Easton Staff Development Review
MEETING AGENDA

ednesday, September 27, 2023 - 11:00 AM
Council Chambers, Easton Town Office
14 S Harrison Street

1. Staff Review

a. Staff review only time: 10:00 AM - 11:00 AM

Easton Staff Development Review (ESDR) meetings are an opportunity for staff to meet with applicants to discuss our preliminary review of their application. At the ESDR meeting, staff also confirms with the applicant the next steps in the review process.

No public comments will be taken at this meeting, but there will be opportunities for public comment at future Planning Commission and/or Town Council public hearings.

2. Discussion Items

a.	**Application Number:**	2023-19
	Location:	Longwoods Road, Parcel 0129 Tax Map 017, Grid 023, Parcel 0129, Lot 3/5
	Applicant:	Shore Health System / University of Maryland Medical System
	Request:	Sketch Site Plan Stormwater Management review for a proposed medical center with associated facilities, parking and utilities.
b.	**Application Number:**	2023-20
	Location:	29315 Dover Road - East Coast Vets Tax Map 105, Grid 000, Parcel 2844, Lot 3
	Applicant:	Lane Engineering
	Request:	Sketch Site Plan review for a proposed two-story addition to an existing single-story veterinarian clinic and parking lot expansion.

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Easton Staff Development Review

Property Information

Address	Longwoods Rd. (Route 662C) South of Hiners Lane and West of Talbot County Community Center						
Tax Map	17	Grid	23	Parcel	129	Lot	3/5
Deed Refernce:	Liber	02304	Folio	00432			
Plat Reference:	Liber	83	Folio	458-464			
Base Zoning District	RH	Historic District Y ☐ N ☑			Planning Redevelopment Y ☐ N ☑		

Purpose of Application / Description of Work:

Shore Health University of Maryland Medical System (UMMS) - Regional Medical Center and appurtenant facilities, parking access roads, utility infrastructure, stormwater management, pedestrian accesses, helipad

Owner

Name	Shore Health System / University of Maryland Medical System		
Mailing Address	219 S. Washington Street, Easton, MD 21601		
Telephone No.	410-382-0654	Email	lkautz@umm.edu

Applicant / Agent

Name	same as Owner		
Mailing Address			
Telephone No.		Email	

Surveyor / Engineer

Name	Kristy Bischoff	License No.	28823	Expiration Date	01/07/2024
Mailing Address	Daft McCune Walker, 501 Fairmount Avenue, Suite 300, Towson, MD 21286				
Telephone No.	410-296-3333	Email	kbischoff@dmw.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent: DocuSigned by: Laura Kautz 0A6D6505A8CF48F... DocuSigned by: Richie Stover 97A8762E51904F5...

Date: 9/1/2023

Printed Name of Applicant or Agent: Laura Creason Kautz

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Easton Staff Development Review Meeting Required Y ☒ N ☐ **ESDR 23 - 19 / 2023 - 1027**

Easton Staff Development Review Meeting Date **09/27/2023**

Completeness Check Date

Revisions/Resubmissions Required Y ☐ N ☐

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☐ N ☐

BOZA Required Y ☐ N ☐

Historic District Commission Required Y ☐ N ☐

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature

Date

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Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Site Plan, PUD, Planned Healthcare Application

Application Type

Planned Unit Development ☐ Amendment ☐ Health Care (HC) ☑ Site Plan ☐

Subdivision Information

Name	N/A			
Original Property Size	Acres		Square Feet	
Telephone No.		Email		

Site Plan Information

Property Size	Acres 236.15 +/-	Square Feet	10,286,694+/-
Structure's Floor Area	3.62 +/-	Structure's Square Feet	157,863 +/-
Area of Disturbance	78.63 +/-	Number of Dwelling Units	N/A

Property Information

Address	Longwoods Rd. (Route 662) South of Hiners Lane and West of Talbot County Community Center						
Tax Map	17	Grid	23	Parcel	129	Lot	3
Deed Refernce:	Liber	02304	Folio	00432			
Plat Reference:	Liber	83	Folio	458-464			
Base Zoning District	RH	Historic Y ☐ N ☑		Planned Redevelopment Y ☐ N ☑			
Source of Electricity	SHA road improvements for Route 662C						

Owner

Name	Shore Health System / University of Maryland Medical System		
Mailing Address	219 S. Washington Street, Easton, MD 21601		
Telephone No.	410-382-0654	Email	lkautz@umm.edu

Applicant or Agent

Name	same as Owner		
Mailing Address			
Telephone No.		Email	

Surveyor / Engineer

Name	Kristy Bischoff	License No.	28823	Expiration Date	01/07/2024
Mailing Address	Daft McCune Walker, 501 Fairmount Avenue, Suite 300, Towson, MD 21286				
Telephone No.	410-296-3333	Email	kbischoff@dmw.com		

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I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

DocuSign Envelope ID: 26E7DE28-1674-4F3D-828A-EE6F4D4E6D91

Signature of Applicant or Agent	DocuSigned by: Laura Kautz	DocuSigned by: Nicole Steiner
Date	9/1/2023	
Printed Name of Applicant or Agent	Laura Creason Kautz	

For Office Use Only

Planning Commission Required	Y ☐ N ☐	ESDR Meeting Date: 09/27/2023	
Planning Commission Meeting Date			
Sketch Approval Date		Project No.	ESDR 23-19
Prelim/Dev. Approval Date		Application No.	2023-1027
Final Approval Date		Sketch Fee Paid	$8,000.00 on 09/06
Recordation Date		Develop. Fee Paid	

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Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Subdivision & Property Line Adjustment Application

Application Type

N/A | Subdivision ☐ | Minor Subdivision ☐ | Lot Line Revision ☐

Subdivision Information

Name	N/A			
Property Size	Acres	N/A	Square Feet	N/A
Number of Lots Proposed		N/A		

Property Information

Address	Longwoods Rd. (Route 662) South of Hiners Lane and West of TCCC						
Tax Map	17	Grid	23	Parcel	75/129	Lot	3/5
Deed Refernce:	Liber	02304	Folio	00432			
Plat Reference:	Liber	83	Folio	458-464			
Zoning District	RH	Planned Redevelopment Y ☐ N ☑		Historic District Y ☐ N ☑			
Source of Electricity	SHA road improvements for Route 662						

Owner

Name	Shore Health System / University of Maryland Medical System		
Mailing Address	219 S. Washington Street, Easton, MD 21601		
Telephone No.	410-382-0654	Email	lkautz@umm.edu

Surveyor / Engineer

Name	Kristy Bischoff	License No.	28823	Expiration Date	01/07/2024
Mailing Address	Daft McCune Walker, 501 Fairmount Avenue, Suite 300, Towson, MD 21286				
Telephone No.	410-296-3333	Email	kbischoff@dmw.com		

Applicant or Agent

Name	same as Owner		
Mailing Address			
Telephone No.		Email	

Additional Comments:

There is no proposed subdivision or lot line revisions for this project. Subdivision for the property has already occurred.

Minimum Lot Size	N/A	Minimum Lot Frontage	N/A
Minimum Lot Envelope	N/A	Existing Lot Coverage	N/A
		Proposed Lot Coverage	N/A

N/A ☐ ESDR Letter
N/A ☐ $200 Per Subdivided Lot Fee
N/A ☐ $500 Lot Line Revision Fee

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I hereby certify that I have reviewed and satisfied the Town of Easton Subdivision Regulations Article 4, Procedures and Requirements and that submission of an incomplete application will be returned for correction prior to processing.

DocuSigned by: Laura Kautz 0A8D8505A8CF48F... DocuSigned by: Richie Stover 07A8762E51004F6...

Signature of Applicant or Agent

Date 9/1/2023

Printed Name of Applicant or Agent Laura Creason Kautz

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Planning Commission Y ☐ N ☐			
Planning Commission Meeting Date			
PC Approval Date		Subdivision No.	
Conditions? Y / N		Application No.	2023-1027
Recordation Date		Fee Amount	N/A
ESDR Y / N Date		Review Fee Paid	
			Revised 02-2019

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Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Forest Conservation Application

Project Information

Project Name	Shore Health Systems Regional Medical Facility	Project Number	09035.N6
Project Location	Longwoods Rd (Rt. 662) South of Hiners Lane & West of Talbot County Community Center		
Project Description	Construct a Regional Medical Facility with appurtenant facilities, parking, access drives, utility infrastructure stormwater management, & pedestrian accesses. Rte. 662C will be relocated and a new entrance from Rte. 50 and to the Talbot County Community Center will be constructed.		

Watershed Information

Watershed Name	Miles River	Sub-watershed No.	2130502
County	Talbot County	Municipality	Easton

Property Information

National Spatial Reference System (NSRS)
Alignment of passive control with the latest realization of the North American Datum of 1983: NAD 83(2011), NAD 83(PA11), and NAD 83(MA11) Epoch 2010.00

Maryland Grid Coordinates centroid:	375,000			ft. North	1,062,500		ft. East
ADC Map: Year	2003	Page	11	Grid			
Tax Map:	17	Grid	23	Parcel	129	Block	
District / Account Number	01-113771/198769/198770/198771/198774/198777/198778					Lot	3
Liber	83/02304	Folio	458/00432				

Agent Information

Name	Eric J. Chodnicki	License No.	N/A	Expiration Date	N/A
Firm Name	Daft-McCune-Walker, Inc.				
Mailing Address	501 Fairmount Avenue, Towson, MD 21286				
Telephone No.	410-296-3333 Ext. 2043	Email	echodnicki@dmw.com		

Forest Stand Delineation Information

Details of Request (Acreage or portion thereof)

Total Tract Area	235.8	Ac.	*Net Tract Area*	202.1 Ac.
Area within 100-year Floodplain	4.8	Ac.	Area of Existing Forest	16.5 Ac.
Area Remaining in Agriculture	0.0	Ac.	Area of Existing NTW	0.0 Ac.
Other	0.0	Ac.	Sensitive Areas	0.0 Ac.

Forested Stream Buffers (minimum 50' wide):			✓ Yes	No
One Side		Both Sides	✓	
Buffer Area Forested	Ac.	Length	Ft.	
Steep Slopes	✓ Yes		No	
Threatened & Endangered Species	Yes		✓ No	
Dominant & Co-dominant Species	Yes		✓ No	

Forest Stand Delineation Prepared by:

Licensed Landscape Architect | Licensed Forester | Qualified Professional

Forest Conservation Plan Information

Details of Request (Acreage or portion thereof)

Existing Land Use (zone)	RH	Proposed Land Use (zone)	RH		
Afforestation Threshold	15%	Conservation Threshold	15%		
Proposed Area of Disturbance	140.0	in Sensitive Areas	0.0		
Proposed Forest Clearing	0.0	in Sensitive Areas	0.0	in NTW	0.0

Forest Retention:

Onsite	TBD	Offsite	0.0	in Long Term Protection	0.0
Forest Conservation Required			TBD	Forest Conservation Provided	TBD

Planting:

Onsite	TBD	Offsite	0.0	Sensitive Area Planting	TBD

Stream Buffer Established: Length TBD Width TBD

Other:

Offsite Location: ALL N/A

County		Municipality			
ADC Map:		Year		Page		Grid	
Tax Map:		Grid		Parcel		Block	
Maryland Grid:		North American Datum Year				Lot	
District / Account Number		Sub-watershed No.			
Planting Responsibility:		Contact #			
Maintenance Responsibility:		Contact #			
Long Term Protection		% in Sensitive Areas			
Long Term Protection Agreement Type					
Fee-in Lieu Amount		Acreage			
Forest Conservation Plan Prepared by					
Licensed Landscape Architect					
Licensed Forester					
Qualified Professional					

Subject to previous FCP? Y / N

If yes, please provide a copy of previous approved FCP. (SEE ATTACHED FCP)

Subject to ESDR? Y/ N

Required:

- ☑ Completed Form
- ☑ Written Statement
- ☑ Signature of Applicant
- ☑ Hardcopy of Drawings
- ☑ Digital Copy of Drawings
- ☑ Copies Hard / Digital of Any Previous FCP + Application
- ☑ Review Fee

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

By signing below, the applicant certifies that he of she has the legal right to implement proposed planting, maintenance and or a long-term protection agreement. The applicant further certifies that the property, subject to a long-term protection agreement is not otherwise protected under Federal, State or local programs.

Signature of Applicant or Agent	DocuSigned by: Laura Kautz 6A6D6505A9CF40F...	DocuSigned by: Nicole Stover 97A3762E31904F3...
Date	9/1/2023	
Printed Name of Applicant or Agent	Laura Creason Kautz	

For Office Use Only

Planning Commission Meeting Date		ESDR Meeting Date: 09/27/2023	
Sketch Approval Date		Project No.	ESDR 23-19
Prelim/Dev. Approval Date		Application No.	2023-1027
Final Approval Date		Sketch Fee Paid	$800.00 on 09/06/2023
Recordation Date		Develop. Fee Paid	
			Revised 02-2019

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Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Forest Conservation Application

Project Information

Project Name	Talbot County Community Center	Project Number	09035.N6
Project Location	Talbot County Community Center Along Ocean Gateway (Rte. 50)		
Project Description	Property improvements that include a new entrance from Rte. 50 and a dedicated access from Rte. 662 associated with the Regional Medical Facility project.		

Watershed Information

Watershed Name	Miles River	Sub-watershed No.	2130502
County	Talbot County	Municipality	Easton

Property Information

National Spatial Reference System (NSRS)
Alignment of passive control with the latest realization of the North American Datum of 1983:
NAD 83(2011), NAD 83(PA11), and NAD 83(MA11) Epoch 2010.00

Maryland Grid Coordinates centroid:	375,000			ft. North	1,062,500		ft. East
ADC Map: Year	2003	Page	11	Grid			
Tax Map:	17	Grid	18	Parcel	38	Block	
District / Account Number	036882					Lot	
Liber	1597/1402	Folio	510/339				

Agent Information

Name	Eric J. Chodnicki	License No.	N/A	Expiration Date	N/A
Firm Name	Daft-McCune-Walker, Inc.				
Mailing Address	501 Fairmount Avenue, Towson, MD 21286				
Telephone No.	410-296-3333 Ext. 2043	Email	echodnicki@dmw.com		

Forest Stand Delineation Information

Details of Request (Acreage or portion thereof)

Total Tract Area	43.7 Ac.	*Net Tract Area*	43.7 Ac.
Area within 100-year Floodplain	0.0 Ac.	Area of Existing Forest	0.5 Ac.
Area Remaining in Agriculture	0.0 Ac.	Area of Existing NTW	0.0 Ac.
Other	0.0 Ac.	Sensitive Areas	0.0 Ac.

Forested Stream Buffers (minimum 50' wide):			✓ Yes	No
One Side	✓	Both Sides		
Buffer Area Forested	0 Ac.	Length	0 Ft.	
Steep Slopes		Yes	✓ No	
Threatened & Endangered Species		Yes	✓ No	
Dominant & Co-dominant Species		Yes	✓ No	

Forest Stand Delineation Prepared by:

Licensed Landscape Architect | Licensed Forester | Qualified Professional

Forest Conservation Plan Information

Details of Request (Acreage or portion thereof)

Existing Land Use (zone)	GI	Proposed Land Use (zone)	GI		
Afforestation Threshold	15%	Conservation Threshold	20%		
Proposed Area of Disturbance	0.0	in Sensitive Areas	0.0		
Proposed Forest Clearing	0.0	in Sensitive Areas	0.0	in NTW	0.0

Forest Retention:

Onsite	0.5 AC	Offsite	0.0	in Long Term Protection	TBD
Forest Conservation Required			TBD	Forest Conservation Provided	TBD

Planting:

Onsite	TBD	Offsite	TBD	Sensitive Area Planting	N/A

Stream Buffer Established: Length _____ Width _____

Other: PROJECT WILL REQUIRE AN FCA VARIANCE

Offsite Location: ALL N/A

County		Municipality					
ADC Map:		Year		Page		Grid	
Tax Map:		Grid		Parcel		Block	
Maryland Grid:		North American Datum Year				Lot	
District / Account Number		Sub-watershed No.					
Planting Responsibility:		Contact #					
Maintenance Responsibility:		Contact #					
Long Term Protection		% in Sensitive Areas					
Long Term Protection Agreement Type							
Fee-in Lieu Amount		Acreage					
Forest Conservation Plan Prepared by							
Licensed Landscape Architect							
Licensed Forester							
Qualified Professional							

Subject to previous FCP? Y / N

If yes, please provide a copy of previous approved FCP. (SEE ATTACHED FCP)

Subject to ESDR? Y/ N

Required:

- ☑ Completed Form
- ☑ Written Statement
- ☑ Signature of Applicant
- ☑ Hardcopy of Drawings
- ☑ Digital Copy of Drawings
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Signature of Applicant or Agent — DocuSigned by: Laura Kautz — DocuSigned by: Nicole Stover

Date 9/1/2023

Printed Name of Applicant or Agent — Laura Creason Kautz

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Planning Commission Meeting Date		ESDR Meeting Date: 09/27/2023	
Sketch Approval Date		Project No.	ESDR 23-19
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Recordation Date		Develop. Fee Paid	
			Revised 02-2019

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Environmental Site Design Stormwater Management Computations

Concept (Sketch Plan)

Shore Health System / University of Maryland Medical System
Regional Medical Center
Easton, MD (Talbot County)

DMW Project No. 09035.N6

September 5th, 2023

Prepared for:
Shore Health System
University of Maryland Medical System
219 South Washington Street
Easton, MD 21601

STATE OF MARYLAND
KRISTY BISCHOFF
28823
PROFESSIONAL ENGINEER
9/5/23

Prepared by:

Daft-McCune-Walker, Inc.
501 Fairmount Ave., Suite 300
Towson, Maryland 21286
410-296-3333
Fax 410-296-4705
Design: LAT Review: KMB
kbischoff@dmw.com

I hereby certify that these documents were prepared, or approved, by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 28823 Exp. Date 1/7/2024

TABLE OF CONTENTS

Narrative	
Introduction	3
Project Location	3
Existing Conditions	3
Proposed Improvements	3
Stormwater Management Practices	3-4
Assumptions	4
Natural Resource Protection	5
Maintenance of natural flow patterns	5
Reduction of impervious areas through better site design, alternative surfaces, and nonstructural practices	5
Integration of erosion and sediment controls into the stormwater strategy	6
Implementation of ESD planning techniques and practices to the MEP	6
ESD Computations – New Development	7-78
Site Characteristics	7
1. Determine Target RCN, Post Construction RCN	7-8
2. Using Percent Impervious Determine Target P_E	9
3. Compute Q_E	9
4. Summary of ESD Practices	10-12
5. Performance Evaluations	13-78
(A-2) Permeable Pavement	13-17
(M-2) Submerged Gravel Wetlands	18-20
(M-6) Micro-Bioretention Facilities	21-63
(M-8) Grass Swales	64-78

Environmental Site Design Narrative

Introduction:

The following report summarizes the proposed stormwater management (SWM) environmental site design (ESD) for the proposed hospital site development. The quantity SWM design is in a separate report. The SWM design for the relocation of Route 662C, US Route 50, and Medical Center Drive are also in a separate report that was previously reviewed and approved by both Talbot County and SHA. The design point and associated ponds that are affected by the hospital development are restudied within the quantity report to ensure town and state requirements are met.

Project Location:

The subject property is located in Talbot County in the Town of Easton on a parcel of land roughly bordered by Route 50 to the east, Hiners Lane to the north, Hailem School Road to the west, and the Gannon Farm to the south. The project is approximately one mile north of the Easton Municipal Airport. The site is located on Tax Map 17, Grid 23 and includes parcel 129 and is comprised of 236.15 Ac +/-.

Existing Conditions:

The existing onsite conditions are primarily small grain row crops with some areas of trees. There is a section of Route 662C that will be removed and relocated as a part of the overall development of the site. Offsite areas that drain onto the site are made up primarily of small grain row crops and woods.

Proposed Improvements:

A portion of the site will be developed (30 Acres +/- within the loop road and 76 acres +/- of disturbance) to include a hospital building, medical office building, parking areas, loop road, and SWM facilities. The remainder of the disturbance on the site will be graded and seeded.

Stormwater Management Practices:

ESD will be implemented to meet the Stormwater Management Act of 2007. The site falls within a five mile radius of an airport, therefore the most stringent requirement between the Federal Aviation Administration (FAA) and the Maryland Aviation Administration (MAA) must be adhered to. Facilities with standing water that could attract waterfowl are not allowed within this radius. Water quality facilities are required to dewater within twenty-four hours. All ESD practices are required to be maintained to ensure that this criterion is met.

ESD practices chosen for this site are indicated and supported as follows:

Alternative Surfaces: Cost implications precluded the use of a green roof. Permeable pavement will be used in a portion of the parking spaces on the site.

Nonstructural Practices: The loop road and associated parking precluded disconnection of rooftop runoff and grass swales precluded disconnection of non-rooftop impervious surfaces. Potential future development outside of the loop road precludes the use of sheet flow to conservation areas.

Micro-Scale Practices:

1. The Submerged Gravel Wetland (M-2) practice was chosen to treat a portion of the hospital roof. There are two Submerged Gravel Wetlands located in the bottom of the detention ponds 6C and 3.
2. The Micro-Bioretention (M-6) practice was chosen for the treatment of ESD_V requirements for a majority of the site. The proposed Medical Office Building roof will be treated in facility no. 27. Micro-Bioretention facilities make up the majority of the landscape islands that are in the proposed site.
3. Grass Swales (M-8) were chosen to treat the loop road. The grass swales have a bottom width of four feet, depth of two feet and side slopes of 3:1 throughout. The slope along the length of the swales will vary.

Assumptions:

The site is considered new development, the existing conditions impervious area within the limit of disturbance is less than 40%. The P_E value is calculated specific to the Limit of Disturbance (LOD) based on hydrologic soil group and imperviousness.

Soil types are derived from the National Resource Conservation Service Survey. RCN values were taken from the TR-55 manual unless otherwise specified.

The Target RCN value was calculated for the site as if it were woods in good condition.

The Calculated Post Construction RCN value was calculated for the proposed improvements prior to implementing any stormwater management practices.

The area to each facility was defined by the proposed site grading within the site disturbance.

A portion of the Micro-Bioretention facilities have drainage areas that exceed 20,000 sf. The size of the site, including the size of the parking bays, dictates that some of the facilities receive more drainage than the regulations allow. All of the facilities have been designed to have a filter area of at least two percent of the overall drainage area to the facility and the storage is limited to the 1-year-24-hour (Cp_V) storm event.

Natural Resource Protection and Enhancement:

The proposed site design will achieve natural resource protection and enhancement by minimizing earth-moving disturbance to that which is necessary to support the project purpose, and by limiting earth disturbances to only those areas which have historically been used for intensive agricultural production. Natural resource protection and enhancement will also be achieved by avoiding forest clearing and impacts to nearby naturally-vegetated wetlands, streams, and their buffers. Large forested tracts surrounding natural stream and wetland systems are being retained and will be protected through establishment of perpetual conservation easements. Protection and enhancement of natural resources is also being achieved by providing water quality treatment, channel protection volume, and groundwater recharge within numerous ESD facilities located throughout the project site. These facilities have been designed within close proximity to proposed roadways and parking areas to quickly capture and treat stormwater runoff so as to reduce adverse effects to natural receiving water bodies. Native trees, shrubs, grasses, and perennials will be planted within the appropriate Best Management Practices (BMPs), as well as throughout the medical campus as part of the proposed sustainable landscape plan. These plantings will provide an enhanced "green footprint" as well as improved habitat for micro- and macro-invertebrates, insect pollinators, small mammals and songbirds, encouraging species diversity and thereby improving the site's natural resource functional value as compared with the current condition.

Maintenance of natural flow patterns:

The natural flow patterns were modified to aid in alleviating existing flooding conditions at Goldborough Neck Road, Foster's Trailer Park, and Hiners Lane. This management reduces flows from the existing conditions and allows for safer conditions in flood events. See the Quantity SWM report for further discussion.

Reduction of impervious areas through better site design, alternative surfaces, and nonstructural practices:

The site layout design reflects the minimum necessary amount of drive access and sidewalks for the demand required by the proposed use. As a result, impervious areas, and thus runoff from the site, are minimized. Additional parking spaces are proposed over the amount required by zoning. Therefore, locations across the site were chosen to provide permeable pavement for those additional spaces.

