

Nutrient Scientific Advisory Board Meeting #12 Minutes

Friday, September 2, 2011

TJCOG - 4307 Emperor Blvd, Durham NC, 27703

9:30 am -12:00 pm

Attendees

Members: Matt Flynn, Michael Layne, Michelle Woolfolk (John Cox's alt), David Phlegar, Trish D'Arconte, Bill Hunt (& Kathy Debusk, alt), Andy McDaniel (Matt Lauffer's alt), Larry Band

Non-Members: Andy Sachs (facilitator), Jason Robinson (DWQ), Rich Gannon (DWQ), Kathy Stecker (DWQ), Adugna Kebede (DWQ), Brian Lowther (DWQ), Sarah Bruce (UNRBA), Michael Schlegel (TJCOG), Heather Saunders (TJCOG), Fred Royal (Brown and Caldwell), John Huisman (DWQ), Trevor Clements (TT), Josh Johnson (AWCK), Sandra Wilbur (Durham), Britt Stoddard (Wake), Brian Jacobson (URS), Michael Sloop (CDM)

Agenda

- Methods for Assigning Credits to Candidate Practices per 4(b)(1) and 4(b)(3)

List of Materials

- Nutrient Load-Reducing Practices Tables – Version 3 (attached)

Convene

- Board members and guests introduced themselves
- The agenda and August minutes were approved (Grady McCallie was absent, but requested a revision to comments attributed to him. These revisions were distributed to the Board members, and no one objected.)

Methods for Assigning Credits to Candidate Practices per 4(b)(1) and 4(b)(3)

DWQ introduced the subject; this meeting shifted from the task of watershed remodeling to the tasks laid out in Section 4(b), specifically identifying load-reducing management strategies and establishing accounting methods for those by July 2012. A 3rd version of the Candidate Practices document was passed out. DWQ had revised the document in response to discussion by the Board in July. Table 1 lists the practices that currently have accepted accounting methods, and Table 2 lists potential practices that currently don't have accepted accounting practices. The goal for this meeting was to decide on the minimum practices that the SAB would like to include in the July 2012 annual report to the Secretary.

Key points made during the Board's discussion are reorganized as follows:

- Watershed remodel-related:
 - The Board discussed the potential for specifying the use of new delivery factors for the watershed via the watershed remodel, and if they should be for 14 (or 12) digit HUCs, or for smaller areas, and whether within-HU delivery factors should be included. It was agreed that the July 2012 recommendation should be to use delivery factors that emerge with the watershed remodel, and the watershed remodel sub-committee should develop specific RFP recommendations.
 - Members agreed that the remodel RFP needs to be more specific about what it will mean for the watershed model to "inform" the credit tool.
- Procedural suggestions for 2012 report:
 - The Board agreed that the July 2012 report should recommend setting the expectation that the practices list and accounting methods will be revised as better data, research,

- etc. is developed. One implication is that local governments (and other regulated entities) will be advised to keep detailed records on their BMPs designs so credit award changes could be made retroactively if revisions were made to the accounting.
- Perhaps create a “definite benefit but no solid numbers yet” table.
 - Recommend that annual reports include reporting on all practices including innovative for which credit is not yet available.
 - BMP and reduction credit approval process - several issues were raised:
 - Agreement was not reached on whether refinements to credit awards based on better science/technical understanding/accounting methods should invoke adjustments to previously awarded credits for applicable practices.
 - Concerns were also raised over the clarity of the BMP approval process going forward.
 - DWQ agreed to develop a method for updating officially accepted BMP methods.
 - Dave was not interested in approving Table 1, and instead felt that to spur innovation, DWQ needs to explicitly define a process by which BMPs and credit accounting would be approved, including compliance accounting changes based on refinements to practices and accounting methods. DWQ was encouraged to include the BMP Manual staff, and to reconcile any process under the Jordan rule requirements with changes to the BMP Manual. SAB members were interested in having further input on a draft process outline.
 - The Board discussed credit for BMPs that existed prior to the baseline (1997-2001) *[editor’s note: BMPs built prior to/during baseline and built to water quality specifications in place at the time could in theory lower a regulated party’s baseline load; options not yet resolved for accounting for this baseline reduction are via the watershed model or a load reduction tool]*. They discussed whether credit could be received by fixing failing BMPs. DWQ offered the position that BMPs required by rule at the time and which are found to function inadequately whether by construction or neglect would be considered enforcement matters and not creditable *[editor’s note: if in place during the baseline, bringing such a BMP into compliance would allow it to be deducted from baseline loads]*. BMPs not designed for water quality purposes would present a potential opportunity for retrofit credit.
 - Other issues were raised by way of example and not resolved:
 - Wet detention design spec’s changed at some point from runoff from ½” to 1” of rainfall; how will credit be assigned for older ones? DWQ suggested moving older design standard versions of BMPs onto Table 2 for separate credit assignment.
 - Michelle W expressed concern that the Jordan/Falls New Dvlp Accounting Tool does not give as much nutrient reduction credit as the Tar-Pam Tool does for most BMPs in the Triassic Basin. DWQ proposed using the Jordan/Falls tool as default method (not accepting earlier, coarser tools) and being open to further refinements.
 - Andy expressed concern about practices that are similar to those contained in Table 1 but not built to BMP manual specifications. He gave an example of the recent Wade Avenue “5-fingered” infield infiltration project by the DOT.
 - It was suggested that an entry should be added to the table for hybrid/experimental systems. Tentative methods to credit these may be developed, including using data from a university study.
 - Recommendations on specific practices:
 - Dr. Hunt identified some practices on Table 2 with potential for near-term accounting approval:
 - major improvements to rainwater harvesting by the fall of 2012,

