Post-Construction Excel Smart Forms

Baldwin County

MS4 NPDES Permit No. ALS000002

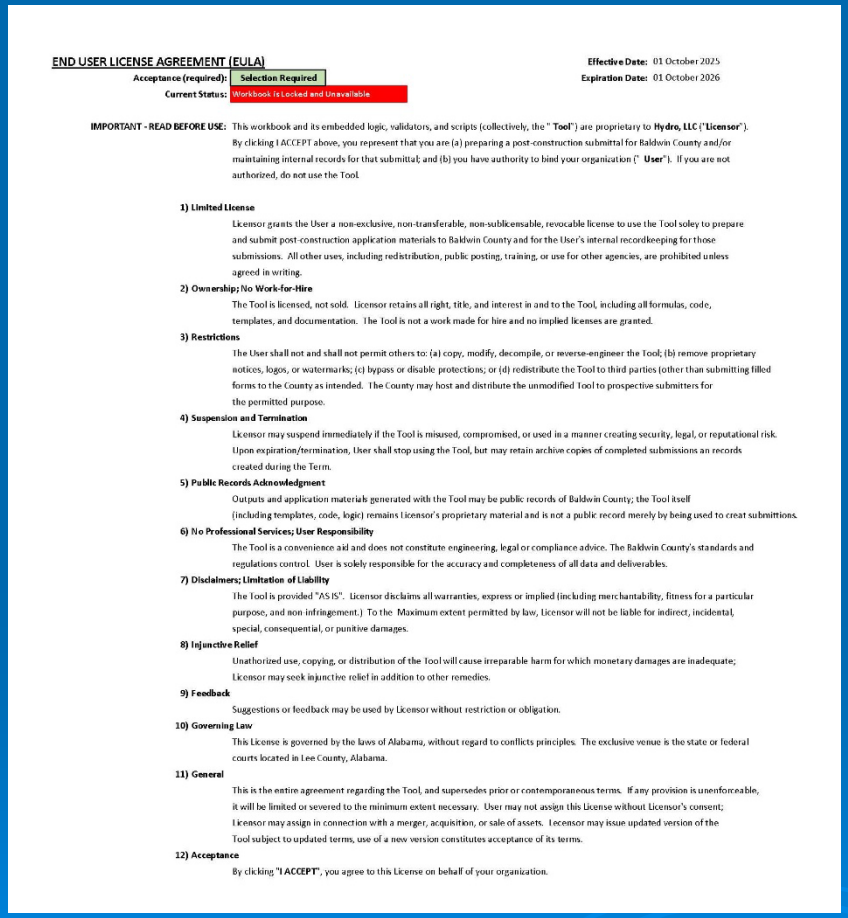
HYDRO ENGINEERING SOLUTIONS

Excel Smart Forms

- Objectives
  - Facilitate the review process
  - Summarize hydrologic and hydraulic calculations
  - Requirements for BMP design
  - Documentation of as-built condition
  - Documentation of routine inspections
- Background

HYDRO ENGINEERING SOLUTIONS

End User License Agreement



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Acceptance (required): Selection Required
Current Status: Workbook is Locked and Unavailable

Effective Date: 01 October 2025
Expiration Date: 01 October 2026

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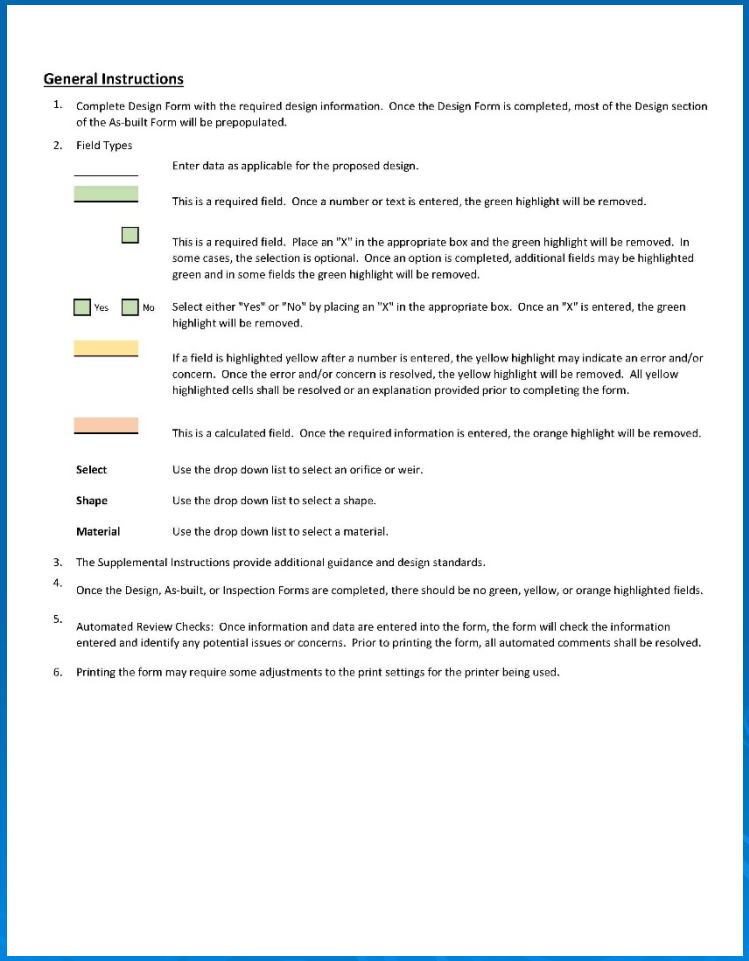
- End User License Agreement
- Acceptance Required
- Version Control

HYDRO ENGINEERING SOLUTIONS

General Instructions

- Required fields highlighted "**Green**"
- Data entry may highlight additional fields "**Green**"
- Calculated fields highlighted "**Orange**"
- Concerns highlighted "**Yellow**"
- Drop Down List



General Instructions

1. Complete Design Form with the required design information. Once the Design Form is completed, most of the Design section of the As-built Form will be prepopulated.
2. Field Types

	Enter data as applicable for the proposed design.
	This is a required field. Once a number or text is entered, the green highlight will be removed.
	This is a required field. Place an "X" in the appropriate box and the green highlight will be removed. In some cases, the selection is optional. Once an option is completed, additional fields may be highlighted green and in some fields the green highlight will be removed.
Yes No	Select either "Yes" or "No" by placing an "X" in the appropriate box. Once an "X" is entered, the green highlight will be removed.
	If a field is highlighted yellow after a number is entered, the yellow highlight may indicate an error and/or concern. Once the error and/or concern is resolved, the yellow highlight will be removed. All yellow highlighted cells shall be resolved or an explanation provided prior to completing the form.
	This is a calculated field. Once the required information is entered, the orange highlight will be removed.
Select	Use the drop down list to select an orifice or weir.
Shape	Use the drop down list to select a shape.
Material	Use the drop down list to select a material.

3. The Supplemental Instructions provide additional guidance and design standards.
4. Once the Design, As-built, or Inspection Forms are completed, there should be no green, yellow, or orange highlighted fields.
5. Automated Review Checks: Once information and data are entered into the form, the form will check the information entered and identify any potential issues or concerns. Prior to printing the form, all automated comments shall be resolved.
6. Printing the form may require some adjustments to the print settings for the printer being used.

HYDRO ENGINEERING SOLUTIONS

Water Quality Volume (WQ_v)

Purpose: Filter sediment, trash, and debris

Water Quality Volume:

EIA = Existing Impervious Area (acres)

PIA = Proposed Impervious Area (acres)

AIA = Additional Impervious Area (acres)

