

Developer Template for Inputting Project Data into the BMP Accounting & Tracking Tool (BATT)

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This Template was created by Worcester Polytechnic Institute (WPI) students as part of their fulfillment of their Major Qualifying Project (MQP). The students worked in collaboration with Stantec, LLC. in understanding the fundamentals of the Best Management Practices (BMP) Accounting and Tracking Tool (BATT). However, all work herein is the students' alone and should not be affiliated with WPI or Stantec.

First, Cambridge as Stantec's client, requested detailed forms for organizing data for input into the BATT. Developers, looking at all of the inputs for the site, can fill out simple forms for structural BMPs, non-structural BMPs and land use conversions. Cambridge can then utilize these forms and easily perform calculations of phosphorus credits using BATT.

Since there are only nine structural BMP options in BATT, the team created a flow chart to help developers organize their BMPs based on how BATT interprets them. The flow chart (provided on page 8) is composed of questions related to BMP designs outlined in BATT, the MS4 Permit, and the Massachusetts Stormwater Handbook. These questions will help lead developers to the correct BMP categorization for BATT.

Project Details:

Town	Subcatchment ID	Receiving Water	Project Type

Project ID	Date of BMP Completion	Date of Last Inspection	Date of Land Conversion Completion

Address	Latitude/Longitude	Property Parcel ID	Responsible Party

Multi Sector General Permit	BMP Built to Design Specifications	O&M Plan Provided and Reviewed

Land Use Details:

Existing Land Use:

Subcatchment	Land Use Group	HSG	Acres of Pervious	Acres of Impervious	Total Acreage

Structural BMPs:

This section determines the design storage volume for your selected BMP. If referring to HydroCAD reports, the *storage volume is already calculated* and the parameters described for each BMP are not necessarily needed. In this case, report at table at bottom of page 6.

Bioretention

Bed Surface Area (sq. ft.)	
Ponding Depth (ft.)	
Soil Depth (ft.)	
Soil Porosity	

Enhanced Bioretention

Surface Area of filter bed (sq. ft.)	
Ponding Depth (ft.)	
Filter Depth (ft.)	
Soil Porosity	
ISR Surface Area (sq. ft.)	
Stone Depth (ft.)	
Stone Porosity	

Extended Dry Detention Pond

Surface Area of Pond (sq. ft.)	
Pond Depth (ft.)	

Grass Swale

Swale Length (ft.)	
Cross Sectional Area (sq. ft.)	

Gravel Wetland

Surface Area of Pretreatment (sq. ft.)	
Pretreatment Depth (ft.)	
Area of Wetland (sq. ft.)	
Depth of Ponding (ft.)	

Infiltration Basin

Infiltration Rate (in./hr.)	
Length (ft.)	
Width of the bottom (ft.)	
Width of the top at max depth (ft.)	
Depth (ft.)	

Infiltration Trench

Infiltration Rate (in./hr.)	
Trench Surface Area (sq. ft.)	
Stone Depth (ft.)	
Stone Porosity	
Sand Depth (ft.)	
Sand Porosity	

Porous Pavement

Depth of filter course (12-32 in.)	
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Wet Pond/Created Wetland

Surface area of pond (sq. ft.)	
Pond Depth (ft.)	

