
STORMWATER MANAGEMENT REPORT

HOG HILL BROOK

**Island Pond Road and West Side Drive
Atkinson, New Hampshire**

December 21, 2009

KNA Project No. 09-0722-1

Prepared For: Ted Stewart, Road Agent
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KNA

KEACH-NORDSTROM ASSOCIATES, INC.

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I. INTRODUCTION

A. Project Description

In May 2006 southern New Hampshire experienced devastating floods that destroyed many local roadways and bridges. Heavy rains drenched the area for days. Island Pond Road in Atkinson, New Hampshire was no exception. Hog Hill Brook crosses beneath Island Pond Road at three locations. The first crossing is through a 48" diameter reinforced concrete pipe (Pond 3P on the attached Watershed Areas Plan). The second two crossings are accomplished through existing 45" diameter reinforced concrete pipes (Ponds 4P and 6P respectively). Between the second and third crossings of Hog Hill Brook under Island Pond Road, an existing 60" diameter reinforced concrete pipe underlies an abandoned gravel roadway. This pipe does not restrict flow and add to the existing deficiencies because it is so much larger than those both upstream and downstream. During the 2006 spring rainstorms, Island Pond Road experienced significant damage when storm surges overwhelmed the three existing crossings and overtopped the road.

The watershed area contributing to the subject crossings is approximately 4.79 square miles in area. The area combines woodland, developed residential and commercial property, and wetlands. Approximately 13% of the overall watershed is wet. The attached Watershed Areas Plan delineates four separate watershed areas that contribute to the flow of water beneath Island Pond Road. Sawmill Swamp collects and conveys stormwater from higher elevations in Hampstead, New Hampshire into Johnsons Pond. For the purpose of the attached Stormwater Management report, it was assumed that the outlet of Johnsons Pond consists of an earthen broad crested weir, 20' in length and 5' in breadth. Stormwater that outlets over the Johnsons Pond weir is directed toward Hog Hill Pond through a natural drainage way. For the purpose of this analysis, the drainage way has an assumed 20' width and 20:1 earthen side slopes. The conservative assumption was made that the conveyance channels between water bodies would not create restrictions and lessen peak flow rates through the subject crossings. From Hog Hill Pond, stormwater is directed through another shallow natural drainage way to Hodges Mill Pond. Hodges Mill Pond is a man-made water impoundment approximately 1 acre in area. The impoundment consists of a dam approximately 60' in length and 10' in height. At the approximate center of the dam is a narrow breach. The New Hampshire Department of Environmental Services (NHDES) has identified the breach at 7' wide and 1.5' in breadth. According to a report prepared by NHDES, the bottom of the breach is approximately 1' from the bottom of the impoundment. The dam is considered "non-menace" at this time because, as stated in an inspection report from NHDES dated December 20, 2006, "if the dam were to breach during the storm very limited additional flow would occur downstream as a result." The first and second culvert crossings under Island Pond Road are situated between the outlet of Hog Hill Pond and the inlet of Hodges Mill Pond. The third crossing under Island Pond Road is downstream of the dam at Hodges Mill Pond.

The purpose of the proposed roadway improvements project is to replace the existing round culverts with adequately sized concrete box culverts. The attached HydroCAD analysis suggests that the existing crossings are overwhelmed during the 10-year design storm causing water to overtop Island Pond Road. The design of the proposed culverts is based on the results of a watershed analysis during the 50-year return frequency storm event at the crossing passing the largest peak flow of stormwater. Based on the results of the attached hydraulic analysis, we recommend the installation of three 9' wide by 5' tall concrete box culverts with both inlet and outlet headwalls; one at each of the three Island Pond Road crossings. These precast units will accommodate flow from the 50-year return frequency storm event without overtopping the roadway. The results of the attached HydroCAD hydraulic analysis were compared to those available online through the USGS New Hampshire Streamstats database. The peak flow estimates were very similar, within a margin of error for a study of this size, which confirms the magnitude of stormwater flow at each location.

In response to a further inquiry from the Atkinson Highway Department, this report was expanded to analyze the crossing of Hog Hill Brook beneath West Side Drive. Information relative to the existing conditions at this location is based entirely on available USGS topographic data and the results of a visual site inspection conducted by this office. The crossing consists of an 8' diameter corrugated metal culvert with dry-stack boulder headwalls at both the inlet and outlet. Upstream of the crossing, a 7.5-acre impoundment area exists. The flow of water from the impoundment is controlled by a broad crested earthen berm made primarily of large boulders. The attached HydroCAD hydraulic analysis reveals that even during the 50-year storm event, Hog Hill Brook does not reach the elevation of the West Side Drive road surface. In other words, the existing crossing at West Side Drive is appropriately sized to accommodate the design storm event, and therefore does not require replacement due to hydraulic capacity. To address concerns relative to potential erosion and undermining of the existing culvert, we suggest the injection of a non-shrink hydraulic cement or mortar. It is our understanding that the Atkinson Road Agent may seek the services of a private contractor to slip line the existing culvert, creating a seamless conduit that matches very closely the existing pipe diameter and flow capacity. Our office is prepared to review shop drawings for the proposed product. Upon receipt of these drawings, we would be happy to render our opinion relative to the same.

II. Storm Drainage Analysis & Design

A. Methodology

The 50-Year return frequency storm event has been used in the various aspects of analysis and design of the proposed culvert replacements for the subject project. The proposed culvert replacements will prevent stormwater from overtopping Island Pond Road at each of the three Hog Hill Brook crossings during the 50-year return frequency storm event, as summarized in Table 1, below.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge volumes for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in analysis were estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All design and analysis calculations performed using the referenced methodologies are attached to this report. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Watershed Areas Plan," attached in the back of this report, graphically defines and illustrates the extent of the area for each watershed or catchment area investigated.

TABLE 1: Peak Elevations of Stormwater Along Island Pond Road

	10-Year Storm Event		25-Year Storm Event		50-Year Storm Event	
	Pre	Post	Pre	Post	Pre	Post
First Crossing (flood elev.=206.48)	206.92	203.85	207.50	205.31	207.78	206.11
Second Crossing (flood elev.=200.40)	201.47	197.22	202.20	198.66	202.56	199.46
Third Crossing (flood elev.=186.92)	187.89	183.49	188.50	184.94	188.78	185.74

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

As an integral part of the engineering design of this site, an erosion and sedimentation control plan has been developed with the intent of limiting the potential for soil loss and associated receiving water quality degradation, both during and after the construction period. As the project plans indicate, traditional temporary erosion and sedimentation control devices and practices, such as siltation fencing, hay baling and seeding have been specified for use during the construction period. In preparation of these provisions, reference was made to the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical. The design plans also caution the contractor and make note that the shown erosion control practices are a minimum standard and serve as a guide only. More extensive erosion control measures are, by mention, incorporated into the plat as field conditions warrant or as directed by the appropriate Local or State authority.

B. Construction Sequence

A site specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgement in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions effecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Further, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his best judgement additional protection is warranted.

C. Permanent Erosion Control Measures

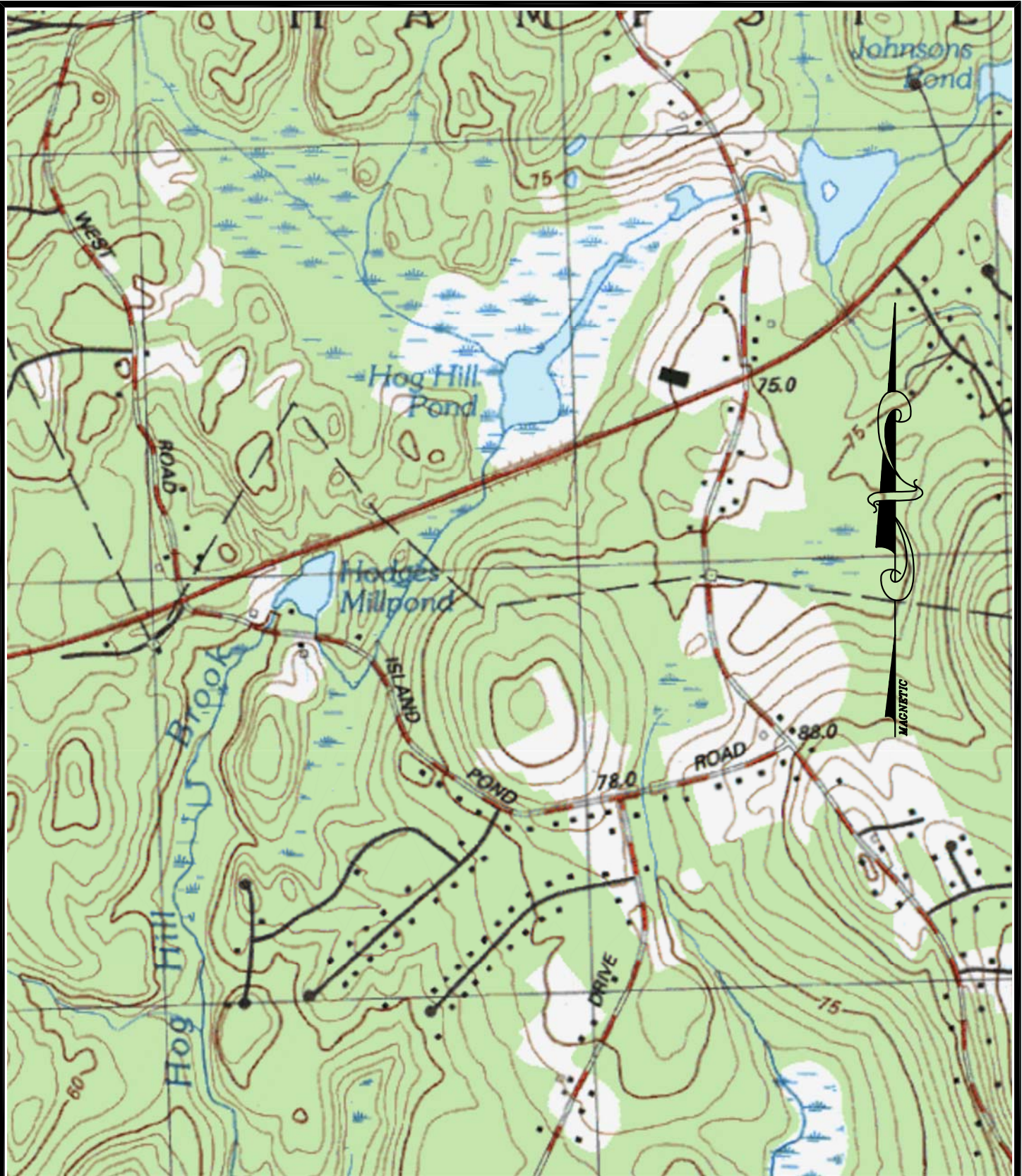
In the original design of this site, consideration was given to limiting the potential for long-term erosion of completed improvements. As a result, several permanent erosion control measures are incorporated into the design of the site. These provisions include:

- 1) Placement of rip-rap where needed to reduce stormwater velocities to manageable levels;
- 2) Specification of a turf establishment schedule and seed mixture, utilizing materials and workmanship recognized as appropriate for the site conditions at hand.

IV. FIGURES

- Figure No.1 - *U.S.G.S. Excerpt*
- Figure No.2 – *SCS Hydrologic Soil Group Map*
- Figure No.3 – *New Hampshire Natural Heritage Inventory Letter*
- Figure No.4 – *Aerial Photograph*

FIGURE 1: USGS EXCERPT



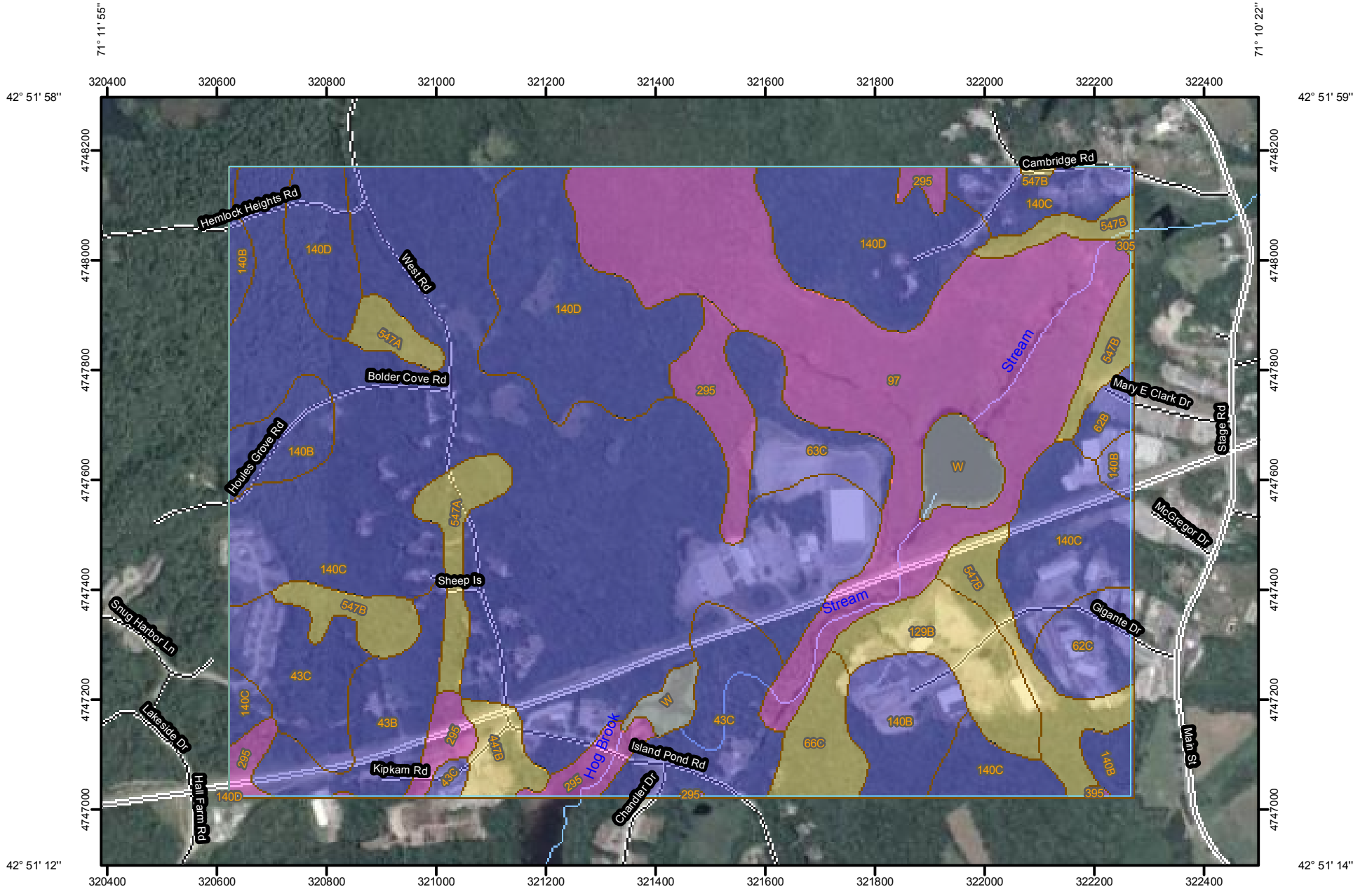
KMA KEACH-NORDSTROM ASSOCIATES, INC.