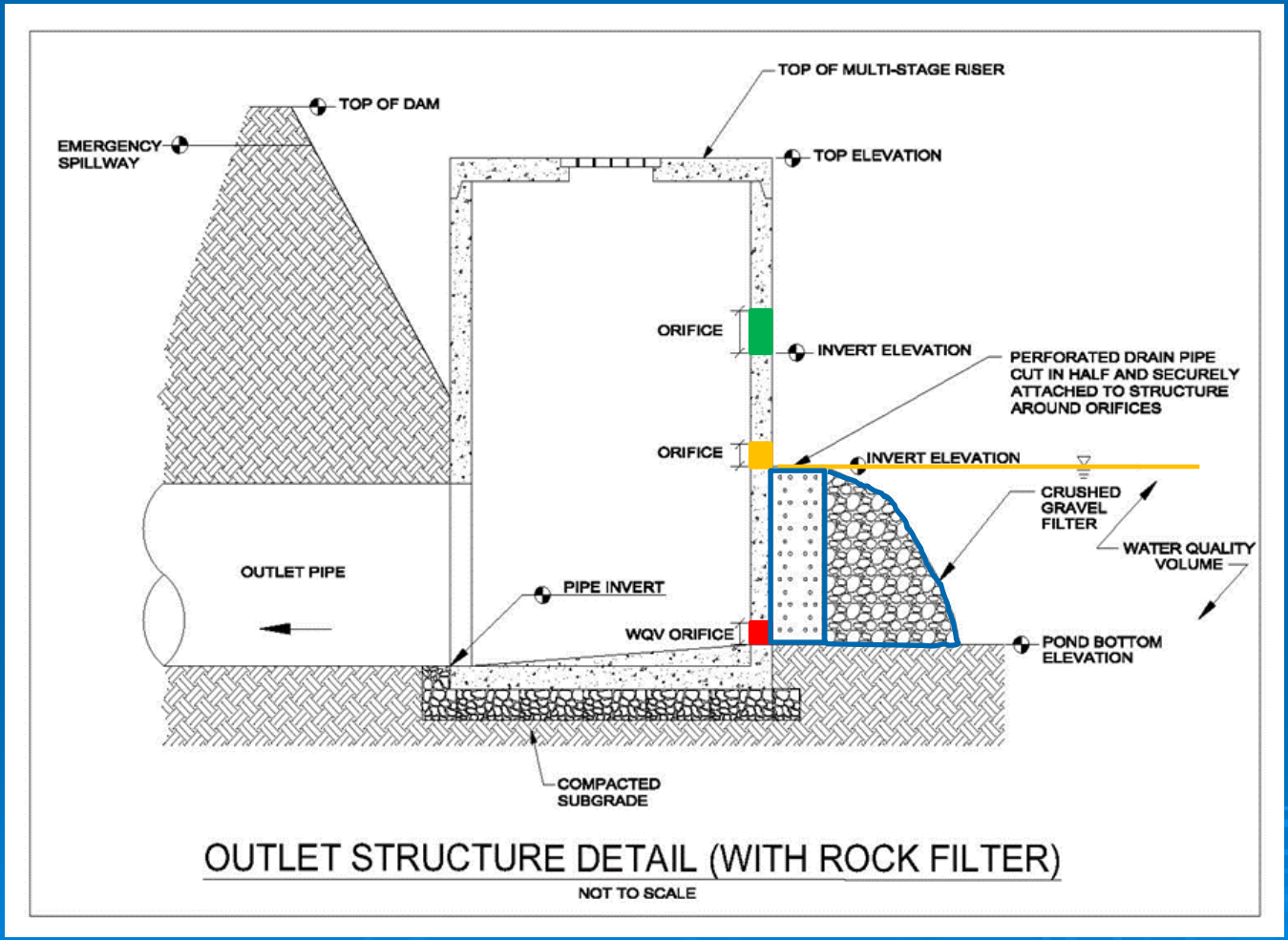
= PIA – EIA

WQ_v = Water Quality Volume (ft^3)

= AIA * 1.00 * 3,630

HYDRO ENGINEERING SOLUTIONS

Water Quality Volume (WQ_v)



HYDRO ENGINEERING SOLUTIONS

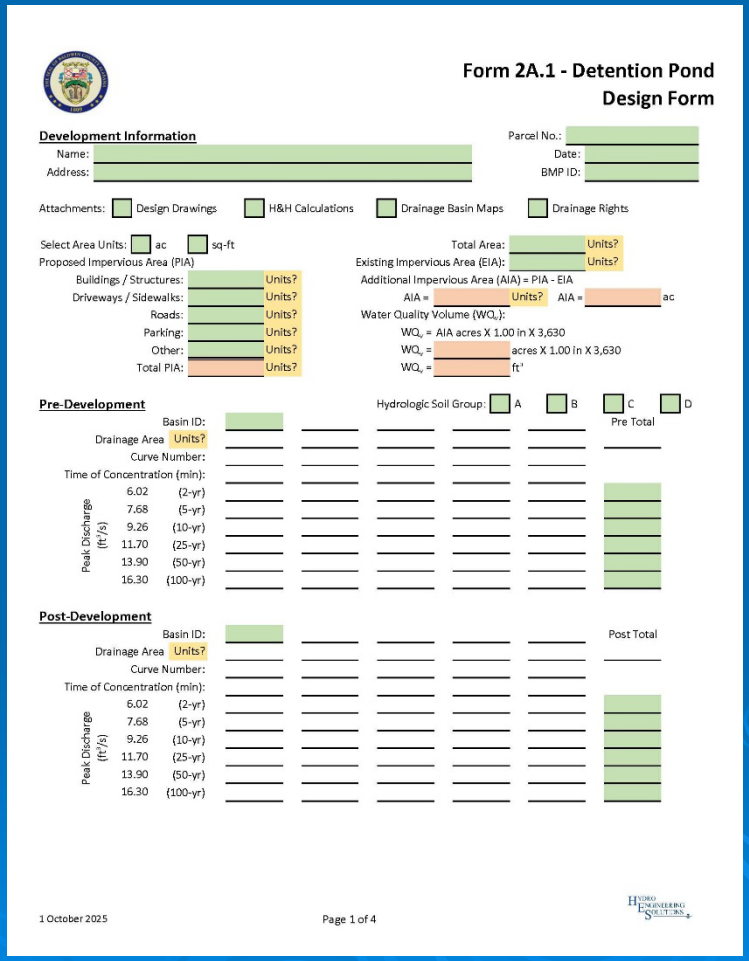
Design Smart Forms

- Design Excel Smart Forms
  - Form 2.1A – Detention Pond
  - Form 2.1B – Retention Pond
  - Form 2.1C – Underground Detention
  - Form 2.1D – Bioretention Area
  - Form 2.1E – Hydrodynamic Separator
  - Form 2.1F – Permeable Pavement

HYDRO ENGINEERING SOLUTIONS

Design Smart Forms

- Fillable Excel Forms
- Required fields highlighted "**Green**"
- Data entry may highlight additional fields "**Green**"
- Calculated fields highlighted "**Orange**"
- Concerns highlighted "**Yellow**"
- Form completed correctly will have **NO** highlighted fields



Form 2A.1 - Detention Pond Design Form

Development Information

Name:
Address:
Parcel No.:
Date:
BMP ID:

Attachments: Design Drawings | H&H Calculations | Drainage Basin Maps | Drainage Rights

Select Area Units: ac sq-ft

Proposed Impervious Area (PIA)

Buildings / Structures:	Units?
Driveways / Sidewalks:	Units?
Roads:	Units?
Parking:	Units?
Other:	Units?
Total PIA:	Units?

Total Area: Units?
Existing Impervious Area (EIA): Units?
Additional Impervious Area (AIA) = PIA - EIA
AIA = Units? AIA = ac
Water Quality Volume (WQ_v):
WQ_v = AIA acres X 1.00 in X 3,630
WQ_v = acres X 1.00 in X 3,630
WQ_v = ft³

Pre-Development

Hydrologic Soil Group: A B C D

							Pre Total
Basin ID:							
Drainage Area	Units?						
Curve Number:							
Time of Concentration (min):							
Peak Discharge (ft³/s)	6.02	(2-yr)					
	7.68	(5-yr)					
	9.26	(10-yr)					
	11.70	(25-yr)					
	13.90	(50-yr)					
	16.30	(100-yr)					

Post-Development

							Post Total
Basin ID:							
Drainage Area	Units?						
Curve Number:							
Time of Concentration (min):							
Peak Discharge (ft³/s)	6.02	(2-yr)					
	7.68	(5-yr)					
	9.26	(10-yr)					
	11.70	(25-yr)					
	13.90	(50-yr)					
	16.30	(100-yr)					

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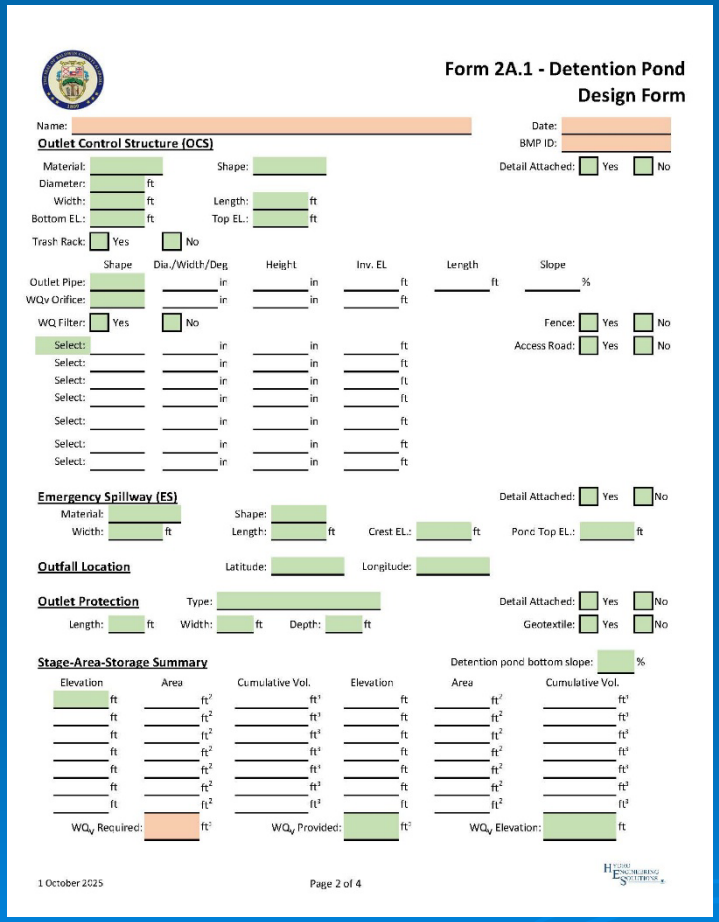
HYDRO ENGINEERING SOLUTIONS

Design Smart Forms



Form 2A.1 - Detention Pond Design Form

Name: _____ Date: _____ BMP ID: _____

Outlet Control Structure (OCS)

Material: _____ Shape: _____ Detail Attached: ☐ Yes ☐ No

Diameter: _____ ft

Width: _____ ft Length: _____ ft

Bottom EL.: _____ ft Top EL.: _____ ft

Trash Rack: ☐ Yes ☐ No

	Shape	Dia./Width/Deg	Height	Inv. EL	Length	Slope
Outlet Pipe:		_____ in	_____ in	_____ ft	_____ ft	_____ %
WQv Orifice:		_____ in	_____ in	_____ ft		
WQ Filter: ☐ Yes ☐ No						
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		
Select:		_____ in	_____ in	_____ ft		

Fence: ☐ Yes ☐ No

Access Road: ☐ Yes ☐ No

Emergency Spillway (ES) Detail Attached: ☐ Yes ☐ No

Material: _____ Shape: _____

Width: _____ ft Length: _____ ft Crest EL.: _____ ft Pond Top EL.: _____ ft

Outfall Location Latitude: _____ Longitude: _____

Outlet Protection Type: _____ Detail Attached: ☐ Yes ☐ No

Length: _____ ft Width: _____ ft Depth: _____ ft Geotextile: ☐ Yes ☐ No

Stage-Area-Storage Summary Detention pond bottom slope: _____ %

Elevation	Area	Cumulative Vol.	Elevation	Area	Cumulative Vol.
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³
_____ ft	_____ ft²	_____ ft³	_____ ft	_____ ft²	_____ ft³