Integration of erosion and sediment controls into the stormwater strategy:

ESC controls will be incorporated into the SWM strategy. The filter areas will be protected from receiving sedimentation until the site is stabilized. The detention facilities will be utilized as sediment basins during construction. Trap devices will be located such that the ESD practices can be constructed while such devices are still in place and being utilized. Runoff from disturbed areas will be diverted around proposed permeable pavement and micro-bioretention facilities if final land grading needs to take place before the surrounding site is stabilized. The basins will need to be dewatered and cleaned out before submerged gravel wetlands will be installed at the time of basin conversion to SWM. The swales will be used to convey sediment laden water to trapping devices during construction, then after the contributing drainage area is completely stabilized, accumulated sediment will be removed and the swale will be excavated to the required dimensions before installing permanent vegetation.

Implementation of ESD planning techniques and practices to the MEP:

The facilities chosen were placed and sized to receive and provide the required ESD_V to the maximum extent practical. The ESD facilities were sized to provide volume for the Target P_E but limited to the 1-year-24-hour (Cp_V) storm event. A few of the ESD practices do not provide the required ESD_V in the DA due to site constraints. However, there is more than the required ESD_V provided for the site overall. Recharge volume is provided by adding 3" of stone below the micro-bioretention facilities. Site constraints require that the rooftop drainage be piped underground, rooftop areas are treated in 2-submerged gravel wetlands and 1-micro-bioretention facility. Not all roadside swales will be used for ESD based on the Q_{10} freeboard requirement. All of the micro-bioretention facilities are temporarily storing 100% of the ESD_V. However, MDE allows for micro-bioretention facilities to store at least 75% of the ESD_V.

Daft-McCune-Walker, Inc.
501 Fairmount Avenue Suite 300 - Towson, Maryland 21286

ESD DESIGN COMPUTATIONS
NEW DEVELOPMENT

Project :	Regional Medical Center	By:	LAT
		Date:	8/29/2023
Location:	Talbot County, Town of Easton	Check:	MM
Job No. :	09035.N6	Date:	8/25/2023

Site Characteristics :

LOD Area :	3,246,186	s.f.	=	74.52	Ac.
Proposed Impervious Area :	908,879	s.f.	=	20.86	Ac.
On-Site Soils :	-	sf "A"	=	-	Ac.
	1,892,067	sf "B"	=	43.44	Ac.
	691,391	sf "C"	=	15.87	Ac.
	662,728	sf "D"	=	15.21	Ac.
	3246186				

1. Determine Target RCN, Post Construction RCN:

a. Calculate Target RCN

Soil Condition and RCNs for "Woods in Good Conditions"

Woods - Good Condition
Soil Conditions

HSG	RCN	AREA	PERCENT
A	38	0	0.0%
B	55	1,892,067	58.3%
C	70	691,391	21.3%
D	77	662,728	20.4%

Determine RCN for Woods in Good Condition :

"A" Soils =	(Area x RCN) =	0
"B" Soils =	(Area x RCN) =	104,063,685
"C" Soils =	(Area x RCN) =	48,397,370
"D" Soils =	(Area x RCN) =	51,030,056

$$\text{RCN(woods)} = \frac{203{,}491{,}111}{3{,}246{,}186} = 62.69$$

Target RCN = 63

b. Calculate Post Construction RCN

Impervious Areas

Soil Conditions

HSG	RCN	AREA	PERCENT	Ac. x RCN
A	98	0	0.0%	0
B	98	568,003	17.5%	55,664,294
C	98	197,429	6.1%	19,348,042
D	98	143,447	4.4%	14,057,806

908879

Pervious Areas

Soil Conditions

HSG	RCN	AREA	PERCENT	Ac. x RCN
A	39	0	0.0%	0
B	61	1,324,064	40.8%	80,767,904
C	74	493,962	15.2%	36,553,188
D	80	519,281	16.0%	41,542,480

Determine Post Construction RCN for Impervious Areas and Grass in Good Condition :

$$\text{Post Construction RCN} = \frac{247{,}933{,}714}{3{,}246{,}186} = 76.38$$

Post Construction RCN =	76

2.Using Percent Impervious Determine Target $P(_E)$:

% Impervious = 28%

From Table 5.3 :

			Weighted $P(_E)$	
			Soils Area	Pe x A_{soil}
For Soils type A	Pe =		0%	0.00
For Soils type B	Pe =	1.6	58%	0.93
For Soils type C	Pe =	1.6	21%	0.34
For Soils type D	Pe =	1.2	20%	0.24
			100%	1.52

Target $P(_E)$= 1.52

3. Compute $Q(_E)$:

$Q(_E)$ = Runoff depth used to size ESD practices

$Q(_E) = P(_E) \times Rv$, where

$P(_E)$ = 1.52 inches

Rv = 0.05 + (0.009) I ; I = 28.00

Rv = 0.30

$Q(_E)$ = 1.52 inches x 0.30

$Q(_E)$ = 0.46 inches

ESD Targets

$P(_E)$ = 1.52 inches

A = 3,246,186 s.f.

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.30)(3{,}246{,}186)}{12}$$

Target ESDv = 123,355 c.f.

4. Summary of ESD Practices:

Environmental Site Design (ESD) Summary of Practices

TOTAL Target ESDv = 123,355 c.f. Required

Facility No.	Drainage Area No.	Practice Code	ESDv Provided (c.f.)			Notes
Phase 1-C	Lot A (12 PS)	(A-2)	311			
Phase 1-C	Lot G (10 PS)	(A-2)	-			Removed
Phase 1-B	Lot A (31 PS)	(A-2)	984			
Phase 1-B	Lot E (30 PS)	(A-2)	-			Removed
Phase 1-B	Lot G (23 PS)	(A-2)	-			Removed
Phase 2-C	Lot D (43 PS)	(A-2)	1,115			Phase 2
Phase 2-C	Lot F (43 PS)	(A-2)	1,115			Phase 2
	Alternative Surfaces Subtotal		*3,524*			
1	1	(M-2)	7,863			
2	2	(M-2)	12,452			
	Structural Practice Gravel Wetland Subtotal		*20,315*			
1	3	(M-6)	4,133	1,970	0	
2	4	(M-6)	4,119	2,109	0	
3	5	(M-6)	2,563	1,345	0	Phase 2
4	6	(M-6)	2,860	1,239	0	
5	7	(M-6)	-	#REF!	#REF!	Removed
6	8	(M-6)	1,687	322	0	Phase 2
7	9	(M-6)	1,030	544	0	
8	10	(M-6)	974	(43)	0	
9	11	(M-6)	974	(45)	0	
10	12	(M-6)	1,426	215	0	
11	13	(M-6)	1,865	252	0	
12	14	(M-6)	1,865	267	0	
13	15	(M-6)	1,944	334	0	
14	16	(M-6)	1,215	570	0	
15	17	(M-6)	1,267	(154)	0	
16	18	(M-6)	2,568	(108)	0	
17	19	(M-6)	2,206	175	0	
18	20	(M-6)	2,623	(175)	0	
19	21	(M-6)	2,410	765	0	
20	22	(M-6)	2,894	(448)	0	
21	23	(M-6)	2,148	702	0	
22	24	(M-6)	-	#REF!	#REF!	Removed
23	25	(M-6)	4,833	2,195	0	
24	26	(M-6)	3,456	1,551	0	
25	27	(M-6)	6,712	3,128	0	
26	28	(M-6)	2,004	4,458	0	Phase 2
27	29	(M-6)	-	#REF!	#REF!	Removed
28	30	(M-6)	3,246	1,365	0	
29	31	(M-6)	-	#REF!	#REF!	Removed
30	32	(M-6)	2,327	848	0	
31	33	(M-6)	2,864	1,343	0	Phase 2
32	34	(M-6)	1,968	#REF!	#REF!	
33	35	(M-6)	710	(35)	0	
34	36	(M-6)	972	127	0	

Facility No.	Drainage Area No.	Practice	ESDv Provided (c.f.)			Notes
35	37	(M-6)	2,071	149	0	
36	38	(M-6)	2,667	#REF!	#REF!	
37	39	(M-6)	1,795	1,337	0	
38	40	(M-6)	1,547	447	0	
39	41	(M-6)	2,366	(277)	0	Phase 2
40	42	(M-6)	667	(91)	0	Phase 2
41	43	(M-6)	1,870	1,439	0	
42	44	(M-6)	3,840	1,147	0	Phase 2
43	45	(M-6)	2,566	1,519	0	
44	46	(M-6)	2,058	1,419	0	
45	47	(M-6)	2,599	#REF!	#REF!	
46	48	(M-6)	3,529	1,477	0	
47	49	(M-6)	-	#REF!	#REF!	Removed
Structural Practice Micro-Bioretention Subtotal			*99,440*			
1	50	(M-8)	77			
2	51	(M-8)	508			
3	52	(M-8)	236			
4	53	(M-8)	210			
5	54	(M-8)	181			
6	55	(M-8)	404			
7	56	(M-8)	430			
8	57	(M-8)	269			
9	58	(M-8)	341			
10	59	(M-8)	409			
11	60	(M-8)	408			
12	61	(M-8)	430			
13	62	(M-8)	585			
14	63	(M-8)	153			
15	64	(M-8)	-			Removed
16	65	(M-8)	-			Removed
Structural Practices Grass Swales Subtotal			*4,641*			
		Total	127,921			

Total Target ESDv =	123,355	c.f. Required

Actual Total Target ESD_V on Site:

Alternative Surfaces Subtotal =	3,524	c.f. Provided
Submerged Gravel Wetland Practices Target ESDv =	20,315	c.f. Provided
Micro-Bioretention Practices Target ESDv =	99,440	c.f. Provided
Structural Practices Grass Swales Subtotal =	4,641	c.f. Provided
Total Target ESDv =	127,921	c.f. Provided

The overall site is providing more ESD_V than required and the sizing has been limited to a 1-year-24 hr (Cp_V) storm event.

Total ESDv Provided on Site

ESDv Treated =	127,921	c.f.

Unified Stormwater Sizing Criteria

Sizing Criteria	Required	Provided
Water Quality Volume (WQ_V) (cft)	ESD_V 123,355 c.f.	ESD_V 127,921 c.f.
Recharge Volume (Re_V) (cft) *		
Channel Protection Volume (Cp_V)		

* 3" of additional stone is provided in the bottom of the Micro-Bioretention facilities

5. Performance Evaluations

(A-2)

Permeable Pavement

5. Performance Evaluations:

1. Alternative Surface (A-2): Permeable Pavement Phase 1-C

Drainage Area # : Lot A (12 PS)

Area of DA =	1,944	s.f.	0.04	Ac.
Impervious =	1,944	s.f.	I% =	100.0
(C Soil)				

Maximum ESDv in this Drainage Area;

Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth

P_E = 2.80 inches I% = 100.0

Rv = 0.05 + (0.009) I ;

Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A) = (2.80)(0.95)(1,944)}{12 \quad 12}$$

ESDv = 431 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Filter Surface Area = 1,944 s.f.

MDE ESD Process and Computations July 2010

Table 1: ESD Values for Permeable Pavements

Thickness of Reservoir Course =	12	in
Treatment volume per square foot =	0.16	ft^3/sf

ESDv = (1,944) (0.160)

ESDv = 311 c.f. Captured and Treated

Volume Provided within the Facility = 311 c.f.

ESDv Provided in Drainage Area

ESDv Provided = 311 c.f.

5. Performance Evaluations (Continued):

1. Alternative Surface (A-2): Permeable Pavement Phase 1-B

Drainage Area # : Lot A (31 PS)

Area of DA =	5,022	s.f.	0.12	Ac.
Impervious =	5,022	s.f.	I% =	100.0
(B Soil)				

Maximum ESDv in this Drainage Area;

Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth

P_E = 2.80 inches I% = 100.0

Rv = 0.05 + (0.009) I ;

Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A) = (2.80)(0.95)(5{,}022)}{12 \quad 12}$$

ESDv = 1,113 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Filter Surface Area = 5,022 s.f.

MDE ESD Process and Computations July 2010

Table 1: ESD Values for Permeable Pavements

Thickness of Reservoir Course =	12	in
Treatment volume per square foot =	0.196	ft^3/sf

ESDv = (5,022) (0.196)

ESDv = 984 c.f. Captured and Treated

Volume Provided within the Facility = 984 c.f.

ESDv Provided in Drainage Area

ESDv Provided =	984	c.f.

5. Performance Evaluations (Continued):

1. Alternative Surface (A-2): Permeable Pavement Phase 2-C

Drainage Area # : Lot D (43 PS)

Area of DA =	6,966	s.f.	0.16	Ac.
Impervious =	6,966	s.f.	I% =	100.0
(C Soil)				

Maximum ESDv in this Drainage Area;

Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth

P_E = 2.80 inches I% = 100.0

Rv = 0.05 + (0.009) I ;

Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A) = (2.80)(0.95)(6{,}966)}{12 \quad 12}$$

ESDv = 1,544 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Filter Surface Area = 6,966 s.f.

MDE ESD Process and Computations July 2010

Table 1: ESD Values for Permeable Pavements

Thickness of Reservoir Course =	12	in
Treatment volume per square foot =	0.16	ft^3/sf

ESDv = (6,966) (0.160)

ESDv = 1,115 c.f. Captured and Treated

Volume Provided within the Facility = 1,115 c.f.

ESDv Provided in Drainage Area

ESDv Provided = 1,115 c.f.

5. Performance Evaluations (Continued):

1. Alternative Surface (A-2): Permeable Pavement Phase 2-C

Drainage Area # : Lot F (43 PS)

Area of DA =	6,966	s.f.	0.16	Ac.
Impervious =	6,966	s.f.	I% =	100.0
(C Soil)				

Maximum ESDv in this Drainage Area;

Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth

P_E = 2.80 inches I% = 100.0

Rv = 0.05 + (0.009) I ;

Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A) = (2.80)(0.95)(6{,}966)}{12 \quad 12}$$

ESDv = 1,544 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Filter Surface Area = 6,966 s.f.

MDE ESD Process and Computations July 2010

Table 1: ESD Values for Permeable Pavements

Thickness of Reservoir Course =	12	in
Treatment volume per square foot =	0.16	ft^3/sf

ESDv = (6,966) (0.160)

ESDv = 1,115 c.f. Captured and Treated

Volume Provided within the Facility = 1,115 c.f.

ESDv Provided in Drainage Area

ESDv Provided = 1,115 c.f.

5. Performance Evaluations

(M-2)

Submerged Gravel Wetlands

5. Performance Evaluations (Continued):

2. Submerged Gravel Wetland (M-2): Facility No. 1

Drainage Area: 1

Area of DA = 35,592 s.f. 0.82 Ac.
Impervious = 35,592 s.f. I% = 100.0

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.95)(35{,}592)}{12}$$

ESDv = 7,890 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.95)(35{,}592)}{12}$$

ESDv = 4,283 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 9829 s.f.

Check minimum Af (2% of DA) = 712 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = - + (9829) (2.00) (0.40)
(Using $d_{ponding*}$ =0ft)

Volume Provided within the Facility = 7,863 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	7,863	c.f.

5. Performance Evaluations (Continued):

2. Submerged Gravel Wetland (M-2): Facility No. 2

Drainage Area: 2

Area of DA = 72,269 s.f. 1.66 Ac.
Impervious = 72,269 s.f. I% = 100.0

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.95)(72{,}269)}{12}$$

ESDv = 16,020 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.95

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.95)(72{,}269)}{12}$$

ESDv = 8,696 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 15565 s.f.

Check minimum Af (2% of DA) = 1,445 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = - + (15565) (2.00) (0.40)
(Using $d_{ponding*}$ =0ft)

Volume Provided within the Facility = 12,452 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	12,452	c.f.

5. Performance Evaluations

(M-6)

Micro-Bioretention

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 1

Drainage Area: 3

Area of DA = 28,114 s.f. 0.65 Ac.
Impervious = 18,243 s.f. I% = 64.9

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.63

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.63)\ (28,114)}{12}$$

ESDv = 4,133 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.63

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.63)\ (28,114)}{12}$$

ESDv = 2,243 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 2341 s.f.

Check minimum Af (2% of DA) = 562 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (2,341) + (2341) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 4,214 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	4,133	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 2

Drainage Area: 4

Area of DA = 29,920 s.f. 0.69 Ac.
Impervious = 17,925 s.f. I% = 59.9

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.59

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.59)\ (29{,}920)}{12}$$

ESDv = 4,119 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.59

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.59)\ (29{,}920)}{12}$$

ESDv = 2,236 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 2414 s.f.

Check minimum Af (2% of DA) = 598 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (2,414) + (2414) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 4,345 **c.f.**

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	4,119	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 3

Drainage Area: 5

Area of DA = 19,616 s.f. 0.45 Ac.
Impervious = 11,119 s.f. I% = 56.7

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.56)\ (19{,}616)}{12}$$

ESDv = 2,563 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.56)\ (19{,}616)}{12}$$

ESDv = 1,391 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1520 s.f.

Check minimum Af (2% of DA) = 392 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,520) + (1520) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,736 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,563	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 4

Drainage Area: 6

Area of DA = 20,095 s.f. 0.46 Ac.
Impervious = 12,441 s.f. I% = 61.9

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.61)\ (20{,}095)}{12}$$

ESDv = 2,860 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.61)\ (20{,}095)}{12}$$

ESDv = 1,553 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1551 s.f.

Check minimum Af (2% of DA) = 402 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,551) + (1551) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,792 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,860	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 6

Drainage Area: 8

Area of DA = 12,407 s.f. 0.28 Ac.
Impervious = 7,635 s.f. I% = 61.5

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.60)\ (12{,}407)}{12}$$

ESDv = 1,737 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.60)\ (12{,}407)}{12}$$

ESDv = 943 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 703 s.f.

Check minimum Af (2% of DA) = 248 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (703) + (703) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,265 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,687	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 7

Drainage Area: 9

Area of DA = 7,120 s.f. 0.16 Ac.
Impervious = 4,505 s.f. I% = 63.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.62

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.62)\ (7{,}120)}{12}$$

ESDv = 1,030 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.62

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.62)\ (7{,}120)}{12}$$

ESDv = 559 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 613 s.f.

Check minimum Af (2% of DA) = 142 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (613) + (613) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,103 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,030	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 8

Drainage Area: 10

Area of DA = 8,603 s.f. 0.20 Ac.
Impervious = 6,328 s.f. I% = 73.6

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.71

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.71)\ (8{,}603)}{12}$$

ESDv = 1,425 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.71

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.71)\ (8{,}603)}{12}$$

ESDv = 774 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 406 s.f.

Check minimum Af (2% of DA) = 172 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (406) + (406) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 731 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	974	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 9

Drainage Area: 11

Area of DA = 8,167 s.f. 0.19 Ac.
Impervious = 6,334 s.f. I% = 77.6

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.75

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.75)\ (8{,}167)}{12}$$

ESDv = 1,429 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.75

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.75)\ (8{,}167)}{12}$$

ESDv = 776 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 406 s.f.

Check minimum Af (2% of DA) = 163 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (406) + (406) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 731 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	974	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 10

Drainage Area: 12

Area of DA = 10,217 s.f. 0.23 Ac.
Impervious = 6,952 s.f. I% = 68.0

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.66

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.66)\ (10{,}217)}{12}$$

ESDv = 1,573 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.66

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.66)\ (10{,}217)}{12}$$

ESDv = 854 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 594 s.f.

Check minimum Af (2% of DA) = 204 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (594) + (594) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,069 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,426	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 11

Drainage Area: 13

Area of DA = 13,123 s.f. 0.30 Ac.
Impervious = 9,353 s.f. I% = 71.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.69

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.69)(13,123)}{12}$$

ESDv = 2,113 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.69

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.69)(13,123)}{12}$$

ESDv = 1,147 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 777 s.f.

Check minimum Af (2% of DA) = 262 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (777) + (777) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,399 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 1,865 c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 12

Drainage Area: 14

Area of DA = 12,587 s.f. 0.29 Ac.
Impervious = 9,273 s.f. I% = 73.7

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.71

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.71)\ (12{,}587)}{12}$$

ESDv = 2,085 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.71

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.71)\ (12{,}587)}{12}$$

ESDv = 1,132 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 777 s.f.

Check minimum Af (2% of DA) = 252 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (777) + (777) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,399 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,865	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 13

Drainage Area: 15

Area of DA = 15,573 s.f. 0.36 Ac.
Impervious = 9,076 s.f. I% = 58.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.57

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.57)\ (15{,}573)}{12}$$

ESDv = 2,071 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.57

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.57)\ (15{,}573)}{12}$$

ESDv = 1,124 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 810 s.f.

Check minimum Af (2% of DA) = 311 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (810) + (810) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,458 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,944	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 14

Drainage Area: 16

Area of DA = 14,467 s.f. 0.33 Ac.
Impervious = 4,916 s.f. I% = 34.0

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.36

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.36)\ (14{,}467)}{12}$$

ESDv = 1,215 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.36

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.36)\ (14{,}467)}{12}$$

ESDv = 660 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 683 s.f.

Check minimum Af (2% of DA) = 289 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (683) + (683) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,229 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,215	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 15

Drainage Area: 17

Area of DA = 15,293 s.f. 0.35 Ac.
Impervious = 8,837 s.f. I% = 57.8

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.57

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.57)\ (15{,}293)}{12}$$

ESDv = 2,034 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.57

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.57)\ (15{,}293)}{12}$$

ESDv = 1,104 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 528 s.f.

Check minimum Af (2% of DA) = 306 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (528) + (528) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 950 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	1,267	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 16

Drainage Area: 18

Area of DA = 23,967 s.f. 0.55 Ac.
Impervious = 16,412 s.f. I% = 68.5

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.67

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.67)\ (23{,}967)}{12}$$

ESDv = 3,747 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.67

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.67)\ (23{,}967)}{12}$$

ESDv = 2,034 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1070 s.f.

Check minimum Af (2% of DA) = 479 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,070) + (1070) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,926 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	2,568	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 17

Drainage Area: 19

Area of DA = 21,234 s.f. 0.49 Ac.
Impervious = 11,816 s.f. I% = 55.6

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.55

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.55)\ (21{,}234)}{12}$$

ESDv = 2,725 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.55

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.55)\ (21{,}234)}{12}$$

ESDv = 1,479 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 919 s.f.

Check minimum Af (2% of DA) = 425 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (919) + (919) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,654 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,206	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 18

Drainage Area: 20

Area of DA = 28,187 s.f. 0.65 Ac.
Impervious = 17,321 s.f. I% = 61.5

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.60)\ (28,187)}{12}$$

ESDv = 3,946 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.60)\ (28,187)}{12}$$

ESDv = 2,142 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1093 s.f.

Check minimum Af (2% of DA) = 564 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,093) + (1093) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,967 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	2,623	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 19

Drainage Area: 21

Area of DA = 19,128 s.f. 0.44 Ac.
Impervious = 10,412 s.f. I% = 54.4

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.54

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.54)\ (19{,}128)}{12}$$

ESDv = 2,410 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.54

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.54)\ (19{,}128)}{12}$$

ESDv = 1,308 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1152 s.f.

Check minimum Af (2% of DA) = 383 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,152) + (1152) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,074 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,410	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 20

Drainage Area: 22

Area of DA = 36,913 s.f. 0.85 Ac.
Impervious = 20,776 s.f. I% = 56.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.56)\ (36{,}913)}{12}$$

ESDv = 4,823 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.56)\ (36{,}913)}{12}$$

ESDv = 2,618 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1206 s.f.

Check minimum Af (2% of DA) = 738 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,206) + (1206) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,171 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	2,894	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 21

Drainage Area: 23

Area of DA = 18,053 s.f. 0.41 Ac.
Impervious = 9,199 s.f. I% = 51.0

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.51

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.51)\ (18{,}053)}{12}$$

ESDv = 2,148 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.51

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.51)\ (18{,}053)}{12}$$

ESDv = 1,166 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1038 s.f.

Check minimum Af (2% of DA) = 361 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,038) + (1038) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,868 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,148	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 23

Drainage Area: 25

Area of DA = 46,032 s.f. 1.06 Ac.
Impervious = 20,360 s.f. I% = 44.2

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.45

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.45)\ (46{,}032)}{12}$$

ESDv = 4,833 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.45

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.45)\ (46{,}032)}{12}$$

ESDv = 2,624 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 2677 s.f.