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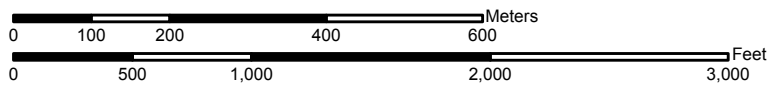
TITLE:	USGS EXCERPT PREPARED FOR: ISLAND POND ROAD ATKINSON, NEW HAMPSHIRE	
DRAWN BY: PRC	DATE: 09/21/09	JOB. NO. 09-0722-1
CHECKED BY: PRC	SCALE: 1" = 1,000' FIGURE 1	

FIGURE 2: SCS HYDROLOGIC SOIL GROUP MAP

Hydrologic Soil Group—Rockingham County, New Hampshire
(ISLAND POND ROAD, ATKINSON)




Map Scale: 1:10,000 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Soil Ratings

 A

 A/D

 B

 B/D

 C

 C/D

 D


 Not rated or not available

Political Features

 Cities

Water Features

 Oceans

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

MAP INFORMATION

Map Scale: 1:10,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 10, Aug 18, 2009

Date(s) aerial images were photographed: 8/28/2003; 7/10/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Rockingham County, New Hampshire				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43B	Canton gravelly fine sandy loam, 3 to 8 percent slopes, very stony	B	13.6	2.9%
43C	Canton gravelly fine sandy loam, 8 to 15 percent slopes, very stony	B	28.6	6.1%
62B	Charlton fine sandy loam, 3 to 8 percent slopes	B	2.7	0.6%
62C	Charlton fine sandy loam, 8 to 15 percent slopes	B	7.3	1.6%
63C	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	B	10.0	2.1%
66C	Paxton fine sandy loam, 8 to 15 percent slopes	C	7.1	1.5%
97	Greenwood and Ossipee soils, ponded	D	75.8	16.3%
129B	Woodbridge fine sandy loam, 3 to 8 percent slopes, very stony	C	12.5	2.7%
140B	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony	B	23.2	5.0%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, very stony	B	169.9	36.5%
140D	Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, very stony	B	55.3	11.9%
295	Greenwood mucky peat	D	17.2	3.7%
305	Lim-Pootatuck complex	C	0.2	0.0%
395	Chocorua mucky peat	D	0.2	0.0%
447B	Scituate-Newfields complex, 3 to 8 percent slopes, very stony	C	4.6	1.0%
547A	Walpole very fine sandy loam, 0 to 3 percent slopes, very stony	C	9.7	2.1%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	C	20.8	4.5%
W	Water		7.6	1.6%
Totals for Area of Interest			466.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

FIGURE 3: NHB LETTER



New Hampshire Natural Heritage Bureau

To: Patrick Colburn
Keach Nordstrom Associates, Inc.
10 Commerce Park No.
Suite 3B
Bedford, NH 03110

Date: 9/17/2009

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 9/17/2009

**VALID ONLY FOR NOTIFICATION OR MINIMUM EXPEDITED
APPLICATIONS SUBMITTED TO THE NHDES WETLANDS BUREAU**

NHB File ID: NHB09-1990

Applicant: Patrick Colburn

Description: ISLAND POND ROAD WHERE HOG HILL BROOK CROSSES
Atkinson

Project Categories:

Bank Stabilization: Retaining wall
Roads, Driveways, Bridges: Culvert(s)
Roads, Driveways, Bridges: Guardrail installation
Roads, Driveways, Bridges: Road construction

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present

This review is valid through 9/17/2010.



MAP OF PROJECT BOUNDARIES FOR: NHB ID# NHB09-1990

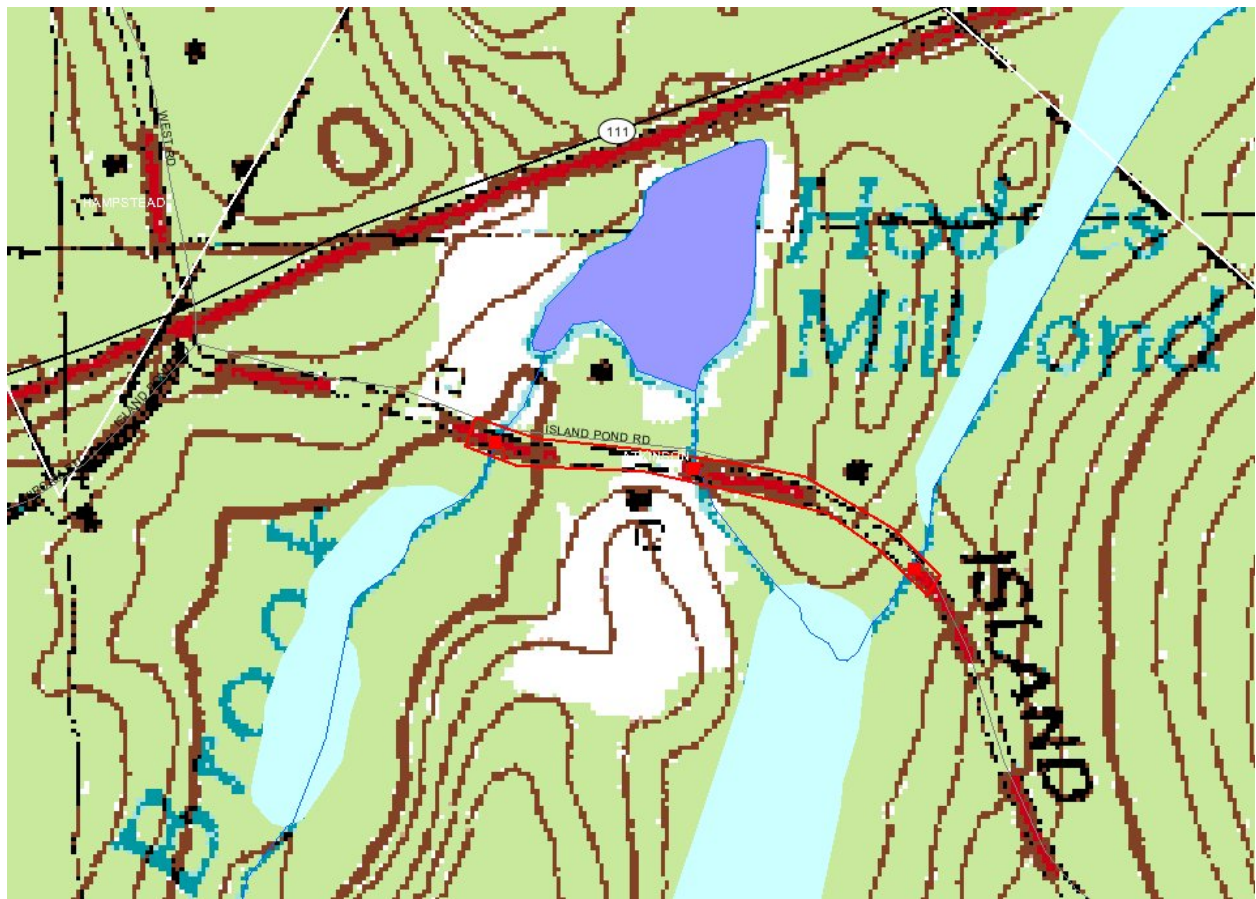
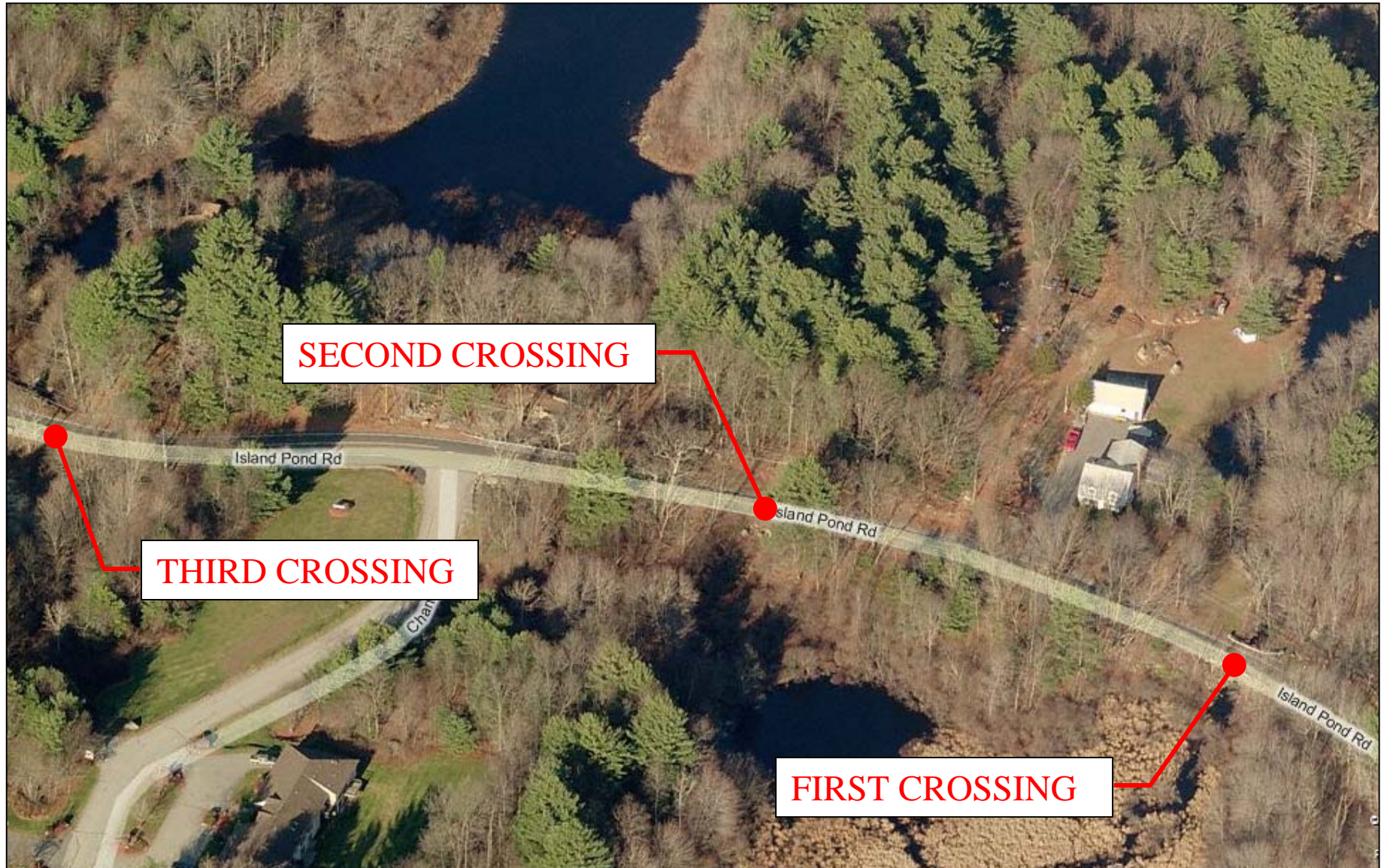


FIGURE 4: AERIAL PHOTOGRAPH

HOG HILL BROOK CROSSINGS UNDER ISLAND POND ROAD, ATKINSON, NEW HAMPSHIRE

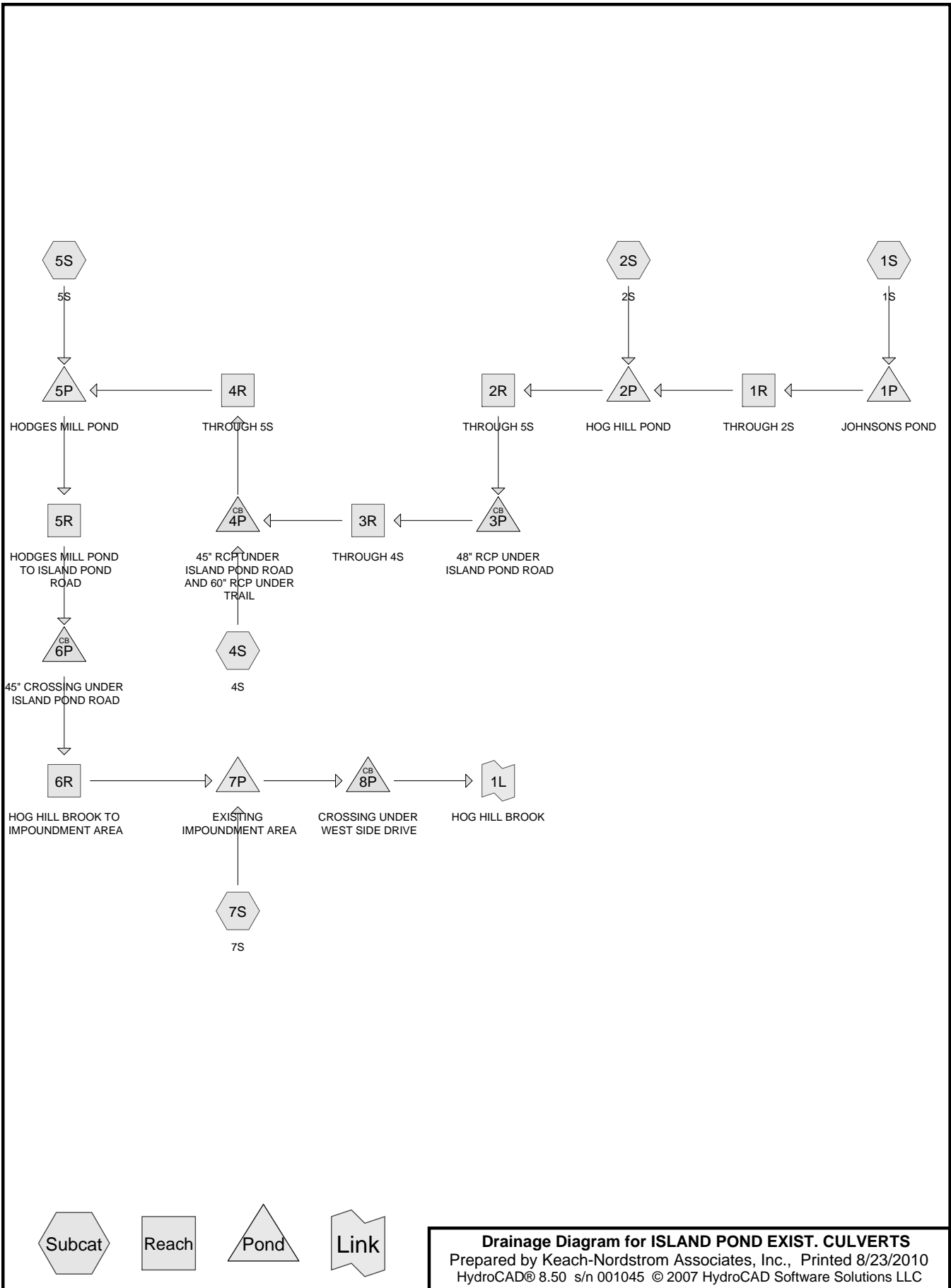


KNA PROJECT NO. 09-0722-1

V. APPENDIX

- A. 10-Year, Existing Site Conditions
- B. 10-Year, Post Roadway Improvements
- C. 25-Year, Existing Site Conditions
- D. 25-Year, Post Roadway Improvements
- E. 50-Year, Existing Site Conditions
- F. 50-Year, Post Roadway Improvements

