

BMP Selection Criteria	Bio-embankment ^{1a}	Biofiltration Conveyance ^{1a}		Bioretention ^{1a,2}		Bioswale ^{1a}		Dry Detention Basin ^{1a}	Filter Strip w/ Level Spreader ^{1a}	Filtration Basin ^{1a,2}		Green Roof ^{1a}	Infiltration Basin ^{1b}	Open Graded Friction Course ^{1a}	Permeable Pavement		Preformed Scour Hole ^{1a}	Rainwater Harvesting ^{1a,3}	Sand Filter ^{1a,4}	Soil Improvement ^{1a}	Storm-water Wetland ^{1a}	Swale ^{1a}		Tree Box ^{1a}	Wet Detention Basin ^{1a}
		w/o IWS	w/IWS	w/o IWS	w/IWS	w/o IWS	w/IWS			w/o IWS	w/IWS				Detention ^{1a}	Infiltrating ^{1b}						Dry	Wet		
Removal Efficiency for Parameters of Concern (POCs)¹																									
Bacteria	Med	Med	High	Med	Low	Low	High	Low ¹²	High	Low	Med	High	Low	Med	High	Low	Varies	Med	Low	High	Low	Med	High		
Metals																									
Dissolved Metals	Low	Low	Med	Med	Low	Low	Med	Low	High	Low	High	Low	High	Low	Low	High	Low	Varies	Low	Low	Med	Low	Med	Low	
Total Recoverable Metals	Low	Low	High	Med	Med	Med	High	Low	High	Low	High	Low	High	Low	Med	High	Med	Varies	Low	Low	High	Low	Med	Med	
Nutrients																									
Dissolved Nitrogen ⁵	Low	Low	Med	Med	High	Low	Med	Low	Low	Med	High	Low	High	Low	Low	High	Low	Varies	Low	Low	Med	Low	Low	Low	Low
Total Nitrogen ⁵	Low	Low	Med	Med	High	Low	Med	Low	Low	Med	High	Med	High	Low	Low	High	Low	Varies	Low	Low	High	Low	Med	Med	Low
Dissolved Phosphorus	Med ¹¹	Med ¹¹	Med ¹¹	Med ¹¹	Low	Low	Med ¹¹	Low	High	Low	High	Low	High	Low	Low	High	Low	Varies	Med ¹¹	Low	Med	Low	Low	Med ¹¹	Low
Total Phosphorus	Med	Med	High	Med	Med	Low	High	Med	High	Low	High	Med	High	Low	Med	High	Low	Varies	Med	Low	High	Low	Med	Med	Med
Oil and Grease	High	High	High	High	Med	Med	High	N/A	High	Med	Med	High	Med	Med	High	Med	Varies	Med	Med	High	Med	High	Low	Low	
Organics	High	High	High	High	Med	Med	High	Med	High	Low	Low	High	Med	Med	High	Med	Varies	Med	Med	High	Med	High	Low	Low	
Temperature	Med	Med	High	Med	Low	Med	High	High	High	Low	High	High	High	Low	High	Med	Low	Med	High	Low	Low	High	Low	Low	
Total Suspended Solids	High	High	High	High	Med	Med	High	High	High	Med	High	High	High	Med	High	Med	High	High	High	Med	High	High	High	High	High
Trash	Med	High	High	High	High	High	High	High	High	Med	High	High	High	Med	High	High	High	High	High	Med	High	High	High	High	High
Water Quantity																									
Runoff Volume Reduction	Med	Low	Med	Med	High	Med	High	Med	Low	Med	High	Med	High	Low	Low	High	Low	Varies	Low	Med	Low	Low	Med	Low	Low
Peak Flow Control	Low	Low	Med	Med	High	Med	High	Med	Low	Med	High	Med	High	Low	Med	High	Low	Varies	Med	Low	High	Low	Low	High	High
Siting Constraints and Other Implementation Considerations																									
Space Requirement	Low	Low	Med	Med	Med	Low	Med	Low	Med	Low	Med	Low	Med	Low	Low	Low	Low	Med	Low	High	Low	Low	High	High	High
Environmental Issues⁶																									
Contaminated Soils ⁷	Use liner	Use liner	Use liner	Use liner	Use liner	Use liner	Use liner	Use liner	Use liner	Yes	No	Yes	No	Yes	Use liner	No	No	Yes	Use liner	No	Use liner	Use liner	Use liner	Use liner	Use liner
Physical Site Limitations⁶																									
Karst Topography	Use liner	Use liner	Use liner	Use liner	Use liner	Use liner	Yes	Use liner	Yes	No	Yes	No	Yes	Use liner	No	Yes	Yes	Yes	Use liner	Yes	Use liner	Yes	Use liner	Use liner	Use liner
Shallow Bedrock ⁸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shallow Water Table ⁹	No	Yes	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Steep Slopes (>5%) ¹⁰	No	Yes	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Cost Considerations																									
Construction Cost	\$-\$	\$-\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$	\$-\$-\$	\$-\$	\$-\$-\$	\$-\$-\$	\$	Varies	\$-\$-\$	\$-\$	\$-\$	\$	\$-\$	\$-\$	\$-\$	\$-\$
O&M Cost	\$-\$	\$	\$-\$	\$-\$	\$-\$	\$	\$	\$-\$	\$-\$	\$	\$	\$-\$	\$-\$	\$	\$	Varies	\$-\$-\$	\$	\$-\$	\$	\$-\$	\$	\$-\$-\$	\$-\$	\$-\$

