Powhatan staff will be able to perform an analysis similar to which was done by Chesterfield. It is unknown if Goochland Co will be able to participate. Henrico stated they would not participate in a sewer connection BMP analysis. Richmond City in cooperation with Richmond City VDH – were working on an analysis. **Please provide information regarding your locality's estimated number of "sewer-connection" BMPs as well as estimated costs to DEQ by 3/23/11, if you plan to participate.**

11. *There was a brief discussion in regard to a timeline for the James River bacteria TMDL IP. Specifically, the group was asked if there were objections to the "20 year timeline" with Stage I = 10 years and Stage II = 10 years (total of 20 year timeline). This timeline was taken from the Lynchburg IP. Within the two Stages, there could be at 5 year intervals, evaluations of the implemented practices and water quality. One WG member recommended that no timeline be included while another agreed with the timeline.
DEQ requests that any additional comments/opinions regarding the timeline used in the IP be submitted by 3/23/11.

12. *Please provide DEQ with any and all currently or soon-to-be implemented BMPs in your locality or area. This includes information related to green roofs, stream restoration projects, green alleys, rain barrels, rain gardens, grass swales, pervious pavers, cisterns, etc.
Please submit information regarding the location, area treated, etc. for these types of BMPs to DEQ by 3/23/11. For those of you who have provided information already – thanks very much!

Email Correspondence to WG Members dated 1/24/11 regarding SW BMP Modeling:

During the 1st steering committee which was held on 1/12/11, many of the members expressed concern in regard to how our contractor MapTech, would model the stormwater (SW) Best Management Practices (BMPs) for the Implementation Plan (IP). The members were concerned that the modeling would only be performed for 3 distinct BMP types … which is not the case. We felt that a thorough explanation of the SW BMP model plan was necessary to put these concerns to rest. The following is a summary which Megan Maggard (MapTech consultant) has provided.

To clarify the inclusion of SW BMPs in the IP, we can include *any and all BMPs* that stakeholders are interested in!

In the IP, we must quantify the number of BMPs needed in each watershed in order to meet the overall final bacteria load. For some SW BMPs I have a good handle of bacterial removal efficiency values (Rain Gardens, Infiltration Trenches, Retention Ponds, Bioretention area). For others, they are designed to collect/reduce SW volume, and are less focused on bacterial removal. However, we *know* that these SW BMPs will positively impact bacteria loads!

For the 3 BMPs I mentioned I would use, "Green Roofs, Permeable Pavement, and Rain Barrels", I must model these in the TMDL HSPF model in order to calculate the bacteria % reduction potential. These 3 types of "Green" SW BMPs are the most dramatic in their changes to the hydrology within the computer model. The reason these 3 provide such a dramatic change is that where there was once an impervious surface, there would now be a pervious surface capable of rainfall and runoff retention, evapotranspiration, and filtration. These 3 BMP types are

the easiest to incorporate in the TMDL model in order to quantify a reduction in the number/amount of CSO overflows.

The benefit of this "Impervious" analysis is that it will show us the greatest benefit (in SW control) to the combined sewer overflows (CSOs) that is possible within our project watershed. If we see no CSO reductions from the model output using these 3 SW BMP types, then it is unlikely we will see CSO reductions modeling the other types.

With this said, our computer model is just that, a MODEL. In reality, I believe that any SW BMP will benefit the greater Richmond area. There are aspects not included in our computer model such as Urban Beautification (aesthetics), Lower Urban Temperatures (less pavement + more green = less heat), Better Air Quality, City/County Pride, and less demand on the waste water treatment plant (less SW funneled to facility for treatment). Obviously, these are just a few examples as there are at least another dozen benefits which could also be mentioned.

Also, our model is representing large areas of land. This means that the impacts of a few SW BMPs may not be captured in the subsequent bacteria levels of the James River. However, on a local scale, water quality and runoff volume could be dramatically improved (lower bacteria levels and less runoff).

These model limitations should not, however, lessen the confidence in our Implementation Plan.
We can build into the Plan any number of SW BMPs that are reasonable, affordable, and implementable.
The goal is to build the plan so that we first (Stage I) implement the BMPs that we know will offer us the greatest benefit to water quality. Examples of Stage I BMPs are Livestock Exclusion Fencing, Residential Waste Treatment System Installation/Repair, and Pet Waste Pick-up BMPs. BMP types which are still beneficial but perhaps less optimal, could be placed in Stage II of the Plan.

For Urban SW BMPs: I currently have bacteria removal efficiencies for: Rain Gardens, Bioretention areas, Infiltration Trenches, Retention Ponds, and can build them into the Plan for each impaired stream.
This information is being included in the WG meeting handouts (which you'll be reviewing this week) by removing as many pet waste composters as possible, and adding these above Urban SW BMPs, in order to meet the target bacteria loads.

As Megan states above, she will model the 3 BMPs, Green Roofs, Permeable Pavement, and Rain Barrels as a starting point because these will show the most dramatic change because they create a change in hydrology. Other BMPs can also be modeled in addition to these three but it is expected that because other BMP types do not create the same effective change in hydrology, their resulting bacteria reductions are less likely to show prominently in the model.

Also, Megan mentioned that she has bacterial removal efficiencies for the following SW BMPs: rain gardens, bioretention areas, infiltration trenches, and retention ponds. As discussed in previous meetings, SW BMPs are designed to reduce water volume - so we don't always have associated bacteria reduction efficiencies to go along with them. If you have information on bacteria efficiencies for SW BMPs not listed here, please provide that information (along with citation)! We would like to create as comprehensive of a list that we can for the IP.

If you have questions regarding the SW BMP model plan, please let me know.

Best Regards,
Margaret Smigo