WQ_v Required: _____ ft² WQ_v Provided: _____ ft² WQ_v Elevation: _____ ft

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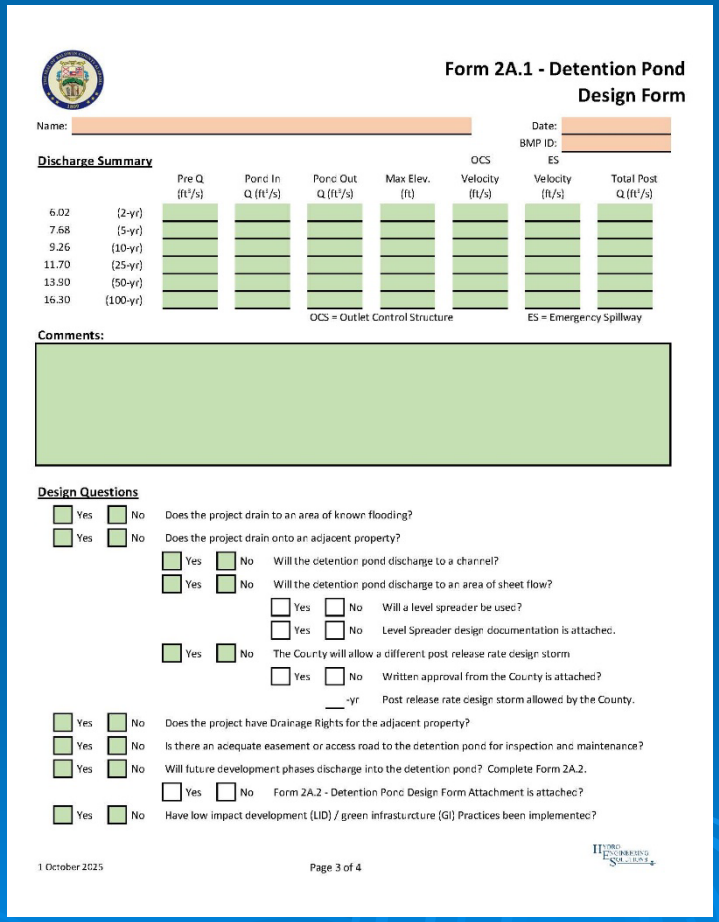

Form 2A.1 - Detention Pond Design Form

Name: _____ Date: _____ BMP ID: _____

Discharge Summary

		Pre Q (ft³/s)	Pond In Q (ft³/s)	Pond Out Q (ft³/s)	Max Elev. (ft)	OCS Velocity (ft/s)	ES Velocity (ft/s)	Total Post Q (ft³/s)
6.02	(2-yr)							
7.68	(5-yr)							
9.26	(10-yr)							
11.70	(25-yr)							
13.90	(50-yr)							
16.30	(100-yr)							

OCS = Outlet Control Structure ES = Emergency Spillway

Comments:

Design Questions

☐ Yes ☐ No Does the project drain to an area of known flooding?

☐ Yes ☐ No Does the project drain onto an adjacent property?

☐ Yes ☐ No Will the detention pond discharge to a channel?

☐ Yes ☐ No Will the detention pond discharge to an area of sheet flow?

☐ Yes ☐ No Will a level spreader be used?

☐ Yes ☐ No Level Spreader design documentation is attached.

☐ Yes ☐ No The County will allow a different post release rate design storm

☐ Yes ☐ No Written approval from the County is attached?

___-yr Post release rate design storm allowed by the County.

☐ Yes ☐ No Does the project have Drainage Rights for the adjacent property?

☐ Yes ☐ No Is there an acequate easement or access road to the detention pond for inspection and maintenance?

☐ Yes ☐ No Will future development phases discharge into the detention pond? Complete Form 2A.2.

☐ Yes ☐ No Form 2A.2 - Detention Pond Design Form Attachment is attached?

☐ Yes ☐ No Have low impact development (LID) / green infrastructure (GI) Practices been implemented?

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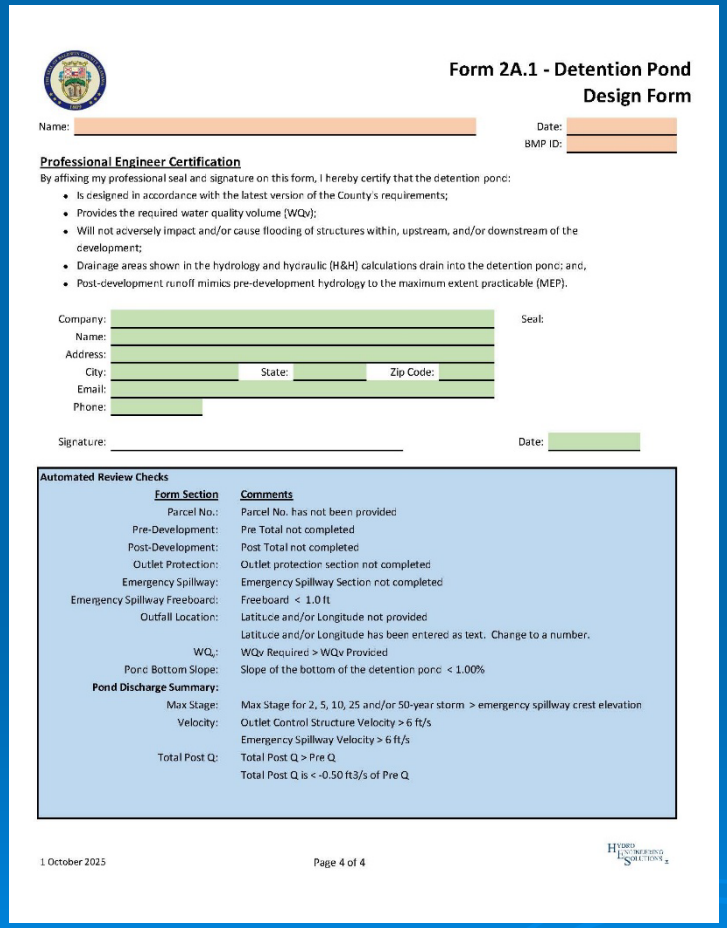
Design Smart Forms



Form 2A.1 - Detention Pond Design Form

Name: Date: BMP ID:

Professional Engineer Certification

By affixing my professional seal and signature on this form, I hereby certify that the detention pond:

- Is designed in accordance with the latest version of the County's requirements;
- Provides the required water quality volume (WQv);
- Will not adversely impact and/or cause flooding of structures within, upstream, and/or downstream of the development;
- Drainage areas shown in the hydrology and hydraulic (H&H) calculations drain into the detention pond; and,
- Post-development runoff mimics pre-development hydrology to the maximum extent practicable (MEP).

Company: Seal:
Name:
Address:
City: State: Zip Code:
Email:
Phone:

Signature: Date:

Automated Review Checks

Form Section	Comments
Parcel No.:	Parcel No. has not been provided
Pre-Development:	Pre Total not completed
Post-Development:	Post Total not completed
Outlet Protection:	Outlet protection section not completed
Emergency Spillway:	Emergency Spillway Section not completed
Emergency Spillway Freeboard:	Freeboard < 1.0 ft
Outfall Location:	Latitude and/or Longitude not provided
	Latitude and/or Longitude has been entered as text. Change to a number.
WQ_v:	WQv Required > WQv Provided
Pond Bottom Slope:	Slope of the bottom of the detention pond < 1.00%
Pond Discharge Summary:	
Max Stage:	Max Stage for 2, 5, 10, 25 and/or 50-year storm > emergency spillway crest elevation
Velocity:	Outlet Control Structure Velocity > 6 ft/s
	Emergency Spillway Velocity > 6 ft/s
Total Post Q:	Total Post Q > Pre Q
	Total Post Q is < -0.50 ft3/s of Pre Q

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- Automated Review Checks
  - Pre-Development
  - Post-Development
  - Emergency Spillway
  - Outfall Location
  - WQ_v
  - Max Stage
  - Velocity
  - Total Post Q
  - Known Flooding
  - Discharges to adjacent property
  - Design Questions
- Form completed correctly will have **NO** highlighted fields and **NO** automated review comments

HYDRO ENGINEERING SOLUTIONS

Design Smart Forms

Supplemental Instructions

Form 2A.1 - Detention Pond Design Form

Supplemental Instructions

General design standards and requirements shall be as follows:

