



# Form 2B – Retention Pond Design Form

## City of Prattville Review

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

Required Attachments:  Narrative  Design Drawings  H&H Calculations  Drainage Basin Maps

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

Total Development Area: \_\_\_\_\_ acres Existing Impervious Area (EIA): \_\_\_\_\_ acres

Proposed Impervious Area (PIA): \_\_\_\_\_

Water Quality Volume (WQ<sub>v</sub>): \_\_\_\_\_

Buildings / Structures: \_\_\_\_\_ acres WQ<sub>v</sub> = Additional Impervious Area (acres) X 1.14 in X 3,630

Driveways / Side Walks: \_\_\_\_\_ acres Additional Impervious Area = PIA – EIA

Roads: \_\_\_\_\_ acres WQ<sub>v</sub> = \_\_\_\_\_ acres X 1.14 in X 3,630

Parking: \_\_\_\_\_ acres WQ<sub>v</sub> = \_\_\_\_\_ ft<sup>3</sup>

Other: \_\_\_\_\_ acres

Total PIA: \_\_\_\_\_ acres

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 <sup>2</sup> :	_____	_____	_____	_____	_____	_____
Curve Number:	_____	_____	_____	_____	_____	_____
Time of Concentration (min):	_____	_____	_____	_____	_____	_____
Peak Discharge (ft <sup>3</sup> /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)	_____	_____	_____	_____	_____	_____

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Development Name: \_\_\_\_\_

Date: \_\_\_\_\_

BMP ID: \_\_\_\_\_

**Post-Development**

Post-Development Basin ID:	_____	_____	_____	_____	_____	_____	_____	Post Total
Drainage Area	<input type="checkbox"/> Acres	<input type="checkbox"/> ft <sup>2</sup> :	_____	_____	_____	_____	_____	_____
Curve Number:	_____	_____	_____	_____	_____	_____	_____	_____
Time of Concentration (min):	_____	_____	_____	_____	_____	_____	_____	_____
Peak Discharge (ft <sup>3</sup> /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)	_____	_____	_____	_____	_____	_____	_____	_____

**Retention Pond**

Normal Pool EL:	_____ ft	Pond Bottom EL:	_____ ft
WQ <sub>v</sub> Pool EL:	_____ ft	Pond Surface Area:	_____ <input type="checkbox"/> ac or <input type="checkbox"/> ft <sup>2</sup>
Max. Pool EL:	_____ ft	Pond Volume:	_____ <input type="checkbox"/> ac-ft or <input type="checkbox"/> ft <sup>3</sup>
Sediment Forebay:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Forebay Volume:	_____ <input type="checkbox"/> ac-ft or <input type="checkbox"/> ft <sup>3</sup>

**Multi-Stage Riser**

Material:	_____	Shape:	_____
Diameter:	_____ ft	OR	Width: _____ ft
Bottom EL:	_____ ft	Length:	_____ ft
Shape	Size	Top EL:	_____ ft
Inv. In EL	Inv. Out EL	Trash Rack:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Outlet Pipe:	_____ in	_____ ft	_____ ft
Pond Drain:	_____ in	_____ ft	_____ ft
Normal Pool Pipe:	_____ in	_____ ft	_____ ft
WQ <sub>v</sub> Orifice:	_____ in	_____ ft	_____ ft
Orifice 2:	_____ in	_____ ft	_____ ft
Orifice 3:	_____ in	_____ ft	_____ ft
Shape	Length	Inv. EL	
Weir 1:	_____ ft	_____ ft	
Weir 2:	_____ ft	_____ ft	

**Emergency Spillway**

Material:	_____	Shape:	_____
Length:	_____ ft	Width:	_____ ft
Crest EL:	_____ ft	Top EL:	_____ ft

**Outfall Location**

Latitude: \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "      Longitude: \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "

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Development Name: \_\_\_\_\_

Date: \_\_\_\_\_

BMP ID: \_\_\_\_\_

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

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

WQ<sub>v</sub> Required: \_\_\_\_\_ ft<sup>3</sup>    WQ<sub>v</sub> Provided: \_\_\_\_\_ ft<sup>3</sup>    Stage: \_\_\_\_\_ ft

**Pond Discharge Summary**

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

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## Supplemental Instructions

1. The developer/owner shall retain the services of a professional engineer to:
  - a. Complete Form 2B – Retention Pond Design Form; and,
  - b. Provide ALL required attachments:
    - Narrative
    - Design Drawings
    - H&H Calculations
    - Drainage Basin Maps
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. Filtration system for the WQ<sub>v</sub> Orifice shall allow the volume of stormwater associated with the WQ<sub>v</sub> to drain slowly from the retention pond within a 48-hour period;
  - g. 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;
  - h. Each stormwater management facility shall provide for an emergency spillway designed to convey the discharge resulting from a 100-year, 24-hour storm event. A freeboard of 20 percent (1 foot minimum) should be added to the embankment above the emergency spillway height to prevent overtopping;
  - i. 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,
  - j. 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,



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emergency spillway geometry, pond stage-area-storage summary, pond discharge summary, inflow and outflow hydrographs, and outlet pipe velocities.

3. Specific requirements for stormwater retention (wet) ponds shall be as follows:
  - a. Maximum side slope steepness shall be 3 horizontal to 1 vertical (3:1);
  - b. Maximum water surface elevation in reservoir shall be two (2) feet (or greater) below lowest floor elevation of adjacent structure(s);
  - c. Provide a low flow ditch in the bottom of the stormwater retention pond;
  - d. Sides and banks shall be grassed or paved;
  - e. Overflow sections, such as emergency spillways, shall be designed to accommodate the discharge resulting from a 100-year, 24-hour storm event; and,
  - f. Stormwater retention ponds located in residential subdivisions shall be enclosed with a minimum four-foot high black, vinyl coated chain link fence. Gate(s) with locks shall be provided for maintenance access.
4. Requirements for permanent lakes used as stormwater management facilities shall be as follows:
  - a. Maximum water surface elevation shall be two (2) feet (or greater) below lowest floor elevation of adjacent structure(s);
  - b. Maximum fluctuation between permanent pond level to maximum pond level shall be three (3) feet;
  - c. Stability analysis shall be furnished; and,
  - d. Consideration is suggested for safety to small children.