

GUIDANCE FOR ENTITIES ESTIMATING URBAN NONPOINT SOURCE LOAD REDUCTIONS

PREPARED FOR LAKE JESUP BMAP TECHNICAL WORKING GROUP
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Background: This document provides guidance on urban stormwater best management practices (BMPs) that are eligible for nutrient pollutant reduction credit in the Lake Jesup BMAP and calculation of project benefits. All of this information will ultimately be integrated in the project implementation spreadsheets currently under development by the Jesup BMAP stakeholders and used in calculation of required reductions achieved by allocation entities.

URBAN STORMWATER BMPs

Calculation of Structural Project Benefits: Calculating the benefits of structural BMPs is a two-step process: 1) calculate pre-treatment load; and 2) calculate treatment efficiency (% TP removal). To facilitate this process, PBS&J will be contacting stakeholders to obtain information about submitted projects. They will then digitize the treatment area. This will allow FDEP to use the TMDL pollutant loading model to estimate pre-treatment TP loads. This approach will maintain consistency across jurisdictions and with the TMDL. Further, we will end up with a GIS layer of project treatment areas that will prove useful in future progress reporting.

To calculate treatment efficiencies, Eric Livingston (FDEP) has developed the following TP percent reductions associated with the suite of typical BMPs that qualify for credit in the BMAP. If entities prefer to submit independent pre-project loading calculations, they may do so but will be asked for detailed information to justify these calculations.

- Where project-specific information exists (e.g. completed projects), entities should use the project-specific design/engineering information as supporting documentation for the pollutant loading calculations.
- Any projects completed as part of a “treatment train” should be identified as such on the project sheets. Benefits of projects early in the train will be propagated downstream along with the appropriate treatment efficiency percentages.
- Projects not identified above that treat external TP loads may be eligible for credit, but would need to be considered on a case-by-case basis.

BMP Efficiency Values for the Lake Jesup BMAP (7/22/08)		
BMP	TP % Reduction	
	Value	Source
STANDARD BMPs		
Off-line Retention 0.25 treatment volume	0.40	E. Livingston evaluation of Harper 2007
Off-line Retention 0.50 treatment volume	0.62	E. Livingston evaluation of Harper 2007
Off-line Retention 0.75 treatment volume	0.75	E. Livingston evaluation of Harper 2007
Off-line Retention 1.00 treatment volume	0.84	E. Livingston evaluation of Harper 2007
On-line Retention 0.25 treatment volume	0.30	E. Livingston evaluation of Harper 2007
On-line Retention 0.50 treatment volume	0.52	E. Livingston evaluation of Harper 2007
On-line Retention 0.75 treatment volume	0.65	E. Livingston evaluation of Harper 2007
On-line Retention 1.00 treatment volume	0.74	E. Livingston evaluation of Harper 2007
Wet Pond 0.5 TV, 7 day residence time	0.40	E. Livingston evaluation of Harper 2007
Wet Pond 1.0 TV, 14 day residence time	0.60	E. Livingston evaluation of Harper 2007
Combination Swale/Wet Pond	Use online retention + wet detention	E. Livingston - BPJ
Dry Detention	0.10	E. Livingston evaluation of Harper 1999
Baffle Box	0.10	E. Livingston - BPJ/data
Nutrient Baffle Box (2nd Generation)	0.25	E. Livingston - BPJ/data
Catch Basin Inserts/Inlet Filters	0.05	E. Livingston - BPJ
Grass Swales	Use applicable on-line retention value	E. Livingston - BPJ/data
Infiltration Trench	Use applicable off-line retention value	E. Livingston - BPJ/data
Porous Pavement 0.5	Use applicable off-line retention value	E. Livingston - BPJ/data
Concrete Grid Pavement 0.5	Use applicable off-line retention value	E. Livingston - BPJ/data
PROVISIONAL BMPs (values valid for first iteration of the Jesup BMAP)		
Street Sweeping (2x/wk)	0.20	B. Kelly evaluation of FDOT 2001
Street Sweeping (1x/wk)	0.15	B. Kelly evaluation of FDOT 2001
Street Sweeping (1x/2wks)	0.10	B. Kelly evaluation of FDOT 2001
Stormceptor	0.10	E. Livingston - BPJ/data
CDS	0.05	E. Livingston - BPJ/data
Public Education*	0.05	E. Livingston evaluation of CWP 2002