A: 10-YEAR, EXISTING SITE CONDITIONS



ISLAND POND EXIST. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S	Runoff Area=1,486.000 ac 3.10% Impervious Runoff Depth>0.84"
Flow Length=12,490'	Slope=0.0050 '/' Tc=588.8 min CN=61 Runoff=124.17 cfs 104.501 af
Subcatchment 2S: 2S	Runoff Area=1,417.000 ac 1.59% Impervious Runoff Depth>0.80"
Flow Length=7,669'	Slope=0.0030 '/' Tc=466.7 min CN=59 Runoff=119.22 cfs 94.901 af
Subcatchment 4S: 4S	Runoff Area=45.000 ac 1.20% Impervious Runoff Depth=0.97"
Flow Length=1,651'	Slope=0.0050 '/' Tc=77.8 min CN=61 Runoff=14.44 cfs 3.636 af
Subcatchment 5S: 5S	Runoff Area=115.000 ac 0.31% Impervious Runoff Depth=0.75"
Flow Length=1,988'	Slope=0.0060 '/' Tc=85.5 min CN=57 Runoff=24.60 cfs 7.224 af
Subcatchment 7S: 7S	Runoff Area=2,028.000 ac 2.53% Impervious Runoff Depth>0.82"
Flow Length=11,484'	Slope=0.0050 '/' Tc=541.4 min CN=60 Runoff=166.50 cfs 138.637 af
Reach 1R: THROUGH 2S	Avg. Depth=1.57' Max Vel=1.31 fps Inflow=106.77 cfs 80.353 af
	n=0.040 L=3,100.0' S=0.0013 '/' Capacity=908.32 cfs Outflow=105.99 cfs 72.510 af
Reach 2R: THROUGH 5S	Avg. Depth=1.69' Max Vel=1.86 fps Inflow=170.44 cfs 143.343 af
	n=0.040 L=2,010.0' S=0.0024 '/' Capacity=1,236.98 cfs Outflow=170.30 cfs 136.988 af
Reach 3R: THROUGH 4S	Avg. Depth=1.24' Max Vel=3.08 fps Inflow=170.30 cfs 136.988 af
	n=0.040 L=655.0' S=0.0093 '/' Capacity=485.49 cfs Outflow=170.30 cfs 135.697 af
Reach 4R: THROUGH 5S	Avg. Depth=0.74' Max Vel=6.66 fps Inflow=170.69 cfs 139.333 af
	n=0.040 L=141.0' S=0.0774 '/' Capacity=7,037.05 cfs Outflow=170.69 cfs 139.204 af
Reach 5R: HODGES MILL POND TO ISLAND	Avg. Depth=1.10' Max Vel=3.63 fps Inflow=167.51 cfs 130.213 af
	n=0.040 L=133.0' S=0.0147 '/' Capacity=178,082.22 cfs Outflow=167.51 cfs 129.968 af
Reach 6R: HOG HILL BROOK TO	Avg. Depth=1.68' Max Vel=1.85 fps Inflow=167.51 cfs 129.968 af
	n=0.040 L=5,247.0' S=0.0024 '/' Capacity=1,236.67 cfs Outflow=166.66 cfs 110.083 af
Pond 1P: JOHNSONSPOND	Peak Elev=212.60' Storage=32.311 af Inflow=124.17 cfs 104.501 af
	Outflow=106.77 cfs 80.353 af
Pond 2P: HOG HILL POND	Peak Elev=209.17' Storage=30.554 af Inflow=177.40 cfs 167.411 af
	Outflow=170.44 cfs 143.343 af
Pond 3P: 48" RCP UNDER ISLAND POND ROAD	Peak Elev=206.92' Inflow=170.30 cfs 136.988 af
	Outflow=170.30 cfs 136.988 af
Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60"	Peak Elev=201.47' Inflow=170.69 cfs 139.333 af
	Outflow=170.69 cfs 139.333 af
Pond 5P: HODGES MILL POND	Peak Elev=185.28' Storage=18.784 af Inflow=172.11 cfs 146.428 af
	Outflow=167.51 cfs 130.213 af

ISLAND POND EXIST. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD Peak Elev=187.89' Inflow=167.51 cfs 129.968 af
Outflow=167.51 cfs 129.968 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=169.29' Storage=28.175 af Inflow=252.76 cfs 248.720 af
Outflow=251.92 cfs 222.508 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=167.14' Inflow=251.92 cfs 222.508 af
Outflow=251.92 cfs 222.508 af

Link 1L: HOG HILL BROOK Inflow=251.92 cfs 222.508 af
Primary=251.92 cfs 222.508 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 348.900 af Average Runoff Depth = 0.82"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

ISLAND POND EXIST. CULVERTS

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Type III 24-hr 10-YR Rainfall=4.30"

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Summary for Subcatchment 1S: 1S

Runoff = 124.17 cfs @ 20.94 hrs, Volume= 104.501 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 119.22 cfs @ 19.19 hrs, Volume= 94.901 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 14.44 cfs @ 13.22 hrs, Volume= 3.636 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

ISLAND POND EXIST. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 24.60 cfs @ 13.39 hrs, Volume= 7.224 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 166.50 cfs @ 20.45 hrs, Volume= 138.637 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 0.65" for 10-YR event
Inflow = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af
Outflow = 105.99 cfs @ 24.63 hrs, Volume= 72.510 af, Atten= 1%, Lag= 71.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.31 fps, Min. Travel Time= 39.4 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 45.9 min

Peak Storage= 250,498 cf @ 23.98 hrs, Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.59" for 10-YR event
Inflow = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af
Outflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af, Atten= 0%, Lag= 31.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.86 fps, Min. Travel Time= 18.0 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 20.5 min

Peak Storage= 183,561 cf @ 24.87 hrs, Average Depth at Peak Storage= 1.69'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.57" for 10-YR event
Inflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af
Outflow = 170.30 cfs @ 25.27 hrs, Volume= 135.697 af, Atten= 0%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.08 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 4.1 min

ISLAND POND EXIST. CULVERTS

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Peak Storage= 36,234 cf @ 25.21 hrs, Average Depth at Peak Storage= 1.24'

Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 100.00'

Length= 655.0' Slope= 0.0093 '/'

Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.57" for 10-YR event

Inflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af

Outflow = 170.69 cfs @ 25.15 hrs, Volume= 139.204 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 6.66 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 4.86 fps, Avg. Travel Time= 0.5 min

Peak Storage= 3,612 cf @ 25.14 hrs, Average Depth at Peak Storage= 0.74'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 141.0' Slope= 0.0774 '/'

Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event

Inflow = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af

Outflow = 167.51 cfs @ 26.37 hrs, Volume= 129.968 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 3.63 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.8 min

Peak Storage= 6,134 cf @ 26.36 hrs, Average Depth at Peak Storage= 1.10'

Bank-Full Depth= 20.00', Capacity at Bank-Full= 178,082.22 cfs

20.00' x 20.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 820.00'

Length= 133.0' Slope= 0.0147 '/'

Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event

Inflow = 167.51 cfs @ 26.37 hrs, Volume= 129.968 af

Outflow = 166.66 cfs @ 27.77 hrs, Volume= 110.083 af, Atten= 1%, Lag= 84.4 min

ISLAND POND EXIST. CULVERTS

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 1.85 fps, Min. Travel Time= 47.2 min

Avg. Velocity = 1.38 fps, Avg. Travel Time= 63.3 min

Peak Storage= 471,670 cf @ 26.99 hrs, Average Depth at Peak Storage= 1.68'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 0.84" for 10-YR event

Inflow = 124.17 cfs @ 20.94 hrs, Volume= 104.501 af

Outflow = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af, Atten= 14%, Lag= 150.4 min

Primary = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 212.60' @ 23.44 hrs Surf.Area= 17.975 ac Storage= 32.311 af

Plug-Flow detention time= 213.7 min calculated for 80.353 af (77% of inflow)

Center-of-Mass det. time= 121.4 min (1,461.4 - 1,340.0)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=106.77 cfs @ 23.44 hrs HW=212.60' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 106.77 cfs @ 3.35 fps)

ISLAND POND EXIST. CULVERTS

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.69" for 10-YR event
 Inflow = 177.40 cfs @ 23.14 hrs, Volume= 167.411 af
 Outflow = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af, Atten= 4%, Lag= 90.3 min
 Primary = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 209.17' @ 24.65 hrs Surf.Area= 15.224 ac Storage= 30.554 af

Plug-Flow detention time= 133.5 min calculated for 143.295 af (86% of inflow)
 Center-of-Mass det. time= 75.3 min (1,449.1 - 1,373.8)

Volume	Invert	Avail.Storage	Storage Description
#1	205.00'	70.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=170.43 cfs @ 24.65 hrs HW=209.17' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir** (Weir Controls 170.43 cfs @ 3.92 fps)

Summary for Pond 3P: 48" RCP UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af
 Outflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 206.92' @ 25.17 hrs
 Flood Elev= 206.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.19'	48.0" x 40.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 199.94' S= 0.0063 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

ISLAND POND EXIST. CULVERTS

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Primary OutFlow Max=170.28 cfs @ 25.17 hrs HW=206.92' (Free Discharge)

└─1=Culvert (Inlet Controls 131.53 cfs @ 10.47 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 38.75 cfs @ 1.78 fps)

Summary for Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60" RCP UNDER TRAIL

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af
 Outflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af, Atten= 0%, Lag= 0.0 min
 Primary = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 201.47' @ 25.14 hrs

Flood Elev= 200.88'

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.84'	45.0" x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	192.48'	60.0" x 19.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 191.47' S= 0.0532 '/' Cc= 0.900 n= 0.012
#3	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=170.70 cfs @ 25.14 hrs HW=201.47' (Free Discharge)

└─2=Culvert (Passes 127.60 cfs of 240.90 cfs potential flow)

└─1=Culvert (Inlet Controls 127.60 cfs @ 11.55 fps)

└─3=Broad-Crested Rectangular Weir (Weir Controls 43.09 cfs @ 2.08 fps)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 172.11 cfs @ 24.85 hrs, Volume= 146.428 af
 Outflow = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af, Atten= 3%, Lag= 90.0 min
 Primary = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 185.28' @ 26.35 hrs Surf.Area= 6.940 ac Storage= 18.784 af

Plug-Flow detention time= 84.5 min calculated for 130.170 af (89% of inflow)

Center-of-Mass det. time= 44.8 min (1,482.1 - 1,437.4)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=167.50 cfs @ 26.35 hrs HW=185.28' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 167.50 cfs @ 6.41 fps)

└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event
Inflow = 167.51 cfs @ 26.37 hrs, Volume= 129.968 af
Outflow = 167.51 cfs @ 26.37 hrs, Volume= 129.968 af, Atten= 0%, Lag= 0.0 min
Primary = 167.51 cfs @ 26.37 hrs, Volume= 129.968 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 187.89' @ 26.37 hrs

Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	45.0" x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=167.44 cfs @ 26.37 hrs HW=187.89' (Free Discharge)

└─1=Culvert (Inlet Controls 135.26 cfs @ 12.25 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 32.17 cfs @ 1.67 fps)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.59" for 10-YR event
Inflow = 252.76 cfs @ 25.62 hrs, Volume= 248.720 af
Outflow = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af, Atten= 0%, Lag= 33.5 min
Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 169.29' @ 26.18 hrs Surf.Area= 17.060 ac Storage= 28.175 af

Plug-Flow detention time= 86.0 min calculated for 222.508 af (89% of inflow)

Center-of-Mass det. time= 45.3 min (1,455.5 - 1,410.2)

ISLAND POND EXIST. CULVERTS

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250
Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=251.90 cfs @ 26.18 hrs HW=169.29' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 137.62 cfs @ 4.00 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 114.28 cfs @ 2.40 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.52" for 10-YR event
 Inflow = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af
 Outflow = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af, Atten= 0%, Lag= 0.0 min
 Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 167.14' @ 26.18 hrs

Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=251.91 cfs @ 26.18 hrs HW=167.14' (Free Discharge)

└─1=Culvert (Barrel Controls 251.91 cfs @ 8.41 fps)

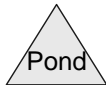
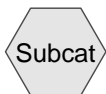
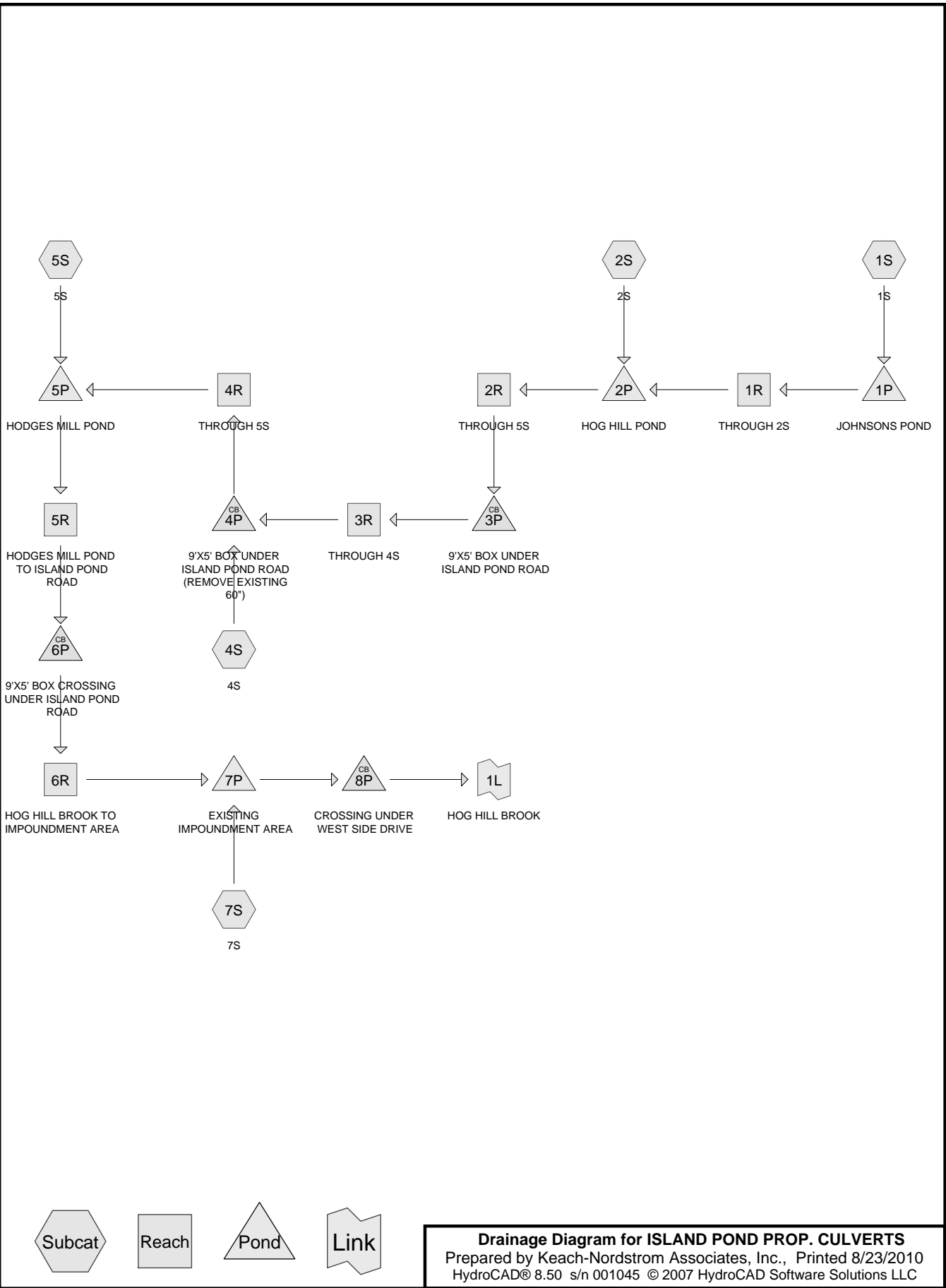
└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.52" for 10-YR event
 Inflow = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af
 Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.508 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

B: 10-YEAR, POST ROADWAY IMPROVEMENTS



Drainage Diagram for ISLAND POND PROP. CULVERTS
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ISLAND POND PROP. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND PROP. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S Runoff Area=1,486.000 ac 3.10% Impervious Runoff Depth>0.84"
Flow Length=12,490' Slope=0.0050 '/' Tc=588.8 min CN=61 Runoff=124.17 cfs 104.501 af

Subcatchment 2S: 2S Runoff Area=1,417.000 ac 1.59% Impervious Runoff Depth>0.80"
Flow Length=7,669' Slope=0.0030 '/' Tc=466.7 min CN=59 Runoff=119.22 cfs 94.901 af

Subcatchment 4S: 4S Runoff Area=45.000 ac 1.20% Impervious Runoff Depth=0.97"
Flow Length=1,651' Slope=0.0050 '/' Tc=77.8 min CN=61 Runoff=14.44 cfs 3.636 af

Subcatchment 5S: 5S Runoff Area=115.000 ac 0.31% Impervious Runoff Depth=0.75"
Flow Length=1,988' Slope=0.0060 '/' Tc=85.5 min CN=57 Runoff=24.60 cfs 7.224 af

Subcatchment 7S: 7S Runoff Area=2,028.000 ac 2.53% Impervious Runoff Depth>0.82"
Flow Length=11,484' Slope=0.0050 '/' Tc=541.4 min CN=60 Runoff=166.50 cfs 138.637 af

Reach 1R: THROUGH 2S Avg. Depth=1.57' Max Vel=1.31 fps Inflow=106.77 cfs 80.353 af
n=0.040 L=3,100.0' S=0.0013 '/' Capacity=908.32 cfs Outflow=105.99 cfs 72.510 af

Reach 2R: THROUGH 5S Avg. Depth=1.69' Max Vel=1.86 fps Inflow=170.44 cfs 143.343 af
n=0.040 L=2,010.0' S=0.0024 '/' Capacity=1,236.98 cfs Outflow=170.30 cfs 136.988 af