¹ "High", "Med", "Low", or "N/A". ^{1a} EMC-based pollutant reduction. ^{1b} Load-based pollutant reduction.

² All NCDOT Bioretention and Filtration Basin facilities include underdrain; if no underdrain, see Infiltration Basin.

³ Water quality and quantity performance varies based on size of system and use of captured water.

⁴ For Sand Filter, an enclosed chamber type system (e.g., Austin/Delaware) is assumed.

⁵ Note that nitrogen concentrations in roadway runoff are generally low; this reduces the removal efficiency of many BMPs.

⁶ "Yes" indicates BMP is suitable for locations with a particular siting constraint. "No" indicates that the BMP is not suitable.

⁷ When contaminated soils are present, consultation with the Geotech Unit and Hydraulics Unit is highly recommended.

⁸ For suitable BMPs, it may be necessary to increase practice footprint and/or install an impermeable liner to achieve desired performance.

⁹ For suitable BMPs, an impermeable liner may be required. Additional investigation and consultation with Geotech and Hydraulics Units recommended.

¹⁰ For green roof, slope refers to roof pitch. Note that design modifications are required for roof pitch >8% (per NCDEQ).

¹¹ With media amended or enhanced to increase dissolved P removal.

¹² Green roofs are not typically a significant source of bacteria.

Targeted Parameter of Concern (POC) Based on Receiving Surface Water Classification	
Classifications	Parameter of Concern (POC)*
B: Primary Recreation, Fresh Water	Bacteria
C: Aquatic Life, Secondary Recreation, Fresh Water	TSS
CA: Critical Area	Organics
HQW: High Quality Waters (including Primary Nursery Areas (PNA))	Nutrients
N/A: Not Applicable/Out of State	TSS
NSW: Nutrient Sensitive Waters	Nutrients
ORW: Outstanding Resource Waters	Nutrients
SA: Market Shellfishing, Salt Water	Bacteria
SB: Primary Recreation, Salt Water	Bacteria
SC: Aquatic Life, Secondary Recreation, Salt Water	TSS
Sw: Swamp Waters	TSS
Tr: Trout Waters	Temperature
UWL: Unique Wetland	TSS
FWS: Future Water Supply Waters	Nutrients
WS-I: Water Supply I - Natural	Nutrients
WS-II: Water Supply II - Undeveloped	Nutrients
WS-III: Water Supply III - Moderately Developed	Nutrients
WS-IV: Water Supply IV- Highly Developed	Nutrients
WS-V: Water Supply V - Upstream	Nutrients

*** Listed POC is to provide guidance when no specific project site data is available. If specific POCs are identified through the project development process, those POCs should be the primary focus for stormwater treatment.**