- retrofitting stormwater ponds into floating islands by this winter.
- Lots of buffer research is being done,
- Dr. McLaughlin is doing a lot of soil amendment research.
- there is work being done on street-sweeping and tree boxes that may be available by December 2012.
- there is work being done on filter strips and more flexible design criteria for swales that may be done by next fall.
- more research could be done for permeable pavement in areas like the Triassic Basin if more funding was available.
- Dave shared that a project is underway now to reconnect a stream to its floodplain with instream structuring.
- Trish clarified that the Peak Flow Control candidate BMP might achieve nutrient reductions as a result of reducing instream erosion.
- All stream restorations should not be lumped together as a single BMP. The amount of nutrient removal may depend on the elements of the restoration. The practice may need to be split out by type, i.e. floodplain reconnection, riparian reforestation, instream habitat reconstruction, etc.
- Dr. Band mentioned that there may be some research on urban tree cover available by June 2012.
- Larry identified riparian buffer restoration as an important practice to get right given its central role. DWQ agreed and shared that they have developed a draft revision to the current offset crediting method that they consider a necessary refinement. Durham raised concern that development offsets won't get the full credit that the developer was awarded. DWQ gave the view that the developer would not be held accountable retroactively under new development rules, but the local government would be held to the current state of knowledge under existing development requirements.

Meeting Wrap-up

The following points were made by Board members in the meeting wrap-up

- Many of the issues that are being presented are rooted in the uncertainty on how compliance will be judged. Currently, compliance is determined by the number of practices, not their success. Ultimately, it should be based on whether the lake improves, but there needs to be some way to determine whether the practices on the ground are making a difference.
- Some practices are proving to be difficult to assess or science finds less nutrient reduction than initially thought (e.g. stream restoration), so be careful with being overly generous with new practices.
- Promising innovative practices on Table 2 should be provided grant funding.
- DWQ has every intention of giving credit for as many practices as possible. It's encouraging that the Board wants to be innovative, and also demand solid science. We believe many of the practices in Table 2 have nutrient reduction values; the challenge is quantifying them in a way we can support.

Potential Future Agenda Items

- October: Watershed Remodel Subcommittee presentation. Agree on scope of contract?

Next Meeting

- Unless specifically rescheduled, the first Friday of each month, 9:30 – 12:00 at TJCOG

Table 1. Load Reducing Practices w/ Accepted Accounting Available

Practice	Accounting Method	Specifics
Stormwater Wetland	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • Runoff routed to BMP, treated • Fixed effluent concentration • Volume reduction via ET, infiltration
Bioretention w/o IWS	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • “
Bioretention w/ IWS	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • “
Wet Detention Basin	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • “
Sand Filter	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • “
Level Spreader & Filter Strip	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • “
Dry Extended Detention Basin	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • Volume reduction via ET, infiltration in Coastal Plain/Sandhills
Grassed Swale	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • “ • “ • Volume reduction via ET, infiltration in Coastal Plain/Sandhills
Greenroof	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • Direct precipitation to BMP • No nutrient treatment - fixed effluent concentration equal to roof EMC • Volume reduction via ET • Can be routed to collection system (see Rainwater Harvesting)
Permeable Pavement (See also Table 2)	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • Direct precipitation or runoff routed to BMP <p><u>DWQ BMP Manual</u></p> <ul style="list-style-type: none"> • Allowed case-by-case if soil infiltration is at least 0.52 in/hr • Tar Pam Tool: Depending on depth of gravel base, % of PP area can be considered managed pervious <p><u>Jordan Tool</u></p> <ul style="list-style-type: none"> • No nutrient treatment - fixed effluent concentration equal to parking lot EMC • Volume reduction via ET, infiltration in Coastal Plain/Sandhills
Rainwater Harvesting System / Underground	Jordan Tool ¹ & DF ²	<ul style="list-style-type: none"> • Runoff routed to storage, redirected to other use