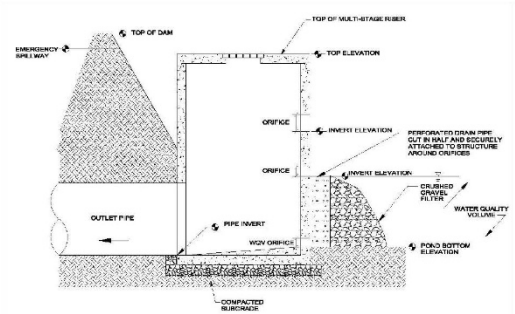
1. If a detention pond encroaches on a floodplain, provide documentaiton showing that all floodplain management requirements have been met
2. A detention pond shall not be constructed within the floodway
3. Installation of a detention pond shall not adversely impact and/or cause flooding of properties located within, upstream, and/or downstream of the development
4. 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 County Engineer
5. All applicable developments shall be responsible for ensuring that post-development hydrology mimics pre-development hydrology for the 2, 5, 10, 25, 50, and 100-year, 24-hour rainfall depths
6. If a proposed development discharges onto an adjacent property, the proposed development shall:
   a. Obtain Drainage Rights for the adjacent property
   b. If Drainage Rights cannot be obtained, size the detention pond to attenuate the post-development peak discharges for the 2, 5, 10, 25, 50, and 100-year to be less than the pre-development peak discharge(s) for the 2, 5, 10, 25, 50, and 100-year storm event
7. A stormwater pathway (i.e. piped storm sewer, overland flow, etc.) within the development shall be provided 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
8. Filtration system for the WQ, Orifice shall allow the volume of stormwater associated with the WQ, to drain slowly from the detention pond within a 48-hour period
9. The principal outlet control structure for a detention pond shall be sized to convey the 2, 5, 10, 25, and 50-year, 24-hour storm event without allowing any discharge from the emergency spillway;
10. A detention pond shall provide for an emergency spillway designed to convey the discharge resulting from a 100-year, 24-hour storm event. A minimum, freeboard of 1-foot above the maximum stage anticipated in the detention pond or above the crest elevation of the emergency spillway
11. The bottom of the detention pond shall have a minimum slope of 1%
12. H&H calculations shall include all the information required to validate information provided on this form i.e. 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 velocities
13. Rainfall depths were obtained from NOAA Atlas 14, Volume 9, Version 2
14. Drainage basin maps shall show:
    a. Provide a drainage basin map for existing conditions
    b. Provide a drainage basin map for proposed conditions
    c. Property boundary
    d. Drainage basins included with the H&H study
    e. Contours with adequate contour lables
    f. Structures, roads, storm sewer, utilities, drainage easements and other site features
    g. Pathways used for calculating Time of Concentration (Tc)
    h. Adjacent properties and site features where stormwater will be discharged from the proposed development
15. Post-development discharges shall be less than pre-development discharges at all discharge locations
16. Provide the velocity at the end of any velocity dissipation device for the outlet control structure (OCS) and the

WQ Filter Examples

Form 2A.1 - Detention Pond Design Form

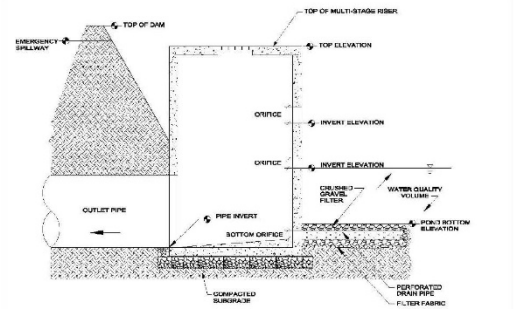
emergency spillway (ES)

17. Outlet control structure diagram is provided for information only.



OUTLET STRUCTURE DETAIL (WITH ROCK FILTER)

NOT TO SCALE

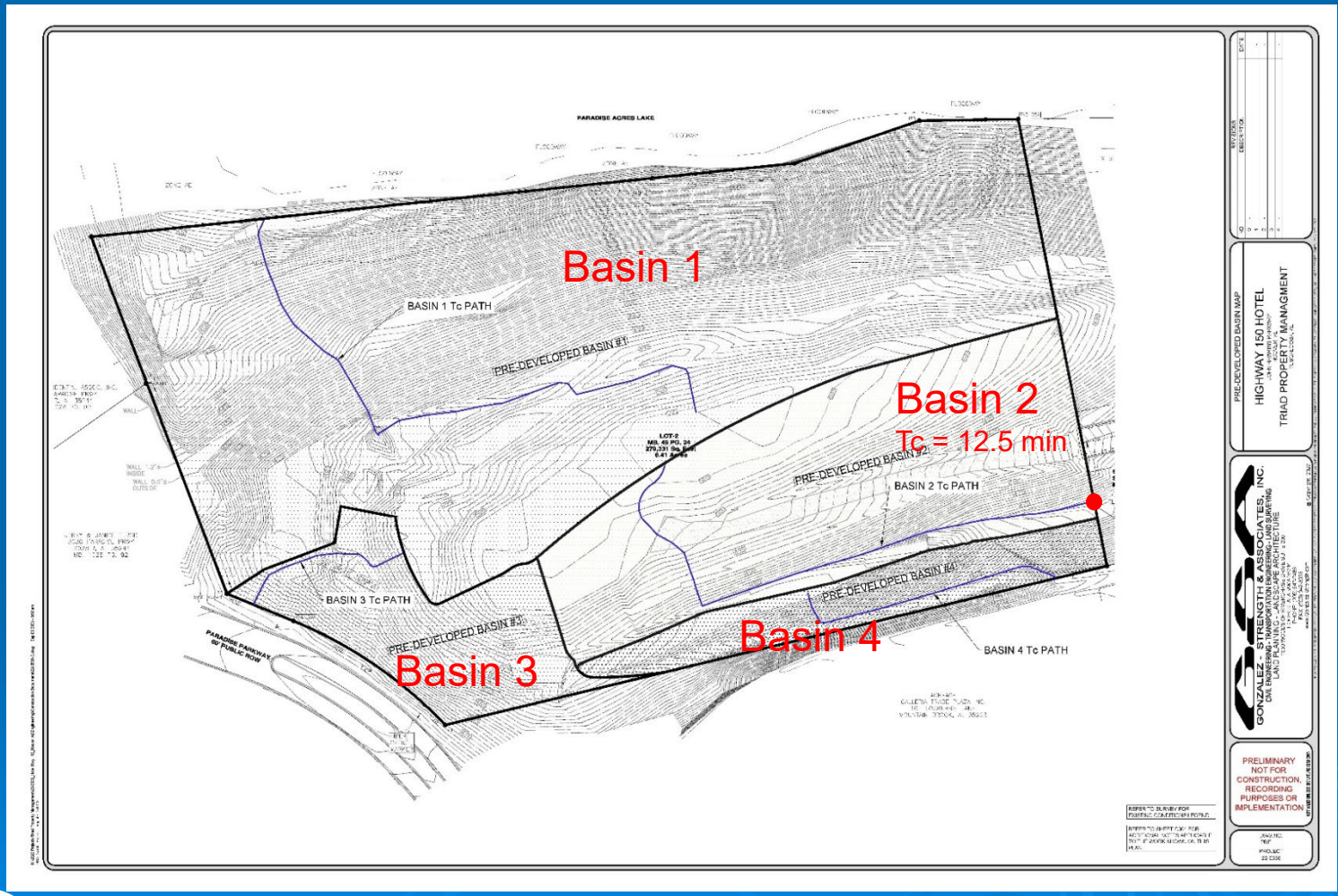


OUTLET STRUCTURE DETAIL (WITH UNDERDRAIN)