Reach 3R: THROUGH 4S Avg. Depth=1.24' Max Vel=3.08 fps Inflow=170.30 cfs 136.988 af
n=0.040 L=655.0' S=0.0093 '/' Capacity=485.49 cfs Outflow=170.30 cfs 135.697 af

Reach 4R: THROUGH 5S Avg. Depth=0.74' Max Vel=6.66 fps Inflow=170.69 cfs 139.333 af
n=0.040 L=141.0' S=0.0774 '/' Capacity=7,037.05 cfs Outflow=170.69 cfs 139.204 af

Reach 5R: HODGES MILL POND TO ISLAND Avg. Depth=1.10' Max Vel=3.62 fps Inflow=167.51 cfs 130.213 af
n=0.040 L=133.0' S=0.0147 '/' Capacity=3,061.83 cfs Outflow=167.51 cfs 129.967 af

Reach 6R: HOG HILL BROOK TO Avg. Depth=1.68' Max Vel=1.85 fps Inflow=167.51 cfs 129.967 af
n=0.040 L=5,247.0' S=0.0024 '/' Capacity=1,236.67 cfs Outflow=166.66 cfs 110.082 af

Pond 1P: JOHNSONSPOND Peak Elev=212.60' Storage=32.311 af Inflow=124.17 cfs 104.501 af
Outflow=106.77 cfs 80.353 af

Pond 2P: HOG HILL POND Peak Elev=209.17' Storage=30.554 af Inflow=177.40 cfs 167.411 af
Outflow=170.44 cfs 143.343 af

Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD Peak Elev=203.85' Inflow=170.30 cfs 136.988 af
Outflow=170.30 cfs 136.988 af

Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE Peak Elev=197.22' Inflow=170.69 cfs 139.333 af
Outflow=170.69 cfs 139.333 af

Pond 5P: HODGES MILL POND Peak Elev=185.28' Storage=18.784 af Inflow=172.11 cfs 146.428 af
Outflow=167.51 cfs 130.213 af

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Type III 24-hr 10-YR Rainfall=4.30"

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Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD Peak Elev=183.49' Inflow=167.51 cfs 129.967 af
Outflow=167.51 cfs 129.967 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=169.29' Storage=28.174 af Inflow=252.75 cfs 248.719 af
Outflow=251.92 cfs 222.507 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=167.14' Inflow=251.92 cfs 222.507 af
Outflow=251.92 cfs 222.507 af

Link 1L: HOG HILL BROOK Inflow=251.92 cfs 222.507 af
Primary=251.92 cfs 222.507 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 348.900 af Average Runoff Depth = 0.82"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

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Summary for Subcatchment 1S: 1S

Runoff = 124.17 cfs @ 20.94 hrs, Volume= 104.501 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 119.22 cfs @ 19.19 hrs, Volume= 94.901 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 14.44 cfs @ 13.22 hrs, Volume= 3.636 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 24.60 cfs @ 13.39 hrs, Volume= 7.224 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 166.50 cfs @ 20.45 hrs, Volume= 138.637 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.30"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

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Type III 24-hr 10-YR Rainfall=4.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 0.65" for 10-YR event
Inflow = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af
Outflow = 105.99 cfs @ 24.63 hrs, Volume= 72.510 af, Atten= 1%, Lag= 71.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.31 fps, Min. Travel Time= 39.4 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 45.9 min

Peak Storage= 250,498 cf @ 23.98 hrs, Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.59" for 10-YR event
Inflow = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af
Outflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af, Atten= 0%, Lag= 31.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.86 fps, Min. Travel Time= 18.0 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 20.5 min

Peak Storage= 183,561 cf @ 24.87 hrs, Average Depth at Peak Storage= 1.69'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.57" for 10-YR event
Inflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af
Outflow = 170.30 cfs @ 25.27 hrs, Volume= 135.697 af, Atten= 0%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.08 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 4.1 min

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Peak Storage= 36,234 cf @ 25.21 hrs, Average Depth at Peak Storage= 1.24'

Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 100.00'

Length= 655.0' Slope= 0.0093 '/'

Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.57" for 10-YR event

Inflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af

Outflow = 170.69 cfs @ 25.15 hrs, Volume= 139.204 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 6.66 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 4.86 fps, Avg. Travel Time= 0.5 min

Peak Storage= 3,612 cf @ 25.14 hrs, Average Depth at Peak Storage= 0.74'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 141.0' Slope= 0.0774 '/'

Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event

Inflow = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af

Outflow = 167.51 cfs @ 26.37 hrs, Volume= 129.967 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 3.62 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 2.83 fps, Avg. Travel Time= 0.8 min

Peak Storage= 6,154 cf @ 26.36 hrs, Average Depth at Peak Storage= 1.10'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 3,061.83 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 133.0' Slope= 0.0147 '/'

Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event

Inflow = 167.51 cfs @ 26.37 hrs, Volume= 129.967 af

Outflow = 166.66 cfs @ 27.77 hrs, Volume= 110.082 af, Atten= 1%, Lag= 84.4 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 1.85 fps, Min. Travel Time= 47.2 min

Avg. Velocity = 1.38 fps, Avg. Travel Time= 63.3 min

Peak Storage= 471,670 cf @ 26.99 hrs, Average Depth at Peak Storage= 1.68'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 0.84" for 10-YR event

Inflow = 124.17 cfs @ 20.94 hrs, Volume= 104.501 af

Outflow = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af, Atten= 14%, Lag= 150.4 min

Primary = 106.77 cfs @ 23.44 hrs, Volume= 80.353 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 212.60' @ 23.44 hrs Surf.Area= 17.975 ac Storage= 32.311 af

Plug-Flow detention time= 213.7 min calculated for 80.353 af (77% of inflow)

Center-of-Mass det. time= 121.4 min (1,461.4 - 1,340.0)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=106.77 cfs @ 23.44 hrs HW=212.60' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 106.77 cfs @ 3.35 fps)

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.69" for 10-YR event
 Inflow = 177.40 cfs @ 23.14 hrs, Volume= 167.411 af
 Outflow = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af, Atten= 4%, Lag= 90.3 min
 Primary = 170.44 cfs @ 24.65 hrs, Volume= 143.343 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 209.17' @ 24.65 hrs Surf.Area= 15.224 ac Storage= 30.554 af

Plug-Flow detention time= 133.5 min calculated for 143.295 af (86% of inflow)
 Center-of-Mass det. time= 75.3 min (1,449.1 - 1,373.8)

Volume #1	Invert 205.00'	Avail.Storage 70.000 af	Storage Description
Custom Stage Data (Prismatic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device #1	Routing Primary	Invert 207.00'	Outlet Devices
20.0' long x 5.0' breadth Broad-Crested Rectangular Weir			
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00			
3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67			
2.66 2.68 2.70 2.74 2.79 2.88			

Primary OutFlow Max=170.43 cfs @ 24.65 hrs HW=209.17' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 170.43 cfs @ 3.92 fps)

Summary for Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af
 Outflow = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 170.30 cfs @ 25.17 hrs, Volume= 136.988 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 203.85' @ 25.17 hrs
 Flood Elev= 206.48'

Device #1	Routing Primary	Invert 200.19'	Outlet Devices
9.00' W x 5.00' H x 40.0' long Culvert			
RCP, square edge headwall, Ke= 0.500			
Outlet Invert= 199.94' S= 0.0063 '/' Cc= 0.900			
n= 0.012 Concrete pipe, finished			
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			

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Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=170.30 cfs @ 25.17 hrs HW=203.85' (Free Discharge)

- 1=Culvert (Barrel Controls 170.30 cfs @ 6.89 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE EXISTING 60")

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af
 Outflow = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af, Atten= 0%, Lag= 0.0 min
 Primary = 170.69 cfs @ 25.14 hrs, Volume= 139.333 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 197.22' @ 25.14 hrs
 Flood Elev= 200.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	193.84'	9.00' W x 5.00' H x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=170.69 cfs @ 25.14 hrs HW=197.22' (Free Discharge)

- 1=Culvert (Barrel Controls 170.69 cfs @ 7.48 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.57" for 10-YR event
 Inflow = 172.11 cfs @ 24.85 hrs, Volume= 146.428 af
 Outflow = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af, Atten= 3%, Lag= 90.0 min
 Primary = 167.51 cfs @ 26.35 hrs, Volume= 130.213 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 185.28' @ 26.35 hrs Surf.Area= 6.940 ac Storage= 18.784 af

Plug-Flow detention time= 84.5 min calculated for 130.170 af (89% of inflow)
 Center-of-Mass det. time= 44.8 min (1,482.1 - 1,437.4)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

ISLAND POND PROP. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=167.50 cfs @ 26.35 hrs HW=185.28' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 167.50 cfs @ 6.41 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.51" for 10-YR event
 Inflow = 167.51 cfs @ 26.37 hrs, Volume= 129.967 af
 Outflow = 167.51 cfs @ 26.37 hrs, Volume= 129.967 af, Atten= 0%, Lag= 0.0 min
 Primary = 167.51 cfs @ 26.37 hrs, Volume= 129.967 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 183.49' @ 26.37 hrs

Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	9.00' W x 5.00' H x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=167.51 cfs @ 26.37 hrs HW=183.49' (Free Discharge)

1=Culvert (Barrel Controls 167.51 cfs @ 6.31 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.59" for 10-YR event
 Inflow = 252.75 cfs @ 25.62 hrs, Volume= 248.719 af
 Outflow = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af, Atten= 0%, Lag= 33.5 min
 Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 169.29' @ 26.18 hrs Surf.Area= 17.060 ac Storage= 28.174 af

Plug-Flow detention time= 86.0 min calculated for 222.433 af (89% of inflow)

Center-of-Mass det. time= 45.3 min (1,455.5 - 1,410.2)

ISLAND POND PROP. CULVERTS

Type III 24-hr 10-YR Rainfall=4.30"

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=251.90 cfs @ 26.18 hrs HW=169.29' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 137.62 cfs @ 4.00 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 114.28 cfs @ 2.40 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.52" for 10-YR event
 Inflow = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af
 Outflow = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af, Atten= 0%, Lag= 0.0 min
 Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 167.14' @ 26.18 hrs
 Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=251.91 cfs @ 26.18 hrs HW=167.14' (Free Discharge)

└─1=Culvert (Barrel Controls 251.91 cfs @ 8.41 fps)

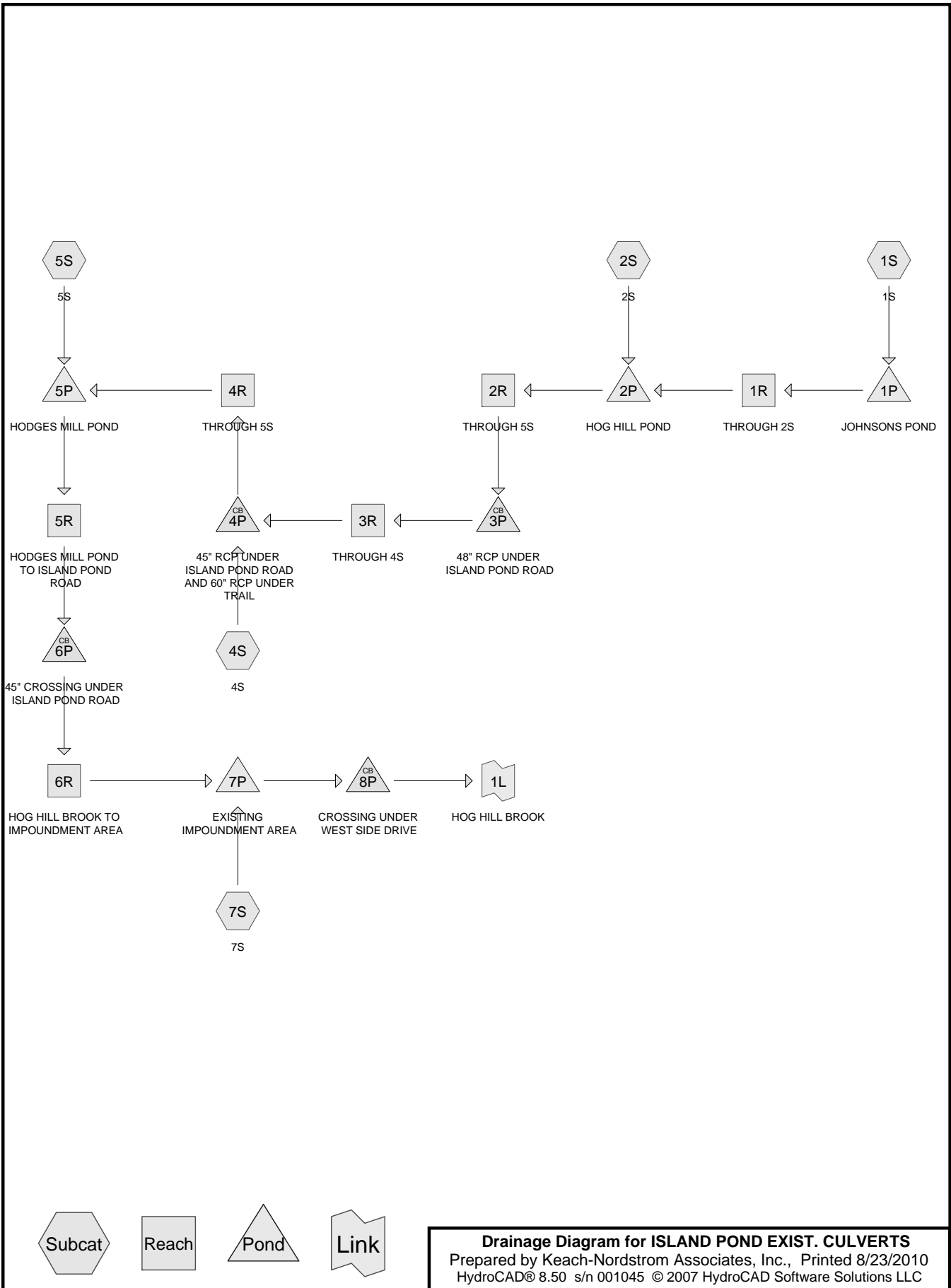
└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.52" for 10-YR event
 Inflow = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af
 Primary = 251.92 cfs @ 26.18 hrs, Volume= 222.507 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

C: 25-YEAR, EXISTING SITE CONDITIONS



ISLAND POND EXIST. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S	Runoff Area=1,486.000 ac	3.10% Impervious	Runoff Depth>1.31"
Flow Length=12,490'	Slope=0.0050 '/'	Tc=588.8 min	CN=61
	Runoff=194.46 cfs	162.127 af	
Subcatchment 2S: 2S	Runoff Area=1,417.000 ac	1.59% Impervious	Runoff Depth>1.27"
Flow Length=7,669'	Slope=0.0030 '/'	Tc=466.7 min	CN=59
	Runoff=192.79 cfs	149.899 af	
Subcatchment 4S: 4S	Runoff Area=45.000 ac	1.20% Impervious	Runoff Depth=1.49"
Flow Length=1,651'	Slope=0.0050 '/'	Tc=77.8 min	CN=61
	Runoff=23.89 cfs	5.590 af	
Subcatchment 5S: 5S	Runoff Area=115.000 ac	0.31% Impervious	Runoff Depth=1.21"
Flow Length=1,988'	Slope=0.0060 '/'	Tc=85.5 min	CN=57
	Runoff=43.91 cfs	11.622 af	
Subcatchment 7S: 7S	Runoff Area=2,028.000 ac	2.53% Impervious	Runoff Depth>1.28"
Flow Length=11,484'	Slope=0.0050 '/'	Tc=541.4 min	CN=60
	Runoff=264.71 cfs	217.104 af	
Reach 1R: THROUGH 2S	Avg. Depth=1.94'	Max Vel=1.48 fps	Inflow=170.49 cfs
n=0.040	L=3,100.0'	S=0.0013 '/'	Capacity=908.32 cfs
	Outflow=169.53 cfs	122.394 af	
Reach 2R: THROUGH 5S	Avg. Depth=2.10'	Max Vel=2.11 fps	Inflow=274.12 cfs
n=0.040	L=2,010.0'	S=0.0024 '/'	Capacity=1,236.98 cfs
	Outflow=273.97 cfs	232.230 af	
Reach 3R: THROUGH 4S	Avg. Depth=1.54'	Max Vel=3.49 fps	Inflow=273.97 cfs
n=0.040	L=655.0'	S=0.0093 '/'	Capacity=485.49 cfs
	Outflow=273.96 cfs	230.501 af	
Reach 4R: THROUGH 5S	Avg. Depth=0.94'	Max Vel=7.60 fps	Inflow=275.18 cfs
n=0.040	L=141.0'	S=0.0774 '/'	Capacity=7,037.05 cfs
	Outflow=275.18 cfs	235.919 af	
Reach 5R: HODGES MILL POND TO ISLAND	Avg. Depth=1.38'	Max Vel=4.11 fps	Inflow=270.13 cfs
n=0.040	L=133.0'	S=0.0147 '/'	Capacity=178,082.22 cfs
	Outflow=270.13 cfs	223.013 af	
Reach 6R: HOG HILL BROOK TO	Avg. Depth=2.08'	Max Vel=2.10 fps	Inflow=270.13 cfs
n=0.040	L=5,247.0'	S=0.0024 '/'	Capacity=1,236.67 cfs
	Outflow=269.05 cfs	195.746 af	
Pond 1P: JOHNSONSPOND	Peak Elev=213.18'	Storage=43.580 af	Inflow=194.46 cfs
	Outflow=170.49 cfs	132.646 af	
Pond 2P: HOG HILL POND	Peak Elev=209.98'	Storage=45.142 af	Inflow=288.17 cfs
	Outflow=274.12 cfs	240.762 af	
Pond 3P: 48" RCP UNDER ISLAND POND ROAD	Peak Elev=207.50'	Inflow=273.97 cfs	232.230 af
	Outflow=273.97 cfs	232.230 af	
Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60"	Peak Elev=202.20'	Inflow=275.18 cfs	236.091 af
	Outflow=275.18 cfs	236.091 af	
Pond 5P: HODGES MILL POND	Peak Elev=186.68'	Storage=29.730 af	Inflow=278.17 cfs
	Outflow=270.13 cfs	223.348 af	