Check minimum Af (2% of DA) = 921 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (2,677) + (2677) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 4,819 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	4,833	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 24

Drainage Area: 26

Area of DA = 24,279 s.f. 0.56 Ac.
Impervious = 15,074 s.f. I% = 62.1

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.61)(24,279)}{12}$$

ESDv = 3,456 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.61)(24,279)}{12}$$

ESDv = 1,876 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1904 s.f.

Check minimum Af (2% of DA) = 486 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,904) + (1904) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 3,427 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	3,456	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 25

Drainage Area: 27

Area of DA = 39,405 s.f. 0.90 Ac.
Impervious = 29,667 s.f. I% = 75.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.73

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.73)\ (39{,}405)}{12}$$

ESDv = 6,712 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.73

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.73)\ (39{,}405)}{12}$$

ESDv = 3,644 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

GOAL SEEK: 3,747

Surface Area of Filter (Af): 3762 s.f.

Check minimum Af (2% of DA) = 788 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (3,762) + (3762) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 6,772 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	6,712	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 26

Drainage Area: 28

Area of DA = 47,724 s.f. 1.10 Ac.
Impervious = 6,848 s.f. I% = 14.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.18

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.18)\ (47{,}724)}{12}$$

ESDv = 2,004 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.18

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.18)\ (47{,}724)}{12}$$

ESDv = 1,088 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

GOAL SEEK: 3,068

Surface Area of Filter (Af): 3081 s.f.

Check minimum Af (2% of DA) = **954** **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (3,081) + (3081) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 5,546 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,004	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 28

Drainage Area: 30

Area of DA = 55,638 s.f. 1.28 Ac.
Impervious = 12,235 s.f. I% = 22.0

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.25

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.25)\ (55,638)}{12}$$

ESDv = 3,246 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.25

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.25)\ (55,638)}{12}$$

ESDv = 1,762 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

GOAL SEEK: 1,732

Surface Area of Filter (Af): 1737 s.f.

Check minimum Af (2% of DA) = **1,113** **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,737) + (1737) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 3,127 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	3,246	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 30

Drainage Area: 32

Area of DA = 43,355 s.f. 1.00 Ac.
Impervious = 8,715 s.f. I% = 20.1

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.23

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.23)\ (43{,}355)}{12}$$

ESDv = 2,327 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.23

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.23)\ (43{,}355)}{12}$$

ESDv = 1,263 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

GOAL SEEK: 807

Surface Area of Filter (Af): 1173 s.f.

Check minimum Af (2% of DA) = **867** **s.f.**
OK

ESDv = $(V_{ponding*})$ + (Af)(df)(void) =
ESDv = (1,173) + (1173) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,111 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,327	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 31

Drainage Area: 33

Area of DA = 35,067 s.f. 0.81 Ac.
Impervious = 11,703 s.f. I% = 33.4

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.35

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.35)\ (35{,}067)}{12}$$

ESDv = 2,864 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.35

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.35)\ (35{,}067)}{12}$$

ESDv = 1,555 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1610 s.f.

Check minimum Af (2% of DA) = 701 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,610) + (1610) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,898 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,864	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 32

Drainage Area: 34

Area of DA = 36,748 s.f. 0.84 Ac.
Impervious = 13,102 s.f. I% = 35.7

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.37

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.37)\ (36{,}748)}{12}$$

ESDv = 3,173 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.37

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.37)\ (36{,}748)}{12}$$

ESDv = 1,722 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 820 s.f.

Check minimum Af (2% of DA) = 735 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (820) + (820) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,476 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	1,968	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 33

Drainage Area: 35

Area of DA = 6,787 s.f. 0.16 Ac.
Impervious = 4,574 s.f. I% = 67.4

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.66

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.66)\ (6{,}787)}{12}$$

ESDv = 1,045 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.66

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.66)\ (6{,}787)}{12}$$

ESDv = 567 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 296 s.f.

Check minimum Af (2% of DA) = 136 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (296) + (296) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 533 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	710	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 34

Drainage Area: 36

Area of DA = 7,088 s.f. 0.16 Ac.
Impervious = 4,852 s.f. I% = 68.5

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.67

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.67)\ (7{,}088)}{12}$$

ESDv = 1,108 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.67

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.67)\ (7{,}088)}{12}$$

ESDv = 602 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 405 s.f.

Check minimum Af (2% of DA) = 142 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (405) + (405) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 729 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	972	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 35

Drainage Area: 37

Area of DA = 16,309 s.f. 0.37 Ac.
Impervious = 11,383 s.f. I% = 69.8

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.68

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.68)\ (16{,}309)}{12}$$

ESDv = 2,588 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.68

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.68)\ (16{,}309)}{12}$$

ESDv = 1,405 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 863 s.f.

Check minimum Af (2% of DA) = 326 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (863) + (863) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,553 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,071	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 36

Drainage Area: 38

Area of DA = 16,331 s.f. 0.37 Ac.
Impervious = 11,865 s.f. I% = 72.7

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.70

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.70)(16,331)}{12}$$

ESDv = 2,667 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.70

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.70)(16,331)}{12}$$

ESDv = 1,448 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1214 s.f.

Check minimum Af (2% of DA) = 327 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,214) + (1214) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,185 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 2,667 c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 37

Drainage Area: 39

Area of DA = 16,723 s.f. 0.38 Ac.
Impervious = 7,631 s.f. I% = 45.6

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.46)\ (16{,}723)}{12}$$

ESDv = 1,795 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.46)\ (16{,}723)}{12}$$

ESDv = 974 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1284 s.f.

Check minimum Af (2% of DA) = 334 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,284) + (1284) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,311 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,795	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 38

Drainage Area: 40

Area of DA = 10,203 s.f. 0.23 Ac.
Impervious = 6,762 s.f. I% = 66.3

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.65

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.65)\ (10{,}203)}{12}$$

ESDv = 1,547 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.65

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.65)\ (10{,}203)}{12}$$

ESDv = 840 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 715 s.f.

Check minimum Af (2% of DA) = 204 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (715) + (715) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,287 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,547	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 39

Drainage Area: 41

Area of DA = 26,555 s.f. 0.61 Ac.
Impervious = 16,505 s.f. I% = 62.2

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.61)\ (26{,}555)}{12}$$

ESDv = 3,780 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.61)\ (26{,}555)}{12}$$

ESDv = 2,052 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 986 s.f.

Check minimum Af (2% of DA) = 531 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (986) + (986) (2.00) (0.40)
(Using $d_{ponding*}$ = 1 ft)

75% Volume Provided within the Facility = 1,775 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	2,366	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 40

Drainage Area: 42

Area of DA = 7,654 s.f. 0.18 Ac.
Impervious = 4,749 s.f. I% = 62.0

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.61)\ (7{,}654)}{12}$$

ESDv = 1,089 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.61)\ (7{,}654)}{12}$$

ESDv = 591 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 278 s.f.

Check minimum Af (2% of DA) = 153 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (278) + (278) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 500 **c.f.**

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
INCREASE Af to MEET TARGET ESDv

ESDv Provided =	667	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 41

Drainage Area: 43

Area of DA = 12,519 s.f. 0.29 Ac.
Impervious = 8,213 s.f. I% = 65.6

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.64

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.64)\ (12{,}519)}{12}$$

ESDv = 1,870 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.64

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.64)\ (12{,}519)}{12}$$

ESDv = 1,015 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1363 s.f.

Check minimum Af (2% of DA) = 250 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,363) + (1363) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,453 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	1,870	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 42

Drainage Area: 44

Area of DA = 31,048 s.f. 0.71 Ac.
Impervious = 16,495 s.f. I% = 53.1

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.53

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.53)(31,048)}{12}$$

ESDv = 3,840 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.53

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.53)(31,048)}{12}$$

ESDv = 2,084 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1795 s.f.

Check minimum Af (2% of DA) = 621 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,795) + (1795) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 3,231 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	3,840	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 43

Drainage Area: 45

Area of DA = 18,028 s.f. 0.41 Ac.
Impervious = 11,194 s.f. I% = 62.1

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.61)\ (18{,}028)}{12}$$

ESDv = 2,566 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.61

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.61)\ (18{,}028)}{12}$$

ESDv = 1,393 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1618 s.f.

Check minimum Af (2% of DA) = 361 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,618) + (1618) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,912 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,566	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 44

Drainage Area: 46

Area of DA = 14,949 s.f. 0.34 Ac.
Impervious = 8,937 s.f. I% = 59.8

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.59

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.59)(14{,}949)}{12}$$

ESDv = 2,058 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.59

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.59)(14{,}949)}{12}$$

ESDv = 1,117 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1409 s.f.

Check minimum Af (2% of DA) = 299 s.f.
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,409) + (1409) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 2,536 c.f.

ESDv Provided in Drainage Area

MEETS or EXCEEDS Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 2,058 c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 45

Drainage Area: 47

Area of DA = 21,659 s.f. 0.50 Ac.
Impervious = 13,245 s.f. I% = 61.2

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.60)\ (21,659)}{12}$$

ESDv = 3,032 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.60)\ (21,659)}{12}$$

ESDv = 1,646 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1083 s.f.

Check minimum Af (2% of DA) = 433 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,083) + (1083) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 1,949 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	2,599	c.f.

5. Performance Evaluations (Continued):

3. Micro-Bioretention (M-6): Facility No. 46

Drainage Area: 48

Area of DA = 32,875 s.f. 0.75 Ac.
Impervious = 15,035 s.f. I% = 45.7

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.46)\ (32{,}875)}{12}$$

ESDv = 3,529 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.46)\ (32{,}875)}{12}$$

ESDv = 1,916 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Surface Area of Filter (Af): 1885 s.f.

Check minimum Af (2% of DA) = 658 **s.f.**
OK

ESDv = ($V_{ponding*}$) + (Af)(df)(void) =
ESDv = (1,885) + (1885) (2.00) (0.40)
(Using $d_{ponding*}$ = 1ft)

75% Volume Provided within the Facility = 3,393 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	3,529	c.f.

5. Performance Evaluations

(M-8)

Grass Swales

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 1

Drainage Area: 50

Area of DA = 5,961 s.f. 0.14 Ac.
Impervious = 3,502 s.f. I% = 58.7

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.58

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.58)(5{,}961)}{12}$$

ESDv = 807 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(5{,}961)}{12}$$

ESDv = 38 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 58 ft
Swale Width W = 4 ft
Swale Area A = 232 s.f.
Check minimum contributing drainage area (>2%) = 119 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 232 s.f. = 77 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	77	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 2

Drainage Area: 51

Area of DA = 21,133 s.f. 0.49 Ac.
Impervious = 6,650 s.f. I% = 31.5

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.33

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.33)\ (21,133)}{12}$$

ESDv = 1,627 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.05)\ (21,133)}{12}$$

ESDv = 134 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 385 ft
Swale Width W = 4 ft
Swale Area A = 1,540 s.f.
Check minimum contributing drainage area (>2%) = 423 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft x 1,540 s.f. = 508 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	508	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 3

Drainage Area: 52

Area of DA = 7,180 s.f. 0.16 Ac.
Impervious = 3,275 s.f. I% = 45.6

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A) = (2.80)(0.46)(7,180)}{12 \quad 12}$$

ESDv = 771 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A) = (1.52)(0.05)(7,180)}{12 \quad 12}$$

ESDv = 45 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 179 ft
Swale Width W = 4 ft
Swale Area A = 716 s.f.
Check minimum contributing drainage area (>2%) = 144 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 716 s.f. = 236 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 236 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 4

Drainage Area: 53

Area of DA = 6,911 s.f. 0.16 Ac.
Impervious = 3,907 s.f. I% = 56.5

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.56)(6{,}911)}{12}$$

ESDv = 903 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(6{,}911)}{12}$$

ESDv = 44 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 159 ft
Swale Width W = 4 ft
Swale Area A = 636 s.f.
Check minimum contributing drainage area (>2%) = 138 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 636 s.f. = 210 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 210 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 5

Drainage Area: 54

Area of DA = 7,416 s.f. 0.17 Ac.
Impervious = 4,500 s.f. I% = 60.7

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.60

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.60)(7,416)}{12}$$

ESDv = 1,038 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(7,416)}{12}$$

ESDv = 47 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 137 ft
Swale Width W = 4 ft
Swale Area A = 548 s.f.
Check minimum contributing drainage area (>2%) = 148 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 548 s.f. = 181 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 181 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 6

Drainage Area: 55

Area of DA = 11,661 s.f. 0.27 Ac.
Impervious = 5,267 s.f. I% = 45.2

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.46)(11,661)}{12}$$

ESDv = 1,252 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(11,661)}{12}$$

ESDv = 74 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 306 ft
Swale Width W = 4 ft
Swale Area A = 1,224 s.f.
Check minimum contributing drainage area (>2%) = 233 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 1,224 s.f. = 404 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 404 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 7

Drainage Area: 56

Area of DA = 13,300 s.f. 0.31 Ac.
Impervious = 5,692 s.f. I% = 42.8

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.44

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.44)(13,300)}{12}$$

ESDv = 1,365 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(13,300)}{12}$$

ESDv = 84 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 326 ft
Swale Width W = 4 ft
Swale Area A = 1,304 s.f.
Check minimum contributing drainage area (>2%) = 266 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft x 1,304 s.f. = 430 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 430 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 8

Drainage Area: 57

Area of DA = 7,899 s.f. 0.18 Ac.
Impervious = 3,622 s.f. I% = 45.9

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.46

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.46)(7{,}899)}{12}$$

ESDv = 848 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(7{,}899)}{12}$$

ESDv = 50 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 204 ft
Swale Width W = 4 ft
Swale Area A = 816 s.f.
Check minimum contributing drainage area (>2%) = 158 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft x 816 s.f. = 269 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 269 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 9

Drainage Area: 58

Area of DA = 22,276 s.f. 0.51 Ac.
Impervious = 4,586 s.f. I% = 20.6

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.24

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.24)\ (22,276)}{12}$$

ESDv = 1,247 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.05)\ (22,276)}{12}$$

ESDv = 141 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 258 ft
Swale Width W = 4 ft
Swale Area A = 1,032 s.f.
Check minimum contributing drainage area (>2%) = 446 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 1,032 s.f. = 341 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided = 341 c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 10

Drainage Area: 59

Area of DA = 21,304 s.f. 0.49 Ac.
Impervious = 5,473 s.f. I% = 25.7

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.28

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.28)(21,304)}{12}$$

ESDv = 1,392 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(21,304)}{12}$$

ESDv = 135 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 310 ft
Swale Width W = 4 ft
Swale Area A = 1,240 s.f.
Check minimum contributing drainage area (>2%) = 426 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft x 1,240 s.f. = 409 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	409	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 11

Drainage Area: 60

Area of DA = 12,733 s.f. 0.29 Ac.
Impervious = 5,422 s.f. I% = 42.6

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.43

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.43)(12{,}733)}{12}$$

ESDv = 1,278 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(12{,}733)}{12}$$

ESDv = 81 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 309 ft
Swale Width W = 4 ft
Swale Area A = 1,236 s.f.
Check minimum contributing drainage area (>2%) = 255 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 1,236 s.f. = 408 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	408	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 12

Drainage Area: 61

Area of DA =	25,208	s.f.	0.58	Ac.
Impervious =	5,792	s.f.	I% =	23.0

Maximum ESDv in this Drainage Area;

From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event

P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;

Rv = 0.26

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.26)\ (25{,}208)}{12}$$

ESDv = 1,529 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;

Using weighted P(E) from Site Characteristics 2. Using Percent Impervious

P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;

Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.05)\ (25{,}208)}{12}$$

ESDv = 160 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L =	326	ft
Swale Width W =	4	ft
Swale Area A =	1,304	s.f.
Check minimum contributing drainage area (>2%) =	504	*OK*
Check bottom width (2' < W < 8') =	*OK*	

Maximum depth is 4" for ESDv

0.33 ft × 1,304 s.f. = 430 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	430	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 13

Drainage Area: 62

Area of DA = 31,053 s.f. 0.71 Ac.
Impervious = 7,924 s.f. I% = 25.5

Maximum ESDv in this Drainage Area;
From Table 2.2 Rainfall Depth for 1 year-24 hr (Cpv) Storm Event
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.28

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)(0.28)(31,053)}{12}$$

ESDv = 2,029 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)(0.05)(31,053)}{12}$$

ESDv = 197 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 443 ft
Swale Width W = 4 ft
Swale Area A = 1,772 s.f.
Check minimum contributing drainage area (>2%) = 621 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft × 1,772 s.f. = 585 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	585	c.f.

5. Performance Evaluations (Continued):

4. Grass Swale (M-8): Facility No. 14

Drainage Area: 63

Area of DA = 16,694 s.f. 0.38 Ac.
Impervious = 9,541 s.f. I% = 57.2

Maximum ESDv in this Drainage Area;
Using 1-year-24 hr (Cpv) Storm Event From Table 2.2 Rainfall Depth
P_E = 2.80 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.56

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(2.80)\ (0.56)\ (16,694)}{12}$$

ESDv = 2,181 c.f. could be treated within this facility.

Required ESDv in this Drainage Area;
Using weighted P(E) from Site Characteristics 2. Using Percent Impervious
P_E = 1.52 inches

Rv = 0.05 + (0.009) I ;
Rv = 0.05

$$ESDv = \frac{(P_E)(Rv)(A)}{12} = \frac{(1.52)\ (0.05)\ (16,694)}{12}$$

ESDv = 106 c.f. could be treated within this facility.

Volume Provided within the ESD Practice:

Swale Length L = 116 ft
Swale Width W = 4 ft
Swale Area A = 464 s.f.
Check minimum contributing drainage area (>2%) = 334 *OK*

Check bottom width (2' < W < 8') = *OK*

Maximum depth is 4" for ESDv

0.33 ft x 464 s.f. = 153 c.f.

ESDv Provided in Drainage Area

INCREASE Af TO PROVIDE Cpv
MEETS or EXCEEDS MINIMUM ESDv

ESDv Provided =	153	c.f.

FOREST STAND DELINEATION REPORT

Proposed Regional Medical Facility Property
Longwoods Road
Town of Easton, Maryland

DMW Project No. 09035.N6

September 5, 2023

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FOREST STAND DELINEATION REPORT

INTRODUCTION

This report provides a description of the forested areas identified by Daft·McCune·Walker, Inc., (DMW) at the Proposed Regional Medical Center property situated along Longwoods Road in the town of Easton. The property is identified as Tax Map 17, Parcels 75 and 129, zoned RH (Regional Hospital) and encompassing ±235 acres (ac). The majority of the property is in agricultural production (±219.0 ac) with approximately 15 ac of it accounted for as forest, exclusive of the ±5 ac of forested floodplain which exists on-site. There are five individual forested areas further delineated into 15 distinctly different forest stands as identified in this report, inventoried on the forest data sheets (Appendix A), and depicted on the Forest Stand Delineation Plan (Appendix B). Within these 15 stands 112 specimen trees were tagged, identified, field located and are included on the Forest Stand Delineation Plan.

There are one other vegetated area on-site, isolated in nature and existing on the southeastern portion adjacent to Route 50 south of the Gagnon property that was not deemed forest due to a lack of composition and size requirements.

SITE PHYSIOGRAPHY

Information pertaining to the geology of the property was obtained from the Maryland Geological Survey's *Geologic Map of the Easton Quadrangle, Maryland* (1968). The property is located upon the Coastal physiographic province and more specifically, is underlain by gravels, sands, silts, clays of the Lowland and Upland Deposits within the Quaternary Group.

The property is located at approximately 55-feet above mean sea level, with elevations ranging from approximately 65-feet in the eastern portion of the property to approximately 15-feet on the southwestern part of the property. The slopes have a general southwest aspect on the western portion with the eastern region having a general eastern aspect. Inspection of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map for this location (Map Panel No. 24041C0180D, Dated July 20, 2016) determined there are mapped FEMA 100-year floodplain areas on this property.

Soils are predominantly mapped as Hambrook-Sassafras complex (HfB and HfC) and Elkton silt loam (EmA) with Fallsington sandy loam (FaA), Woodstown sandy loam (WdA), and Woodstown loam (WoA) in association. Lenni loam (LgA), Ingleside sandy loam (IgB), and Fallsington loam (FgA) are mapped throughout the property with Zekiah silt loam (Zk) mapped within the floodplain.

FOREST STAND DELINEATION

INTRODUCTION

The retention of existing forest and the creation of new forests are important for the maintenance of our current quality of life. Flood retention, water quality enhancement, wildlife habitat improvement, increased property value and energy conservation are significant byproducts of forest conservation in association with new development. For these reasons, the Town of Easton published a "Forest Conservation Ordinance" and adopted a "Forest Conservation Act" to regulate and encourage the conservation of the town's forests. To guide new development, the "Forest Conservation Ordinance" established standards for Forest Stand Delineations and Forest Conservation Plans.

Forest Stand Delineations are assessments of the quality and location of forest communities. These assessments may only be performed by a licensed forester, licensed landscape architect, or another

qualified professional. Definitions of qualified professionals vary between jurisdictions, but no one is qualified to perform Forest Stand Delineation or Forest Conservation Plans without a Certificate of Attendance from a Department of Natural Resources Forest Conservation Act Technical Training Workshop.

This Forest Stand Delineation was performed in accordance with criteria and guidelines outlined in the Forest Conservation Technical Manual. All fieldwork was performed by Eric J. Chodnicki, a Natural Resources Specialist certified to perform forest stand delineations as referenced in COMAR 08.19.06.01. The Forest Stand Data Sheets which support this delineation are contained in Appendix A.

STAND CONDITION / ENVIRONMENTAL FEATURES

The forest stands identified on the Proposed Regional Medical Center site do not belong to one specific forest stand association group; however, it may be noted that the dominant species common throughout the property were red maple, oak, sweetgum, beech, hickory, and loblolly pine. A total of ±16.9 ac of forest exist on-site with approximately 4.76 ac lying within the 100-year FEMA floodplain (floodplain) limits resulting in a net forest area of 15.14 ac. The 5.05 acres of forest within the FEMA floodplain was not included in this report since forested areas within floodplains are not recognized in the Forest Conservation Worksheet calculations and are not accounted for in the calculations as forested areas to be retained. The forest on-site, as delineated and described in this report, is comprised of 15 stands as described herein. As noted, there are 112 specimen trees on-site, the majority of which are concentrated in Stand 'D' with scattered occurrences in Stands 'B', 'C', 'E', 'F', 'H', 'I', 'K', 'L', 'M', 'O', and 'P'.

Stand 'A' (±1.2 ac) is an early seral stage oak/maple/sweetgum/pine forest located on the northern portion of the property southeast from where Hiners Lane intersects Longwoods Road. It occurs on relatively flat land consisting of 0-2% slopes with a north/northwest aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and willow oak (*Quercus phellos*). The common regeneration in the understory consisted of willow oak, white oak (*Quercus alba*), southern red oak (*Quercus falcata*), loblolly pine, and American beech (*Fagus grandifolia*) ranging in size from 2-11.9" dbh. The common understory species consisted of multiflora rose (*Rosa multiflora*) and common greenbrier (*Smilax rotundifolia*) scattered throughout. The forest floor is loosely covered in Japanese honeysuckle (*Lonicera japonica*) with Virginia creeper (*Parthenocissus quinquefolia*), trumpet creeper (*Campsis radicans*), and sedge species (*Carex ssp.*) scattered throughout with a leaf litter depth of 1-2" to mineral soil. There are no specimen trees within the stand, nor were there any standing snags greater than 20" dbh; and there was plenty of downed woody debris.

Stand 'B' (±1.33 ac) is an early seral stage cherry/Kentucky coffeetree forest located in the central region on the eastern portion of the property south from Stand 'A'. It occurs on relatively flat land consisting of 0-2% slopes with a north/northwest aspect. The average diameter-at-breast-height (dbh) of the canopy is 2-19.9" dominated with black cherry (*Prunus serotina*) and Kentucky coffeetree (*Gymnocladus dioicus*) with black locust (*Robinia pseudoacacia*). The common regeneration in the understory consisted of black cherry, black locust, and red maple ranging in size from 2-11.9" dbh. The common understory species consisted of multiflora rose and common greenbrier (*Smilax rotundifolia*) scattered throughout. The forest floor is loosely covered in Japanese honeysuckle with Virginia creeper, and trumpet creeper scattered throughout with a leaf litter depth of 0-1" to mineral soil. There are no specimen trees within the stand, nor were there any standing snags greater than 20" dbh; and there was plenty of downed woody debris.