NOT TO SCALE

HYDRO ENGINEERING SOLUTIONS

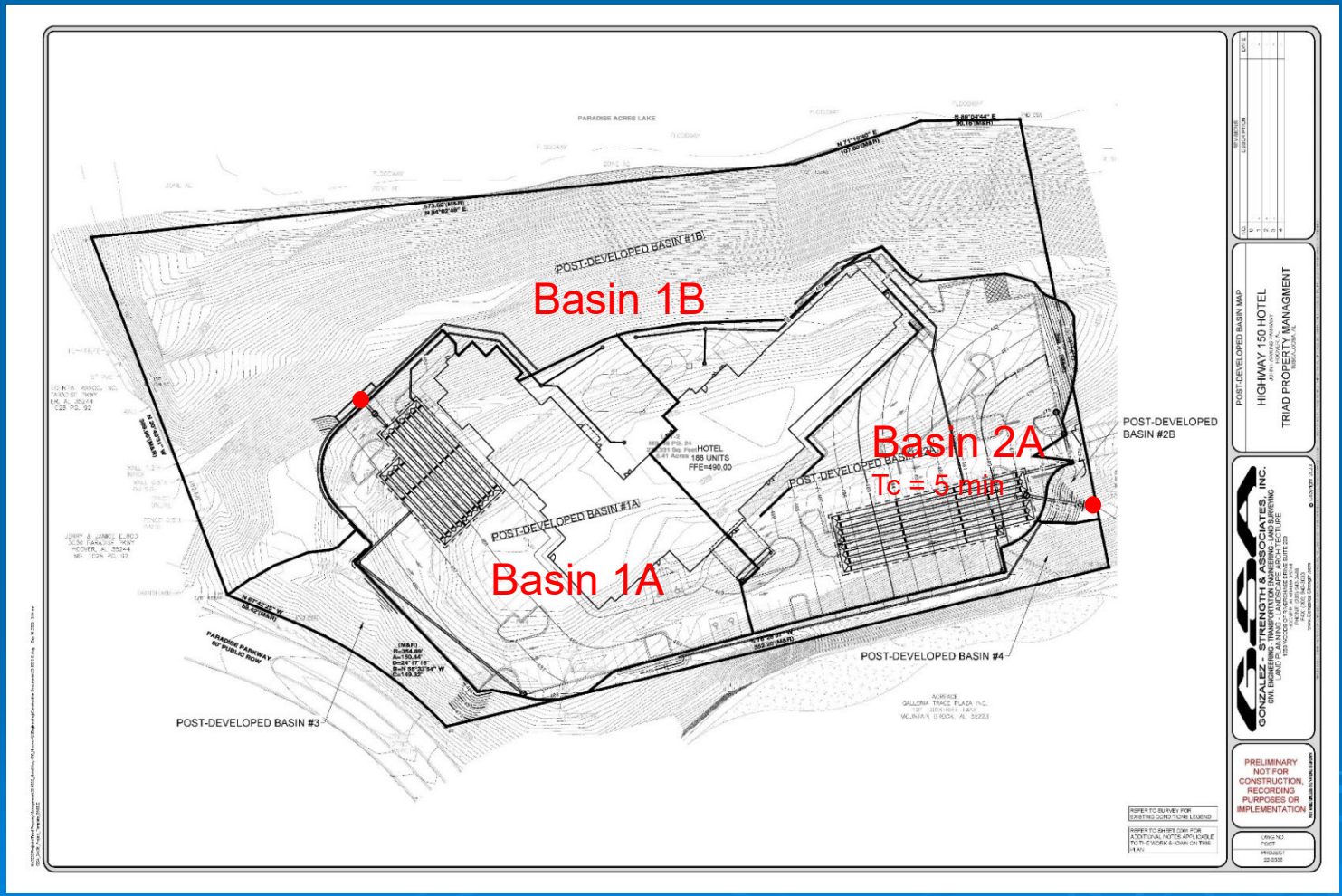
Pre-Development Map



Hoover: Hwy 150 Hotel

HYDRO ENGINEERING SOLUTIONS

Post-Development Map

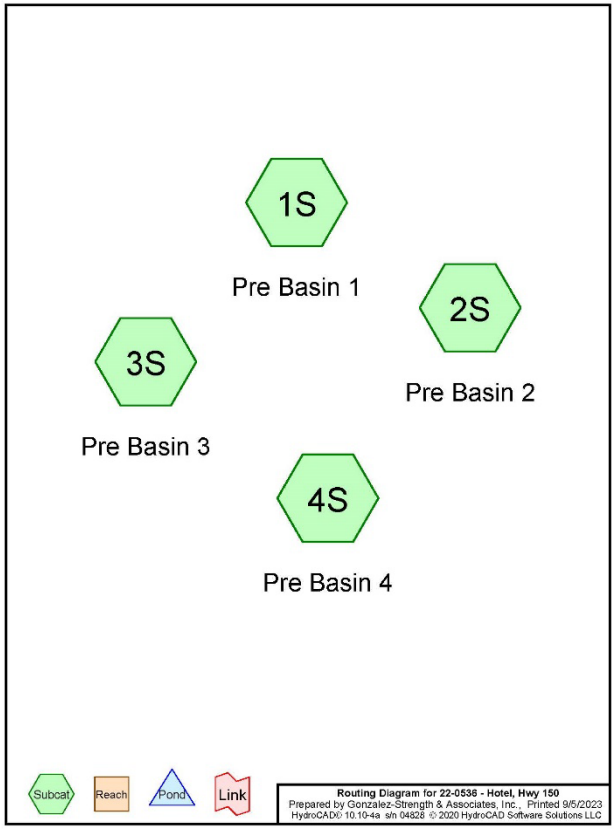


Hoover: Hwy 150 Hotel

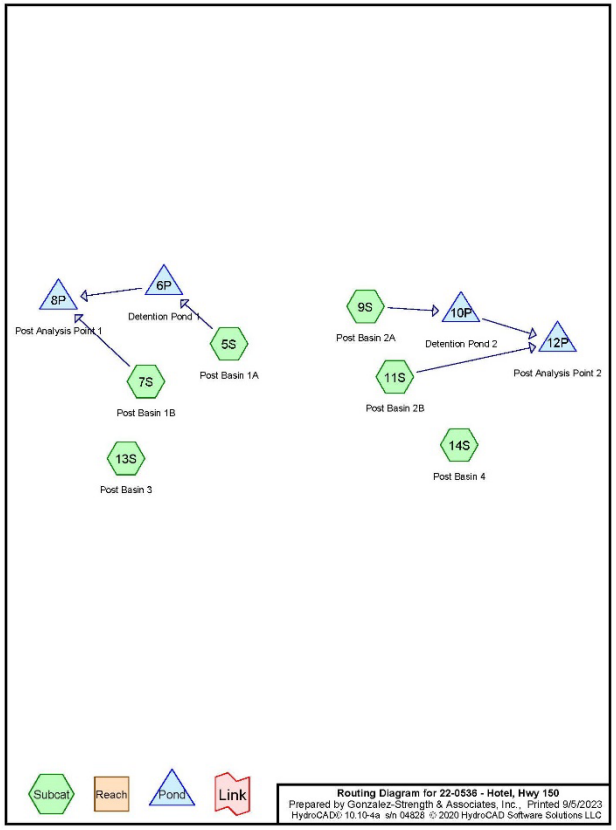
HYDRO ENGINEERING SOLUTIONS

Model Schematic

Pre-Development

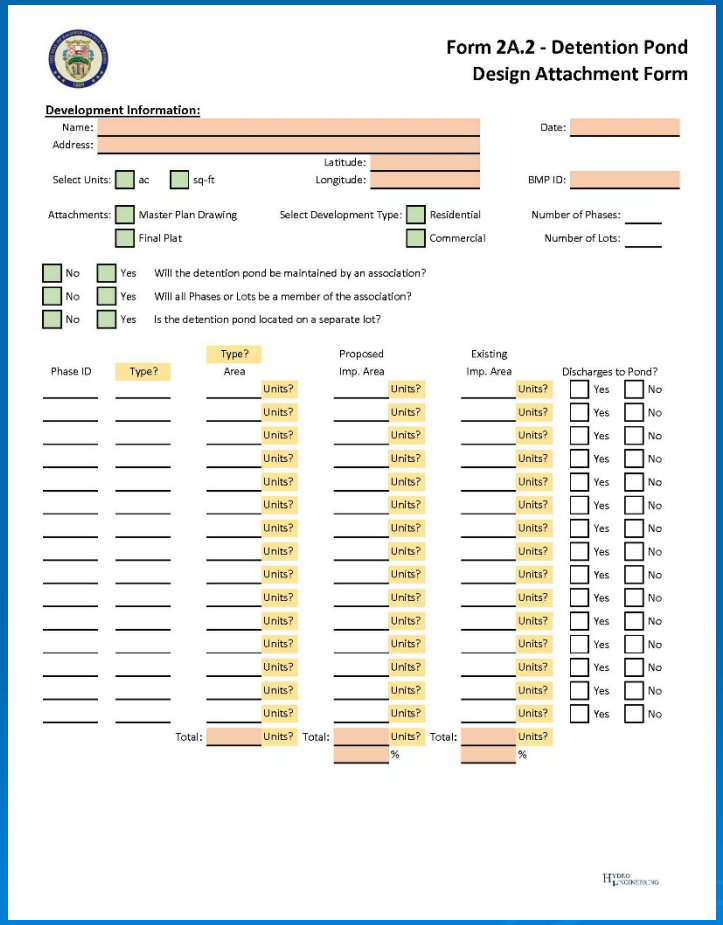


Post-Development



HYDRO ENGINEERING SOLUTIONS

Future Development with Regional Detention



Form 2A.2 - Detention Pond Design Attachment Form

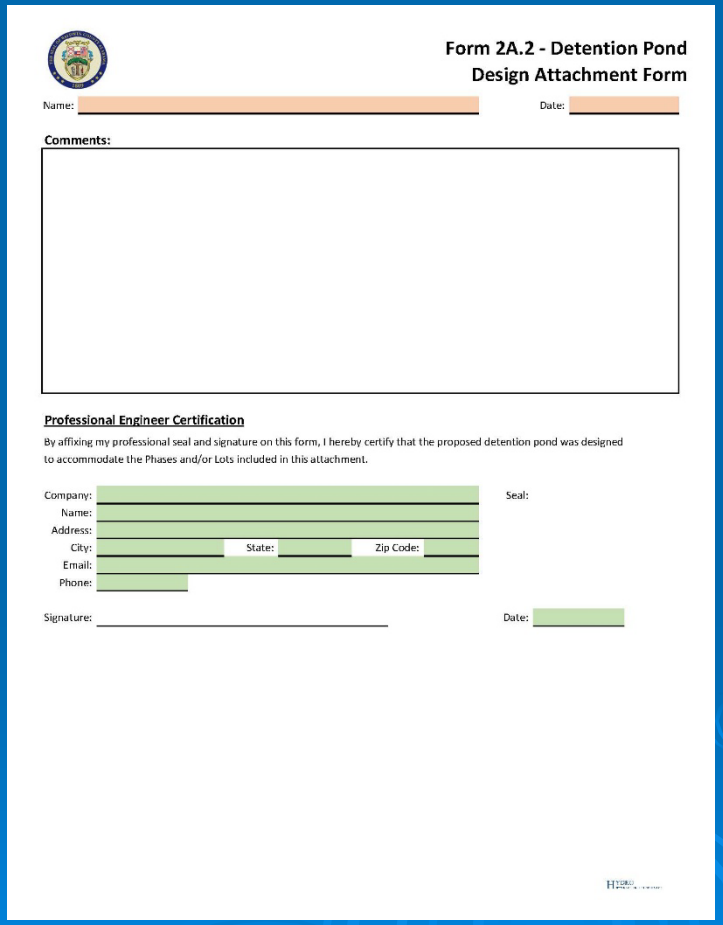
Development Information:

Name:
Address:
Date:
Latitude:
Select Units: ☐ ac ☐ sq-ft
Longitude:
BMP ID:

Attachments: ☐ Master Plan Drawing ☐ Final Plat
Select Development Type: ☐ Residential ☐ Commercial
Number of Phases:
Number of Lots:

☐ No ☐ Yes Will the detention pond be maintained by an association?
☐ No ☐ Yes Will all Phases or Lots be a member of the association?
☐ No ☐ Yes Is the detention pond located on a separate lot?

Phase ID	Type?	Type? Area		Proposed Imp. Area		Existing Imp. Area		Discharges to Pond?
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
			Units?		Units?		Units?	☐ Yes ☐ No
		Total:	Units?	Total:	Units?	Total:	Units?	
					%		%	



Form 2A.2 - Detention Pond Design Attachment Form

Name:
Date:

Comments:

Professional Engineer Certification

By affixing my professional seal and signature on this form, I hereby certify that the proposed detention pond was designed to accommodate the Phases and/or Lots included in this attachment.