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD Peak Elev=188.50' Inflow=270.13 cfs 223.013 af
Outflow=270.13 cfs 223.013 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=169.77' Storage=36.683 af Inflow=412.47 cfs 412.851 af
Outflow=411.50 cfs 380.311 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=169.42' Inflow=411.50 cfs 380.311 af
Outflow=411.50 cfs 380.311 af

Link 1L: HOG HILL BROOK Inflow=411.50 cfs 380.311 af
Primary=411.50 cfs 380.311 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 546.342 af Average Runoff Depth = 1.29"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

ISLAND POND EXIST. CULVERTS

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Type III 24-hr 25-YR Rainfall=5.20"

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Summary for Subcatchment 1S: 1S

Runoff = 194.46 cfs @ 20.93 hrs, Volume= 162.127 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 192.79 cfs @ 19.18 hrs, Volume= 149.899 af, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 23.89 cfs @ 13.14 hrs, Volume= 5.590 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 43.91 cfs @ 13.30 hrs, Volume= 11.622 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 264.71 cfs @ 19.86 hrs, Volume= 217.104 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.07" for 25-YR event
Inflow = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af
Outflow = 169.53 cfs @ 24.09 hrs, Volume= 122.394 af, Atten= 1%, Lag= 61.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.48 fps, Min. Travel Time= 34.9 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 40.7 min

Peak Storage= 354,751 cf @ 23.51 hrs, Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.00" for 25-YR event
Inflow = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af
Outflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af, Atten= 0%, Lag= 27.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 2.11 fps, Min. Travel Time= 15.9 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 18.1 min

Peak Storage= 261,195 cf @ 24.26 hrs, Average Depth at Peak Storage= 2.10'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.96" for 25-YR event
Inflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af
Outflow = 273.96 cfs @ 24.61 hrs, Volume= 230.501 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.49 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 3.04 fps, Avg. Travel Time= 3.6 min

ISLAND POND EXIST. CULVERTS

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Type III 24-hr 25-YR Rainfall=5.20"

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Peak Storage= 51,440 cf @ 24.56 hrs, Average Depth at Peak Storage= 1.54'

Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 100.00'

Length= 655.0' Slope= 0.0093 '/'

Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.96" for 25-YR event

Inflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af

Outflow = 275.18 cfs @ 24.54 hrs, Volume= 235.919 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 7.60 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 5.63 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5,105 cf @ 24.54 hrs, Average Depth at Peak Storage= 0.94'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 141.0' Slope= 0.0774 '/'

Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.88" for 25-YR event

Inflow = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af

Outflow = 270.13 cfs @ 25.74 hrs, Volume= 223.013 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 4.11 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 3.33 fps, Avg. Travel Time= 0.7 min

Peak Storage= 8,736 cf @ 25.73 hrs, Average Depth at Peak Storage= 1.38'

Bank-Full Depth= 20.00', Capacity at Bank-Full= 178,082.22 cfs

20.00' x 20.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 820.00'

Length= 133.0' Slope= 0.0147 '/'

Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.87" for 25-YR event

Inflow = 270.13 cfs @ 25.74 hrs, Volume= 223.013 af

Outflow = 269.05 cfs @ 26.99 hrs, Volume= 195.746 af, Atten= 0%, Lag= 75.3 min

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 2.10 fps, Min. Travel Time= 41.7 min

Avg. Velocity = 1.63 fps, Avg. Travel Time= 53.8 min

Peak Storage= 672,878 cf @ 26.30 hrs, Average Depth at Peak Storage= 2.08'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.31" for 25-YR event

Inflow = 194.46 cfs @ 20.93 hrs, Volume= 162.127 af

Outflow = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af, Atten= 12%, Lag= 128.3 min

Primary = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 213.18' @ 23.07 hrs Surf.Area= 20.876 ac Storage= 43.580 af

Plug-Flow detention time= 183.2 min calculated for 132.646 af (82% of inflow)

Center-of-Mass det. time= 108.2 min (1,438.2 - 1,330.0)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=170.48 cfs @ 23.07 hrs HW=213.18' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 170.48 cfs @ 3.92 fps)

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.13" for 25-YR event
 Inflow = 288.17 cfs @ 22.18 hrs, Volume= 272.293 af
 Outflow = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af, Atten= 5%, Lag= 113.2 min
 Primary = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 209.98' @ 24.06 hrs Surf.Area= 20.880 ac Storage= 45.142 af

Plug-Flow detention time= 118.3 min calculated for 240.762 af (88% of inflow)
 Center-of-Mass det. time= 69.9 min (1,428.5 - 1,358.6)

Volume	Invert	Avail.Storage	Storage Description
#1	205.00'	70.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=274.11 cfs @ 24.06 hrs HW=209.98' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 274.11 cfs @ 4.59 fps)

Summary for Pond 3P: 48" RCP UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.96" for 25-YR event
 Inflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af
 Outflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af, Atten= 0%, Lag= 0.0 min
 Primary = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 207.50' @ 24.52 hrs
 Flood Elev= 206.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.19'	48.0" x 40.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 199.94' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Primary OutFlow Max=273.94 cfs @ 24.52 hrs HW=207.50' (Free Discharge)

1=Culvert (Inlet Controls 139.37 cfs @ 11.09 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 134.57 cfs @ 2.65 fps)

Summary for Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60" RCP UNDER TRAIL

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.96" for 25-YR event
 Inflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af
 Outflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af, Atten= 0%, Lag= 0.0 min
 Primary = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 202.20' @ 24.53 hrs
 Flood Elev= 200.88'

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.84'	45.0" x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	192.48'	60.0" x 19.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 191.47' S= 0.0532 '/' Cc= 0.900 n= 0.012
#3	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=275.14 cfs @ 24.53 hrs HW=202.20' (Free Discharge)

2=Culvert (Passes 135.40 cfs of 253.99 cfs potential flow)

1=Culvert (Inlet Controls 135.40 cfs @ 12.26 fps)

3=Broad-Crested Rectangular Weir (Weir Controls 139.74 cfs @ 3.03 fps)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.97" for 25-YR event
 Inflow = 278.17 cfs @ 24.44 hrs, Volume= 247.541 af
 Outflow = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af, Atten= 3%, Lag= 76.8 min
 Primary = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 186.68' @ 25.72 hrs Surf.Area= 8.698 ac Storage= 29.730 af

Plug-Flow detention time= 79.3 min calculated for 223.348 af (90% of inflow)
 Center-of-Mass det. time= 42.5 min (1,459.8 - 1,417.3)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=270.12 cfs @ 25.72 hrs HW=186.68' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 270.12 cfs @ 7.52 fps)

└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.87" for 25-YR event
Inflow = 270.13 cfs @ 25.74 hrs, Volume= 223.013 af
Outflow = 270.13 cfs @ 25.74 hrs, Volume= 223.013 af, Atten= 0%, Lag= 0.0 min
Primary = 270.13 cfs @ 25.74 hrs, Volume= 223.013 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 188.50' @ 25.74 hrs

Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	45.0" x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=270.00 cfs @ 25.74 hrs HW=188.50' (Free Discharge)

└─1=Culvert (Inlet Controls 141.40 cfs @ 12.80 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 128.59 cfs @ 2.61 fps)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.97" for 25-YR event
Inflow = 412.47 cfs @ 24.32 hrs, Volume= 412.851 af
Outflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 32.8 min
Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 169.77' @ 24.87 hrs Surf.Area= 19.025 ac Storage= 36.683 af

Plug-Flow detention time= 68.7 min calculated for 380.184 af (92% of inflow)

Center-of-Mass det. time= 37.4 min (1,435.6 - 1,398.2)

ISLAND POND EXIST. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=411.49 cfs @ 24.87 hrs HW=169.77' (Free Discharge)
 ↳1=**Broad-Crested Rectangular Weir** (Weir Controls 182.16 cfs @ 4.39 fps)
 ↳2=**Broad-Crested Rectangular Weir** (Weir Controls 229.33 cfs @ 3.02 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.90" for 25-YR event
 Inflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af
 Outflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 0.0 min
 Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 169.42' @ 24.87 hrs
 Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

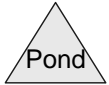
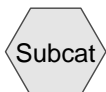
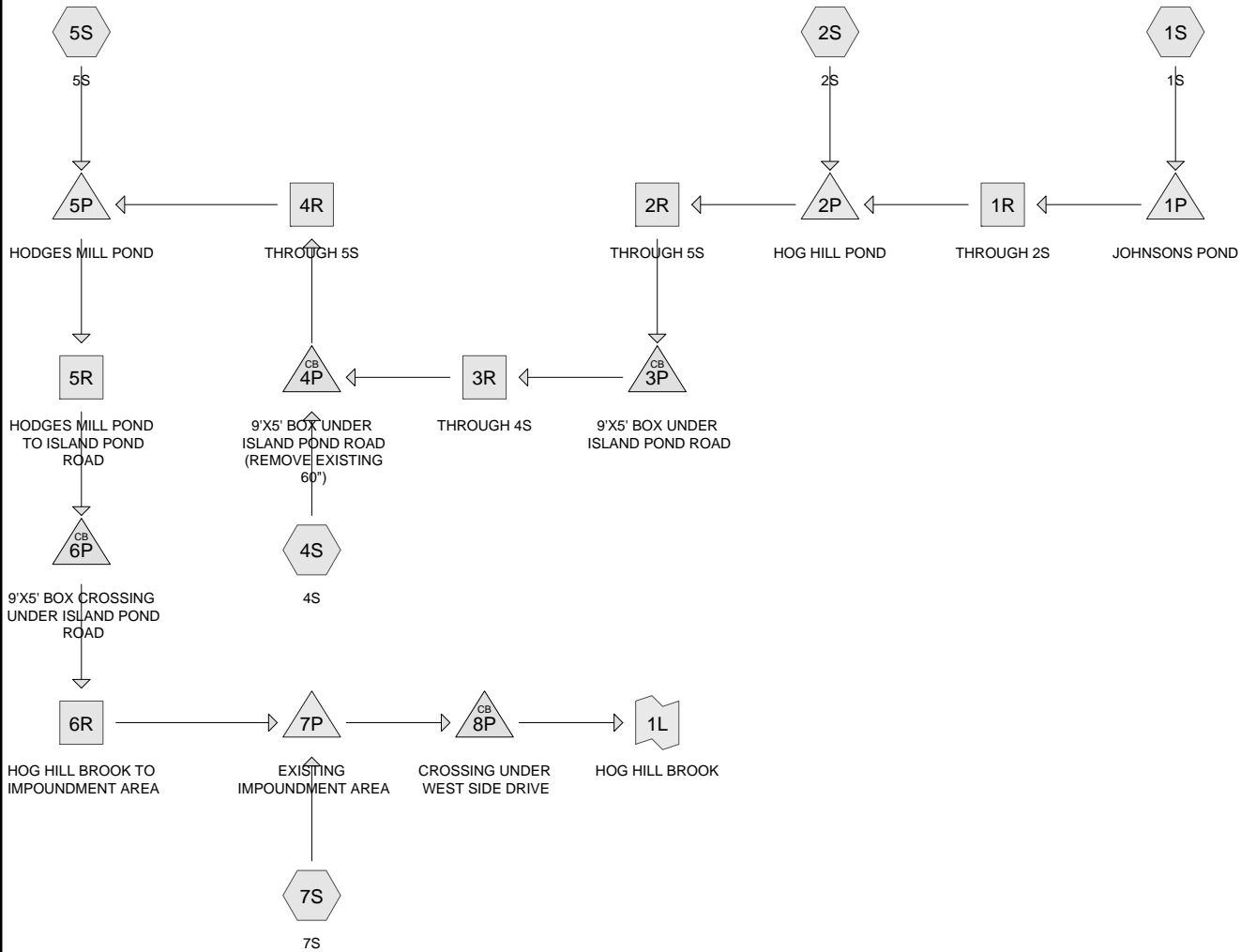
Primary OutFlow Max=411.51 cfs @ 24.87 hrs HW=169.42' (Free Discharge)
 ↳1=**Culvert** (Barrel Controls 411.51 cfs @ 9.67 fps)
 ↳2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.90" for 25-YR event
 Inflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af
 Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

D: 25-YEAR, POST ROADWAY IMPROVEMENTS



Drainage Diagram for ISLAND POND PROP. CULVERTS
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ISLAND POND PROP. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

ISLAND POND PROP. CULVERTS

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S	Runoff Area=1,486.000 ac 3.10% Impervious Runoff Depth>1.31"
Flow Length=12,490'	Slope=0.0050 '/' Tc=588.8 min CN=61 Runoff=194.46 cfs 162.127 af
Subcatchment 2S: 2S	Runoff Area=1,417.000 ac 1.59% Impervious Runoff Depth>1.27"
Flow Length=7,669'	Slope=0.0030 '/' Tc=466.7 min CN=59 Runoff=192.79 cfs 149.899 af
Subcatchment 4S: 4S	Runoff Area=45.000 ac 1.20% Impervious Runoff Depth=1.49"
Flow Length=1,651'	Slope=0.0050 '/' Tc=77.8 min CN=61 Runoff=23.89 cfs 5.590 af
Subcatchment 5S: 5S	Runoff Area=115.000 ac 0.31% Impervious Runoff Depth=1.21"
Flow Length=1,988'	Slope=0.0060 '/' Tc=85.5 min CN=57 Runoff=43.91 cfs 11.622 af
Subcatchment 7S: 7S	Runoff Area=2,028.000 ac 2.53% Impervious Runoff Depth>1.28"
Flow Length=11,484'	Slope=0.0050 '/' Tc=541.4 min CN=60 Runoff=264.71 cfs 217.104 af
Reach 1R: THROUGH 2S	Avg. Depth=1.94' Max Vel=1.48 fps Inflow=170.49 cfs 132.646 af
n=0.040 L=3,100.0'	S=0.0013 '/' Capacity=908.32 cfs Outflow=169.53 cfs 122.394 af
Reach 2R: THROUGH 5S	Avg. Depth=2.10' Max Vel=2.11 fps Inflow=274.12 cfs 240.762 af
n=0.040 L=2,010.0'	S=0.0024 '/' Capacity=1,236.98 cfs Outflow=273.97 cfs 232.230 af
Reach 3R: THROUGH 4S	Avg. Depth=1.54' Max Vel=3.49 fps Inflow=273.97 cfs 232.230 af
n=0.040 L=655.0'	S=0.0093 '/' Capacity=485.49 cfs Outflow=273.96 cfs 230.501 af
Reach 4R: THROUGH 5S	Avg. Depth=0.94' Max Vel=7.60 fps Inflow=275.18 cfs 236.091 af
n=0.040 L=141.0'	S=0.0774 '/' Capacity=7,037.05 cfs Outflow=275.18 cfs 235.919 af
Reach 5R: HODGES MILL POND TO ISLAND	Avg. Depth=1.38' Max Vel=4.11 fps Inflow=270.13 cfs 223.348 af
n=0.040 L=133.0'	S=0.0147 '/' Capacity=3,061.83 cfs Outflow=270.13 cfs 223.013 af
Reach 6R: HOG HILL BROOK TO	Avg. Depth=2.08' Max Vel=2.10 fps Inflow=270.13 cfs 223.013 af
n=0.040 L=5,247.0'	S=0.0024 '/' Capacity=1,236.67 cfs Outflow=269.05 cfs 195.746 af
Pond 1P: JOHNSONSPOND	Peak Elev=213.18' Storage=43.580 af Inflow=194.46 cfs 162.127 af
	Outflow=170.49 cfs 132.646 af
Pond 2P: HOG HILL POND	Peak Elev=209.98' Storage=45.142 af Inflow=288.17 cfs 272.293 af
	Outflow=274.12 cfs 240.762 af
Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD	Peak Elev=205.31' Inflow=273.97 cfs 232.230 af
	Outflow=273.97 cfs 232.230 af
Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE	Peak Elev=198.66' Inflow=275.18 cfs 236.091 af
	Outflow=275.18 cfs 236.091 af
Pond 5P: HODGES MILL POND	Peak Elev=186.68' Storage=29.730 af Inflow=278.17 cfs 247.541 af
	Outflow=270.13 cfs 223.348 af

