



Form 2D – Bioretention Area Design Form

City of Prattville Review

Reviewed By: _____ Date: _____

Required Attachments: Narrative Design Drawings H&H Calculations Drainage Basin Maps
 Soils Data Vegetation Plan Maintenance Plan

Approval Status: Approved Approved Contingent Denied Incomplete

Comments: _____

Development Information

Date: _____

Name: _____ BMP ID: _____

Address or Location: _____

Required Attachments: Narrative Design Drawings H&H Calculations Drainage Basin Maps
 Soils Data Vegetation Plan Maintenance Plan

Total Development Area: _____ acres

Existing Impervious Area (EIA): _____ acres

Proposed Impervious Area (PIA):

Water Quality Volume (WQ_v):

Buildings / Structures: _____ acres
 Driveways / Side Walks: _____ acres
 Roads: _____ acres
 Parking: _____ acres
 Other: _____ acres
 Total PIA: _____ acres

WQ_v = Additional Impervious Area (acres) X 1.14 in X 3,630
 Additional Impervious Area = PIA – EIA
 WQ_v = _____ acres X 1.14 in X 3,630
 WQ_v = _____ ft³

Comments: _____

Watershed: Noland Creek Autauga Creek Pine Creek Fay Branch

Pre-Development

Pre-Development Basin ID:	_____	_____	_____	_____	_____	Pre Total
Drainage Area <input type="checkbox"/> Acres <input type="checkbox"/> ft ² :	_____	_____	_____	_____	_____	_____
Curve Number:	_____	_____	_____	_____	_____	_____
Time of Concentration (min):	_____	_____	_____	_____	_____	_____
Peak Discharge (ft ³ /s):	_____	_____	_____	_____	_____	Pre Total
1.14" (WQ)	_____	_____	_____	_____	_____	_____
4.21" (2-yr)	_____	_____	_____	_____	_____	_____
5.24" (5-yr)	_____	_____	_____	_____	_____	_____
6.17" (10-yr)	_____	_____	_____	_____	_____	_____
7.55" (25-yr)	_____	_____	_____	_____	_____	_____
9.93" (100-yr)	_____	_____	_____	_____	_____	_____



Form 2D – Bioretention Area Design Form

Development Name: _____

Date: _____

BMP ID: _____

Post-Development

Post-Development Basin ID:	_____	_____	_____	_____	_____	_____	Post Total
Drainage Area <input type="checkbox"/> Acres <input type="checkbox"/> ft ² :	_____	_____	_____	_____	_____	_____	_____
Curve Number:	_____	_____	_____	_____	_____	_____	_____
Time of Concentration (min):	_____	_____	_____	_____	_____	_____	_____
Peak Discharge (ft ³ /s):	_____	_____	_____	_____	_____	_____	Post Total
1.14" (WQ)	_____	_____	_____	_____	_____	_____	_____
4.21" (2-yr)	_____	_____	_____	_____	_____	_____	_____
5.24" (5-yr)	_____	_____	_____	_____	_____	_____	_____
6.17" (10-yr)	_____	_____	_____	_____	_____	_____	_____
7.55" (25-yr)	_____	_____	_____	_____	_____	_____	_____
9.93" (100-yr)	_____	_____	_____	_____	_____	_____	_____

Bioretention Area

Hydrologic Soil Group: A B C D

Saturated Hydraulic Conductivity: _____ in/hr Field Test Performed? Yes No

Drainage Area: _____ Acres Water Table Depth: _____ ft Land Slope: _____ %

Pretreatment: Grassed Filter Strip Forebay Other: _____

Soil Media:	Depth	Bottom EL	
Mulch:	_____ in	_____ ft	
Bioretention Media:	_____ in	_____ ft	
Stone:	_____ in	_____ ft	

Underdrain Pipe(s): Material: _____ No underdrain system

Perforated Pipe Invert EL: _____ ft Diameter: _____ in

Outlet Pipe Invert EL: _____ ft Diameter: _____ in

Clean Out Pipe(s): Material: _____ No clean out pipes

Number of Pipes: _____ ea Diameter: _____ in

Overflow Structure: Material: _____ Shape: _____ Trash Rack: Yes No

Diameter: _____ ft OR Width: _____ ft Length: _____ ft

Bottom EL: _____ ft Top EL: _____ ft

Outlet Pipe: Material: _____ Shape: _____

Diameter: _____ in

Internal Water Storage: Depth: _____ in Drain Time: _____ hrs

Ponded Water: Depth: _____ in Drain Time: _____ hrs Surface Area: _____ ft²

Outfall Location

Latitude: _____ ° _____ ' _____ "

Longitude: _____ ° _____ ' _____ "

This form has been developed for the City of Prattville and cannot be copied, duplicated or used by another entity without written permission from the City of Prattville.



Form 2D – Bioretention Area Design Form

Development Name: _____

Date: _____

BMP ID: _____

Stage-Area-Storage Summary: (Notes: Maximum elevation increment of 1 foot.)