Company:
Name:
Address:
City:
State:
Zip Code:
Email:
Phone:
Seal:

Signature:
Date:

HYDRO ENGINEERING SOLUTIONS

Design Submittal Issues

- Common issues
  - Incomplete forms
  - Discrepancies between forms, H&H calculations, and construction plans
  - Incomplete H&H calculations
  - Large bypass areas not providing water quality treatment.
  - BMP discharges onto adjacent parcels and not into a drainage easement

HYDRO ENGINEERING SOLUTIONS

Design Submittal Issues

- Common issues
  - Velocity > 6 ft/s
  - Total Post Q > Pre Q
  - Freeboard < 1.0 feet
  - Max stage for 2, 5, 10, 25, and/or 50-year storm > Emergency spillway crest elevation
  - WQ_v Required > WQ_v Provided
  - Insufficient design details

HYDRO ENGINEERING SOLUTIONS

Design Submittal Issues

- Detention Pond
  - Missing filter on WQ_v Orifice
  - Flat bottoms that do not drain well
- Underground Detention
  - Missing attachments
    - Maintenance Plan
    - Manufacture's Data
  - Adequate number of inspection / maintenance ports

HYDRO ENGINEERING SOLUTIONS

Design Submittal Issues

- Hydrodynamic Separators
  - Maintenance Plan
  - Manufacture's Data
    - Treatment Flow Rate
    - Allowable Peak Inline Flow Rate
    - Floatable / Oil Storage Capacity
    - Sediment Storage Capacity

HYDRO ENGINEERING SOLUTIONS

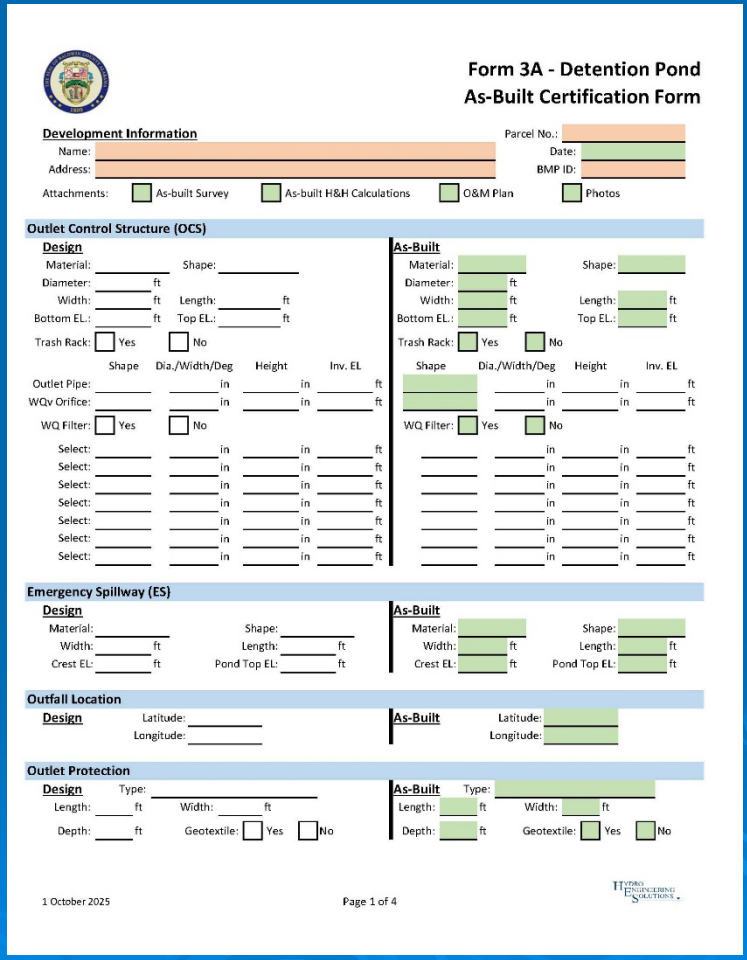
As-Built Smart Forms

- As-built Excel Smart Forms
  - Form 3A – Detention Pond
  - Form 3B – Retention Pond
  - Form 3C – Underground Detention
  - Form 3D – Bioretention Area
  - Form 3E – Hydrodynamic Separator
  - Form 3F – Permeable Pavement

HYDRO ENGINEERING SOLUTIONS

As-Built Smart Forms

- Fillable Excel Forms
- Design information pre-populated
- Required fields highlighted "**Green**"
- Data entry may highlight additional fields "**Green**"
- Calculated fields highlighted "**Orange**"
- Concerns highlighted "**Yellow**"
- Form completed correctly will have **NO** highlighted fields



Form 3A - Detention Pond
As-Built Certification Form

Development Information
Name: Parcel No.:
Address: Date:
BMP ID:
Attachments: As-built Survey | As-built H&H Calculations | O&M Plan | Photos

Outlet Control Structure (OCS)

Design				As-Built			
Material:		Shape:		Material:		Shape:	
Diameter: ft				Diameter: ft			
Width: ft	Length: ft			Width: ft	Length: ft		
Bottom EL.: ft	Top EL.: ft			Bottom EL.: ft	Top EL.: ft		
Trash Rack: Yes No				Trash Rack: Yes No			
	Shape	Dia./Width/Deg	Height	Inv. EL	Shape	Dia./Width/Deg	Height	Inv. EL
Outlet Pipe:		in	in	ft		in	in	ft
WQv Orifice:		in	in	ft		in	in	ft
WQ Filter: Yes No					WQ Filter: Yes No			
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft
Select:		in	in	ft		in	in	ft

Emergency Spillway (ES)

Design				As-Built			
Material:		Shape:		Material:		Shape:	
Width: ft		Length: ft		Width: ft		Length: ft	
Crest EL: ft		Pond Top EL: ft		Crest EL: ft		Pond Top EL: ft	

Outfall Location

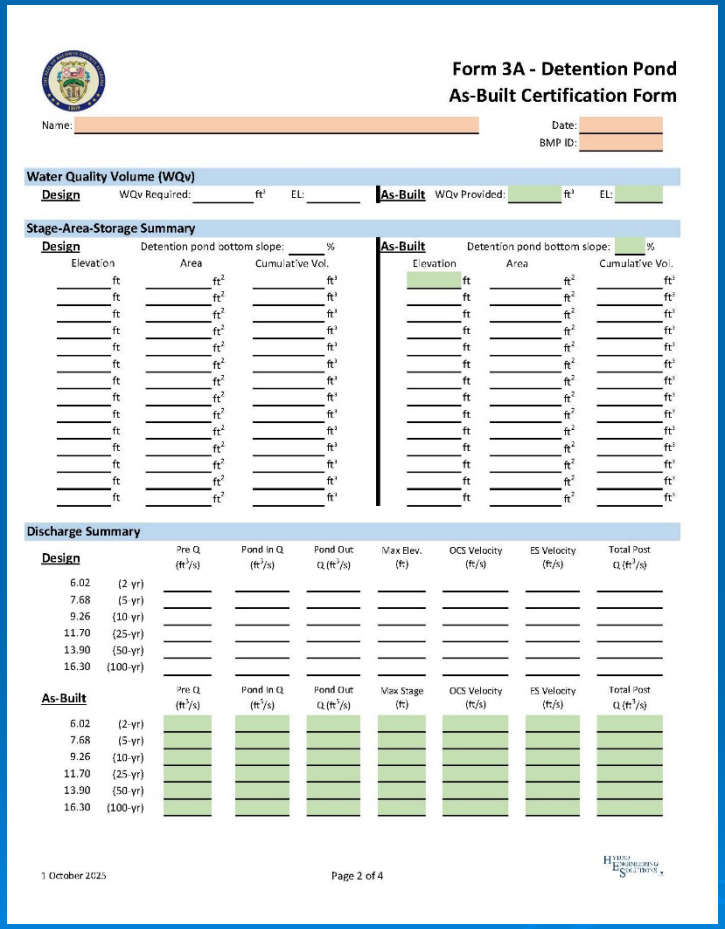
Design		As-Built	
Latitude:		Latitude:	
Longitude:		Longitude:	

Outlet Protection

Design				As-Built			
Type:				Type:			
Length: ft	Width: ft			Length: ft	Width: ft		
Depth: ft	Geotextile: Yes No			Depth: ft	Geotextile: Yes No		

1 October 2025 Page 1 of 4

As-Built Smart Forms



Form 3A - Detention Pond
As-Built Certification Form

Name: _____ Date: _____
BMP ID: _____

Water Quality Volume (WQv)

Design WQv Required: _____ ft³ EL: _____ **As-Built** WQv Provided: _____ ft³ EL: _____