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD Peak Elev=184.94' Inflow=270.13 cfs 223.013 af
Outflow=270.13 cfs 223.013 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=169.77' Storage=36.683 af Inflow=412.47 cfs 412.850 af
Outflow=411.50 cfs 380.311 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=169.42' Inflow=411.50 cfs 380.311 af
Outflow=411.50 cfs 380.311 af

Link 1L: HOG HILL BROOK Inflow=411.50 cfs 380.311 af
Primary=411.50 cfs 380.311 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 546.342 af Average Runoff Depth = 1.29"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

ISLAND POND PROP. CULVERTS

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Type III 24-hr 25-YR Rainfall=5.20"

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Summary for Subcatchment 1S: 1S

Runoff = 194.46 cfs @ 20.93 hrs, Volume= 162.127 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 192.79 cfs @ 19.18 hrs, Volume= 149.899 af, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 23.89 cfs @ 13.14 hrs, Volume= 5.590 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 43.91 cfs @ 13.30 hrs, Volume= 11.622 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 264.71 cfs @ 19.86 hrs, Volume= 217.104 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.20"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

ISLAND POND PROP. CULVERTS

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Type III 24-hr 25-YR Rainfall=5.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.07" for 25-YR event
Inflow = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af
Outflow = 169.53 cfs @ 24.09 hrs, Volume= 122.394 af, Atten= 1%, Lag= 61.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.48 fps, Min. Travel Time= 34.9 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 40.7 min

Peak Storage= 354,751 cf @ 23.51 hrs, Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.00" for 25-YR event
Inflow = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af
Outflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af, Atten= 0%, Lag= 27.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 2.11 fps, Min. Travel Time= 15.9 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 18.1 min

Peak Storage= 261,195 cf @ 24.26 hrs, Average Depth at Peak Storage= 2.10'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.96" for 25-YR event
Inflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af
Outflow = 273.96 cfs @ 24.61 hrs, Volume= 230.501 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.49 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 3.04 fps, Avg. Travel Time= 3.6 min

ISLAND POND PROP. CULVERTS

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Type III 24-hr 25-YR Rainfall=5.20"

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Peak Storage= 51,440 cf @ 24.56 hrs, Average Depth at Peak Storage= 1.54'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 100.00'
Length= 655.0' Slope= 0.0093 '/'
Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.96" for 25-YR event
Inflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af
Outflow = 275.18 cfs @ 24.54 hrs, Volume= 235.919 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 7.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.63 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5,105 cf @ 24.54 hrs, Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 141.0' Slope= 0.0774 '/'
Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.88" for 25-YR event
Inflow = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af
Outflow = 270.13 cfs @ 25.73 hrs, Volume= 223.013 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 4.11 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.31 fps, Avg. Travel Time= 0.7 min

Peak Storage= 8,743 cf @ 25.73 hrs, Average Depth at Peak Storage= 1.38'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 3,061.83 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 133.0' Slope= 0.0147 '/'
Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.87" for 25-YR event
Inflow = 270.13 cfs @ 25.73 hrs, Volume= 223.013 af
Outflow = 269.05 cfs @ 26.99 hrs, Volume= 195.746 af, Atten= 0%, Lag= 75.3 min

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 2.10 fps, Min. Travel Time= 41.7 min

Avg. Velocity = 1.63 fps, Avg. Travel Time= 53.8 min

Peak Storage= 672,878 cf @ 26.29 hrs, Average Depth at Peak Storage= 2.08'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.31" for 25-YR event

Inflow = 194.46 cfs @ 20.93 hrs, Volume= 162.127 af

Outflow = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af, Atten= 12%, Lag= 128.3 min

Primary = 170.49 cfs @ 23.07 hrs, Volume= 132.646 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 213.18' @ 23.07 hrs Surf.Area= 20.876 ac Storage= 43.580 af

Plug-Flow detention time= 183.2 min calculated for 132.646 af (82% of inflow)

Center-of-Mass det. time= 108.2 min (1,438.2 - 1,330.0)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=170.48 cfs @ 23.07 hrs HW=213.18' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 170.48 cfs @ 3.92 fps)

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.13" for 25-YR event
 Inflow = 288.17 cfs @ 22.18 hrs, Volume= 272.293 af
 Outflow = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af, Atten= 5%, Lag= 113.2 min
 Primary = 274.12 cfs @ 24.06 hrs, Volume= 240.762 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 209.98' @ 24.06 hrs Surf.Area= 20.880 ac Storage= 45.142 af

Plug-Flow detention time= 118.3 min calculated for 240.762 af (88% of inflow)
 Center-of-Mass det. time= 69.9 min (1,428.5 - 1,358.6)

Volume	Invert	Avail.Storage	Storage Description
#1	205.00'	70.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=274.11 cfs @ 24.06 hrs HW=209.98' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 274.11 cfs @ 4.59 fps)

Summary for Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 0.96" for 25-YR event
 Inflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af
 Outflow = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af, Atten= 0%, Lag= 0.0 min
 Primary = 273.97 cfs @ 24.52 hrs, Volume= 232.230 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 205.31' @ 24.52 hrs
 Flood Elev= 206.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.19'	9.00' W x 5.00' H x 40.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 199.94' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=273.96 cfs @ 24.52 hrs HW=205.31' (Free Discharge)

- 1=Culvert (Barrel Controls 273.96 cfs @ 7.93 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE EXISTING 60")

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 0.96" for 25-YR event
 Inflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af
 Outflow = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af, Atten= 0%, Lag= 0.0 min
 Primary = 275.18 cfs @ 24.53 hrs, Volume= 236.091 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 198.66' @ 24.53 hrs
 Flood Elev= 200.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	193.84'	9.00' W x 5.00' H x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=275.18 cfs @ 24.53 hrs HW=198.66' (Free Discharge)

- 1=Culvert (Barrel Controls 275.18 cfs @ 8.46 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.97" for 25-YR event
 Inflow = 278.17 cfs @ 24.44 hrs, Volume= 247.541 af
 Outflow = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af, Atten= 3%, Lag= 76.8 min
 Primary = 270.13 cfs @ 25.72 hrs, Volume= 223.348 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 186.68' @ 25.72 hrs Surf.Area= 8.698 ac Storage= 29.730 af

Plug-Flow detention time= 79.3 min calculated for 223.348 af (90% of inflow)
 Center-of-Mass det. time= 42.5 min (1,459.8 - 1,417.3)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=270.12 cfs @ 25.72 hrs HW=186.68' (Free Discharge)

- └─1=Broad-Crested Rectangular Weir (Weir Controls 270.12 cfs @ 7.52 fps)
- └─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 0.87" for 25-YR event
 Inflow = 270.13 cfs @ 25.73 hrs, Volume= 223.013 af
 Outflow = 270.13 cfs @ 25.73 hrs, Volume= 223.013 af, Atten= 0%, Lag= 0.0 min
 Primary = 270.13 cfs @ 25.73 hrs, Volume= 223.013 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 184.94' @ 25.73 hrs
 Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	9.00' W x 5.00' H x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=270.13 cfs @ 25.73 hrs HW=184.94' (Free Discharge)

- └─1=Culvert (Barrel Controls 270.13 cfs @ 7.43 fps)
- └─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.97" for 25-YR event
 Inflow = 412.47 cfs @ 24.32 hrs, Volume= 412.850 af
 Outflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 32.8 min
 Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 169.77' @ 24.87 hrs Surf.Area= 19.025 ac Storage= 36.683 af

Plug-Flow detention time= 68.7 min calculated for 380.311 af (92% of inflow)
 Center-of-Mass det. time= 37.4 min (1,435.6 - 1,398.2)

ISLAND POND PROP. CULVERTS

Type III 24-hr 25-YR Rainfall=5.20"

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=411.49 cfs @ 24.87 hrs HW=169.77' (Free Discharge)

└─1=**Broad-Crested Rectangular Weir** (Weir Controls 182.16 cfs @ 4.39 fps)

└─2=**Broad-Crested Rectangular Weir** (Weir Controls 229.33 cfs @ 3.02 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.90" for 25-YR event
 Inflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af
 Outflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 0.0 min
 Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 169.42' @ 24.87 hrs

Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=411.51 cfs @ 24.87 hrs HW=169.42' (Free Discharge)

└─1=**Culvert** (Barrel Controls 411.51 cfs @ 9.67 fps)

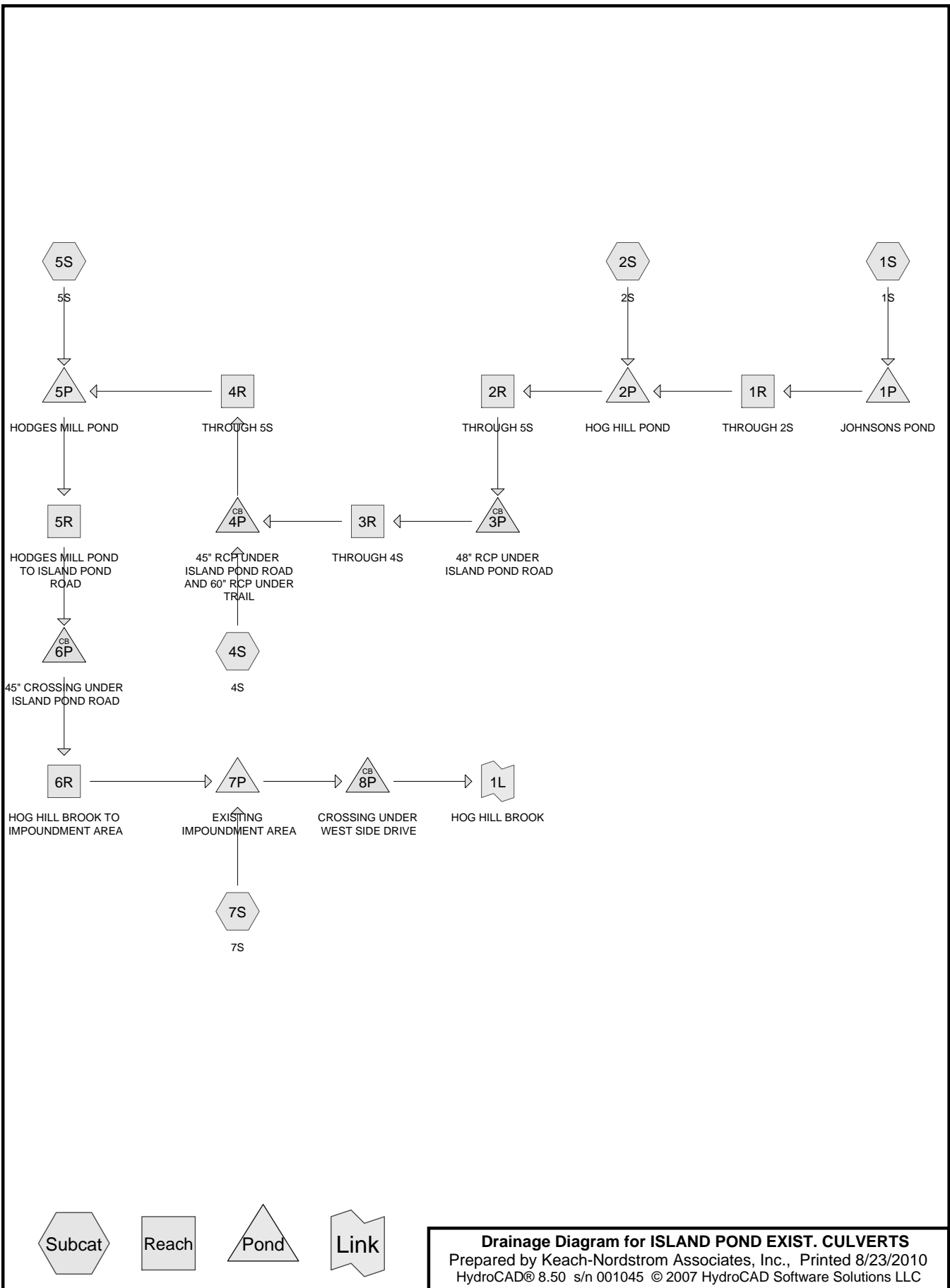
└─2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 0.90" for 25-YR event
 Inflow = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af
 Primary = 411.50 cfs @ 24.87 hrs, Volume= 380.311 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

E: 50-YEAR, EXISTING SITE CONDITIONS



ISLAND POND EXIST. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S	Runoff Area=1,486.000 ac 3.10% Impervious Runoff Depth>1.59"
Flow Length=12,490'	Slope=0.0050 '/' Tc=588.8 min CN=61 Runoff=238.10 cfs 197.301 af
Subcatchment 2S: 2S	Runoff Area=1,417.000 ac 1.59% Impervious Runoff Depth>1.56"
Flow Length=7,669'	Slope=0.0030 '/' Tc=466.7 min CN=59 Runoff=238.22 cfs 183.711 af
Subcatchment 4S: 4S	Runoff Area=45.000 ac 1.20% Impervious Runoff Depth=1.81"
Flow Length=1,651'	Slope=0.0050 '/' Tc=77.8 min CN=61 Runoff=29.67 cfs 6.778 af
Subcatchment 5S: 5S	Runoff Area=115.000 ac 0.31% Impervious Runoff Depth=1.50"
Flow Length=1,988'	Slope=0.0060 '/' Tc=85.5 min CN=57 Runoff=56.24 cfs 14.345 af
Subcatchment 7S: 7S	Runoff Area=2,028.000 ac 2.53% Impervious Runoff Depth>1.57"
Flow Length=11,484'	Slope=0.0050 '/' Tc=541.4 min CN=60 Runoff=325.45 cfs 265.177 af
Reach 1R: THROUGH 2S	Avg. Depth=2.13' Max Vel=1.56 fps Inflow=209.35 cfs 164.746 af
n=0.040 L=3,100.0'	S=0.0013 '/' Capacity=908.32 cfs Outflow=208.34 cfs 153.164 af
Reach 2R: THROUGH 5S	Avg. Depth=2.30' Max Vel=2.23 fps Inflow=338.33 cfs 300.351 af
n=0.040 L=2,010.0'	S=0.0024 '/' Capacity=1,236.98 cfs Outflow=338.16 cfs 290.557 af
Reach 3R: THROUGH 4S	Avg. Depth=1.70' Max Vel=3.68 fps Inflow=338.16 cfs 290.557 af
n=0.040 L=655.0'	S=0.0093 '/' Capacity=485.49 cfs Outflow=338.15 cfs 288.578 af
Reach 4R: THROUGH 5S	Avg. Depth=1.04' Max Vel=8.05 fps Inflow=339.72 cfs 295.356 af
n=0.040 L=141.0'	S=0.0774 '/' Capacity=7,037.05 cfs Outflow=339.72 cfs 295.159 af
Reach 5R: HODGES MILL POND TO ISLAND	Avg. Depth=1.52' Max Vel=4.35 fps Inflow=333.09 cfs 280.307 af
n=0.040 L=133.0'	S=0.0147 '/' Capacity=178,082.22 cfs Outflow=333.09 cfs 279.923 af
Reach 6R: HOG HILL BROOK TO	Avg. Depth=2.28' Max Vel=2.21 fps Inflow=333.09 cfs 279.923 af
n=0.040 L=5,247.0'	S=0.0024 '/' Capacity=1,236.67 cfs Outflow=331.84 cfs 248.598 af
Pond 1P: JOHNSONSPOND	Peak Elev=213.49' Storage=50.324 af Inflow=238.10 cfs 197.301 af
	Outflow=209.35 cfs 164.746 af
Pond 2P: HOG HILL POND	Peak Elev=210.42' Storage=54.895 af Inflow=357.22 cfs 336.875 af
	Outflow=338.33 cfs 300.351 af
Pond 3P: 48" RCP UNDER ISLAND POND ROAD	Peak Elev=207.78' Inflow=338.16 cfs 290.557 af
	Outflow=338.16 cfs 290.557 af
Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60"	Peak Elev=202.56' Inflow=339.72 cfs 295.356 af
	Outflow=339.72 cfs 295.356 af
Pond 5P: HODGES MILL POND	Peak Elev=187.45' Storage=36.793 af Inflow=343.42 cfs 309.505 af
	Outflow=333.09 cfs 280.307 af