Storage Devices (See also Table 2)		<u>DWQ Technical Guidance Memo</u> <ul style="list-style-type: none"> Allowed case-by-case if captured SW has dedicated use Tar-Pam Tool: Rooftop area removed <u>Jordan Tool</u> <ul style="list-style-type: none"> No nutrient treatment - fixed effluent concentration equal to roof EMC Volume reduction (user defined) via infiltration or routing to WW collection system
Load Reduction on New Development That Doesn't Require Treatment	Jordan Tool ¹ & DF ²	Require treatment on new development that isn't required to meet requirements of Jordan New Development Rule: not exceed loading rate targets or not exceed land disturbance thresholds
Overtreatment of New Development	Jordan Tool ¹ & DF ²	Set loading rate targets below Jordan New Development Rule requirements
Load Reduction on Redevelopment	Jordan Tool ¹ & DF ²	<ol style="list-style-type: none"> Compliance with Jordan New Development Rule for development that increases BUA yields existing development credit Require treatment on redevelopment that doesn't have to treat for Jordan New Development requirements (no increase in BUA or below land disturbance thresholds)
Removal of impervious surface	Jordan Tool ¹ & DF ²	Replace impervious cover with pervious cover, resulting in decreased runoff and increase infiltration.
Restoration of Riparian Buffer (w/ Level Spreader, if necessary) (See Also Table 2)	DWQ Credit Yield Calculation & DF	<ul style="list-style-type: none"> Diffuse inflow required Route channelized flow to flow-diffusing BMP Load reduction via up to 3 mechanisms: <ol style="list-style-type: none"> Treatment of catchment drainage Treatment of overbank flooding Land conversion of buffer footprint Mitigation under Buffer Rules is not eligible for Nutrient Offset Buffer establishment required on New Development
Upland Reforestation on Developed Land (See also Table 2)	Jordan Tool ¹ & DF ²	Credit via change in land cover requires conservation easement or other protective covenant.
Payment to EEP or Private Bank	DWQ Credit Yield Calculation or Jordan Tool	Calculation method dependent on practice. See above.

¹ DWQ needs to determine how to address discrepancies between the DWQ BMP Manual and the Jordan Tool, aka the Jordan/Falls Stormwater Nutrient Load Accounting Tool

² NSAB may want to recommend use of the Jordan Tool and delivery factors from the original stormwater model, or an alternative method that is developed by the WS Remodel

Abbreviations:

- BMP = Best Management Practice
- BUA = Built-upon area

- DF = Delivery Factors (produced by TT's or new WS model)
- EMC = Event Mean Concentration
- ET = Evapotranspiration
- IWS = Internal Water Storage
- Jordan Tool = Jordan/Falls Lake Nutrient Stormwater Load Accounting Tool
- PP = Permeable Pavement
- SW = Stormwater
- WW = Wastewater

Table 2. Potential Nutrient Load-Reducing Practices

Practice	Potential Accounting Method	Specifics
Undersizing Practices	Jordan New D Tool & DF	NSAB should evaluate accounting method assumptions
Restoration of Riparian Buffers of Varying Widths	DWQ Draft Yield Method & DF	<ul style="list-style-type: none"> • DWQ Draft Method <ul style="list-style-type: none"> ○ Diminishing credit with increased widths ○ NLEW % efficiencies on ag land
Repairing/Enhancement of Existing Riparian Buffers	Watershed Model or separate calculation (additional data required)	<ul style="list-style-type: none"> • Literature review, research • Potential Activities <ul style="list-style-type: none"> ○ Hydrologic restoration including diffuse flow ○ Removal of invasive species • Credit calculation will depend on type of repair/enhancement
Flood Plain Restoration	DWQ Draft Yield Method	<ul style="list-style-type: none"> • How is this different from buffer restoration?
Agriculture BMPs w/ Credit Method Available <ul style="list-style-type: none"> • Cropland Conversion to Trees/Grass • Buffer Restoration • Exclusion • Excluded Buffers 	<ul style="list-style-type: none"> • Calculation • DWQ Credit Yield • Calculation • Calculation 	<ul style="list-style-type: none"> • Literature-based export coefficient comparison • Revisions currently being drafted • Pasture Point System Method with export coefficients • Pasture Point System Method with export coefficients and DWQ Draft Buffer Credit Yield
Permeable Pavement (See also Table 1)	Modify Jordan Tool?	Infiltration credit in other regions besides Coastal Plain/Sandhills?
Infiltration Devices, including Infiltration Basins	Modify Jordan Tool?	<ul style="list-style-type: none"> • SW routed to BMP, fully infiltrated • Potentially add to Jordan Tool, data needed for effluent concentration and volume reduction • Consider using BMP manual specs
Rainwater Harvesting (See also Table 1)	Modify Jordan Tool?	Expanding dedicated use to allow for directing SW to pervious surface for infiltration?
Divert Impervious Runoff to Pervious Areas	Modify Jordan Tool?	Develop criteria? For example: <ul style="list-style-type: none"> ○ Pervious: impervious ratio ○ Slope limits ○ Dimensional minimums
Retrofitting Existing Stormwater Ponds	Jordan New D Tool	Improve volume control ponds to meet BMP manual treatment specs
Repairing Failing BMPs	Jordan New D Tool	<ul style="list-style-type: none"> • Questionable: Needs to be investigated with DWQ SPU