Stage-Area-Storage Summary

Design Detention pond bottom slope: _____ %

Elevation	Area	Cumulative Vol.
_____ ft	_____ ft²	_____ ft³

As-Built Detention pond bottom slope: _____ %

Elevation	Area	Cumulative Vol.
_____ ft	_____ ft²	_____ ft³

Discharge Summary

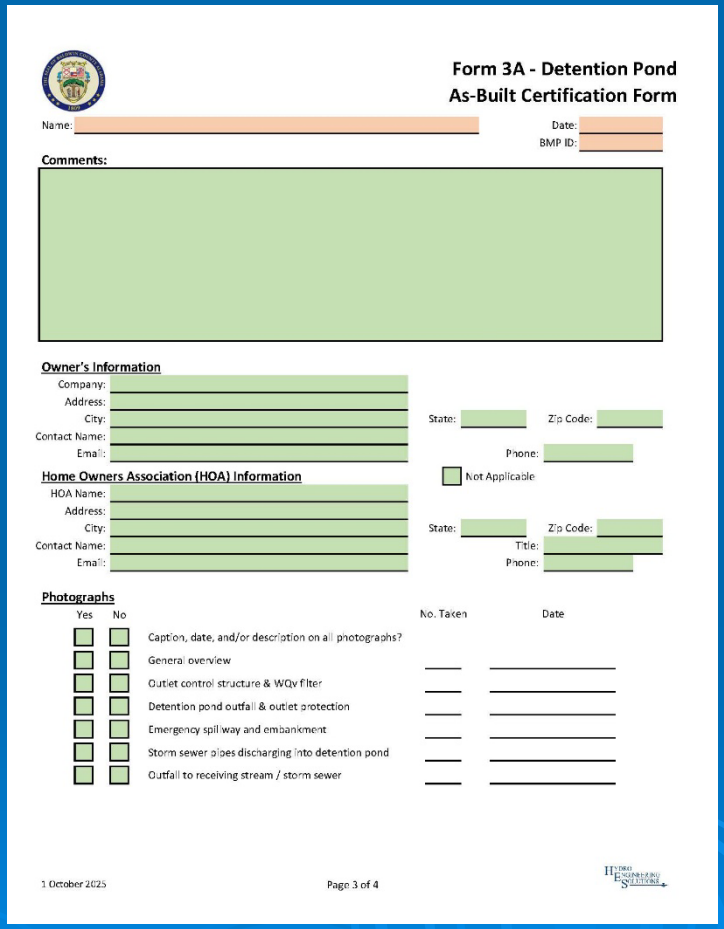
Design

		Pre Q (ft³/s)	Pond In Q (ft³/s)	Pond Out Q (ft³/s)	Max Elev. (ft)	OCS Velocity (ft/s)	ES Velocity (ft/s)	Total Post Q (ft³/s)
6.02	(2-yr)							
7.68	(5-yr)							
9.26	(10-yr)							
11.70	(25-yr)							
13.90	(50-yr)							
16.30	(100-yr)							

As-Built

		Pre Q (ft³/s)	Pond In Q (ft³/s)	Pond Out Q (ft³/s)	Max Stage (ft)	OCS Velocity (ft/s)	ES Velocity (ft/s)	Total Post Q (ft³/s)
6.02	(2-yr)							
7.68	(5-yr)							
9.26	(10-yr)							
11.70	(25-yr)							
13.90	(50-yr)							
16.30	(100-yr)							

1 October 2025 Page 2 of 4



Form 3A - Detention Pond
As-Built Certification Form

Name: _____ Date: _____
BMP ID: _____

Comments:

Owner's Information

Company: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Contact Name: _____ Phone: _____
Email: _____

Home Owners Association (HOA) Information

☐ Not Applicable

HOA Name: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Contact Name: _____ Title: _____
Email: _____ Phone: _____

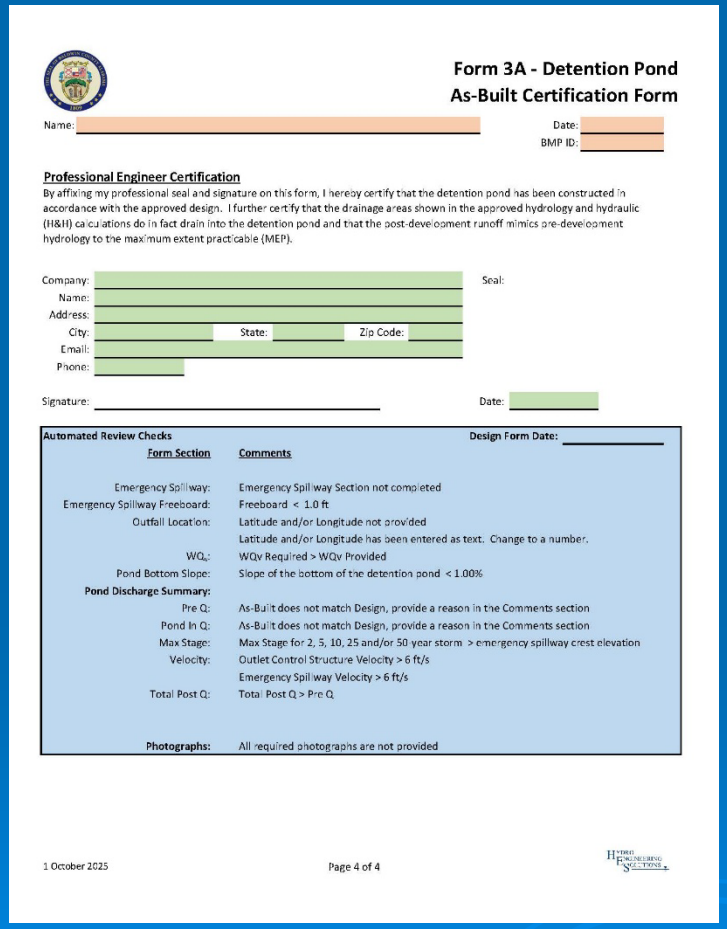
Photographs

Yes	No		No. Taken	Date
☐	☐	Caption, date, and/or description on all photographs?		
☐	☐	General overview	____	_____
☐	☐	Outlet control structure & WQv filter	____	_____
☐	☐	Detention pond outfall & outlet protection	____	_____
☐	☐	Emergency spillway and embankment	____	_____
☐	☐	Storm sewer pipes discharging into detention pond	____	_____
☐	☐	Outfall to receiving stream / storm sewer	____	_____

1 October 2025 Page 3 of 4

HYDRO ENGINEERING SOLUTIONS

As-Built Smart Forms



Form 3A - Detention Pond
As-Built Certification Form

Name: _____ Date: _____
BMP ID: _____

Professional Engineer Certification

By affixing my professional seal and signature on this form, I hereby certify that the detention pond has been constructed in accordance with the approved design. I further certify that the drainage areas shown in the approved hydrology and hydraulic (H&H) calculations do in fact drain into the detention pond and that the post-development runoff mimics pre-development hydrology to the maximum extent practicable (MEP).

Company: _____ Seal:
Name: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Email: _____
Phone: _____

Signature: _____ Date: _____

Automated Review Checks **Design Form Date:** _____

Form Section	Comments
Emergency Spillway:	Emergency Spillway Section not completed
Emergency Spillway Freeboard:	Freeboard < 1.0 ft
Outfall Location:	Latitude and/or Longitude not provided
	Latitude and/or Longitude has been entered as text. Change to a number.
WQ_v:	WQv Required > WQv Provided
Pond Bottom Slope:	Slope of the bottom of the detention pond < 1.00%
Pond Discharge Summary:	
Pre Q:	As-Built does not match Design, provide a reason in the Comments section
Pond In Q:	As-Built does not match Design, provide a reason in the Comments section
Max Stage:	Max Stage for 2, 5, 10, 25 and/or 50 year storm > emergency spillway crest elevation
Velocity:	Outlet Control Structure Velocity > 6 ft/s
	Emergency Spillway Velocity > 6 ft/s
Total Post Q:	Total Post Q > Pre Q
Photographs:	All required photographs are not provided

1 October 2025 Page 4 of 4

- Automated Review Checks
  - As-built vs Design
  - WQ_v
  - Max Stage
  - Velocity
  - Total Post Q
  - Known Flooding
  - Drains to adjacent property
- Required Photographs
- Form completed correctly will have **NO** highlighted fields and **NO** automated review comments

HYDRO ENGINEERING SOLUTIONS

As-built Submittal Issues

- Incomplete forms
- As-built survey
  - Not signed and sealed by professional land surveyor
  - Missing details of outlet control structure and emergency spillway
- Photographs
  - Underground detention – not taken during construction
  - No captions or dates
- Discrepancies between forms, H&H calculations, and as-built survey
- Design changed during construction without approval

HYDRO ENGINEERING SOLUTIONS

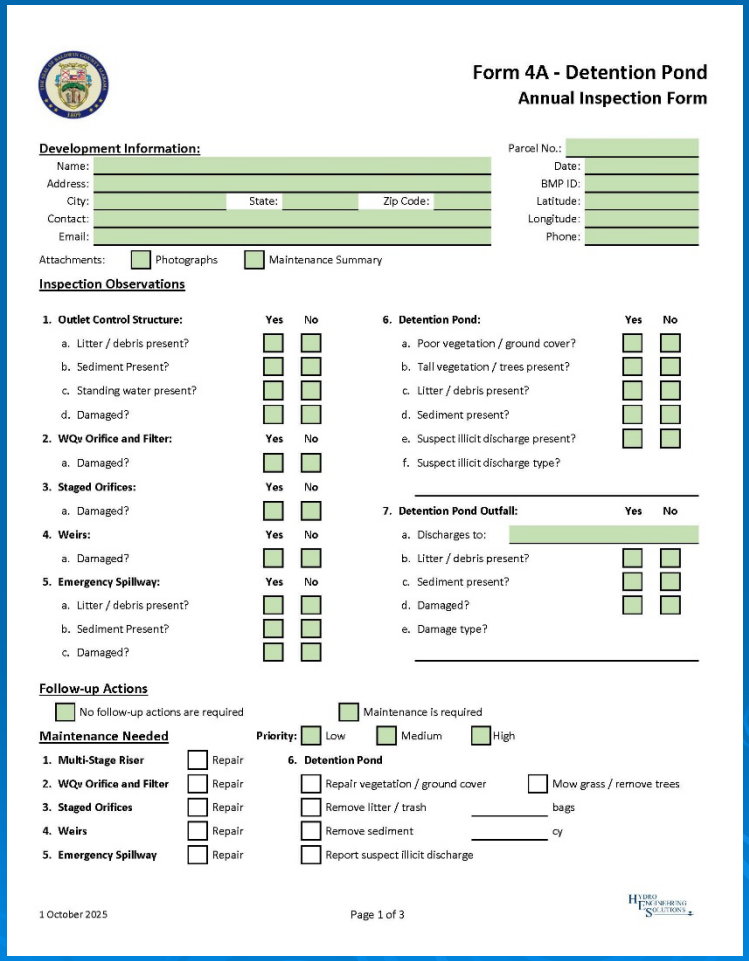
Inspection Smart Forms

- Inspection Excel Smart Forms
  - Form 4A – Detention Pond
  - Form 4B – Retention Pond
  - Form 4C – Underground Detention
  - Form 4D – Bioretention Area
  - Form 4E – Hydrodynamic Separator
  - Form 4F – Permeable Pavement