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD Peak Elev=188.78' Inflow=333.09 cfs 279.923 af
Outflow=333.09 cfs 279.923 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=170.04' Storage=41.250 af Inflow=510.39 cfs 513.776 af
Outflow=514.03 cfs 477.675 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=171.14' Inflow=514.03 cfs 477.675 af
Outflow=514.03 cfs 477.675 af

Link 1L: HOG HILL BROOK Inflow=514.03 cfs 477.675 af
Primary=514.03 cfs 477.675 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 667.313 af Average Runoff Depth = 1.57"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

ISLAND POND EXIST. CULVERTS

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Type III 24-hr 50-YR Rainfall=5.70"

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Summary for Subcatchment 1S: 1S

Runoff = 238.10 cfs @ 20.29 hrs, Volume= 197.301 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 238.22 cfs @ 19.18 hrs, Volume= 183.711 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 29.67 cfs @ 13.13 hrs, Volume= 6.778 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 56.24 cfs @ 13.21 hrs, Volume= 14.345 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 325.45 cfs @ 19.85 hrs, Volume= 265.177 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

ISLAND POND EXIST. CULVERTS

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.33" for 50-YR event
Inflow = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af
Outflow = 208.34 cfs @ 23.90 hrs, Volume= 153.164 af, Atten= 0%, Lag= 57.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.56 fps, Min. Travel Time= 33.1 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 38.7 min

Peak Storage= 413,455 cf @ 23.34 hrs, Average Depth at Peak Storage= 2.13'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.24" for 50-YR event
Inflow = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af
Outflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af, Atten= 0%, Lag= 26.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 2.23 fps, Min. Travel Time= 15.1 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 17.2 min

Peak Storage= 305,462 cf @ 24.01 hrs, Average Depth at Peak Storage= 2.30'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.20" for 50-YR event
Inflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af
Outflow = 338.15 cfs @ 24.34 hrs, Volume= 288.578 af, Atten= 0%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.68 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 3.21 fps, Avg. Travel Time= 3.4 min

ISLAND POND EXIST. CULVERTS

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Peak Storage= 60,109 cf @ 24.29 hrs, Average Depth at Peak Storage= 1.70'

Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 100.00'

Length= 655.0' Slope= 0.0093 '/'

Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 1.20" for 50-YR event

Inflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af

Outflow = 339.72 cfs @ 24.31 hrs, Volume= 295.159 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 8.05 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 5.95 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5,954 cf @ 24.30 hrs, Average Depth at Peak Storage= 1.04'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 141.0' Slope= 0.0774 '/'

Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event

Inflow = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af

Outflow = 333.09 cfs @ 25.53 hrs, Volume= 279.923 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 4.35 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 3.55 fps, Avg. Travel Time= 0.6 min

Peak Storage= 10,187 cf @ 25.52 hrs, Average Depth at Peak Storage= 1.52'

Bank-Full Depth= 20.00', Capacity at Bank-Full= 178,082.22 cfs

20.00' x 20.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 820.00'

Length= 133.0' Slope= 0.0147 '/'

Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event

Inflow = 333.09 cfs @ 25.53 hrs, Volume= 279.923 af

Outflow = 331.84 cfs @ 26.72 hrs, Volume= 248.598 af, Atten= 0%, Lag= 71.1 min

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 2.21 fps, Min. Travel Time= 39.5 min

Avg. Velocity = 1.74 fps, Avg. Travel Time= 50.3 min

Peak Storage= 786,447 cf @ 26.06 hrs, Average Depth at Peak Storage= 2.28'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.59" for 50-YR event

Inflow = 238.10 cfs @ 20.29 hrs, Volume= 197.301 af

Outflow = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af, Atten= 12%, Lag= 159.1 min

Primary = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 213.49' @ 22.94 hrs Surf.Area= 22.433 ac Storage= 50.324 af

Plug-Flow detention time= 172.8 min calculated for 164.746 af (83% of inflow)

Center-of-Mass det. time= 103.7 min (1,429.4 - 1,325.7)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=209.34 cfs @ 22.94 hrs HW=213.49' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 209.34 cfs @ 4.21 fps)

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.39" for 50-YR event
 Inflow = 357.22 cfs @ 21.89 hrs, Volume= 336.875 af
 Outflow = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af, Atten= 5%, Lag= 115.9 min
 Primary = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 210.42' @ 23.82 hrs Surf.Area= 23.927 ac Storage= 54.895 af

Plug-Flow detention time= 115.1 min calculated for 300.351 af (89% of inflow)
 Center-of-Mass det. time= 69.2 min (1,421.4 - 1,352.1)

Volume	Invert	Avail.Storage	Storage Description
#1	205.00'	70.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=338.32 cfs @ 23.82 hrs HW=210.42' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir** (Weir Controls 338.32 cfs @ 4.95 fps)

Summary for Pond 3P: 48" RCP UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.20" for 50-YR event
 Inflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af
 Outflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af, Atten= 0%, Lag= 0.0 min
 Primary = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 207.78' @ 24.26 hrs
 Flood Elev= 206.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.19'	48.0" x 40.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 199.94' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Primary OutFlow Max=338.12 cfs @ 24.26 hrs HW=207.78' (Free Discharge)

1=Culvert (Inlet Controls 143.03 cfs @ 11.38 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 195.09 cfs @ 3.01 fps)

Summary for Pond 4P: 45" RCP UNDER ISLAND POND ROAD AND 60" RCP UNDER TRAIL

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 1.20" for 50-YR event
 Inflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af
 Outflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af, Atten= 0%, Lag= 0.0 min
 Primary = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 202.56' @ 24.30 hrs

Flood Elev= 200.88'

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.84'	45.0" x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	192.48'	60.0" x 19.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 191.47' S= 0.0532 '/' Cc= 0.900 n= 0.012
#3	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=339.72 cfs @ 24.30 hrs HW=202.56' (Free Discharge)

2=Culvert (Passes 139.14 cfs of 260.30 cfs potential flow)

1=Culvert (Inlet Controls 139.14 cfs @ 12.60 fps)

3=Broad-Crested Rectangular Weir (Weir Controls 200.58 cfs @ 3.41 fps)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.21" for 50-YR event
 Inflow = 343.42 cfs @ 24.25 hrs, Volume= 309.505 af
 Outflow = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af, Atten= 3%, Lag= 75.8 min
 Primary = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 187.45' @ 25.52 hrs Surf.Area= 9.664 ac Storage= 36.793 af

Plug-Flow detention time= 78.3 min calculated for 280.214 af (91% of inflow)

Center-of-Mass det. time= 42.2 min (1,452.0 - 1,409.8)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=333.09 cfs @ 25.52 hrs HW=187.45' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 333.09 cfs @ 8.06 fps)

└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 45" CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event
 Inflow = 333.09 cfs @ 25.53 hrs, Volume= 279.923 af
 Outflow = 333.09 cfs @ 25.53 hrs, Volume= 279.923 af, Atten= 0%, Lag= 0.0 min
 Primary = 333.09 cfs @ 25.53 hrs, Volume= 279.923 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 188.78' @ 25.53 hrs
 Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	45.0" x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=333.08 cfs @ 25.53 hrs HW=188.78' (Free Discharge)

└─1=Culvert (Inlet Controls 144.22 cfs @ 13.06 fps)

└─2=Broad-Crested Rectangular Weir (Weir Controls 188.86 cfs @ 2.97 fps)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.21" for 50-YR event
 Inflow = 510.39 cfs @ 23.76 hrs, Volume= 513.776 af
 Outflow = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min
 Primary = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 170.04' @ 23.75 hrs Surf.Area= 20.000 ac Storage= 41.250 af

Plug-Flow detention time= 62.9 min calculated for 477.675 af (93% of inflow)
 Center-of-Mass det. time= 34.6 min (1,427.6 - 1,392.9)

ISLAND POND EXIST. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=514.03 cfs @ 23.75 hrs HW=170.04' (Free Discharge)
 ↳1=**Broad-Crested Rectangular Weir** (Weir Controls 210.00 cfs @ 4.60 fps)
 ↳2=**Broad-Crested Rectangular Weir** (Weir Controls 304.03 cfs @ 3.29 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.13" for 50-YR event
 Inflow = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af
 Outflow = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min
 Primary = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 171.14' @ 23.75 hrs
 Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

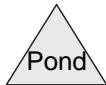
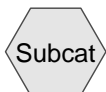
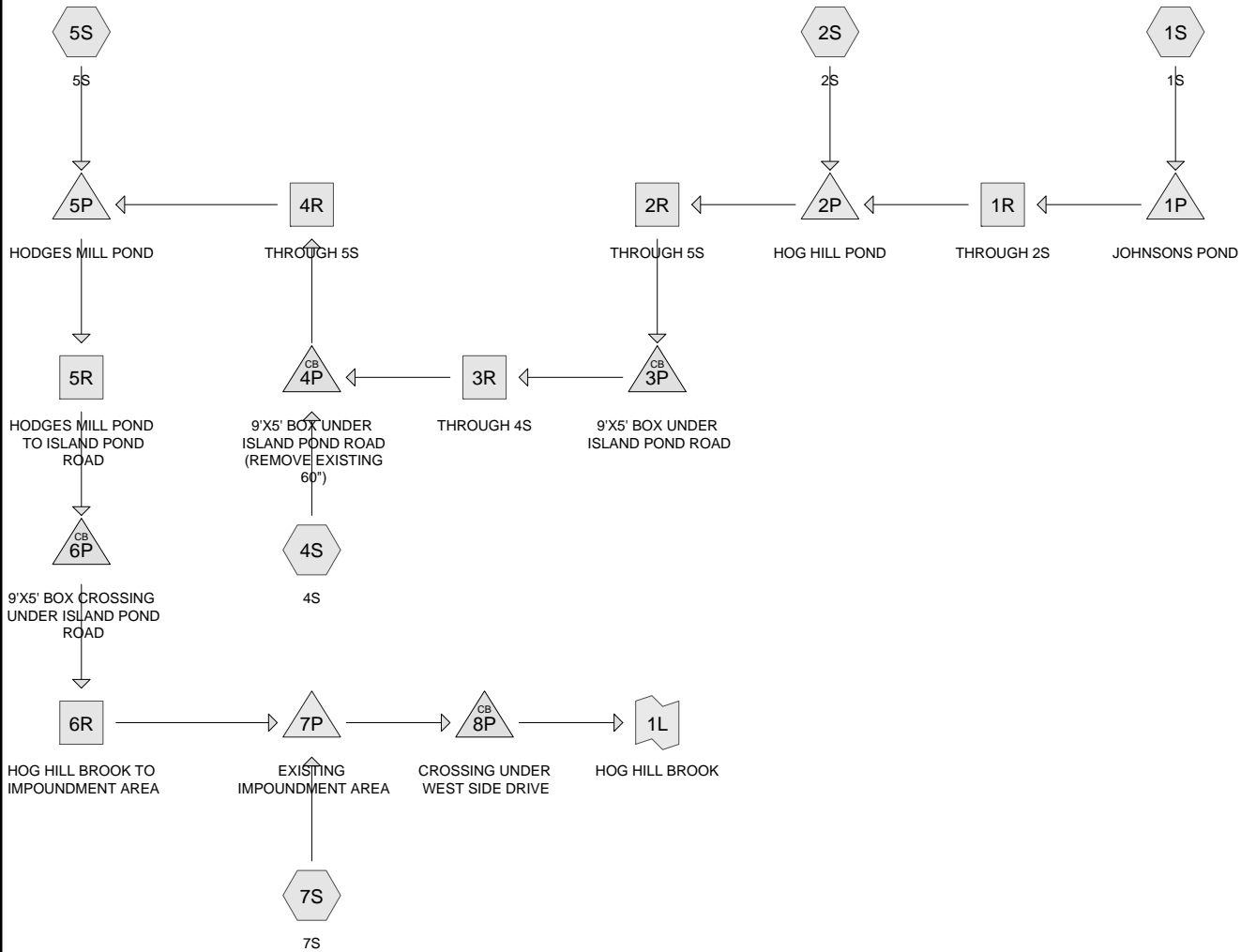
Primary OutFlow Max=514.12 cfs @ 23.75 hrs HW=171.14' (Free Discharge)
 ↳1=**Culvert** (Barrel Controls 514.12 cfs @ 10.42 fps)
 ↳2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.13" for 50-YR event
 Inflow = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af
 Primary = 514.03 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

F: 50-YEAR, POST ROADWAY IMPROVEMENTS



Drainage Diagram for ISLAND POND PROP. CULVERTS
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ISLAND POND PROP. CULVERTS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3,405.000	55	Woods, Good, HSG B (1S,2S,4S,5S,7S)
1,006.500	65	2 acre lots, 12% imp, HSG B (1S,2S,4S,5S,7S)
679.500	77	Woods, Good, HSG D (1S,2S,4S,5S,7S)
5,091.000		TOTAL AREA

ISLAND POND PROP. CULVERTS

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
4,411.500	HSG B	1S, 2S, 4S, 5S, 7S
0.000	HSG C	
679.500	HSG D	1S, 2S, 4S, 5S, 7S
0.000	Other	
5,091.000		TOTAL AREA