Stand 'C' (±0.6 ac) is a mid seral stage pine/sweetgum/maple/cherry forest located along the southern property boundary east of Longwoods Road. Vegetated areas consisting of trees and other woody plants continue east and west from this forest stand but neither area met the 35-foot width or trees-per-acre requirements and were therefore not included as part of this forest stand. It occurs on relatively gently sloping land consisting of 2-5% slopes with an easterly aspect. The average diameter-at-breast-

height (dbh) of the canopy is 12-29.9" dominated with loblolly pine, red maple, sweetgum, black cherry, and red oak (*Quercus rubra*). The common regeneration in the understory consisted of willow oak, red oak, American beech, pignut hickory (*Carya glabra*), black cherry, and black gum (*Nyssa sylvatica*) ranging in size from 2-11.9" dbh. The eastern portion of the forest stand is mostly composed of loblolly pine becoming more diversified moving westward. The forest floor is loosely covered in Japanese honeysuckle and poison ivy (*Toxicodendron radicans*) with a leaf litter depth of 1-2" to mineral soil and plenty of downed woody debris present. There were two specimen trees within the stand and there were no standing snags greater than 20" dbh.

Stand 'D' (±1.2 ac) is a mid seral stage beech/oak/maple/hickory forest located along the southern property boundary west of Stand 'C'. It occurs on gently sloping land consisting of 5-10% slopes with a northwesterly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-29.9" dominated with red oak, white oak, American beech, pignut hickory, and red maple. The common regeneration species in the understory consisted of American beech, black cherry, black gum, and eastern hop-hornbeam (*Ostrya virginiana*) ranging in size from 2-5.9" dbh. The understory is primarily open with the occasional common greenbrier and American holly (*Ilex opaca*) occurring. The forest floor was devoid of vegetation, the leaf litter depth was 1-2" to mineral soil and there was plenty of downed woody debris present. There were four specimen trees within the stand and there were no standing snags greater than 20" dbh.

Stand 'E' (±5.9 ac) is a late seral stage beech/oak/hickory forest located along the southern property boundary west of Stand 'D' bordered to the east and north by the existing perennial stream that exists on the property. It is the largest of the forest stands on the property occurring on gently sloping lands generally ranging from 5-10% slopes with a northerly aspect; a few areas adjacent to the perennial stream channel have slopes that exceed 15-20%, but these are very small "blip-like" areas. The average diameter-at-breast-height (dbh) of the canopy is 12-29.9" dominated with red oak, white oak, American beech, pignut hickory, and red maple. The common regeneration species in the understory consisted of American beech and oak species ranging in size from 2-5.9" dbh. The forest floor was devoid of vegetation, the leaf litter depth was 1-3" to mineral soil, and there was very little downed woody debris present. There were 33 specimen trees within the stand and there were no standing snags greater than 20" dbh.

Stand 'F' (±1.0 ac) is an early seral stage maple/cherry/elm/sweetgum forest located north along the perennial stream, adjacent to Stands 'D' and 'E' on the property. It occurs on gently sloping lands generally ranging from 5-10% slopes with a southerly aspect; a few areas adjacent to the perennial stream channel have slopes that exceed 15-20%, but these are very small "blip-like" areas. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with sweetgum, black cherry, American elm (*Ulmus Americana*), box-elder (*Acer negundo*), and red oak. The common understory species consisted mainly of common greenbrier, Japanese honeysuckle, multiflora rose, American holly, wild grape (*Vitis ssp.*), and blackberry species (*Rubus ssp.*). The forest floor was pretty well covered with Japanese honeysuckle, mock strawberry (*Duchesnia indica*), and false garlic (*Allium bivalve*). There was little to no leaf litter depth and very little downed woody debris; no standing snags greater than 20" dbh; and three specimen trees present.

Stand 'G' (±0.5 ac) is an early seral stage sweetgum/maple forest located north along the perennial stream west of and adjacent to Stand 'F' on the property. It occurs on gently sloping lands generally ranging from 5-10% slopes with a southerly aspect; a few areas adjacent to the perennial stream channel have slopes that exceed 15-20%, but these are very small "blip-like" areas. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with sweetgum and red maple. The common regeneration species in the understory consisted of American beech, black cherry, American elm, pignut hickory, Eastern hop-hornbeam, and red maple ranging in size from 2-5.9" dbh. The common understory species consisted mainly of common greenbrier and American holly, both in limited quantities. The forest floor was mostly open with the occasional Japanese honeysuckle and a leaf litter depth of 1-3" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and three specimen trees present.

Stand 'H' (±0.8 ac) is an early seral stage sweetgum/maple forest located north along the perennial stream west of and adjacent to Stand 'G' on the property. It occurs on gently sloping lands generally ranging from 2-10% slopes with a southerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with sweetgum and red maple. The common regeneration species in the understory consisted of American elm, Eastern hop-hornbeam, and red maple ranging in size from 2-5.9" dbh. The common understory species consisted mainly of spicebush (*Lindera benzoin*), American holly, and Japanese honeysuckle. The forest floor was mostly open with the occasional Japanese honeysuckle and a leaf litter depth of 1-2" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and no specimen trees present.

Stand 'J' (±2.1 ac) is an early to mid seral stage sweetgum/pine/maple/poplar forest located north along the perennial stream west of and adjacent to Stand 'H' on the property. It occurs on gently sloping lands generally ranging from 2-10% slopes with a southerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with sweetgum and red maple. The common regeneration species in the understory consisted of American holly with common understory species dominated by common greenbrier and multiflora rose. The forest floor was mostly open with the occasional Japanese honeysuckle and false garlic, and a leaf litter depth of 1-2" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and ten specimen trees present.

Stand 'K' (±0.8 ac) is a mid seral stage poplar/ash/cherry/oak forest located north along the perennial stream in a small patch of forest west of Stands 'E' and 'J', which abuts the eastern limits of the existing power line easement. It occurs on gently sloping lands generally ranging from 2-10% slopes with a southerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with tulip poplar and ash. The common regeneration species in the understory consisted of black cherry, American elm, red maple, sweetgum, and green ash ranging in size from 2-5.9" dbh. The common regeneration species in the understory consisted of spicebush and inkberry (*Ilex glabra*) with common greenbrier throughout. The forest floor was mostly open with the occasional Japanese honeysuckle, sedge species, and false garlic, and a leaf litter depth of less than 1" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and 14 specimen trees present.

Stand 'L' (±0.1 ac) is a early to mid seral stage oak/sweetgum/maple forest located opposite the perennial stream from Stand 'I' in the same small patch of forest that abuts the eastern limits of the existing power line easement. It occurs on gently sloping lands generally ranging from 2-10% slopes with a northerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-19.9" dominated with willow oak, white oak, red maple, and sweetgum. The common regeneration species in the understory consisted of sweetgum, pignut hickory, white oak, sassafras, and American beech ranging in size from 2-5.9" dbh. The common regeneration species in the understory consisted of common greenbrier, low-bush blueberry (*Vaccinium angustifolium*), sweetbay magnolia (*Magnolia virginiana*), American holly, and eastern hop-hornbeam throughout. The forest floor was mostly covered with Japanese honeysuckle and a leaf litter depth of 1-3" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and two specimen trees present.

Stand 'M' (±0.3 ac) is a mid seral stage sweetgum/ash/hickory forest located east of and adjacent to Stand 'L' in the same small patch of forest that abuts the eastern limits of the existing power line easement. It occurs on gently sloping lands generally ranging from 2-10% slopes with a northerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 20-29.9" dominated with sweetgum, green ash, and bitternut hickory (*Carya cordiformis*) with red maple and black cherry in association. The common regeneration species in the understory consisted of sassafras and sweetgum ranging in size from 2-11.9" dbh. The understory was dominated by multiflora with common greenbrier in association. The forest floor was devoid of vegetation and the leaf litter depth was less than 1". There was plenty of downed woody debris; no standing snags greater than 20" dbh; and one specimen trees present.

Stand 'N' (±0.5 ac) is a mid seral stage maple/sweetgum/oak forest located along the southern property boundary east of Stand 'E' and south of Stands 'L' and 'M'. Vegetated areas consisting of trees and other woody plants continue east from this forest stand to Stand 'E', but the area did not meet the 35-foot minimum width or trees-per-acre requirements and was therefore not included as part of this forest stand. The stand occurs on relatively gently sloping area of 2-5% slopes with a westerly aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-29.9" dominated by red maple, sweetgum, and white oak. The common regeneration species in the understory consisted of bitternut hickory, American beech, flowering dogwood (*Cornus florida*), black cherry, sassafras ranging in size from 2-5.9" dbh. The understory was composed of pignut hickory, inkberry, Japanese honeysuckle, and common greenbrier. The forest floor is loosely covered in Japanese honeysuckle and sedge species with a leaf litter depth of less than 1" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and three specimen trees present.

Stand 'O' (±0.4 ac) is a mid seral stage oak/poplar forest located east of the perennial stream and existing power line easement on the southwestern corner of the property. It occurs on land ranging from 2-20% slopes with a western aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-29.9" dominated with black oak (Quercus velutina) and tulip poplar with black cherry, red maple, and black walnut in association. The common regeneration species in the understory consisted of species noted from the canopy un secondary canopy ranging in size from 2-11.9" dbh. The understory consisted mostly of common greenbrier scattered throughout. The forest floor was mostly open with the occasional Japanese honeysuckle and false garlic, and a leaf litter depth of less than 1" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and four specimen trees present.

Stand 'P' (±0.4 ac) is a mid seral stage sweetgum/cherry/oak forest located west of the perennial stream and existing power line easement on the southwestern corner of the property. It occurs on gentle to steep sloping lands ranging from 2-10% slopes with an east/southeast aspect. The average diameter-at-breast-height (dbh) of the canopy is 12-29.9" dominated with black cherry, pin oak (*Quercus palustris*), and sweetgum. The common regeneration species in the understory consisted of bitternut hickory, American beech, flowering dogwood, pignut hickory, green ash, eastern hop-hornbeam, red maple, and sassafras ranging in size from 2-5.9" dbh. The common regeneration species in the understory consisted mostly of common greenbrier scattered throughout. The forest floor was mostly open with the occasional Japanese honeysuckle, sedge species, and false garlic, and a leaf litter depth of less than 1" to mineral soil. There was plenty of downed woody debris; no standing snags greater than 20" dbh; and six specimen trees present.

FOREST CONSERVATION ACT REQUIREMENTS

Development of this property must comply with provisions of the Forest Conservation Act (FCA). Presently ±15.1 acres of forest exist on-site outside the 100-year FEMA floodplain (±6.40 ac/±5.0 ac forested), based on the most recent available GIS data and as verified during site inspections. Based on preliminary analyses an afforestation requirement of ±17.5 ac exists. Any clearing of forest will require additional reforestation above the afforestation requirement at a 2:1 replacement ratio for each acre of forest cleared.

CONCLUSIONS AND RECOMMENDATIONS

- Development of this property must comply with the provisions of the Forest Conservation Act (FCA). There are currently ±16.9 acres of forest existing on the property based on GIS information received from Talbot County and upon site inspection. Under the current FCA, preliminary Forest Conservation Worksheet calculations indicate an afforestation requirement of ±13.77 ac exists. Any clearing of forest will require reforestation at a rate of 2:1 for each acre of forest cleared in addition to the afforestation requirement (13.77 ac).

- Nontidal wetlands on the property are associated with streams and flood prone areas that drain into the Chester River Watershed, more specifically the tidal waters known as Goldsborough Creek (Use-II). The stream which traverses the site from east to west drains into an unnamed tributary to Goldsborough Creek (Use-I per COMAR 26.08.02.08).

- Projects that propose impacts to wetlands, streams, floodplains, and their associated buffers require authorizations from federal, state, and local government agencies.

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Appendix A
(Forest Stand Delineation Plan)

Appendix B
(Forest Stand Data Sheets)

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: A Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum	9				4											13
L. Styraciflua					4											4
P. Taeda						2	2									4
Total Number of Trees per Size Class	9			10			2			0			0			21
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
Q. Phellos, Q. Falcata, R. Multiflora, V. Dentalum

% of Canopy Closure

C	N	E	S	W	Total
Y	Y	Y	Y	N	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early

List of Herbaceous Species 0'-3':

Carex Vulp.

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	N	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
Y	N	N	N	N	20%

Comments:

T. Radicans, S. Rotundifolia, Plenty of downed woody debris, leaf litter 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: A Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
U. Americana		4														4
A. Rubrum			2			2										4
Q. Phellos			2				4									2
L. Styraciflua		5		7			3									16
P. Taeda																3
Total Number of Trees per Size Class	13			9			7			0			0			29
Number & Size of Standing Dead Trees	2			2			--			--			--			4

List of Common Understory Species 3'-20':
Q. Falcata, Q. Alba, Q. Phellos, P. Taeda, F. Grandifola, R. Multiflora

% of Canopy Closure					
C	N	E	S	W	Total
N	Y	Y	Y	N	<60%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early

List of Herbaceous Species 0'-3':

Carex Vulp.

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

P. Quinquefolia, C. Radicans, L. Japonica, P. Serotina seedlings. Open canopy, more light, more seedlings. Plenty of downed woody debris, leaf little depth 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: B Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Serotina		8		6			2									16
G. dioicus		10		6			2									18
R. pseudoacacia		6														6
A. rubrum			2													2
Total Number of Trees per Size Class	26			12			4									42
Number & Size of Standing Dead Trees							--			--			--			

List of Common Understory Species 3'-20':

% of Canopy Closure

C	N	E	S	W	Total
N	Y	Y	Y	N	<60%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early

List of Herbaceous Species 0'-3':

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	N	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

P. Quinquefolia, C. Radicans, L. Japonica, P. Serotina seedlings. Open canopy, more light, more seedlings. Plenty of downed woody debris, leaf little depth 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: B Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Serotina		4		10			4									18
G. dioicus		4		8			2									14
R. pseudoacacia		6														6
A. rubrum			4													4
																0
Total Number of Trees per Size Class	18			18			6									42
Number & Size of Standing Dead Trees							--			--			--			

List of Common Understory Species 3'-20':

% of Canopy Closure

C	N	E	S	W	Total
N	Y	Y	Y	N	<60%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early

List of Herbaceous Species 0'-3':

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	N	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

P. Quinquefolia, C. Radicans, L. Japonica, P. Serotina seedlings. Open canopy, more light, more seedlings. Plenty of downed woody debris, leaf little depth 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: C Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 145

Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Taeda								3			3					6
L. Styraciflua				4				3			2					9
F. Grandifolia	3					2			1							6
C. Glabra	2															2
P. Serotina	6					1			2			2				11
Q. Spp.	2					2										4
A. Rubrum																1
Total Number of Trees per Size Class	14			9			9			7			0			39
Number & Size of Standing Dead Trees	1			--			--			--			--			0

List of Common Understory Species 3'-20':
C. Glabra, P. Serotina, Q. Phellos, F. Grandifolia

% of Canopy Closure

C	N	E	S	W	Total
N	N	Y	Y	Y	60%

Percent of Invasive Cover per Plot (All Layers): 10%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	Y	N	Y	<40%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

L. Japonica/ T. Radicans: scattered, numerous P. Serotina seedlings. Plenty of downed woody debris, leaf litter debris depth 1-2".

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: C Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 145	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Taeda						1		3								4
L. Styraciflua			2	4												6
C. Glabra			3													3
F. Grandifolia			4													4
P. Serotina			7			1										8
A. Rubrum			1			1										2
J. Virginiana			1													1
Q. Rubra			1						1							2
N. Sylvatica			2													2
Total Number of Trees per Size Class	21			7			4			0			0			32
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
C. Glabra, P. Serotina

% of Canopy Closure

C	N	E	S	W	Total
N	N	Y	Y	N	40%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	Y	Y	N	40%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Smilax Rotundifolia, L. Japonica, T. Radicans sporadic. Widened hedgerow, much downed woody debris (old pine etc.). Eastern part of stand larger pine, western end becomes less dense.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: D Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 240	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
F. Grandifolia			12			1				1						14
Q. Alba													1			1
P. Serotina			1													1
Q. Rubra													1			1
N. Sylvatica			2													2
I. Opaca			3													3
A. Rubrum			1					1								2
Total Number of Trees per Size Class	19			1			1			1			2			24
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
1 I. Opaca

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	Y	100%

Percent of Invasive Cover per Plot (All Layers): None

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	0

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Plenty of downed woody debris, leaf litter 1-3". 5 Specimen trees, overall good condition

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: D Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 140

Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Serotina			4													4
F. Grandifolia			6		1											7
L. Styraciflua					1		1									1
A. Rubrum					1		2									2
O. Virginiana			3													5
C. Glabra					1											2
					1											1
Total Number of Trees per Size Class	13			5			4			0			0			22
Number & Size of Standing Dead Trees	--			--			1			1			--			0

List of Common Understory Species 3'-20':
S. Rotundifolia

% of Canopy Closure

C	N	E	S	W	Total
Y	N	N	Y	Y	60%

Percent of Invasive Cover per Plot (All Layers):

None

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	Y	N	N	20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Trees surrounding this plot were much larger and consistent with plot #1. Plenty of downed woody debris, leaf litter depth 1-2".

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: E Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 126	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
F. Grandifolia			12							2						14
C. Glabra					1											1
O. Virginiana			4													4
Total Number of Trees per Size Class	16			1			0			2			0			19
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
F. Grandofilia

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	Y	100%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Late

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	E	N	N	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	E	N	N	0%

Comments:

Leaf litter depth 1-3". Not much downed wooded debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: E Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
F. Grandifolia			5				3									8
C. Glabra				1				1								3
O. Virginiana								1								1
Total Number of Trees per Size Class	5			1			5			0			0			11
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
N/A

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	Y	100%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Late

List of Herbaceous Species 0'-3':
N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	E	N	N	0%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	E	N	N	0%

Comments:

Leaf litter depth 1-3". Limited downed wooded debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: F Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 110	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Serotina			6	5												11
A. Negundo			2	1			1									4
C. Florida			1													1
Q. Rubra			1				1									2
L. Styraciflua			1													1
C. Glabra			1	1												2
U. Americana				1												1
A. Rubrum			1													1
Total Number of Trees per Size Class	13			8			2			0			0			23
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
Smilax, Lonicera, R. Multiflora, I. Opaca

% of Canopy Closure					
C	N	E	S	W	Total
Y	N	Y	N	Y	60%

Percent of Invasive Cover per Plot (All Layers): <5%

Plot Successional Stage: Early

List of Herbaceous Species 0'-3':

Allium

% Understory Cover 3'-20'					
C	N	E	S	W	Total
Y	N	N	Y	Y	60%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
Y	N	N	N	N	20%

Comments:

Forest floor covered with L. Japonica, Deuchesnia, Allium (all 3 most dominant). No leaf litter or downed wood debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: F Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 110	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
P. Serotina			2	2			1									5
A. Rubrum																
A. Negundo			1	1			1									3
U. Americana			3				1									4
L. Styraciflua							1									1
Total Number of Trees per Size Class	6			3			4									13
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
Lindera 6"-12", Vitis ssp., L Japonica, P. Quinquefolia, R. Multiflora

% of Canopy Closure

C	N	E	S	W	Total
Y	N	Y	Y	N	60%

Percent of Invasive Cover per Plot (All Layers): <5%

Plot Successional Stage: Early

% Understory Cover 3'-20'

C	N	E	S	W	Total
Forest floor w/ Lindera (<5%) to south					

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
Scattered					

Comments:

L. Japonica dominates forest floor. Poison ivy with vitis climbing trees. Very little downed woody debris, no leaf litter.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: G Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 60	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
F. Grandifolia			5													5
L. Styraciflua					4		1									5
P. Serotina			1													1
U. Americana			1													1
C. Glabra			2													2
O. Virginiana			2													2
A. Rubrum			2													2
Total Number of Trees per Size Class	13			4			1			0			0			18
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
N/A

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	Y	100%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':
N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	0%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Leaf litter depth 1-3", plenty of downed woody debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: G Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 160	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum			1		1		3									5
F. Grandifolia			1													1
P. Serotina			1													1
Total Number of Trees per Size Class	3			1			3			0			0			7
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
1 F. Grandifolia, 1 I. Opaca, S. Rotundifolia

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	Y	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Little L. Japonica, plenty of downed woody debris, leaf litter depth 1-3".

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: H Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 100	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
L. Styraciflua					1		2									3
A. Rubrum					3		1									4
C. Glabra					1											1
U. Americana			2													2
Total Number of Trees per Size Class	2			5			3			0			0			10
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
O. Virginiana (1), L. Benzoin (1)

% of Canopy Closure					
C	N	E	S	W	Total
Y	N	N	Y	Y	60%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

Allium (10%)

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	Y	N	N	N	20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	Y	N	N	N	<20%

Comments:

Leaf litter depth 1-2", plenty of downed woody debris. L. Japonica.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: H Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 80

Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum			2		2											4
L. Styraciflua							3									3
Total Number of Trees per Size Class	2			2			3			0			0			7
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
L. Japonica, Euonymus, A. Negundo, L. Benzoin. I. Opaca

% of Canopy Closure

C	N	E	S	W	Total
N	N	Y	Y	Y	60%

Percent of Invasive Cover per Plot (All Layers): 20%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	Y	N	N	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Leaf litter depth 1-2", plenty of downed woody debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: J Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum			2		1											3
P. Serotina			1													1
P. Taeda							2									2
F. Grandifolia					1											1
U. Americana			1													1
L. Styraciflua							1									1
Total Number of Trees per Size Class	4			2			3			0			0			9
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
N/A

% of Canopy Closure

C	N	E	S	W	Total
Y	N	N	S	Y	60%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

Allium (<5%)

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	N	N	0%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	<5%

Comments:

Leaf litter depth 1-2", plenty of downed woody debris. L. Japonica.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: J Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 67

Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum			1		2											3
P. Taeda							1									1
P. Serotina					1											1
T. Poplar							1									1
S. Albidum			1													1
Total Number of Trees per Size Class	2			3			2			0			0			7
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
I. Opaca, S. Rotundifolia, R. Multiflora, F. Grandifolia

% of Canopy Closure

C	N	E	S	W	Total
Y	N	Y	Y	Y	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

Allium (10%)

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

Comments:

Leaf litter depth 1-3", plenty of downed woody debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: K Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 110	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
L. Tulipifera							1			1						2
U. Americana			1													1
P. Serotina			3													3
Q. Plaustris					1											1
F. Pennsylvanica			1		1		1									3
Total Number of Trees per Size Class	5			2			2			1			0			10
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
L. Benzoin, I. Glabra

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	N	Y	80%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

Carex, Allium (scarce)

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	Y	Y	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	Y	Y	<20%

Comments:

Leaf litter depth <1", plenty downed woody debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: K Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 60	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum			4													4
L. Styraciflua			2													2
L. Tulipifera										2						2
P. Serotina			2		1											3
A. Negundo			1													1
Total Number of Trees per Size Class	9			1			0			2			0			12
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
L. Benzoin, S. Rotundifolia

% of Canopy Closure

C	N	E	S	W	Total
Y	Y	Y	N	Y	80%

Percent of Invasive Cover per Plot (All Layers): <5%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	Y	Y	<20%

Comments:

Leaf litter depth <1", abundant downed woody debris, little L. Japonica.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: L Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 217

Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
C. Cordiformis			4		1											5
Q. Alba			3					1		1						5
Q. Imbricara										2						2
S. Albidum					2											2
F. Grandifolia					2											2
Total Number of Trees per Size Class	7			5			1			3			0			16
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
S. Rotundifolia

% of Canopy Closure

C	N	E	S	W	Total
Y	Y	Y	N	N	60%

Percent of Invasive Cover per Plot (All Layers): <5%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

Comments:

Leaf litter depth 1-3", plenty of downed woody debris, L. Japonica.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: L Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 185	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
L. Styraciflua			4		2		1									7
S. Albidum			2		4											6
A. Rubrum							1									1
Q. Alba			2		3											5
Q. Imbricaria										1						1
F. Grandifolia			1													1
Total Number of Trees per Size Class	9			9			2			1			0			20
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
S. Rotundifolia, Vaccinium A., Magnolia, O. Virginiana, I. Opaca

% of Canopy Closure

C	N	E	S	W	Total
Y	Y	Y	N	W	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	Y	Y	<40%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	Y	Y	<40%

Comments:

Leaf litter depth 1-3", plenty of downed woody debris, L. Japonica.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: M Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 155	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
L. Styraciflua										1						1
F. Pennsylvanica										1						1
C. Cordiformis										1						1
Total Number of Trees per Size Class	0			0			0			3			0			3
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
L. Benzoin

% of Canopy Closure

C	N	E	S	W	Total
N	N	Y	N	Y	40%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

N/A

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	Y	N	<20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Leaf Litter <1", abundant downed woody debris

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: N Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 106	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum										1						1
P. Serotina										1						1
S. Albidum			4					2								6
L. Styraciflua					1											1
Total Number of Trees per Size Class	4			1			2			2			0			9
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
R. Multiflora dominant, S. Rotundifolia

% of Canopy Closure					
C	N	E	S	W	Total
N	N	Y	N	Y	40%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

Allium

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	Y	N	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	Y	N	<20%

Comments:

L. Japonica, leaf little <1', abundant downed woody debris.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: N Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 150	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
A. Rubrum						1				1						2
L. Styraciflua						1		1								2
S. Albidum			1			2										3
Q. Alba						5		1								6
F. Grandifolia			2			1										3
P. Serotina			1													1
Total Number of Trees per Size Class	4			10			2			1			0			17
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
S. Rotundifolia

% of Canopy Closure					
C	N	E	S	W	Total
Y	N	Y	Y	Y	80%

Percent of Invasive Cover per Plot (All Layers): <20%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':
N/A

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	Y	N	N	N	<20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	E	S	W	0%

Comments:

Abundant downed woody debris, leaf litter 1-2". Hedgerow of trees.