		<ul style="list-style-type: none"> • If allowable, would requires evidence of failure during baseline
Off-line Regional Treatment	Modify Jordan Tool?	Partial storm-flow diversion of conveyance for large catchment to treatment with ponding retrofit practice
Soil Amendments	Calculation based on literature findings	Reduce runoff volume via improved infiltration
Stream restoration	Calculation based on literature findings	<ul style="list-style-type: none"> • Reduce erosion of stream bank soils • Restore stream assimilation functions
Increase Tree Canopy	Calculation based on literature findings or WS Remodel	<ul style="list-style-type: none"> • Reduce runoff via interception – potential volume/load reduction • Requires means of tracking and assurance of long-term maintenance
Improved street sweeping	Calculation based on literature findings or WS Remodel	Decrease organic matter entrained in runoff to surface water
Source control, such as pet waste and fertilizer ordinances	Calculation based on literature findings or WS Remodel	Decrease “fertilizer rates” to landscape areas
Overtreatment of WW	Calculation of annual mass load difference between existing and new treatment of discharge volume	Long-term dedication of unused allocation
Improvement/Regionalization of WW facilities	Calculation of annual mass load difference between existing and new treatment of discharge volume	Redirecting discharge not treated for nutrients into larger system that does, or adding nutrient removal to an existing system
Improvement of discharging sand filter	Calculation of annual mass load discharge difference between existing and proposed	Connect to central sewer or replace with non-discharge alternatives
Repair Malfunctioning Septic System	Calculation based on literature findings or WS Remodel	<ul style="list-style-type: none"> • Restore nutrient removal functions • Connect to central sewer, improve treatment, or replace with non-discharge alternatives • Sampling of discharge and calculation of annual mass load discharge difference between existing and proposed
Improvement of functioning Septic System	Calculation based on literature	<ul style="list-style-type: none"> • Increase nutrient removal efficiency

	findings or WS Remodel	<ul style="list-style-type: none"> Account for different flows Account for rising groundwater table
Removal of Illegal Discharges	Calculation of specific discharges	Decrease illegal discharges making their way into surface waters
Improvement of Wastewater Collection Systems	Calculation of annual mass load discharge difference between existing and proposed	Increase nutrient removal efficiency
Proprietary Devices	Depends	<ul style="list-style-type: none"> DWQ has a process for evaluating and approving Credit will be BMP specific <ul style="list-style-type: none"> Tree boxes, hydraulic vortex units....
Emission Reduction (Atmospheric Deposition)	Watershed Remodel?	<ul style="list-style-type: none"> Correlate emission reductions to deposition reduction to impervious surfaces, effect on event mean concentrations
Peak Flow Control	Watershed Remodel?	<ul style="list-style-type: none"> Study load benefits instream Flow Modification
Improved Biosolids Management	Calculation based on literature findings or WS Remodel	<ul style="list-style-type: none"> Reduce application rates blow Fertilizer Management Rule requirements Sampling design to determine reduction in loading to surface
Other Ag BMPs <ul style="list-style-type: none"> Managed Grazing Water Control Structures Cover Crops Conservation Tillage 	Calculation based on literature findings or WS Remodel	Have BMP efficiencies, but need load reductions in-stream
Potential Ag BMPs <ul style="list-style-type: none"> Pond creation Pond renovation 	Calculation based on literature findings or WS Remodel	Work with agriculture community to develop specifications

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