HYDRO ENGINEERING SOLUTIONS

Inspection Smart Forms

- Fillable Excel Forms
- Required fields highlighted "**Green**"
- Data entry may highlight additional fields "**Green**"
- Form completed correctly will have **NO** highlighted fields



Form 4A - Detention Pond
Annual Inspection Form

Development Information:

Name: | Parcel No.:
Address: | Date:
City: State: Zip Code: | BMP ID:
Contact: | Latitude:
Email: | Longitude:
Phone:

Attachments: ☐ Photographs ☐ Maintenance Summary

Inspection Observations

	Yes	No
1. Outlet Control Structure:		
a. Litter / debris present?	☐	☐
b. Sediment Present?	☐	☐
c. Standing water present?	☐	☐
d. Damaged?	☐	☐
2. WQv Orifice and Filter:		
a. Damaged?	☐	☐
3. Staged Orifices:		
a. Damaged?	☐	☐
4. Weirs:		
a. Damaged?	☐	☐
5. Emergency Spillway:		
a. Litter / debris present?	☐	☐
b. Sediment Present?	☐	☐
c. Damaged?	☐	☐

	Yes	No
6. Detention Pond:		
a. Poor vegetation / ground cover?	☐	☐
b. Tall vegetation / trees present?	☐	☐
c. Litter / debris present?	☐	☐
d. Sediment present?	☐	☐
e. Suspect illicit discharge present?	☐	☐
f. Suspect illicit discharge type?		
7. Detention Pond Outfall:	**Yes**	**No**
a. Discharges to:		
b. Litter / debris present?	☐	☐
c. Sediment present?	☐	☐
d. Damaged?	☐	☐
e. Damage type?		

Follow-up Actions

☐ No follow-up actions are required ☐ Maintenance is required

Maintenance Needed **Priority:** ☐ Low ☐ Medium ☐ High

1. Multi-Stage Riser	☐ Repair	**6. Detention Pond**	
2. WQv Orifice and Filter	☐ Repair	☐ Repair vegetation / ground cover	☐ Mow grass / remove trees
3. Staged Orifices	☐ Repair	☐ Remove litter / trash	_____ bags
4. Weirs	☐ Repair	☐ Remove sediment	_____ cy
5. Emergency Spillway	☐ Repair	☐ Report suspect illicit discharge	

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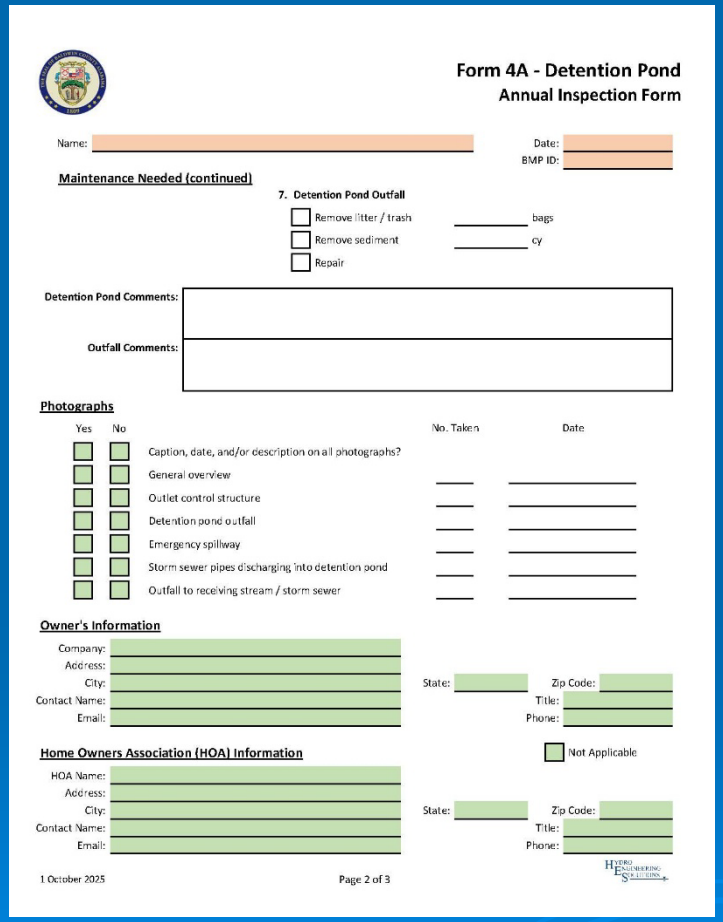
HYDRO ENGINEERING SOLUTIONS

Inspection Smart Forms



Form 4A - Detention Pond
Annual Inspection Form

Name: _____ Date: _____
BMP ID: _____

Maintenance Needed (continued)

7. Detention Pond Outfall

- ☐ Remove litter / trash _____ bags
- ☐ Remove sediment _____ cy
- ☐ Repair

Detention Pond Comments: _____

Outfall Comments: _____

Photographs

Yes	No		No. Taken	Date
☐	☐	Caption, date, and/or description on all photographs?		
☐	☐	General overview		
☐	☐	Outlet control structure		
☐	☐	Detention pond outfall		
☐	☐	Emergency spillway		
☐	☐	Storm sewer pipes discharging into detention pond		
☐	☐	Outfall to receiving stream / storm sewer		

Owner's Information

Company: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Contact Name: _____ Title: _____
Email: _____ Phone: _____

Home Owners Association (HOA) Information

☐ Not Applicable

HOA Name: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Contact Name: _____ Title: _____
Email: _____ Phone: _____

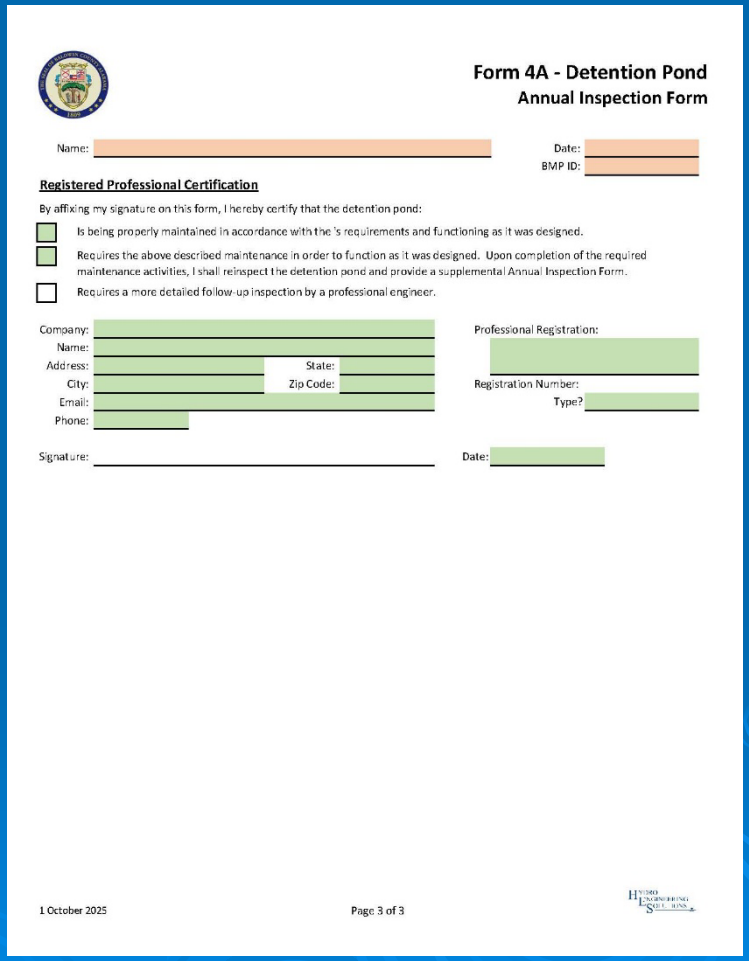
1 October 2025 Page 2 of 3

- ☐ Inspection Observations
- ☐ Follow up Actions
- ☐ Maintenance Needed
  - Priority
- ☐ Comments
- ☐ Photographs
- ☐ Owner's Information
- ☐ HOA Information
- ☐ Certification

HYDRO ENGINEERING SOLUTIONS

Post Construction Inspection Smart Forms

- Registered Professional
  - Professional Engineer
  - Qualified Credentialed Inspector
  - Certified Erosion, Sediment and Stormwater Inspector
  - Certified Professional in Erosion and Sediment Control
  - Certified Professional in Municipal Stormwater Management
  - Certified Professional in Stormwater Quality



Form 4A - Detention Pond
Annual Inspection Form

Name: _____ Date: _____
BMP ID: _____

Registered Professional Certification

By affixing my signature on this form, I hereby certify that the detention pond:

☐ Is being properly maintained in accordance with the 's requirements and functioning as it was designed.

☐ Requires the above described maintenance in order to function as it was designed. Upon completion of the required maintenance activities, I shall reinspect the detention pond and provide a supplemental Annual Inspection Form.

☐ Requires a more detailed follow-up inspection by a professional engineer.

Company: _____
Name: _____
Address: _____ State: _____
City: _____ Zip Code: _____
Email: _____
Phone: _____

Professional Registration: _____
Registration Number: _____
Type? _____

Signature: _____ Date: _____

1 October 2025 Page 3 of 3

HYDRO ENGINEERING SOLUTIONS

Inspection Submittal Issues

- Inspections not performed
- Inspection forms not provided
- Incomplete forms
  - Missing Owner information
  - Missing HOA information
- Attachments not provided
  - Photographs
  - Maintenance Activities

HYDRO ENGINEERING SOLUTIONS

QUESTIONS

HYDRO ENGINEERING SOLUTIONS