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: O Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
Q. velutina		1			8		2			2			1			14
L. tulipifera		4			6		4			4			3			21
P.serotina			10			3	1									14
A. rubrum			4			2		1								7
J. nigra			4			1										5
Total Number of Trees per Size Class	23			20			8			6			4			61
Number & Size of Standing Dead Trees							--			1			--			1

List of Common Understory Species 3'-20':
None

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	N	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':
None

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	0%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:
Dense canopy with more seedlings than most stands. Plenty of downed woody debris, leaf little depth 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: O Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 120	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
Q. velutina			2		4		2									8
L. tulipifera		1			4		6									11
P.serotina			4			1		1								6
A. rubrum			1			3		2								6
J. nigra			1													1
Total Number of Trees per Size Class	9			12			11			0			0			32
Number & Size of Standing Dead Trees							--						--			

List of Common Understory Species 3'-20':
None

% of Canopy Closure					
C	N	E	S	W	Total
Y	Y	Y	Y	N	80%

Percent of Invasive Cover per Plot (All Layers): <10%

Plot Successional Stage: Mid

List of Herbaceous Species 0'-3':

None

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	N	0%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:
Dense canopy with more seedlings than most stands. Plenty of downed woody debris, leaf little depth 1-3"

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: P Plot#: 1 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 130	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
C. Cordiformis			2			1										3
C. Glabra						2										2
F. Grandifolia			1													1
P. Serotina						1		1								2
C. Florida			2													2
L. Styraciflua										1						1
Q. Palustris								1								1
Total Number of Trees per Size Class	5			4			2			1			0			12
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
C. Glabra, I. Glabra, L. Japonica, Quercus ssp.

% of Canopy Closure					
C	N	E	S	W	Total
N	Y	N	Y	Y	60%

Percent of Invasive Cover per Plot (All Layers): <5%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

Carex

% Understory Cover 3'-20'					
C	N	E	S	W	Total
N	N	N	N	Y	20%

% of Herbaceous Cover 0'-3'					
C	N	E	S	W	Total
N	N	N	N	Y	<10%

Comments:

Leaf Litter <1", plenty of downed woody debris

Forest Sampling Data Worksheet **C:1**

Property: Shore Health System - Easton Prepared By: E. Chodnicki Stand: P Plot#: 2 Plot Size: 1/20 Date: 08/02/2023

Basal Area in sf/acre: 130	Size class of trees > 20' height within sample plot															
Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
Crown Position	Dom	CoD	other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	
F. Grandifolia			4													4
C. Glabra			1		2											3
P. Serotina			4													4
F. Pennsylvanica			1													1
L. Styraciflua										1						1
O. Virginiana			1													1
A. Rubrum			1													1
S. Albidum			2													2
Total Number of Trees per Size Class	14			2			0			1			0			17
Number & Size of Standing Dead Trees	--			--			--			--			--			0

List of Common Understory Species 3'-20':
S. Albidum, A. Rubrum, C. Glabra, P. Serotina, S. Rotundifolia

% of Canopy Closure

C	N	E	S	W	Total
Y	Y	Y	Y	N	80%

Percent of Invasive Cover per Plot (All Layers): 0%

Plot Successional Stage: Early-Mid

List of Herbaceous Species 0'-3':

Carex

% Understory Cover 3'-20'

C	N	E	S	W	Total
N	N	N	N	Y	20%

% of Herbaceous Cover 0'-3'

C	N	E	S	W	Total
N	N	N	N	N	0%

Comments:

Leaf Litter 1-2", plenty of downed woody debris

Forest Sampling Data Worksheet **C:1**

Appendix C
(Forest Stand Data Summary)

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'A'	Stand 'B'
1. Dominant species/Codominant species	Q. Phellos, A. Rubrum, L. Styraciflua, P. Taeda	Cherry, Kentucky Coffee
2. Successional stage	Early	Early
3. Basal area in s.f. per acre	165	150
4. Size class of dominant species	6-11.9" & 12-19.9"	6-15"
5. Percent of canopy closure	60-80%	60%
6. Number of tree species per acre	5	3
7. Common understory species per acre	Q. Alba/Falcata, Phellos, F. Grandifolia, P. Taeda, R. Multiflora, V. Dentatum	Prunus serotina, robinia pseudoacacia
8. Percent of understory cover 3' to 20' tall	<20%	30%
9. Number of woody plant species 3' to 20' tall	7	3
10. Common herbaceous species 0' to 3' tall	1	2
11. Percent of herbaceous & woody plant cover 0' to 3' tall	<20%	<20%
12. List of major invasive plant species & percent of cover	L. Japonica - <10%	L. Japonica - <10%
13. Number of standing dead trees 6" dbh or greater	0	0
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'C'	Stand 'D'
1. Dominant species/Codominant species	P. Taeda, L. Styraciflua, Q. Rubra, P. Serotina	F. Grandifolia, Q. Alba, Q. Rubra, A. Rubrum, C. Glabra
2. Successional stage	Mid	Mid
3. Basal area in s.f. per acre	145	240
4. Size class of dominant species	12-19.9" & 20-29.9"	12-19.9" & 20-29.9"
5. Percent of canopy closure	40-60%	80%
6. Number of tree species per acre	9	8
7. Common understory species per acre	C. Glabra, P. Serotina, Q. Phellos, F. Grandifolia	Ilex Opaca, S. Rotundifolia
8. Percent of understory cover 3' to 20' tall	40%	20%
9. Number of woody plant species 3' to 20' tall	4	2
10. Common herbaceous species 0' to 3' tall	0	None
11. Percent of herbaceous & woody plant cover 0' to 3' tall	40%	20%
12. List of major invasive plant species & percent of cover	L. Jaonica - <20%	None
13. Number of standing dead trees 6" dbh or greater	0	2
14. Comments Sheet_ of _	Hedgerow Forest / Narrow	

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'E'	Stand 'F'
1. Dominant species/Codominant species	F. Grandifolia, C. Glabra, A. Rubrum	A. Negundo, Q. Rubra, P. Serotina, U. Americana, L. Styraciflua
2. Successional stage	Late	Early
3. Basal area in s.f. per acre	120	110
4. Size class of dominant species	12-19.9" & 20-29.9"	12-19.9"
5. Percent of canopy closure	100%	60%
6. Number of tree species per acre	3	8
7. Common understory species per acre	F. Grandifolia	L. Benzoin, Smilax, L. Japonica, R. Multiflora, Vitis
8. Percent of understory cover 3' to 20' tall	<20%	60%
9. Number of woody plant species 3' to 20' tall	1	5
10. Common herbaceous species 0' to 3' tall	None	Allium
11. Percent of herbaceous & woody plant cover 0' to 3' tall	<20%	0.2
12. List of major invasive plant species & percent of cover	None	L. Japonica - 40%
13. Number of standing dead trees 6" dbh or greater	0	0
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'G'	Stand 'H'
1. Dominant species/Codominant species	L. Styraciflua, A. Rubrum	L. Styraciflua, A.Rubrum
2. Successional stage	Early	Early-Mid
3. Basal area in s.f. per acre	160	100
4. Size class of dominant species	12-19.9"	12-19.9"
5. Percent of canopy closure	80-100%	60%
6. Number of tree species per acre	7	4
7. Common understory species per acre	F. Grandifolia, I. Opaca, S. Rotundifolia	A. Negundo, L. Benzoin, I. Opaca
8. Percent of understory cover 3' to 20' tall	<20%	20%
9. Number of woody plant species 3' to 20' tall	3	5
10. Common herbaceous species 0' to 3' tall	None	Allium
11. Percent of herbaceous & woody plant cover 0' to 3' tall	0	<10%
12. List of major invasive plant species & percent of cover	L. Jaonica - <5%	L. Japonica - <10%
13. Number of standing dead trees 6" dbh or greater	0	0
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'J'	Stand 'K'
1. Dominant species/Codominant species	L. Styraciflua, P. Taeda, A. Rubrum, L. Tulipifera	L. Tulipifera, F. Pennsylvanica, P. Serotina, Q. Palustris
2. Successional stage	Early-Mid	Mid
3. Basal area in s.f. per acre	84	110
4. Size class of dominant species	12-19.9"	12-19.9"
5. Percent of canopy closure	60%	80%
6. Number of tree species per acre	6	6
7. Common understory species per acre	I. Opaca, Smilax, R. Multiflora	Lindera, I. Glabra, Smilax
8. Percent of understory cover 3' to 20' tall	<20%	<20%
9. Number of woody plant species 3' to 20' tall	3	3
10. Common herbaceous species 0' to 3' tall	Allium	Carex ssp, Allium
11. Percent of herbaceous & woody plant cover 0' to 3' tall	<20%	<20%
12. List of major invasive plant species & percent of cover	L. Japonica - 10%	None
13. Number of standing dead trees 6" dbh or greater	0	0
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'L'	Stand 'M'
1. Dominant species/Codominant species	Quercus ssp, L. Styraciflua, A. Rubrum	L. Styraciflua, F. Pennsylvanica, Carya ssp.
2. Successional stage	Early-Mid	Mid
3. Basal area in s.f. per acre	200	155
4. Size class of dominant species	12-19.9"	20-29"
5. Percent of canopy closure	80-100%	40%
6. Number of tree species per acre	7	3
7. Common understory species per acre	Smilax, Vaccinium, Magnolia, I. Opaca	L. Benzoin
8. Percent of understory cover 3' to 20' tall	40%	<20%
9. Number of woody plant species 3' to 20' tall	5	<5%
10. Common herbaceous species 0' to 3' tall	None	None
11. Percent of herbaceous & woody plant cover 0' to 3' tall	5%	None
12. List of major invasive plant species & percent of cover	L. Japonica <5%	None
13. Number of standing dead trees 6" dbh or greater	0	0
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'N'	Stand 'O'
1. Dominant species/Codominant species	A. Rubrum, L. Styraciflua, Q. Alba	
2. Successional stage	Mid	
3. Basal area in s.f. per acre	130	
4. Size class of dominant species	12-29.9"	
5. Percent of canopy closure	60%	
6. Number of tree species per acre	6	
7. Common understory species per acre	Smilax, R. Multiflora	
8. Percent of understory cover 3' to 20' tall	<20%	
9. Number of woody plant species 3' to 20' tall	2	
10. Common herbaceous species 0' to 3' tall	Allium	
11. Percent of herbaceous & woody plant cover 0' to 3' tall	<20%	
12. List of major invasive plant species & percent of cover	L. Japonica <5%	
13. Number of standing dead trees 6" dbh or greater	0	
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

Property Name: Shore Health System - Easton
Location: Talbot County Prepared By: DMW Date: 08/02/2023

Stand Variable	Stand 'P'	
1. Dominant species/Codominant species	L. Styraciflua, P. Serotina, Q. Palustris	
2. Successional stage	Early-Mid	
3. Basal area in s.f. per acre	110	
4. Size class of dominant species	12-29.9"	
5. Percent of canopy closure	70%	
6. Number of tree species per acre	8	
7. Common understory species per acre	F. Grandiflolia, P. Serotina, S. Albidum	
8. Percent of understory cover 3' to 20' tall	20%	
9. Number of woody plant species 3' to 20' tall	8	
10. Common herbaceous species 0' to 3' tall	Carex ssp.	
11. Percent of herbaceous & woody plant cover 0' to 3' tall	<10%	
12. List of major invasive plant species & percent of cover	None	
13. Number of standing dead trees 6" dbh or greater	0	
14. Comments Sheet_ of _		

Forest Stand Summary Worksheet **C:2**

EXTERIOR RENDERING

NOT FOR CONSTRUCTION

PLOT DATE:
9/1/2023 3:11:22 PM

HKS

ARCHITECT
HKS, Inc.
1250 Eye Street NW, Suite 600
Washington, D.C. 20005

INTERIORS
HKS, Inc.
1250 Eye Street NW, Suite 600
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Annapolis, MD 21401

CIVIL
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Towson, MD 21286

MEP
Highland Associates
102 Highland Avenue
Clarks Summit, PA 18411

STRUCTURAL
O'Donnell & Naccarato
111 South Independence Mall East
Suite 950
Philadelphia, PA 19106-2524

LANDSCAPE
Mahan Rykiel Associates
The Stueff Silver Building
800 Wyman Park Drive, Suite 100
Baltimore, MD 21211

FOODSERVICE DESIGN
VisionBuilders Design
1515 Shopton Rd, Suite 104
Charlotte, NC

SHORE HEALTH
UNIVERSITY OF MARYLAND
MEDICAL SYSTEM

Shore Regional Medical Center

OWNER
University of Maryland Health System
250 W. Pratt Street
Suite 2400
Baltimore, MD 21201

Shore Health System
219 S. Washington Street
Easton, MD 21601

OWNER'S CONSULTANT
Covalus
901 Main Street
Suite 4100
Dallas, TX 75202

REGISTRATION/STAMP

STATE OF MARYLAND
DAVID K. WU
21048
REGISTERED ARCHITECT

SEPTEMBER 05, 2023

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LISCENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.

LISCENSE NUMBER: 21048
EXPIRATION DATE: MARCH 01, 2024

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
EXTERIOR RENDERING

SHEET NO.
1 OF 1

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APPENDIX B

SKETCH PLAN
SUBMITTAL CHECKLIST

NOTE: **THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.**

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER "N/A".

1. Location map, ✓
2. Boundary, ✓
3. Topography, ✓
4. General proposed land uses drawn to scale, and ✓
5. The Forest Stand Delineation as detailed in the Town of Easton's Forest Conservation Ordinance. ✓
6. The location of any easements, rights-of-way or any other encumbrances which pertain to the property subject to the site plan review. ✓
7. Conditions of concern, for example, water courses, wetlands, floodplains, or other environmentally sensitive features. ✓
8. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks. ✓
9. General location and description (r.e. intended function, proposed species, etc.) of proposed landscaping. ✓
10. Location of parking including layout and landscaping. ✓
11. Conceptual building elevations or renderings illustrating the character, scale, and materials of all proposed structures. Such elevations or renderings shall be sealed by a licensed professional as described above. ✓
12. A statement describing the extent to which the application complies with the Recommended Design Principles for Easton set forth on pages 29-31 of the Comprehensive Plan. ✓

SITE DATA

OWNER/DEVELOPER: SHORE HEALTH SYSTEM INC.
UNIVERSITY OF MARYLAND MEDICAL SYSTEM
219 SOUTH WASHINGTON STREET
EASTON, MD 21601

PROPERTY: TAX MAP 17, PARCEL 129

TAX ACCOUNT: 113771, 198769, 198770, 198771, 198772, 198773, 198774, 198775, 198776, 198777, 198778

PLAT: 83/458

SITE AREA: 236.15 ACRES±

ZONING: RH DISTRICT - REGIONAL HEALTHCARE DISTRICT

EXISTING USE: AGRICULTURAL AND FOREST

PROPOSED USE: MEDICAL CENTER

TOTAL BUILDING FOOTPRINT COVERAGE: 158,500 SF± = 4.7% ; 40% PERMITTED

BUILDING HEIGHT: 93'-4" ; 110' PERMITTED

REQUIRED PARKING: HOSPITAL: 1 PARKING SPACE PER 600 SF
PHASE 1: 340,890 SF± / 600 = 596
MEDICAL OFFICE: 1 PARKING SPACE PER 250 SF
PHASE 1: 58,300 SF± / 250 = 234
PHASE 2: 30,000 SF± / 250 = 120
TOTAL REQUIRED: 923 SPACES

NOTE: THE CENTRAL UTILITY PLANT (CUP) AREA IS NOT INCLUDED WITHIN THE REQUIRED PARKING COUNTS

PROPOSED PARKING: 1,163 SPACES PROVIDED (SEE PHASE / LOT BREAKDOWN ON SHEET 3)

REQUIRED BICYCLE PARKING: HOSPITAL: 1 BIKE SPACE PER 20 PARKING SPACES
PHASE 1: 612 SPACES / 20 SPACES = 31
PHASE 2: 317 SPACES / 20 SPACES = 16
MEDICAL OFFICE: 1 BIKE SPACE PER 10 PARKING SPACES
PHASE 1: 234 SPACES / 10 SPACES = 24
TOTAL REQUIRED = 71 BIKE SPACES

PROPOSED BIKE PARKING: 80 BIKE SPACES

REFUSE/TRASH: COMPACTOR AND DUMPSTER LOCATED IN REAR OF HOSPITAL WITHIN THE LOADING DOCK AREA

STORMWATER MANAGEMENT: QUALITY MANAGEMENT IS PROVIDED IN MICRO-BIORETENTION FACILITIES, SUBMERGED GRAVEL WETLANDS, SWALES, AND PERVIOUS PAVING THROUGHOUT THE SITE. QUANTITY MANAGEMENT PROVIDED IN 5 EXTENDED DETENTION FACILITIES.

LANDSCAPE REQUIREMENTS SUMMARY: SECTION 1015.6 E:

1A. TREES REQUIRED BASED ON AREAS OF OVER 100,00 SF:1 TREE/ 2500 SF

TOTAL TREES REQUIRED
PHASE 1 SITE AREA: 1,573,064 SF / 2500 = 630 TREES
PHASE 2 SITE AREA: 167,321 SF / 2500 = 67 TREES
TOTAL TREES PROVIDED: 697 TREES

2A. STREET TREES - 1 SHADE/CANOPY TREE PER 35' OF CENTERLINE LENGTH

MEDICAL CENTER PARKWAY CENTERLINE LENGTH: 3420' / 35' = 98 TREES
STREET TREES PROVIDED: 98 TREES

2B. INTERIOR PARKING LOT PLANTINGS - 1 TREE PER 7.5 PARKING SPACES

PHASE 1 PARKING SPACES: 846 / 7.5 = 113 TREES
PHASE 2 PARKING SPACES: 317 / 7.5 = 43 TREES
PARKING LOT TREES PROVIDED: 156 TREES

2C. PARKING LOT HEDGE: REQUIRED ALONG PARKING AREAS FRONTING MEDICAL CENTER PARKWAY

SHRUBS SPACED TO FORM A CONTINUOUS 42" HIGH EVERGREEN HEDGE WITHIN 5 YEARS:
SHRUBS CANNOT BE PROVIDED IN THIS AREA SINCE SHRUB BEDS WILL IMPEDE DRAINAGE TO ADJACENT ROADWAY SWALES. WE WILL COORDINATE WITH THE TOWN OF EASTON AND SHS ON APPROPRIATE PREFERRED LANDSCAPE TREATMENTS OF BIOSWALES AND BIORETENTION AREAS THROUGHOUT THE SITE.

2D. BUILDING FAÇADE PLANTINGS - 1 TREE PER 50' OF FRONT BUILDING FAÇADE, LANDSCAPE BEDS COVERING 25% OF FAÇADE (5' MIN. WIDTH)

FAÇADE LENGTH: 740' / 50' = 15 TREES

TREES PROVIDED: AS REQUIRED. NOTE: DETAILED PLANTING PLAN INDICATING PROPOSED TREES, SHRUBS, AND GROUNDCOVERS WILL BE PREPARED FOR THE BUILDING PERIMETER AND SITE AMENITY AREAS DURING THE NEXT DESIGN PHASE.

2E. SERVICE/LOADING AREAS

PROVIDE MINIMUM 6' HIGH ARCHITECTURALLY COMPATIBLE WALL OR FENCE WITH 50% OF FACE PLANTED WITH EVERGREEN TREES OR SHRUBS.

A SOLID 6' HIGH FENCE AND EVERGREEN PLANTINGS WILL BE PROVIDED TO SCREEN ON-SITE SERVICE AREAS.

2F. SHRUB AND GROUNDCOVER PLANTINGS

SHRUB AND GROUNDCOVER PLANTINGS SHALL BE INCORPORATED INTO SITE IN BEDS FOR OVERALL LANDSCAPE APPEARANCE AS INDICATED UNDER 2D ABOVE.

2G. BUFFERYARDS REQUIRED PER 1015.7E

SHOULD NOT BE REQUIRED - TO BE CONFIRMED WITH TOWN OF EASTON.

COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE

1. "THE COLORS, DESIGNS AND MATERIAL USED THROUGHOUT ANY RH DISTRICT SHOULD BE COMPLEMENTARY TO ESTABLISH AND MAINTAIN A VISUALLY-COORDINATED CAMPUS APPEARANCE WITH A RECOGNIZABLE IMAGE AS A DISTINCT PLACE WHILE MAINTAINING A DESIGN THAT IS APPROPRIATE TO THE CONTEXT OF EASTON. INTRIGUING DESIGN CHARACTER SHOULD BE ENCOURAGED THROUGH THE CREATIVE USE OF MATERIALS AND DESIGN DETAILS. BUILDING ELEMENTS SHOULD CREATE FOCAL POINTS AND ESTABLISH HIERARCHY. ROOFTOP MECHANICAL EQUIPMENT SHOULD BE VARIED AND ARTICULATED TO VISUALLY AND DIMENSIONALLY INTERRUPT THE BULK OF THE BUILDINGS. COLOR SCHEMES SHOULD TIE BUILDING ELEMENTS TOGETHER, RELATE SEPARATE BUILDINGS WITHIN AN RH DISTRICT AND SHOULD BE USED TO ENHANCE THE ARCHITECTURAL FORM OF A BUILDING."

   SITE AND BUILDING DESIGNS WILL REINFORCE A RELATIONSHIP WITH THE NATURAL ENVIRONMENT BY CREATING AN ORGANIC SERIES OF FORMS ALONG PUBLIC AREAS THAT ARE NOT REVEALED IN THE SINGLE VIEWING OF A LARGE FACADE, BUT RATHER CAN BE SLOWLY EXPLORED AS ONE CIRCUMNAVIGATES THE FACILITY.

   THE BUILDING MATERIALS, PLANNED TO CONSIST PRIMARILY OF MASONRY, GLASS AND METAL, WILL REINFORCE THE HIERARCHY OF THE FORMS AND HELP TO TIE THE OVERALL COMPOSITION TO THE DESIGN CONCEPT. THE OVERLAY OF A COORDINATED COLOR SCHEME AND DETAILS PROPORTIONED TO THE INDIVIDUAL MASSES RATHER THAN THE OVERALL BULK OF THE STRUCTURE, WILL RECALL THE CHARACTER OF THE PEDESTRIAN STREETSCAPE IN EASTON.

2. "ACCESSORY STRUCTURES, SERVICE AREAS AND MECHANICAL EQUIPMENT SHOULD BE DESIGNED AS INTEGRAL COMPONENTS OF THE SITE."