WQ _v	Elevation	Area	Cumulative Volume	WQ _v	Elevation	Area	Cumulative Volume
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³
<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³	<input type="checkbox"/>	_____ ft	_____ ft ²	_____ ft ³

WQ_v Required: _____ ft³ WQ_v Provided: _____ ft³ Stage: _____ ft

Discharge Summary:

Rainfall	Pre Q	Pond In Q	Pond Out Q	Max. Stage	Outlet Velocity	Total Post Q
1.14" (WQ)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s
4.21" (2-yr)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s
5.24" (5-yr)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s
6.17" (10-yr)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s
7.55" (25-yr)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s
9.93" (100-yr)	_____ ft ³ /s	_____ ft ³ /s	_____ ft ³ /s	_____ ft	_____ ft/s	_____ ft ³ /s

Professional Engineer Certification:

By affixing my professional seal and signature on this form, I hereby certify that this stormwater management facility provides the required water quality volume (WQ_v) and is designed in accordance with the City of Prattville Technical Memorandum dated 21 March 2020. I further certify that the drainage areas shown in the hydrology and hydraulic (H&H) calculations do in fact drain into this facility and that the post-development runoff mimics pre-development hydrology to the maximum extent practicable (MEP).

Company: _____

Seal:

Name: _____

Address: _____

E-mail: _____

Phone: _____

Signature: _____

Date: _____



Form 2D – Bioretention Area Design Form

Supplemental Instructions

1. The developer/owner shall retain the services of a professional engineer to:
 - a. Complete Form 2D – Bioretention Area Design Form; and,
 - b. Provide ALL required attachments:
 - Narrative
 - Design Drawings
 - H&H Calculations
 - Drainage Basin Maps
 - Soils Data
 - Vegetation Plan
 - Maintenance Plan
2. General design standards and requirements shall be as follows:
 - a. Stormwater management facilities cannot be constructed within the floodway;
 - b. Installation of stormwater management facilities shall not adversely impact and/or cause flooding of properties located upstream and/or downstream of the development;
 - c. The calculation methodology shall utilize the National Resource Conservation Resources (NRCS) Urban Hydrology for Small Watersheds Technical Release 55 (TR-55) or equivalent as approved by the City Engineer;
 - d. All applicable developments shall be responsible for ensuring that post-development hydrology mimics pre-development hydrology for the WQ, 2-year, 5-year, 10-year, and 25-year, 24-hour rainfall depths;
 - e. The storm drainage system (i.e. piped storm sewer, overland flow, etc.) within the development shall be designed to convey the discharge resulting from a 100-year, 24-hour storm event in a manner that will not adversely impact and/or cause flooding of structures within the development;
 - f. The principal spillway for a stormwater management facility shall be sized to convey the 25-year, 24-hour storm event without allowing any discharge from the emergency spillway;
 - g. Design plans for stormwater management facilities shall have a maximum scale of 1 inch = 100 feet and show existing contours, proposed contours, floodplain, floodway, details of outlet structure, details of emergency spillway, layout of storm sewer system, details of storm sewer system outlet protection, property lines, roads, rights-of-way, streets, easements, etc.; and,
 - h. H&H studies for stormwater management facilities shall include model network, existing drainage areas, proposed drainage areas, time of concentration, curve number, pre-development peak discharges, post-development peak discharges, outlet structure geometry, emergency spillway geometry, pond stage-area-storage summary, pond discharge summary, inflow and outflow hydrographs, and outlet pipe velocities;



Form 2D – Bioretention Area Design Form

- i. The latest version of the Alabama Low Impact Development Handbook for the State of Alabama is incorporated by reference; and,
- j. Bioretention areas shall be designed in accordance with the Alabama Low Impact Development Handbook for the State of Alabama. Applicable design requirements include but are not limited to the following:
 - The maximum recommended drainage area is 5 acres, but 0.5 to 2 acres is preferred;
 - A minimum of 200 square feet footprint is recommended or approximately 5% to 8% of the contributing impervious area;
 - Seasonally high-water table shall be greater than 6-feet below the surface;
 - Bioretention areas shall be located in areas where the slope is 5% or less;
 - Preferred in-situ soils shall be hydrologic soil group A or B;
 - Ponded water shall drain within 12 hours, and stormwater shall infiltrate the bioretention cell to 2 feet below the surface within 48 hours;
 - If internal water storage is provided, internal water storage shall drain within 4 days;
 - Components of the bioretention area may include a pretreatment device, bioretention area, overflow structure, underdrain, clean out pipes, and internal water storage; and,
 - The vegetation plan shall address plant types, plant sizes, plant establishment, lime and fertilizer, and plant spacing.
- k. The maintenance plan shall address the following:
 - Mulching
 - Re-planting
 - Weeding
 - Routine inspections
 - Storm event inspections
 - Fertilization
 - Unclogging underdrain pipes
 - Pruning
 - Sediment Removal
 - Trash removal
 - Mulch removal from outlets

3. BMP Information:

- a. Complete a Form 2D – Bioretention Area Design Form for each bioretention area;
- b. For the form to be considered complete, all required attachments shall be provided with a completed form;
- c. Narrative: Shall describe the stormwater management strategy and associated assumptions;
- d. H&H Calculations: Shall include all supporting information and data required to complete this form; and,
- e. Soils Data: Shall include published data and supporting documentation of all field tests performed to determine the saturated hydraulic conductivity.

4. Pre-Development Conditions:

- a. Provide a unique basin identification number for each basin that drains to the proposed location of the bioretention area; and,



Form 2D – Bioretention Area Design Form

- b. If multiple basins drain to the bioretention area, the combined peak discharges shall be completed in the last column of this section.
5. Post-Development Conditions:
- a. Provide a unique basin identification number for each basin that drains to the proposed location of the bioretention area; and,
 - b. If multiple basins drain to the bioretention area, the combined peak discharges shall be completed in the last column of this section.
6. Bioretention Area:
- a. Information required in this section was developed in accordance with the Alabama Low Impact Development Handbook for the State of Alabama.