ISLAND POND PROP. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1S	Runoff Area=1,486.000 ac	3.10% Impervious	Runoff Depth>1.59"
Flow Length=12,490'	Slope=0.0050 '/'	Tc=588.8 min	CN=61
	Runoff=238.10 cfs	197.301 af	
Subcatchment 2S: 2S	Runoff Area=1,417.000 ac	1.59% Impervious	Runoff Depth>1.56"
Flow Length=7,669'	Slope=0.0030 '/'	Tc=466.7 min	CN=59
	Runoff=238.22 cfs	183.711 af	
Subcatchment 4S: 4S	Runoff Area=45.000 ac	1.20% Impervious	Runoff Depth=1.81"
Flow Length=1,651'	Slope=0.0050 '/'	Tc=77.8 min	CN=61
	Runoff=29.67 cfs	6.778 af	
Subcatchment 5S: 5S	Runoff Area=115.000 ac	0.31% Impervious	Runoff Depth=1.50"
Flow Length=1,988'	Slope=0.0060 '/'	Tc=85.5 min	CN=57
	Runoff=56.24 cfs	14.345 af	
Subcatchment 7S: 7S	Runoff Area=2,028.000 ac	2.53% Impervious	Runoff Depth>1.57"
Flow Length=11,484'	Slope=0.0050 '/'	Tc=541.4 min	CN=60
	Runoff=325.45 cfs	265.177 af	
Reach 1R: THROUGH 2S	Avg. Depth=2.13'	Max Vel=1.56 fps	Inflow=209.35 cfs
n=0.040	L=3,100.0'	S=0.0013 '/'	Capacity=908.32 cfs
	Outflow=208.34 cfs	153.164 af	
Reach 2R: THROUGH 5S	Avg. Depth=2.30'	Max Vel=2.23 fps	Inflow=338.33 cfs
n=0.040	L=2,010.0'	S=0.0024 '/'	Capacity=1,236.98 cfs
	Outflow=338.16 cfs	290.557 af	
Reach 3R: THROUGH 4S	Avg. Depth=1.70'	Max Vel=3.68 fps	Inflow=338.16 cfs
n=0.040	L=655.0'	S=0.0093 '/'	Capacity=485.49 cfs
	Outflow=338.15 cfs	288.578 af	
Reach 4R: THROUGH 5S	Avg. Depth=1.04'	Max Vel=8.05 fps	Inflow=339.72 cfs
n=0.040	L=141.0'	S=0.0774 '/'	Capacity=7,037.05 cfs
	Outflow=339.72 cfs	295.159 af	
Reach 5R: HODGES MILL POND TO ISLAND	Avg. Depth=1.52'	Max Vel=4.34 fps	Inflow=333.09 cfs
n=0.040	L=133.0'	S=0.0147 '/'	Capacity=3,061.83 cfs
	Outflow=333.09 cfs	279.922 af	
Reach 6R: HOG HILL BROOK TO	Avg. Depth=2.28'	Max Vel=2.21 fps	Inflow=333.09 cfs
n=0.040	L=5,247.0'	S=0.0024 '/'	Capacity=1,236.67 cfs
	Outflow=331.84 cfs	248.598 af	
Pond 1P: JOHNSONSPOND	Peak Elev=213.49'	Storage=50.324 af	Inflow=238.10 cfs
	Outflow=209.35 cfs	164.746 af	
Pond 2P: HOG HILL POND	Peak Elev=210.42'	Storage=54.895 af	Inflow=357.22 cfs
	Outflow=338.33 cfs	300.351 af	
Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD	Peak Elev=206.11'	Inflow=338.16 cfs	290.557 af
	Outflow=338.16 cfs	290.557 af	
Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE	Peak Elev=199.46'	Inflow=339.72 cfs	295.356 af
	Outflow=339.72 cfs	295.356 af	
Pond 5P: HODGES MILL POND	Peak Elev=187.45'	Storage=36.793 af	Inflow=343.42 cfs
	Outflow=333.09 cfs	280.307 af	

ISLAND POND PROP. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD Peak Elev=185.74' Inflow=333.09 cfs 279.922 af
Outflow=333.09 cfs 279.922 af

Pond 7P: EXISTING IMPOUNDMENT AREA Peak Elev=170.04' Storage=41.250 af Inflow=510.38 cfs 513.775 af
Outflow=512.90 cfs 477.675 af

Pond 8P: CROSSING UNDER WEST SIDE DRIVE Peak Elev=171.12' Inflow=512.90 cfs 477.675 af
Outflow=512.90 cfs 477.675 af

Link 1L: HOG HILL BROOK Inflow=512.90 cfs 477.675 af
Primary=512.90 cfs 477.675 af

Total Runoff Area = 5,091.000 ac Runoff Volume = 667.313 af Average Runoff Depth = 1.57"
97.63% Pervious = 4,970.220 ac 2.37% Impervious = 120.780 ac

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Type III 24-hr 50-YR Rainfall=5.70"

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Summary for Subcatchment 1S: 1S

Runoff = 238.10 cfs @ 20.29 hrs, Volume= 197.301 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
250.000	77	Woods, Good, HSG D
384.000	65	2 acre lots, 12% imp, HSG B
852.000	55	Woods, Good, HSG B
1,486.000	61	Weighted Average
1,439.920		Pervious Area
46.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
588.8	12,490	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 2S: 2S

Runoff = 238.22 cfs @ 19.18 hrs, Volume= 183.711 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
151.000	77	Woods, Good, HSG D
188.000	65	2 acre lots, 12% imp, HSG B
1,078.000	55	Woods, Good, HSG B
1,417.000	59	Weighted Average
1,394.440		Pervious Area
22.560		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
466.7	7,669	0.0030	0.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: 4S

Runoff = 29.67 cfs @ 13.13 hrs, Volume= 6.778 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

ISLAND POND PROP. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Area (ac)	CN	Description
11.000	77	Woods, Good, HSG D
4.500	65	2 acre lots, 12% imp, HSG B
29.500	55	Woods, Good, HSG B
45.000	61	Weighted Average
44.460		Pervious Area
0.540		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
77.8	1,651	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 5S: 5S

Runoff = 56.24 cfs @ 13.21 hrs, Volume= 14.345 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
3.000	65	2 acre lots, 12% imp, HSG B
102.500	55	Woods, Good, HSG B
115.000	57	Weighted Average
114.640		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
85.5	1,988	0.0060	0.39		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 7S: 7S

Runoff = 325.45 cfs @ 19.85 hrs, Volume= 265.177 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=5.70"

Area (ac)	CN	Description
258.000	77	Woods, Good, HSG D
427.000	65	2 acre lots, 12% imp, HSG B
1,343.000	55	Woods, Good, HSG B
2,028.000	60	Weighted Average
1,976.760		Pervious Area
51.240		Impervious Area

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Type III 24-hr 50-YR Rainfall=5.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
541.4	11,484	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Reach 1R: THROUGH 2S

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.33" for 50-YR event
Inflow = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af
Outflow = 208.34 cfs @ 23.90 hrs, Volume= 153.164 af, Atten= 0%, Lag= 57.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 1.56 fps, Min. Travel Time= 33.1 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 38.7 min

Peak Storage= 413,455 cf @ 23.34 hrs, Average Depth at Peak Storage= 2.13'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 908.32 cfs

20.00' x 4.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 3,100.0' Slope= 0.0013 '/'
Inlet Invert= 209.00', Outlet Invert= 205.00'

Summary for Reach 2R: THROUGH 5S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.24" for 50-YR event
Inflow = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af
Outflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af, Atten= 0%, Lag= 26.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 2.23 fps, Min. Travel Time= 15.1 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 17.2 min

Peak Storage= 305,462 cf @ 24.01 hrs, Average Depth at Peak Storage= 2.30'
Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.98 cfs

20.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 180.00'
Length= 2,010.0' Slope= 0.0024 '/'
Inlet Invert= 205.00', Outlet Invert= 200.19'

Summary for Reach 3R: THROUGH 4S

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.20" for 50-YR event
Inflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af
Outflow = 338.15 cfs @ 24.34 hrs, Volume= 288.578 af, Atten= 0%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 3.68 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 3.21 fps, Avg. Travel Time= 3.4 min

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Type III 24-hr 50-YR Rainfall=5.70"

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Peak Storage= 60,109 cf @ 24.29 hrs, Average Depth at Peak Storage= 1.70'

Bank-Full Depth= 2.00', Capacity at Bank-Full= 485.49 cfs

20.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 100.00'

Length= 655.0' Slope= 0.0093 '/'

Inlet Invert= 199.94', Outlet Invert= 193.84'

Summary for Reach 4R: THROUGH 5S

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 1.20" for 50-YR event

Inflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af

Outflow = 339.72 cfs @ 24.31 hrs, Volume= 295.159 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 8.05 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 5.95 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5,954 cf @ 24.30 hrs, Average Depth at Peak Storage= 1.04'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 7,037.05 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 141.0' Slope= 0.0774 '/'

Inlet Invert= 191.47', Outlet Invert= 180.55'

Summary for Reach 5R: HODGES MILL POND TO ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event

Inflow = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af

Outflow = 333.09 cfs @ 25.53 hrs, Volume= 279.922 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 4.34 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 3.53 fps, Avg. Travel Time= 0.6 min

Peak Storage= 10,205 cf @ 25.52 hrs, Average Depth at Peak Storage= 1.52'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 3,061.83 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 133.0' Slope= 0.0147 '/'

Inlet Invert= 181.50', Outlet Invert= 179.55'

Summary for Reach 6R: HOG HILL BROOK TO IMPOUNDMENT AREA

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event

Inflow = 333.09 cfs @ 25.53 hrs, Volume= 279.922 af

Outflow = 331.84 cfs @ 26.72 hrs, Volume= 248.598 af, Atten= 0%, Lag= 71.1 min

ISLAND POND PROP. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Max. Velocity= 2.21 fps, Min. Travel Time= 39.5 min

Avg. Velocity = 1.74 fps, Avg. Travel Time= 50.3 min

Peak Storage= 786,447 cf @ 26.06 hrs, Average Depth at Peak Storage= 2.28'

Bank-Full Depth= 4.00', Capacity at Bank-Full= 1,236.67 cfs

20.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 5,247.0' Slope= 0.0024 '/'

Inlet Invert= 179.55', Outlet Invert= 167.00'

Summary for Pond 1P: JOHNSONS POND

Inflow Area = 1,486.000 ac, 3.10% Impervious, Inflow Depth > 1.59" for 50-YR event

Inflow = 238.10 cfs @ 20.29 hrs, Volume= 197.301 af

Outflow = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af, Atten= 12%, Lag= 159.1 min

Primary = 209.35 cfs @ 22.94 hrs, Volume= 164.746 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 213.49' @ 22.94 hrs Surf.Area= 22.433 ac Storage= 50.324 af

Plug-Flow detention time= 172.8 min calculated for 164.746 af (83% of inflow)

Center-of-Mass det. time= 103.7 min (1,429.4 - 1,325.7)

Volume	Invert	Avail.Storage	Storage Description
#1	209.00'	90.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
209.00	0.000	0.000	0.000
211.00	10.000	10.000	10.000
213.00	20.000	30.000	40.000
215.00	30.000	50.000	90.000

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=209.34 cfs @ 22.94 hrs HW=213.49' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 209.34 cfs @ 4.21 fps)

ISLAND POND PROP. CULVERTS

Type III 24-hr 50-YR Rainfall=5.70"

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Summary for Pond 2P: HOG HILL POND

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.39" for 50-YR event
 Inflow = 357.22 cfs @ 21.89 hrs, Volume= 336.875 af
 Outflow = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af, Atten= 5%, Lag= 115.9 min
 Primary = 338.33 cfs @ 23.82 hrs, Volume= 300.351 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 210.42' @ 23.82 hrs Surf.Area= 23.927 ac Storage= 54.895 af

Plug-Flow detention time= 115.1 min calculated for 300.351 af (89% of inflow)
 Center-of-Mass det. time= 69.2 min (1,421.4 - 1,352.1)

Volume	Invert	Avail.Storage	Storage Description
#1	205.00'	70.000 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
205.00	0.000	0.000	0.000
207.00	7.000	7.000	7.000
209.00	14.000	21.000	28.000
211.00	28.000	42.000	70.000

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=338.32 cfs @ 23.82 hrs HW=210.42' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir** (Weir Controls 338.32 cfs @ 4.95 fps)

Summary for Pond 3P: 9'X5' BOX UNDER ISLAND POND ROAD

Inflow Area = 2,903.000 ac, 2.36% Impervious, Inflow Depth > 1.20" for 50-YR event
 Inflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af
 Outflow = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af, Atten= 0%, Lag= 0.0 min
 Primary = 338.16 cfs @ 24.26 hrs, Volume= 290.557 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 206.11' @ 24.26 hrs
 Flood Elev= 206.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.19'	9.00' W x 5.00' H x 40.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 199.94' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	206.48'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

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Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=338.16 cfs @ 24.26 hrs HW=206.11' (Free Discharge)

- 1=Culvert (Barrel Controls 338.16 cfs @ 8.46 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: 9'X5' BOX UNDER ISLAND POND ROAD (REMOVE EXISTING 60")

Inflow Area = 2,948.000 ac, 2.35% Impervious, Inflow Depth > 1.20" for 50-YR event
 Inflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af
 Outflow = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af, Atten= 0%, Lag= 0.0 min
 Primary = 339.72 cfs @ 24.30 hrs, Volume= 295.356 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 199.46' @ 24.30 hrs
 Flood Elev= 200.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	193.84'	9.00' W x 5.00' H x 42.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 193.30' S= 0.0129 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	200.88'	35.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=339.72 cfs @ 24.30 hrs HW=199.46' (Free Discharge)

- 1=Culvert (Barrel Controls 339.72 cfs @ 8.95 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: HODGES MILL POND

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.21" for 50-YR event
 Inflow = 343.42 cfs @ 24.25 hrs, Volume= 309.505 af
 Outflow = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af, Atten= 3%, Lag= 75.8 min
 Primary = 333.09 cfs @ 25.52 hrs, Volume= 280.307 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 187.45' @ 25.52 hrs Surf.Area= 9.664 ac Storage= 36.793 af

Plug-Flow detention time= 78.3 min calculated for 280.214 af (91% of inflow)
 Center-of-Mass det. time= 42.2 min (1,452.0 - 1,409.8)

Volume	Invert	Avail.Storage	Storage Description
#1	180.55'	59.850 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
180.55	1.000	0.000	0.000
189.55	12.300	59.850	59.850

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Device	Routing	Invert	Outlet Devices
#1	Primary	181.55'	7.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Primary	190.55'	60.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=333.09 cfs @ 25.52 hrs HW=187.45' (Free Discharge)

- 1=Broad-Crested Rectangular Weir (Weir Controls 333.09 cfs @ 8.06 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: 9'X5' BOX CROSSING UNDER ISLAND POND ROAD

Inflow Area = 3,063.000 ac, 2.27% Impervious, Inflow Depth > 1.10" for 50-YR event
 Inflow = 333.09 cfs @ 25.53 hrs, Volume= 279.922 af
 Outflow = 333.09 cfs @ 25.53 hrs, Volume= 279.922 af, Atten= 0%, Lag= 0.0 min
 Primary = 333.09 cfs @ 25.53 hrs, Volume= 279.922 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 185.74' @ 25.53 hrs
 Flood Elev= 186.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.55'	9.00' W x 5.00' H x 48.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 179.55' S= 0.0000 '/' Cc= 0.900 n= 0.012
#2	Primary	187.51'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=333.09 cfs @ 25.53 hrs HW=185.74' (Free Discharge)

- 1=Culvert (Barrel Controls 333.09 cfs @ 7.97 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING IMPOUNDMENT AREA

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.21" for 50-YR event
 Inflow = 510.38 cfs @ 23.76 hrs, Volume= 513.775 af
 Outflow = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min
 Primary = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9
 Peak Elev= 170.04' @ 23.75 hrs Surf.Area= 20.000 ac Storage= 41.250 af

Plug-Flow detention time= 62.9 min calculated for 477.675 af (93% of inflow)
 Center-of-Mass det. time= 34.6 min (1,427.6 - 1,392.9)

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Volume	Invert	Avail.Storage	Storage Description
#1	167.00'	41.250 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
167.00	7.500	0.000	0.000
170.00	20.000	41.250	41.250

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	168.50'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=512.89 cfs @ 23.75 hrs HW=170.04' (Free Discharge)

└─1=**Broad-Crested Rectangular Weir** (Weir Controls 209.69 cfs @ 4.60 fps)

└─2=**Broad-Crested Rectangular Weir** (Weir Controls 303.20 cfs @ 3.29 fps)

Summary for Pond 8P: CROSSING UNDER WEST SIDE DRIVE

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.13" for 50-YR event
 Inflow = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af
 Outflow = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min
 Primary = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 171.12' @ 23.75 hrs

Flood Elev= 175.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	96.0" x 40.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 160.60' S= 0.0100 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	175.00'	50.0' long x 24.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=512.96 cfs @ 23.75 hrs HW=171.12' (Free Discharge)

└─1=**Culvert** (Barrel Controls 512.96 cfs @ 10.41 fps)

└─2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: HOG HILL BROOK

Inflow Area = 5,091.000 ac, 2.37% Impervious, Inflow Depth > 1.13" for 50-YR event
 Inflow = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af
 Primary = 512.90 cfs @ 23.75 hrs, Volume= 477.675 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

VI. WATERSHED AREAS PLAN