   ACCESSORY STRUCTURES, SERVICE AREAS AND MECHANICAL EQUIPMENT WILL BE TREATED WITH THE SAME DESIGN PRIORITY TO AESTHETICALLY BLEND IN WITH THE SURROUNDING ARCHITECTURE. MECHANICAL EQUIPMENT ON THE ROOFTOPS WILL BE SCREENED IN A COMPLIMENTARY FASHION TO THE BUILDINGS AND WILL PROVIDE VISUAL HIERARCHICAL VARIATION. GROUND LEVEL EQUIPMENT WILL BE SEAMLESSLY INTEGRATED INTO THE FACADE DESIGN, HIDDEN FROM MOST PUBLIC VIEWS AND INTEGRATED INTO LANDSCAPING TO FURTHER ITS BLENDING INTO THE CAMPUS. ALL ACCESSORY STRUCTURES WILL BE CLAD IN THE SAME BLEND OF MATERIALS AS THE MAIN OCCUPIED STRUCTURES.

3. "PEDESTRIAN ACCESS SHOULD BE PROVIDED AND INCORPORATED INTO THE SITE AND BUILDING DESIGN. LANDSCAPED, TREE-LINED WALKWAYS SHOULD BE USED AS CONNECTIONS BETWEEN BUILDINGS, BUILDINGS TO STREETS AND BUILDINGS TO PARKING AREAS. SITE DESIGN SHOULD INCORPORATE RECESSED SITTING AREAS INTO THE WALK OR PATHWAY SYSTEM."

   THE ROADWAYS AND PEDESTRIAN WALKWAYS WILL BE PLANNED TO TAKE INDIRECT PATHS AS VISITORS APPROACH THE BUILDING, INVITING AN OPPORTUNITY TO EXPLORE THE UNIQUE FEATURES OF THE SITE. THE TREE-LINED STREETS AND PEDESTRIAN PATHWAYS WILL CREATE A CANOPY AS THE TREES MATURE, FURTHER ENHANCING THE GENTEEL CHARACTER OF THE INTERNAL STREETSCAPE ON THE CAMPUS.

   ALONG THE PEDESTRIAN CORRIDORS THAT LEAD FROM THE PARKING AREAS TO THE ENTRANCES, THERE WILL BE HARDSCAPED SITTING AREAS WITH BENCHES AND OTHER SITE FURNITURE.

4. "LANDSCAPING SHOULD CREATE AND DEFINE STREET IMAGE, ENTRANCEWAYS, SCREEN STORAGE AND LOADING AREAS, PROVIDE BUFFERS ADJACENT TO RESIDENTIAL USES, SHADE PARKING LOTS AND INTEGRATE THE BUILDING DESIGN WITH THE SITE DESIGN."

   A SERIES OF PEDESTRIAN TRAILS AND PATHS, WEAVING THROUGH BIO-SWALES WITH NATIVE VEGETATION, WILL SERVE TO PROVIDE VISUAL RELIEF FROM THE SCREENED PARKING LOTS, WHICH WILL BE PLANNED IN SMALLER MODULES, DEFINED BY ZONES OF LANDSCAPING THAT WILL PROVIDE SHADE AND STRENGTHEN THE CHARACTER OF THE SITE. SCREENING THROUGH THE USE OF PLANT MATERIALS AND BERMING WILL ALSO BE USED TO BUFFER THE PROJECT FROM THE ADJACENT RESIDENTIAL DEVELOPMENT.

5. "WHERE APPROPRIATE, OPEN SPACE AMENITIES SHOULD BE INCLUDED AS PART OF THE OVERALL SITE PLAN BY PROVIDING SMALL AREAS FOR ACTIVE OR PASSIVE USE BY EMPLOYEES SUCH AS PICNIC TABLES, BENCHES AND OTHER AREAS FOR SITTING, EATING OR MEETING. SPACES BETWEEN TO HOSPITAL AND ADJACENT BUILDINGS CONSTRUCTED WITH REDUCED SETBACKS SHOULD INCLUDE A COURTYARD OR OTHER PEDESTRIAN-ORIENTED SITE FEATURE."

   THE HOSPITAL STRUCTURE WILL BE ENCIRCLED BY LANDSCAPED ZONES THAT WILL PROVIDE VISUAL RELIEF IN THE PARKING LOTS. HARDSCAPING MATERIALS FOR THE WALKS AND PATIO SPACES WILL VARY IN COLOR AND TEXTURE AND WILL FURTHER BE DEFINED BY SITE FURNITURE. THESE SPACES WILL BE DESIGNED TO EMULATE THE CHARACTER OFTEN FOUND AROUND THE EASTERN SHORE TO CELEBRATE THE INTERSECTION OF NATURAL SPACES WITH THE BUILT ENVIRONMENT. THE FOCAL POINT OF THIS LANDSCAPED ZONE WILL BE A "HEALING GARDEN"; A PLACE OF PERSONAL CONTEMPLATION AND GROUP SUPPORT THAT WILL BE THE PHYSICAL EMBODIMENT OF THE NOTION HAT HEALTH IS A HOLISTIC PROCESS THAT REQUIRES THE REPLANISHMENT OF NOT JUST THE BODY, BUT ALSO THE MIND AND SPIRIT.

6. "CIRCULATION AND PARKING SHOULD REINFORCE SAFE AND EFFICIENT PEDESTRIAN AND VEHICULAR MOVEMENT. THE MAIN ENTRANCE SHOULD SERVE AS THE DOMINANT INGRESS AND EGRESS POINTS FOR THE DISTRICT. CURB CUTS SHOULD BE CONSOLIDATED TO THE EXTENT PRACTICABLE."

   CIRCULATION AND PARKING PATTERNS WILL BE ORGANIZED AROUND FUNCTIONALLY DISTINCT ENTRANCES AND PARKING ZONES. FOR EXAMPLE, VISITORS TO THE HOSPITAL FACILITY WILL BE SEPARATED FROM EMERGENCY AND SERVICE TRAFFIC. TO PROTECT PEDESTRIANS SAFETY, WALKING PATHS WILL BE CLEARLY IDENTIFIED WITHIN PARKING LOTS TO SEPARATE PEDESTRIANS FROM VEHICULAR TRAFFIC.

7. "SIGNAGE SHOULD SERVE AS A FOCAL POINT FOR INFORMATION TO IDENTIFY THE LOCATION AND NATURE OF USES WITHIN AN RH DISTRICT. SIGNAGE DESIGN SHOULD IMPROVE THE THE VISUAL CONTINUITY OF THE AREA; IT SHOULD NOT SERVE AS A DISTRACTION. THE DESIGN AND MATERIALS OF A SIGN SHOULD COMPLEMENT AND BE SIMILAR TO THOSE USED ON THE BUILDING."

   IDENTITY AND WAYFINDING SIGNS ARE NECESSARY ON A REGIONAL HEALTHCARE CAMPUS TO EFFICIENTLY GUIDE VISITORS TO AND FROM THEIR SPECIFIC DESTINATIONS. THE SIGNAGE FOR THE CAMPUS WILL CUSTOM DESIGNED TO ADD TO THE CHARACTER OF THE LANDSCAPE DESIGN, USING SIMILAR MATERIALS SUCH AS LOW MASONRY WALLS IN THE HARDSCAPED AREAS AND A COLOR PALATE COMPLIMENTARY TO THE HOSPITAL BUILDING.

8. "A BUS SHELTER (OR SHELTERS) SHALL BE PROVIDED TO AFFORD BUS RIDERS THE OPPORTUNITY TO WAIT FOR THEIR BUS IN A STRUCTURE THAT PROTECTS THEM FROM INCLEMENT WEATHER. THE LOCATION OF SUCH SHELTER(S) SHALL BE SHOWN ON THE SITE PLAN AT THE SKETCH PLAN LEVEL."

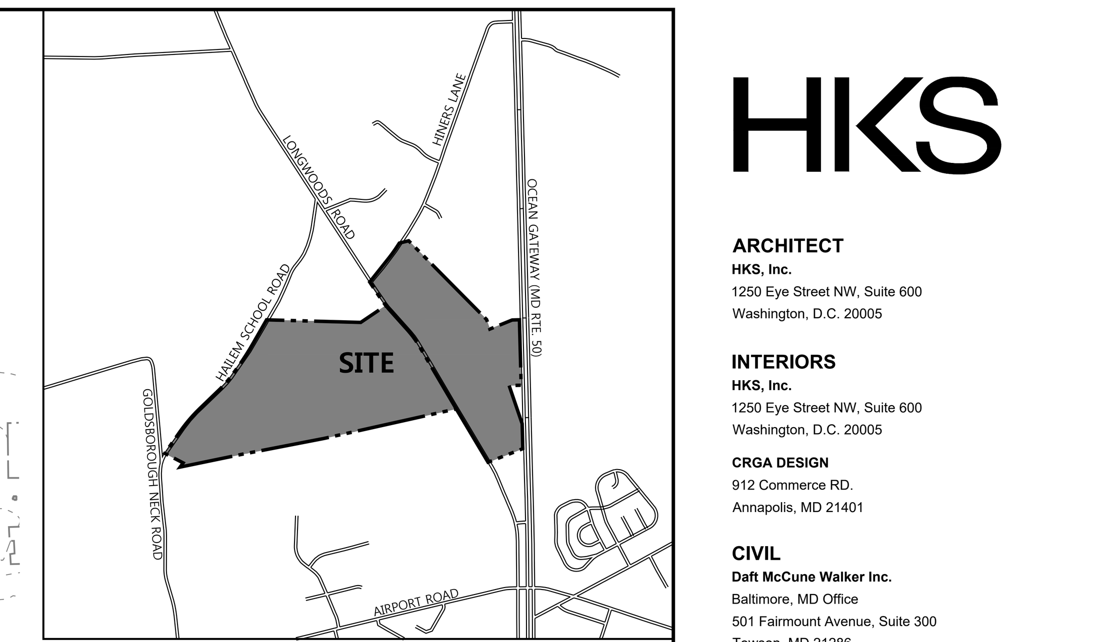
   THE BUS STOP WILL BE AT THE MAIN ENTRANCE OF THE FACILITY. THE CANOPY AT THE MAIN ENTRANCE WILL SERVE AS THE SHELTER TO PROTECT THE BUS RIDERS FROM INCLEMENT WEATHER.

9. "LIGHTING FIXTURES SHOULD BE DESIGNED TO PROVIDE CONTINUITY WITH AN RH DISTRICT. LIGHTING LEVELS SHOULD BE APPROPRIATE FOR THE USE PROPOSED. THE ILLUMINATION OF BUILDINGS AND SITE FEATURES (PARKING LOTS, WALKWAYS, ENTRANCES, ETC.) SHOULD NOT EXCEED THE NEEDED LEVEL AND SHOULD BE APPROPRIATELY SIZED FOR ITS PURPOSE."

   AN ILLUMINATION BEACON/TOWER ELEMENT ABOUT THE MAIN ENTRANCE MAY BE USED TO SERVE AS A WELCOMING GESTURE FROM A DISTANCE AND PROVIDE A UNIFIED WAYFINDING ELEMENT FOR THE ENTIRE CAMPUS. SITE LIGHTING WILL BE DESIGNED USING A COHESIVE VARIETY OF FIXTURES AND LIGHTING LEVELS TO MINIMIZE NIGHT SKY ILLUMINATION WHILE HIGHLIGHTING ARCHITECTURAL AND SITE FEATURES AND PROVIDING FOR THE SAFETY OF VISITORS AND EMPLOYEES. PARKING LOT LIGHTING WILL BE HOODED TO REDUCE LIGHT POLLUTION AND PEDESTRIAN LIGHTS WILL BE SCALED APPROPIATELY AND WILL BE SELECTED TO FIT THE CONTEXT OF THE OVERALL DESIGN CONCEPT.

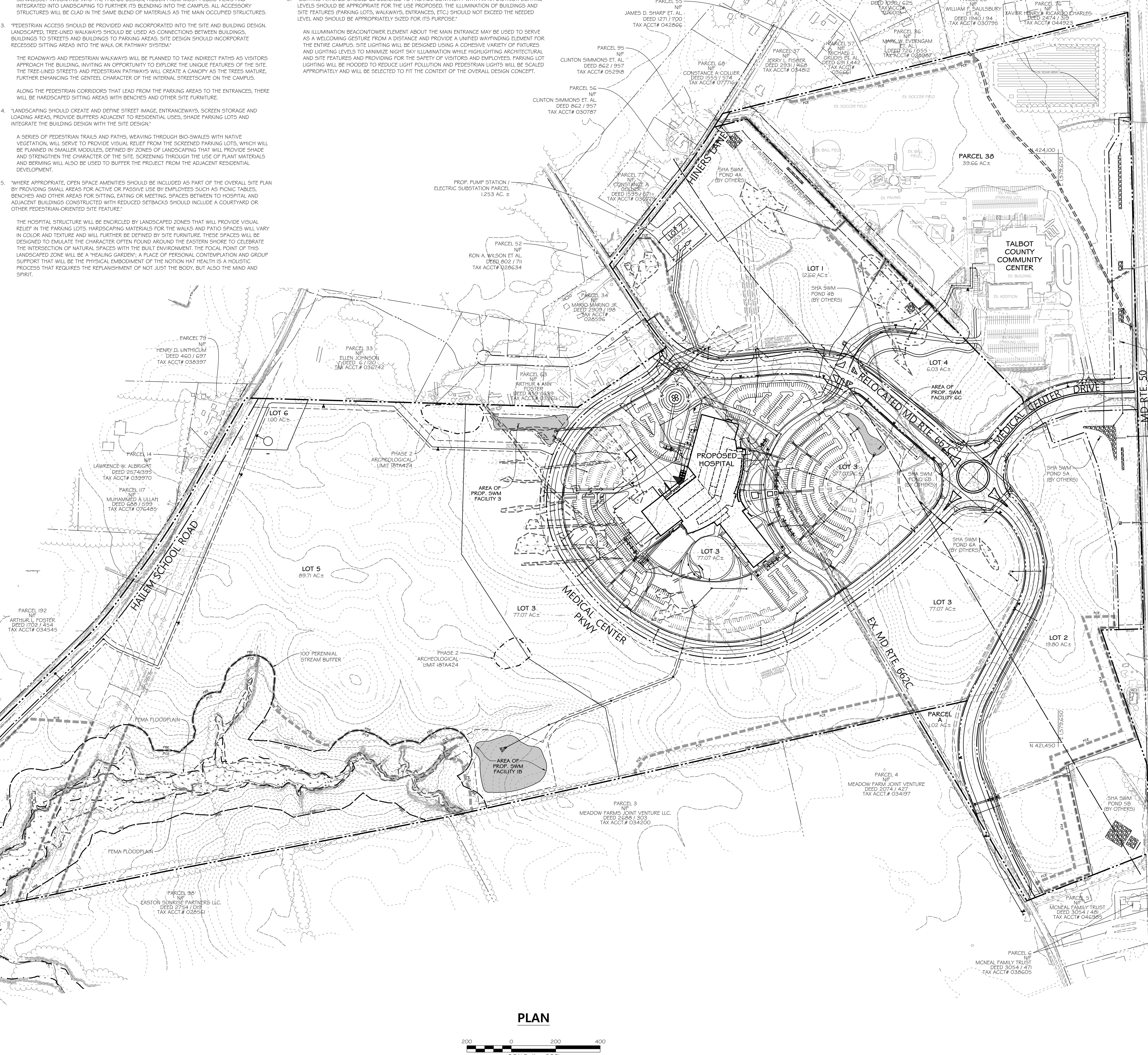
NOTES:

1. THIS SKETCH PLAN DETAILS PHASE 1 AND PHASE 2 OF THE MEDICAL CENTER IMPROVEMENTS, THE RELOCATION OF MD RTE 662C, AND THE MODIFIED ENTRANCES INTO THE TALBOT COUNTY COMMUNITY CENTER.
2. PHASE 2 OF THE HOSPITAL WILL POTENTIALLY BE 1-FLOOR ADDED TO THE MEDICAL OFFICE BUILDING FOOTPRINT.
3. DESIGN AND INSTALLATION OF LIGHTING, SIDEWALKS AND TREES ALONG THE OUTSIDE OF MEDICAL CENTER PARKWAY TO COINCIDE WITH FUTURE DEVELOPMENT OF THE PROPERTY.
4. MEDICAL CENTER PARKWAY SHALL BE A PRIVATE ROAD.
5. ALL SWM FACILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED.
6. SWM FACILITY 1B PROVIDES 2, 10, AND 100 YEAR MANAGEMENT. SWM FACILITIES 3 AND 6C PROVIDE 2 AND 10 YEAR MANAGEMENT.
7. SWM ESD PRACTICES ARE PROVIDED THROUGHOUT THE SITE.
8. ALL PARKING SPACES WILL HAVE A CONCRETE WHEEL STOP (SEE DETAIL ON SHEET 3).
9. COORDINATION WITH MDE AND THE CORP OF ENGINEERS IS UNDERWAY TO OBTAIN A PERMIT FOR WETLAND AND BUFFER IMPACTS.
10. GEOTHERMAL ENERGY WILL BE UTILIZED ON THIS PROJECT. WELL LOCATIONS WILL BE DETERMINED AT A LATER TIME, DURING DEVELOPMENT SITE PLAN REVIEW. WELL LOCATIONS WILL BE COORDINATED WITH THE PROPOSED UTILITIES AND SWM FEATURES.



VICINITY MAP

SCALE: 1" = 2,000'



PLAN

200 0 200 400
SCALE: 1" = 200'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- RIGHT OF WAY
- EX. LOT LINE
- EX. CENTERLINE
- BUILDING SETBACK
- EX. EASEMENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- EX. TREELINE
- FBE — FOREST BUFFER
- FCE — FOREST CONSERVATION
- STREAM CENTERLINE
- STREAM EDGE
- STREAM BUFFER
- FLOODPLAIN
- EX. WETLAND
- EX. WETLAND BUFFER
- PROP. RIGHT OF WAY
- PROP. CENTERLINE
- PROP. BUILDING
- PROP. ROAD
- PROP. CHAINLINK FENCE
- PROP. FLIGHT PATH
- 18" D. — PROP. STORM DRAIN
- 8" S. — PROP. SEWER
- 8" W. — PROP. WATER
- PROP. SWM POND

SHEET INDEX	
NO.	SHEET NAME
1	OVERALL PROPERTY PLAN
2	OVERALL SITE PLAN
3	DETAILED SITE PLAN
4	LANDSCAPE AND LIGHTING PLAN
5	FOREST STAND DELINEATION PLAN
6	FOREST STAND DELINEATION PLAN
7	FOREST STAND DELINEATION PLAN

DATA SOURCE:

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON THE RESULTS OF FLOWN PHOTOGRAMMETRY PROVIDED BY AXIS GEOSPATIAL LLC, DATED MARCH 3, 2009. EXISTING TOPOGRAPHY SHOWN OUTSIDE THE PROPERTY IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006. EXISTING SOILS AND ZONING SHOWN HEREON IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006.
2. PROPERTY LINE(S) SHOWN HEREON ARE BASED UPON THE RESULTS OF A FIELD RUN SURVEY PERFORMED BY DMW, INC. ON 04/15/2009.
3. 100-YEAR FLOODPLAIN INFORMATION SHOWN HEREON IS PROVIDED BY FEMA FLOOD MAP SERVICE CENTER HTTP://MSC.FEMA.GOV ACCESSED 07/12/2023, CONSISTENT WITH FIRM NUMBER 24041C0180D, EFFECTIVE DATE SEPTEMBER 19, 2007.
4. THE LIMITS OF THE REGULATED RESOURCES (WATERS OF THE US, NATIONAL WETLANDS, AND FARMED WETLANDS) SHOWN HEREON ARE FIELD LOCATED AND APPROVED BY MDE AND THE USACE PER FIELD REVIEWS CONDUCTED IN OCTOBER 2009.

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NOT FOR CONSTRUCTION

PLOT DATE:
A:\09035\09035.N6\ENG\ICAD FILES\SHEET FILES\09035.N6_SP1.DWG 9/5/2023 10:01 AM gothitis

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Shore Health System
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Easton, MD 21601

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FM Global
2100 Reston Parkway, Suite 600
Reston, VA 20191

MCS NAD83 (2011)

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 28823, EXPIRATION DATE: 01/07/2024.

STATE OF MARYLAND KRISTY BISCHOFF PROFESSIONAL ENGINEER
9/5/23

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
OVERALL PROPERTY PLAN

SHEET NO.
1 OF 7

PLAN

SCALE: 1" = 100'

NOT FOR CONSTRUCTION

PLOT DATE:
K:\0900\09035 MERIDIAN\CAD FILES\SHORE MC SP2.DWG 9/5/2023 10:00 AM jpotts

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GRIDS NORTH

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LICENSE NO. 28823, EXPIRATION DATE: 01/07/2024.

STATE OF MARYLAND
KELLY M. BOULD
LICENSED PROFESSIONAL ENGINEER
9/5/23

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
OVERALL SITE PLAN

SHEET NO.
2 OF 7

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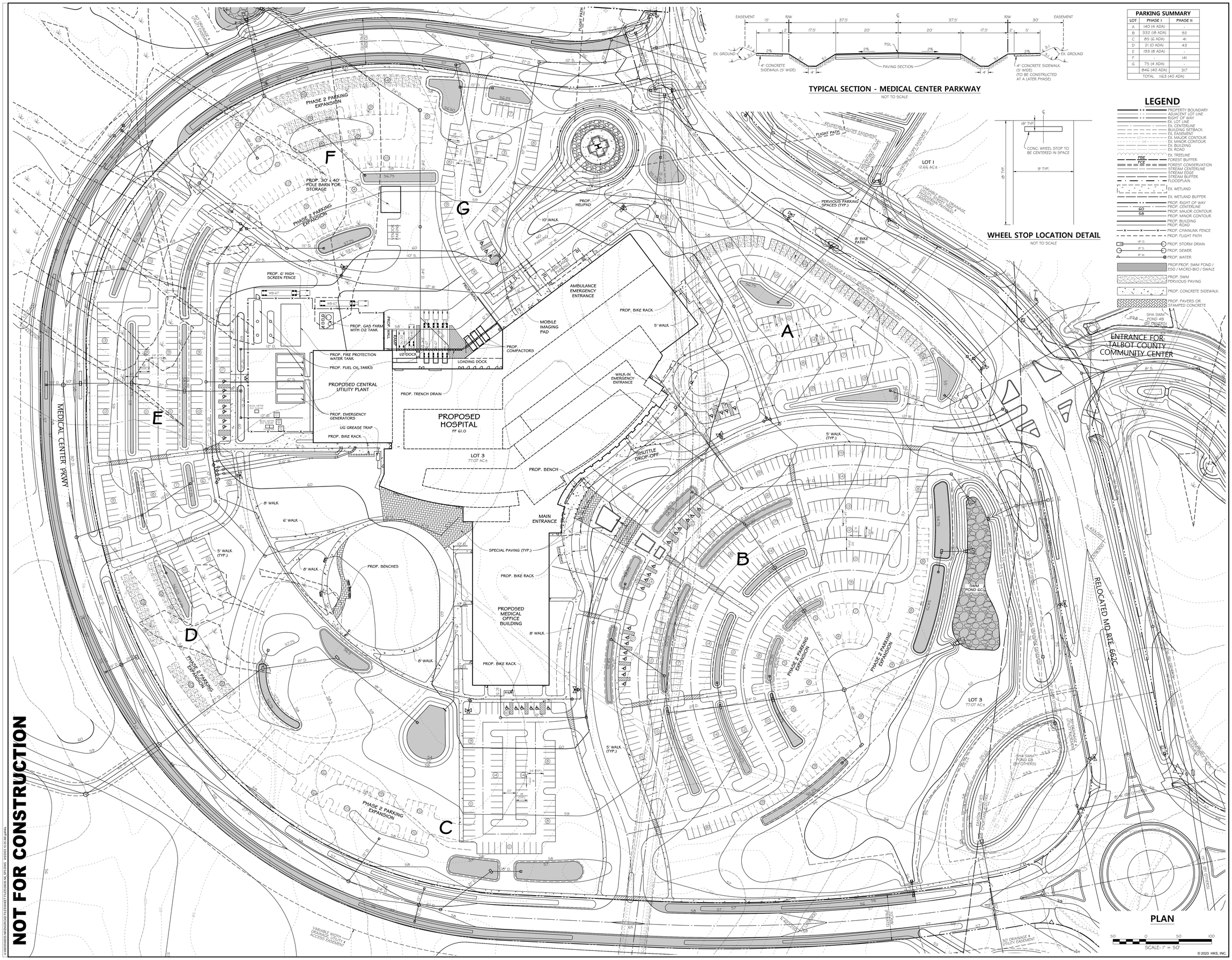

TYPICAL SECTION - MEDICAL CENTER PARKWAY

NOT TO SCALE

PARKING SUMMARY		
LOT	PHASE I	PHASE II
A	140 (4 ADA)	-
B	332 (8 ADA)	92
C	85 (6 ADA)	41
D	21 (0 ADA)	43
E	193 (8 ADA)	-
F	-	141
G	75 (4 ADA)	-
	846 (40 ADA)	317
TOTAL	1163 (40 ADA)	

WHEEL STOP LOCATION DETAIL

NOT TO SCALE

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- RIGHT OF WAY
- EX. LOT LINE
- EX. CENTERLINE
- BUILDING SETBACK
- EX. EASEMENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- EX. TREELINE
- FBE / FCE — FOREST BUFFER / FOREST CONSERVATION
- STREAM CENTERLINE
- STREAM EDGE
- STREAM BUFFER
- FLOODPLAIN
- EX. WETLAND
- EX. WETLAND BUFFER
- PROP. RIGHT OF WAY
- 60 — PROP. CENTERLINE
- 58 — PROP. MAJOR CONTOUR
- PROP. MINOR CONTOUR
- PROP. BUILDING
- PROP. ROAD
- PROP. CHAINLINK FENCE
- PROP. FLIGHT PATH
- 18" D. — PROP. STORM DRAIN
- 8" S. — PROP. SEWER
- 8" W. — PROP. WATER
- PROP. PROP. SWM POND / ESD / MICRO-BIO / SWALE
- PROP. SWM PERVIOUS PAVING
- PROP. CONCRETE SIDEWALK
- PROP. PAVERS OR STAMPED CONCRETE

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NORTH
MAGNETIC NORTH

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LICENSE NO. 28823 EXPIRATION DATE: 06/07/2024

STATE OF MARYLAND — KEITH M. BURNETT — PROFESSIONAL ENGINEER — 9/5/23

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER

19782.012 | 09035.N6

DATE

05 SEPTEMBER, 2023

ISSUE

SKETCH PLAN

SHEET TITLE

DETAILED SITE PLAN

SHEET NO.