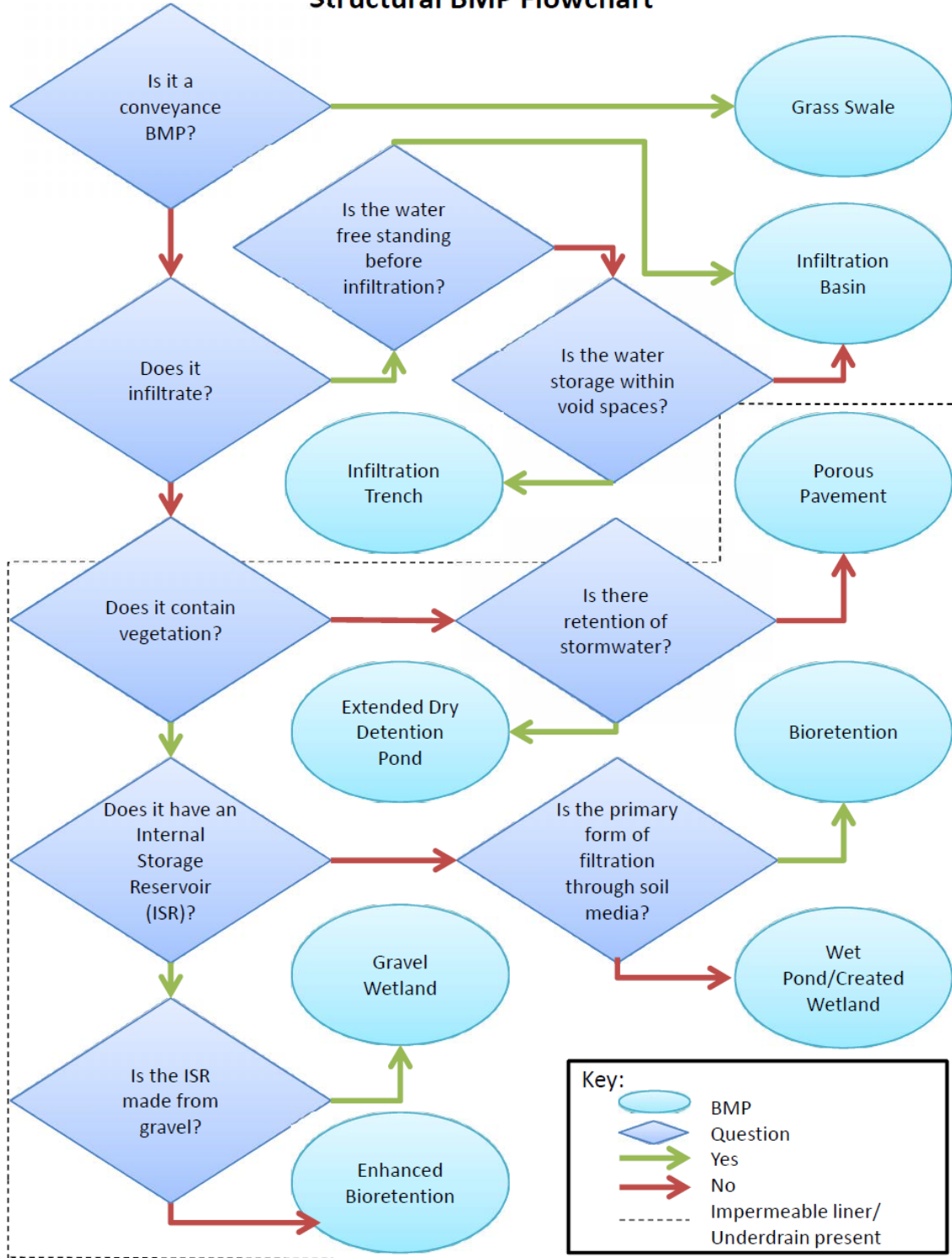
BMP and Subcatchment Number: Subcatchments should come from the Proposed Land Use Chart. Multiple Subcatchment names may be used for one BMP. Please make it clear which areas (completed on page 3) relate to which BMPs on the form.

BMP	Subcatchment

Other Pertinent Information:

This is a flowchart to help categorize your BMP with one in BATT. The following pages also outline distinguishing characteristics for the structural and two non-structural BMPs.

Structural BMP Flowchart



Differentiating Characteristics for Structural BMPs in BATT

Infiltration Trench

Differentiating Characteristics: Infiltration into subsoils instead of redirection, Storage container (pipe, chamber, galley), provides temporary storage using void spaces

BMPs labeled as a trench:

- Porous pavement without impermeable liner
- Subsurface infiltration
- Tree filter
- Dry Well
- Leaching Catch Basin

Infiltration Basin

Differentiating Characteristics: Infiltration into subsoils instead of redirection; Stores runoff by standing water before infiltration

BMPs labeled as a basin:

- Bioretention areas
- Rain Gardens
- Wet Pond
- Dry Pond
- Gravel Wetland

Bioretention

Differentiating Characteristics: Primary removal mechanism is soil media filtering, Water passes through without retention, Shallow depressions that contain soil, plants, and microbes

BMPs labeled as bioretention:

- Biofiltration (w/underdrain)
- Rain Gardens (w/ underdrain)

Gravel Wetland

Differentiating Characteristics: Gravel Internal Storage Reservoir (ISR), Retention time of at least 24 hours

Enhanced Bioretention

Differentiating Characteristics: Primary removal mechanism is soil media filtering, Washed stone Internal Storage Reservoir (ISR), Retention time of at least 24 hours

Porous Pavement

Differentiating Characteristics: Porosity in paved surface allows filtration to an underdrain

Wet Pond/Created Wetland

Differentiating Characteristics: Primary removal mechanism is settling and vegetative treatment; Stormwater remains until displaced by incoming storm runoff

Dry Pond

Differentiating Characteristics: Stormwater treatment through limited settling, rapid displacement; No vegetation required

BMPs Labeled as Dry Pond:

Dry Detention Basin: Limited settling of sediments; designed to empty in less than 24 hours

Extended Dry Detention Pond: Provides a minimum detention time of 24 hours, removal of sediment can be enhanced with addition of shallow marshes, micropools, or forebays

Grass Swale

Differentiating Characteristics: Primary removal mechanism is conveyance: water must move across swale for treatment, Infiltration is a factor (Rate assumed in BATT)

Differentiating Characteristics for Non-Structural BMPs in BATT

Impervious Area Disconnection with Storage

Differentiating Characteristics: Primary mechanism is to collect runoff from an impervious area, storing it in a container, and releasing it to a pervious area after a time delay

BMPs Labeled as Impervious Area Disconnection with Storage:

Rain barrel

Cistern

Rainwater harvester

Impervious Area Disconnection without Storage

Differentiating Characteristics: Discharge of rainwater from an impervious area to a pervious area

BMPs Labeled as Impervious Area Disconnection without Storage:

Rain Gutter Downspout