Citations:

BPJ = Best professional judgment

Center for Watershed Protection (CWP). 2002. Watershed Treatment Model Version 3.1.

FDOT District 7 & Univ. of South Florida. 2001. Street Sweeping and Stormwater Runoff, Phase II Report.

Harper, H. & D. Baker. 2007. Evaluation of Current Stormwater Design Criteria within the State of Florida.

Harper, H.H. 1999. Pollutant removal efficiencies for typical stormwater management systems in FL. Florida Water Resources Journal September: 22-26

* Applies to entities with nutrient-specific education programs (e.g. FYN).

Design Factors: For retention and wet detention projects, quantification of the expected nutrient load reductions are dependent upon the project's design criteria. Although this information is not needed on the project spreadsheets submitted to DEP, please be prepared to provide the following details for each project submitted. These details may be needed by DEP or your fellow Working Group members as project suites for the Jesup BMAP are evaluated. For projects wherein an entity prefers to submit detailed justification of higher pollutant reductions than identified by the standard pollutant reduction tool, or for projects that do not fit the assumptions made in development of that tool, the details that will be needed to facilitate project evaluation are described in the table below.

BMP	Design Factors
Dry retention	Drainage area treated (acres), impervious acres treated, project curve number, treatment volume (acre feet), on-line vs. off-line, infiltration rates, drawdown time
Wet retention/detention	Drainage area treated, impervious acres treated, project curve number, treatment volume, on-line vs. off-line, infiltration rates, drawdown time, volume infiltrated vs. detained
Wet detention	Drainage area treated (acres), impervious acres treated, project Curve Number, treatment volume (acre feet), wet season and annual residence time (days), littoral zone (Yes/No), % area in littoral zone, pond depth (ave/max), drawdown time (hrs), stormwater reuse (Yes/No), reuse rate (inches/week), pretreatment? BMP Treatment Train?
Swales	Drainage area treated (acres), impervious acres treated, project curve number, treatment volume (acre feet), on-line vs. off-line, infiltration rates, drawdown time presence of swale blocks
Second generation baffle boxes	Drainage area treated (acres), impervious acres treated, project Curve Number, On line versus Off line, Flow (cfs)
Alum injection	Drainage area treated (acres), Impervious acres treated, project Curve Number, alum dosage (mg/l), alum floc capture/disposal method. Note: if associated with a wet detention system, provide details on design as requested above
Stormceptor Units	Drainage area treated (acres), impervious acres treated, project Curve Number, On line versus Off line, Flow (cfs)

ADDITIONAL PROJECT TYPES

Stormwater Reuse: Stormwater reuse may be eligible for up to 100% TP load reduction credit, depending on the design of the project. These will need to be evaluated by FDEP on a case-by-case basis.

Septic Tank BMPs: Areas served by septic tanks within 200m of a surface waterbody in the Jesup watershed (consistent with the Jesup TMDL) that are converted to central sewer will be eligible for up to 100% credit, depending on how the effluent is treated (re-use versus surface discharge). Effluent that results in surface discharge will be provided reduced (i.e. less than 100%) credit in the BMAP.

Low Impact Development (LID) Projects: Many entities in the Jesup watershed have implemented low impact development principles as part of their stormwater management projects. Credit will be given for LID practices that either: 1) were not credited in the original ERP permit calculations; or 2) are part of a retrofit project that improves current treatment levels. Credit for LID projects will be evaluated on a case-by-case basis, as LID projects tend to be unique in design.