3 OF 7

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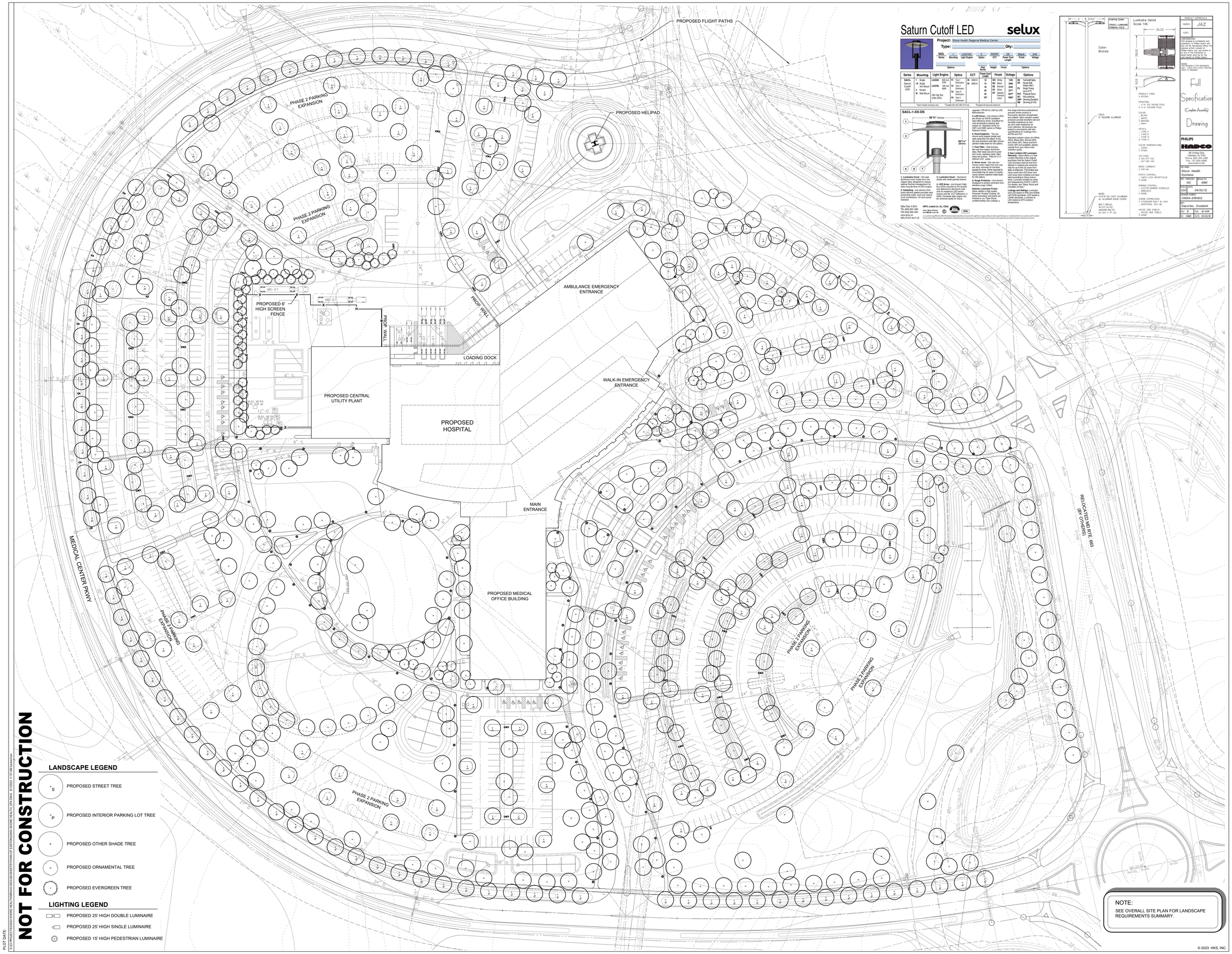
PLOT DATE:
X:\2019\09035.N6\DWG\N6D FILES\SHEET FILES\SHEET FILES\SHEET FILES\N6_SP3.DWG 9/5/2023 10:21 AM jgrimm



Saturn Cutoff LED

selux

Project: Shore Health Regional Medical Center

Type: **Qty:**

SACL	1	LG3700	2	5000K	2W	Black	240
Series	Mounting	Light Engine	Optics	CCT	Power Level Length	Finish	Voltage
Options			Pole Series	Height	Finish	Options	

Series	Mounting	Light Engine	Optics	CCT	Power Level Length	Finish	Voltage	Options
SACL Saturn Cutoff LED	**1** Single **1A** Single Arm Mount **2** Double **W** Wall Mount	**LG3500** 700 mA 25W **LG3700** 700 mA 50W (95 high flux white LEDs)	**W** Type I Distribution **N2** Type II Distribution **R2** Type III Distribution **R4** Type IV Distribution **M** Type V Distribution	**30** 3000 K **50** 5000 K	**1L** 1 **1S** 1 **1H** 1 **2L** 2 **2S** 2 **2H** 2 **3L** 3 **3S** 3 **3H** 3 **4L** 4 **4S** 4 **4H** 4	**BK** White **BL** Black **BZ** Bronze **SV** Silver **SP** Specify Partial Color	**120** 120 **208** 208 **240** 240 **277** 277 **347*** 347 **480*** 480 **DMT** Dimming (0-10V) **DM** Dimming (DALI)	**DS** Full CutOff Optics **HS** House Side Shield (180°) **SS** Single Fusing (1A 277V) **RCT** Remote Photocell Receptacle **WG** Wire Guard (Stainless Steel) **DF** Dimming (0-10V) Driver

1 and 2 Fixture mounting is axial. *Available with 120, 240, 277V only. *Fixtures with stay-dark ballast.

SACL-1-XX-DS

1. Luminaire Cover – Die cast aluminum cover made from low copper alloy, designed to ensure optimal heat dissipation and extra long life time of LED engine.

2. Gasketing – (not shown) One piece silicone gasket between cover and housing ensures dust and moisture at all connections. UV and ozone resistant.

Selux Corp. © 2012
TEL (845) 884-1900
FAX (845) 884-1401
www.selux.us
SACL-DTG01 (w-R1.15)

3. Luminaire Head – Aluminum shaft with white painted interior.

4. LED Array – (not shown) High flux LEDs mounted to PC boards and attached to aluminum heat sink. Optics are UV stable acrylic reverse and the CCT tolerance is 250K. Complete light engine can be removed easily for future upgrade. CRI 80 for LED by LED Manufacturer.

5. LED Driver – (not shown) LEDs are driven by RoHS compliant high-efficiency driver. Excellent for low ripple current and stable output ca. Standard drive IP20 and DMD option is Philips Xitanium IP66.

6. Hood Supports – Two aluminum arms support shade and hold luminaire in place. Arms are die cast aluminum,side filter (shown) painted matte black for DS option.

7. Pole Adapter – Luminaire housing is a single piece aluminum alloy, filter base secured to pole adapter with four stainless steel hex head set screws. Fitter for 3 5/7 (90mm) O.D. poles.

8. Pole Adapter Cover – Black aluminum cover made from low copper alloy, removes for tool-less access to pole adapter. Includes accessible tray for ease of maintenance (shown painted matte black for DS option).

9. Surge Protector – (not shown) Surge protector protects fixture from electrical surge (10kA).

Exterior Luminaire Finish – Black Matte Finish Is Selux Black Polyester Powder Coating. All Selux luminaires and poles are finished in a Selux QUALIFIED certified facility and undergo a five stage intensive pretreatment process where product is thoroughly cleaned, phosphated and primed. This pretreatment process provides excellent salt and humidity resistance as well as long lasting durability and color retention. All products are tested in accordance with test methods and standards from ASTM and PCI.

Standard exterior colors are White (BK), Black (BL), Bronze (BZ) and Silver (SV). Below premium colors (SP) are available; please specify when ordering. Below color selection guide.

5 Year Limited LED Luminaire Warranty – Selux offers a 5 Year Limited Warranty to the original purchaser of Selux LED luminaires. LED luminaires shall be free from defects in workmanship and material for up to five (5) years from date of shipment. Warranty covers only the LED driver and LED array when installed and operated in accordance with Selux specifications.Luminaire suitable for ambient temperatures of 50°C (122°F) per Selux LED Array Terms and Condition of Sale.

Listings and Ratings: Luminaire and LED fixtures to IP65 and IEC60598-2-3 Class I. LED array tested to LM-80 standards. Luminaire and LED tested at 25°C ambient temperature.

PRODUCT CODE:
X ROOND

MOUNTING:
4"=4" SQ. ROUND POLE
4'-4" SQUARE POLE

COLOR:
- BLACK
- WHITE
- BRONZE
- GRAY

OPTICS:
- TYPE I
- TYPE II
- TYPE IV
- TYPE V

COLOR TEMPERATURE:
- 4000K
- 5700K

VOLTAGE:
- 120-277 VAC
- 347-480 VAC

DRIVE CURRENT:
- 530 mA

PHOTO CONTROL:
- RECEPTACLE LOCK RECEPTACLE
- NONE

DIMMING CONTROL:
- CUSTOM DIMMING SCHEDULE
- 0-10V
- NONE

SURGE SUPPRESSION:
- STANDARD BUILT IN +3KV
- ADDITIONAL 10kV INL

HOUSE SIDE SHIELD:
- HOUSE SIDE SHIELD
- NONE

PRODUCT APPROVALS

MADCO	JAZ
COST:	

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NOTE:
DRAWING IS FOR REFERENCE ONLY - CHECK FOR LATEST REVISION PRIOR TO ORDERING

Full Specification (Complete Assembly) Drawing

PHILIPS
HADCO
58 Dorbay Drive
Stratham, Nh 03885
Phone: 800-305-1365
Fax: 603-772-9087
www.PhilipsLuma

SE MAC	Shore Health Systems
SP. NUMBER	142
DRAWN BY	GMK
LTR	DATE
0.00	04-02-12
DRAWING NUMBER	C9694-DW002
Exporter, Combish	
REV. #	FOL. 02-058
BY: GMR	DATE: 04-02-12

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REGISTRATION/STAMP

STATE OF MARYLAND
SCOTT JON RYKIEL
No. 631
LICENSED LANDSCAPE ARCHITECT
SEPTEMBER 05, 2023

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NUMBER: 631
EXPIRATION DATE: SEPTEMBER 21, 2023

TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
LANDSCAPE AND LIGHTING PLAN

SHEET NO.
4 OF 7

NOT FOR CONSTRUCTION

LANDSCAPE LEGEND

- PROPOSED STREET TREE
- PROPOSED INTERIOR PARKING LOT TREE
- PROPOSED OTHER SHADE TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED EVERGREEN TREE

LIGHTING LEGEND

- PROPOSED 25' HIGH DOUBLE LUMINAIRE
- PROPOSED 25' HIGH SINGLE LUMINAIRE
- PROPOSED 15' HIGH PEDESTRIAN LUMINAIRE

NOTE:
SEE OVERALL SITE PLAN FOR LANDSCAPE REQUIREMENTS SUMMARY.

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PLOT DATE:
S:\23 PROJECTS\2303 SHORE HEALTH\MAVUD 10\CAD\SHEETS\TOWN OF EASTON\2303 SHORE HEALTH_SPA.DWG 9/13/2023 11:37 AM kadamsuth

SPECIMEN TREE INVENTORY

KEY	BOTANICAL NAME	COMMON NAME	SIZE (DBH)	CONDITION	COMMENTS
1	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	30"	FAIR	
2	QUERCUS FALCATA	SOUTHERN RED OAK	39"	POOR	TRIPLE/ TRUNK ROT
3	QUERCUS RUBRA	NORTHERN RED OAK	37"	POOR	
4	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	32"	FAIR	DOUBLE
5	ACER RUBRUM	RED MAPLE	30.5"	FAIR	
6	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	35"	FAIR	
7	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	31"	GOOD	
8	QUERCUS ALBA	WHITE OAK	35"	POOR	
9	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	31"	GOOD	
10	QUERCUS PHELLOS	WILLOW OAK	43"	FAIR	
11	QUERCUS RUBRA	NORTHERN RED OAK	43"	GOOD	
12	QUERCUS FALCATA	SOUTHERN RED OAK	56"	FAIR	
13	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	42.5"	FAIR	
14	QUERCUS VELUTINA	BLACK OAK	41.5"	POOR	
15	QUERCUS ALBA	WHITE OAK	33.5"	GOOD	
16	FAGUS GRANDIFOLIA	AMERICAN BEECH	45.5"	GOOD	TWIN
17	PINUS TAEDA	LOBLOLLY PINE	32.5"	FAIR	
18	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
19	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
20	FAGUS GRANDIFOLIA	AMERICAN BEECH	35"	GOOD	
21	FAGUS GRANDIFOLIA	AMERICAN BEECH	40"	POOR	
22	QUERCUS VELUTINA	BLACK OAK	35.5"	GOOD	
23	ACER RUBRUM	RED MAPLE	33.5"	POOR	
24	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33"	GOOD	
25	ACER RUBRUM	RED MAPLE	40"	POOR	
26	QUERCUS ALBA	WHITE OAK	32.5"	FAIR	
27	ACER RUBRUM	RED MAPLE	37"	POOR	
28	QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	47.5"	GOOD	
29	QUERCUS ALBA	WHITE OAK	34"	GOOD	
30	FAGUS GRANDIFOLIA	AMERICAN BEECH	38"	GOOD	
31	FAGUS GRANDIFOLIA	AMERICAN BEECH	36"	GOOD	
32	QUERCUS ALBA	WHITE OAK	33"	GOOD	
33	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	32"	FAIR	
34	ACER RUBRUM	RED MAPLE	36.5"	GOOD	
35	QUERCUS VELUTINA	BLACK OAK	36"	GOOD	TWIN
36	QUERCUS VELUTINA	BLACK OAK	43"	POOR	
37	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37.5"	GOOD	
38	LIRIODENDRON TULIPIFERA	RED MAPLE	31"	GOOD	
39	ACER RUBRUM	RED MAPLE	42"	GOOD	
40	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	GOOD	
41	ACER RUBRUM	RED MAPLE	31.5"	GOOD	
42	ACER RUBRUM	RED MAPLE	31"	GOOD	
43	QUERCUS ALBA	WHITE OAK	34"	GOOD	
44	QUERCUS ALBA	WHITE OAK	35"	GOOD	
45	QUERCUS ALBA	WHITE OAK	32"	GOOD	
46	QUERCUS RUBRA	NORTHERN RED OAK	47"	GOOD	
47	QUERCUS ALBA	WHITE OAK	37"	GOOD	
48	QUERCUS ALBA	WHITE OAK	31"	GOOD	
49	FAGUS GRANDIFOLIA	AMERICAN BEECH	37"	FAIR	
50	FAGUS GRANDIFOLIA	AMERICAN BEECH	40"	GOOD	
51	QUERCUS VELUTINA	BLACK OAK	42"	GOOD	
52	QUERCUS VELUTINA	BLACK OAK	40"	GOOD	
53	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	42.5"	GOOD	
54	FAGUS GRANDIFOLIA	AMERICAN BEECH	35"	GOOD	
55	QUERCUS ALBA	WHITE OAK	30"	GOOD	
56	FAGUS GRANDIFOLIA	AMERICAN BEECH	36"	GOOD	
57	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
58	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
59	FAGUS GRANDIFOLIA	AMERICAN BEECH	37"	GOOD	
60	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
61	FAGUS GRANDIFOLIA	AMERICAN BEECH	38"	GOOD	
62	QUERCUS ALBA	WHITE OAK	32.5"	GOOD	
63	QUERCUS PALUSTRIS	PIN OAK	33"	GOOD	
64	QUERCUS PALUSTRIS	PIN OAK	31"	GOOD	
65	PRUNUS SEROTINA	WILD BLACK CHERRY	35"	POOR	
66	PRUNUS SEROTINA	WILD BLACK CHERRY	37"	POOR	
67	QUERCUS FALCATA	SOUTHERN RED OAK	45"	GOOD	
68	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	POOR	
69	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	GOOD	
70	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
71	QUERCUS VELUTINA	BLACK OAK	38"	FAIR	
72	JUGLANS NIGRA	BLACK WALNUT	52"	POOR	
73	FRAXINUS PENNSYLVANICA	GREEN ASH	31"	FAIR	
74	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32.5"	FAIR	

KEY	BOTANICAL NAME	COMMON NAME	SIZE (DBH)	CONDITION	COMMENTS
75	LIRIODENDRON TULIPIFERA	TULIP POPLAR	42"	FAIR	
76	QUERCUS VELUTINA	BLACK OAK	32"	FAIR	
77	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33"	POOR	
78	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
79	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
80	FAGUS GRANDIFOLIA	AMERICAN BEECH	30"	GOOD	
81	QUERCUS FALCATA	SOUTHERN RED OAK	55"	GOOD	
82	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
83	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
84	LIRIODENDRON TULIPIFERA	TULIP POPLAR	51"	FAIR	
85	ACER RUBRUM	RED MAPLE	36"	POOR	
86	QUERCUS FALCATA	SOUTHERN RED OAK	55"	GOOD	
87	LIRIODENDRON TULIPIFERA	TULIP POPLAR	34"	GOOD	
88	QUERCUS FALCATA	SOUTHERN RED OAK	45"	GOOD	
89	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
90	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
91	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
92	LIRIODENDRON TULIPIFERA	TULIP POPLAR	35"	FAIR	
93	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
94	ACER RUBRUM	RED MAPLE	33"	FAIR	
95	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	FAIR	
96	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
97	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	FAIR	
98	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	FAIR	
99	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	FAIR	
100	QUERCUS PALUSTRIS	PIN OAK	40"	FAIR	
101	QUERCUS FALCATA	SOUTHERN RED OAK	30"	FAIR	
102	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	32"	FAIR	
103	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
104	JUGLANS NIGRA	BLACK WALNUT	37"	FAIR	
105	QUERCUS VELUTINA	BLACK OAK	44.5"	FAIR	
106	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30.5"	POOR	
107	LIRIODENDRON TULIPIFERA	TULIP POPLAR	34"	POOR	
108	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	GOOD	
109	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	POOR	
110	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	GOOD	
111	ACER RUBRUM	RED MAPLE	33"	GOOD	
112	QUERCUS FALCATA	SOUTHERN RED OAK	37"	GOOD	TWIN

FOREST STAND SUMMARY TABLE

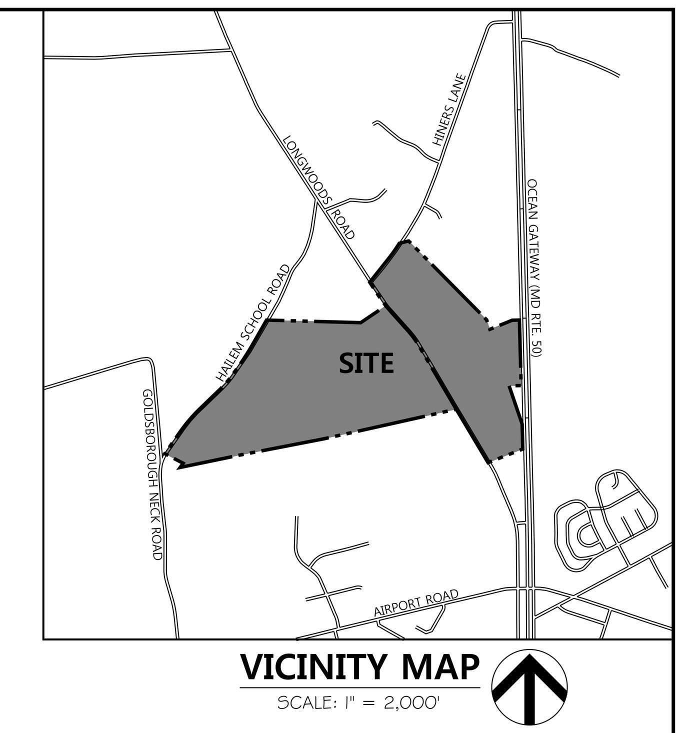
STAND	FOREST COVER TYPE	SIZE (±SF)	SIZE (±AC)	SERAL STAGE	CONDITION
A'	OAK/MAPLE/SWEETGUM/PINE	52,620	1.2	EARLY	FAIR
B'	CHERRY/KENTUCKY COFFEE/	17,490	0.4	EARLY	FAIR
C'	PINE/SWEETGUM/MAPLE/CHERRY	23,960	0.6	MID	FAIR
D'	BEECH/OAK/MAPLE/HICKORY	51,820	1.2	MID	GOOD
E'	BEECH/HICKORY/MAPLE	259,150	5.9	LATE	GOOD
F'	MAPLE/CHERRY/ELM/SWEETGUM	44,720	1.0	EARLY	FAIR
G'	SWEETGUM/MAPLE	21,930	0.5	EARLY	GOOD
H'	SWEETGUM/MAPLE	36,850	0.8	EARLY-MID	GOOD
J'	SWEETGUM/PINE/MAPLE/POPLAR	89,760	2.1	EARLY-MID	FAIR
K'	POPLAR/BEECH/CHERRY/OAK	34,090	0.8	MID	FAIR
L'	OAK/SWEETGUM/MAPLE	4,390	0.1	EARLY-MID	FAIR
M'	SWEETGUM/HICKORY	14,640	0.3	MID	GOOD
N'	MAPLE/SWEETGUM/OAK	19,990	0.5	MID	FAIR
O'	POPLAR/OAK	17,930	0.4	MID	GOOD
P'	SWEETGUM/CHERRY/OAK	47,150	1.1	EARLY-MID	FAIR
	TOTAL:	736,490	16.9		

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- 100-YR FLOODPLAIN
- SOILS
- DELINEATED FOREST STANDS
- EX. TREE LINE
- EX. WETLAND
- STREAM CENTERLINE
- FOREST STAND BREAK
- SPECIMEN TREE
- ≥25% STEEP SLOPES

SOILS TABLE

SYMBOL	SOIL NAME	SLOPE	K FACTOR	HYDRIC	COMMENTS
CoA	CORSICA MUCKY LOAM	0-2%	---	YES	
EmA	ELKTON SILT LOAM	0-2%	---	YES	
FacA	FALLSINGTON SANDY LOAM	0-2%	---	YES	
FgcA	FALLSINGTON LOAM	0-2%	0.32	YES	
HfB	HAMBROOK-SASSAFRAS COMPLEX	2-5%	0.32	NO	
HfC	HAMBROOK-SASSAFRAS COMPLEX	5-10%	0.32	NO	
IgB	INGLESIDE SANDY LOAM	2-5%	0.15	NO	
LgA	LENNI LOAM	0-2%	---	YES	
MtcA	MATTAPEX SILT LOAM	0-2%	0.49	NO	2-10% OTHELLO INCLUSIONS
MtcB	MATTAPEX SILT LOAM	2-5%	0.49	NO	2-10% OTHELLO INCLUSIONS
NsB	NASSAWANGO SILT LOAM	2-5%	0.49	NO	
WdcA	WOODSTOWN SANDY LOAM	0-2%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WdcB	WOODSTOWN SANDY LOAM	2-5%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WocA	WOODSTOWN LOAM	0-2%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
WocB	WOODSTOWN LOAM	2-5%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
Zk	ZEKIAH SILT LOAM	---	0.37	YES	



VICINITY MAP

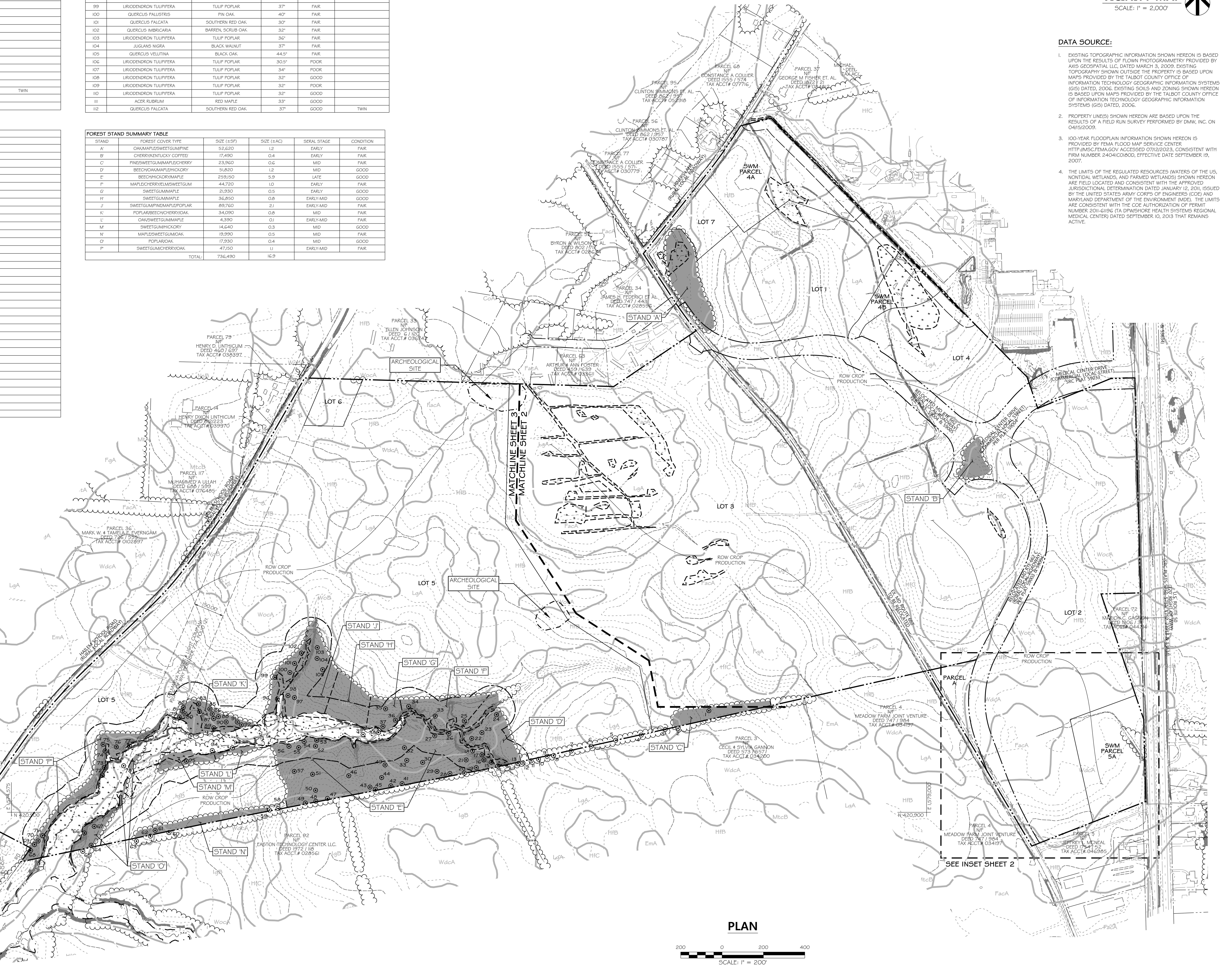
SCALE: 1" = 2,000'

DATA SOURCE:

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON THE RESULTS OF FLOWN PHOTOGRAMMETRY PROVIDED BY AXIS GEOSPATIAL LLC, DATED MARCH 3, 2009. EXISTING TOPOGRAPHY SHOWN OUTSIDE THE PROPERTY IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006. EXISTING SOILS AND ZONING SHOWN HEREON IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006.
2. PROPERTY LINE(S) SHOWN HEREON ARE BASED UPON THE RESULTS OF A FIELD RUN SURVEY PERFORMED BY DMW, INC. ON 04/15/2009.
3. 100-YEAR FLOODPLAIN INFORMATION SHOWN HEREON IS PROVIDED BY FEMA FLOOD MAP SERVICE CENTER HTTP://MSC.FEMA.GOV ACCESSED 07/12/2023, CONSISTENT WITH FIRM NUMBER 24041C0180D, EFFECTIVE DATE SEPTEMBER 19, 2007.
4. THE LIMITS OF THE REGULATED RESOURCES (WATERS OF THE US, NONTIDAL WETLANDS, AND FARMED WETLANDS) SHOWN HEREON ARE FIELD LOCATED AND CONSISTENT WITH THE APPROVED JURISDICTIONAL DETERMINATION DATED JANUARY 12, 2011, ISSUED BY THE UNITED STATES ARMY CORPS OF ENGINEERS (COE) AND MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE). THE LIMITS ARE CONSISTENT WITH THE COE AUTHORIZATION OF PERMIT NUMBER 2011-61196 (TA DPW/SHORE HEALTH SYSTEMS REGIONAL MEDICAL CENTER) DATED SEPTEMBER 10, 2013 THAT REMAINS ACTIVE.

PROPERTY DATA

PROPERTY OWNER:	SHORE HEALTH SYSTEM, INC. 219 S. WASHINGTON STREET EASTON, MD 21601
DEVELOPER/APPLICANT:	SHORE HEALTH SYSTEM, INC. UNIVERSITY OF MARYLAND MEDICAL SYSTEM 219 SOUTH WASHINGTON STREET EASTON, MD 21601
DESIGN CONSULTANT:	DAFT MCCUNE WALKER, INC. 501 FAIRMOUNT AVE. TOWSON, MD 21286 (410) 296-3333
TAX MAP/GRID:	17/23
TAX ACCT. NO:	01-113771, 198769, 198770, 198771, 198774, 198777, 198778
PARCEL:	129
ZONING:	RH - REGIONAL HEALTHCARE
ACREAGE:	±235.8 AC
EXISTING CONDITION:	UNDEVELOPED AGRICULTURAL



PLAN

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Clarks Summit, PA 18411

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Shore Health System
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Easton, MD 21601

OWNER'S CONSULTANT
FM Global
2100 Reston Parkway, Suite 600
Reston, VA 20191

MCS NAD83 (2011)

THIS PLAN HAS BEEN PREPARED BY ERIC J. CHODNICKI, A QUALIFIED PROFESSIONAL EMPLOYED WITH DAFT McCUNE WALKER, INC. WHO MEETS THE REQUIREMENTS OF COMAR 08.19.06.01.

SIGNATURE

DATE 09/05/23

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
FOREST STAND DELINEATION PLAN

SHEET NO.
5 OF 7

NOT FOR CONSTRUCTION

PLOT DATE:
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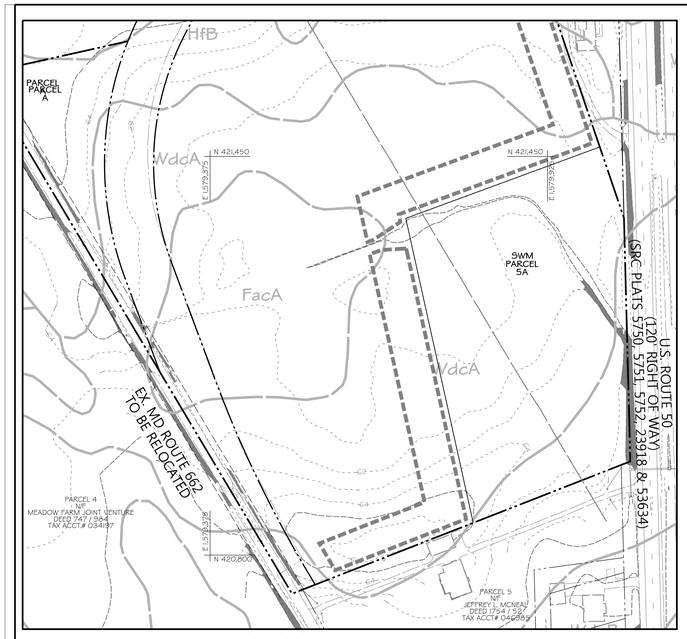

INSET

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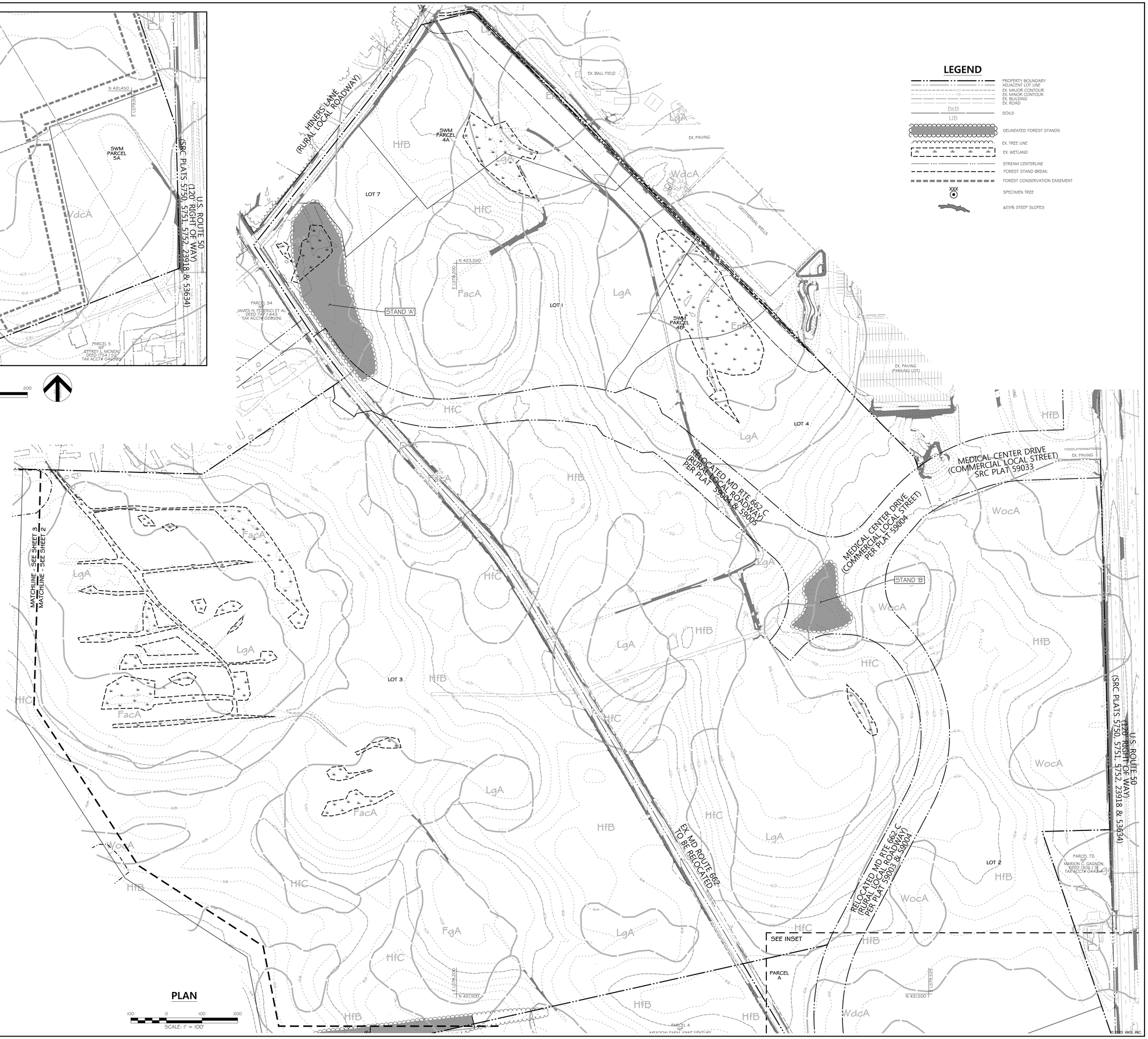
SCALE: 1" = 100'



PLAN

100 0 100 200
SCALE: 1" = 100'

NOT FOR CONSTRUCTION

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- BtB / LIB — SOILS
- DELINEATED FOREST STANDS
- EX. TREE LINE
- EX. WETLAND
- STREAM CENTERLINE
- FOREST STAND BREAK
- FOREST CONSERVATION EASEMENT
- XXX — SPECIMEN TREE
- ≥25% STEEP SLOPES

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MAGNETIC NORTH
GRID NORTH

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FOREST STAND DELINEATION PLAN

SHEET NO.
6 OF 7

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PLOT DATE:
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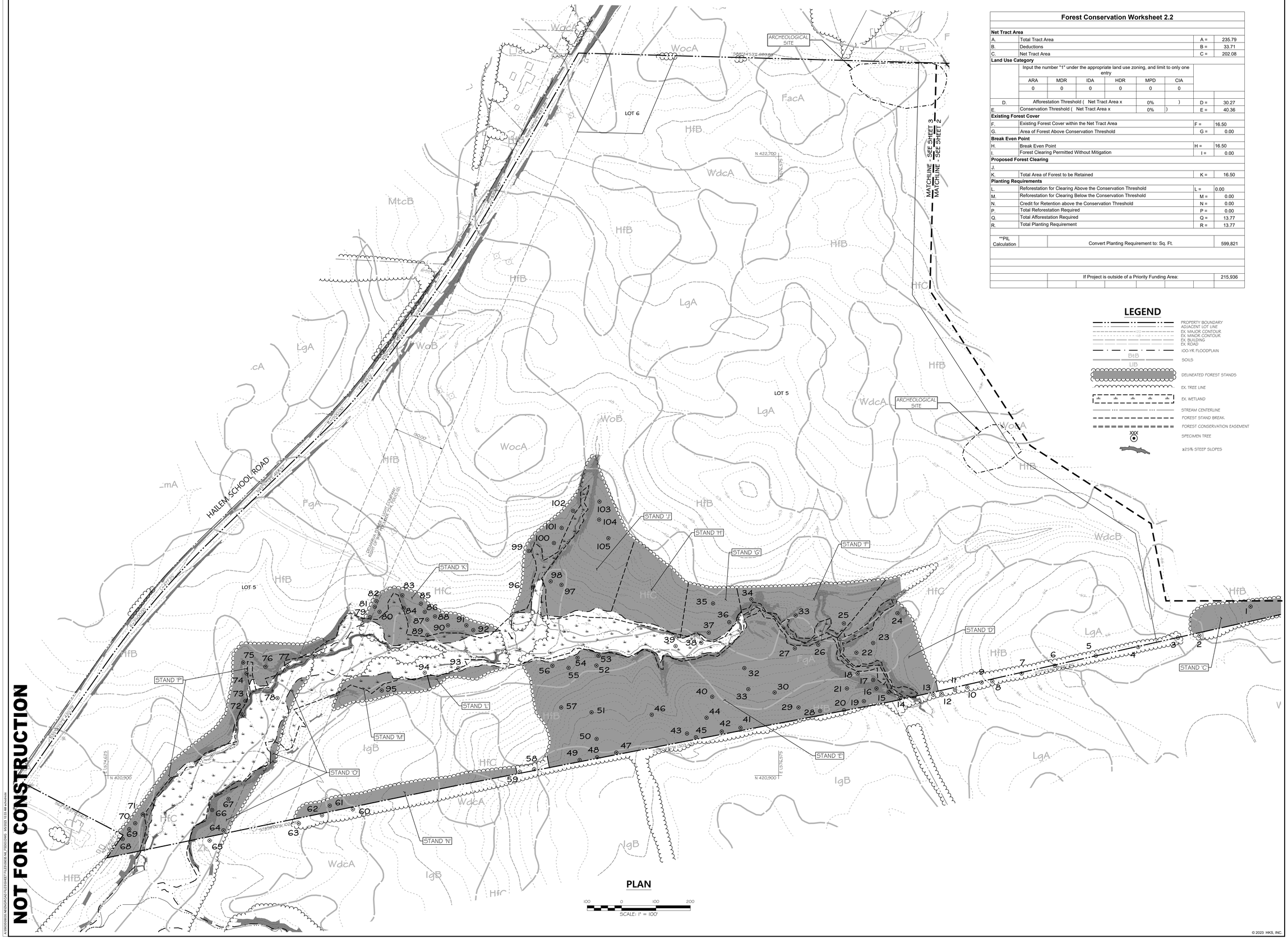

Forest Conservation Worksheet 2.2

Net Tract Area			
A.	Total Tract Area	A =	235.79
B.	Deductions	B =	33.71
C.	Net Tract Area	C =	202.08
Land Use Category			

Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	0	0	0

D.	Afforestation Threshold (Net Tract Area x 0%)	D =	30.27
E.	Conservation Threshold (Net Tract Area x 0%)	E =	40.36
Existing Forest Cover			
F.	Existing Forest Cover within the Net Tract Area	F =	16.50
G.	Area of Forest Above Conservation Threshold	G =	0.00
Break Even Point			
H.	Break Even Point	H =	16.50
I.	Forest Clearing Permitted Without Mitigation	I =	0.00
Proposed Forest Clearing			
J.			
K.	Total Area of Forest to be Retained	K =	16.50
Planting Requirements			
L.	Reforestation for Clearing Above the Conservation Threshold	L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold	M =	0.00
N.	Credit for Retention above the Conservation Threshold	N =	0.00
P.	Total Reforestation Required	P =	0.00
Q.	Total Afforestation Required	Q =	13.77
R.	Total Planting Requirement	R =	13.77
**PIL Calculation	Convert Planting Requirement to: Sq. Ft.		599,821
	If Project is outside of a Priority Funding Area:		215,936

LEGEND

- PROPERTY BOUNDARY
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SKETCH PLAN

SHEET TITLE
FOREST STAND DELINEATION PLAN

SHEET NO.
7 OF 7

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PLOT DATE:
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SPECIMEN TREE INVENTORY

KEY	BOTANICAL NAME	COMMON NAME	SIZE (DBH)	CONDITION	COMMENTS
1	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	30"	FAIR	
2	QUERCUS FALCATA	SOUTHERN RED OAK	39"	POOR	TRIPLE/ TRUNK ROT
3	QUERCUS RUBRA	NORTHERN RED OAK	37"	POOR	
4	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	32"	FAIR	DOUBLE
5	ACER RUBRUM	RED MAPLE	30.5"	FAIR	
6	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	35"	FAIR	
7	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	31"	GOOD	
8	QUERCUS ALBA	WHITE OAK	35"	POOR	
9	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	31"	GOOD	
10	QUERCUS PHELLOS	WILLOW OAK	43"	FAIR	
11	QUERCUS RUBRA	NORTHERN RED OAK	43"	GOOD	
12	QUERCUS FALCATA	SOUTHERN RED OAK	56"	FAIR	
13	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	42.5"	FAIR	
14	QUERCUS VELUTINA	BLACK OAK	41.5"	POOR	
15	QUERCUS ALBA	WHITE OAK	33.5"	GOOD	
16	FAGUS GRANDIFOLIA	AMERICAN BEECH	45.5"	GOOD	TWIN
17	PINUS TAEDA	LOBLOLLY PINE	32.5"	FAIR	
18	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
19	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
20	FAGUS GRANDIFOLIA	AMERICAN BEECH	35"	GOOD	
21	FAGUS GRANDIFOLIA	AMERICAN BEECH	40"	POOR	
22	QUERCUS VELUTINA	BLACK OAK	35.5"	GOOD	
23	ACER RUBRUM	RED MAPLE	33.5"	POOR	
24	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33"	GOOD	
25	ACER RUBRUM	RED MAPLE	40"	POOR	
26	QUERCUS ALBA	WHITE OAK	32.5"	FAIR	
27	ACER RUBRUM	RED MAPLE	37"	POOR	
28	QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	47.5"	GOOD	
29	QUERCUS ALBA	WHITE OAK	34"	GOOD	
30	FAGUS GRANDIFOLIA	AMERICAN BEECH	38"	GOOD	
31	FAGUS GRANDIFOLIA	AMERICAN BEECH	36"	GOOD	
32	QUERCUS ALBA	WHITE OAK	33"	GOOD	
33	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	32"	FAIR	
34	ACER RUBRUM	RED MAPLE	36.5"	GOOD	
35	QUERCUS VELUTINA	BLACK OAK	36"	GOOD	TWIN
36	QUERCUS VELUTINA	BLACK OAK	43"	POOR	
37	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37.5"	GOOD	
38	LIRIODENDRON TULIPIFERA	RED MAPLE	31"	GOOD	
39	ACER RUBRUM	RED MAPLE	42"	GOOD	
40	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	GOOD	
41	ACER RUBRUM	RED MAPLE	31.5"	GOOD	
42	ACER RUBRUM	RED MAPLE	31"	GOOD	
43	QUERCUS ALBA	WHITE OAK	34"	GOOD	
44	QUERCUS ALBA	WHITE OAK	35"	GOOD	
45	QUERCUS ALBA	WHITE OAK	32"	GOOD	
46	QUERCUS RUBRA	NORTHERN RED OAK	47"	GOOD	
47	QUERCUS ALBA	WHITE OAK	37"	GOOD	
48	QUERCUS ALBA	WHITE OAK	31"	GOOD	
49	FAGUS GRANDIFOLIA	AMERICAN BEECH	37"	FAIR	
50	FAGUS GRANDIFOLIA	AMERICAN BEECH	40"	GOOD	
51	QUERCUS VELUTINA	BLACK OAK	42"	GOOD	
52	QUERCUS VELUTINA	BLACK OAK	40"	GOOD	
53	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	42.5"	GOOD	
54	FAGUS GRANDIFOLIA	AMERICAN BEECH	35"	GOOD	
55	QUERCUS ALBA	WHITE OAK	30"	GOOD	
56	FAGUS GRANDIFOLIA	AMERICAN BEECH	36"	GOOD	
57	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
58	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
59	FAGUS GRANDIFOLIA	AMERICAN BEECH	37"	GOOD	
60	FAGUS GRANDIFOLIA	AMERICAN BEECH	31"	GOOD	
61	FAGUS GRANDIFOLIA	AMERICAN BEECH	38"	GOOD	
62	QUERCUS ALBA	WHITE OAK	32.5"	GOOD	
63	QUERCUS PALUSTRIS	PIN OAK	33"	GOOD	
64	QUERCUS PALUSTRIS	PIN OAK	31"	GOOD	
65	PRUNUS SEROTINA	WILD BLACK CHERRY	35"	POOR	
66	PRUNUS SEROTINA	WILD BLACK CHERRY	37"	POOR	
67	QUERCUS FALCATA	SOUTHERN RED OAK	45"	GOOD	
68	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	POOR	
69	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	GOOD	
70	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
71	QUERCUS VELUTINA	BLACK OAK	38"	FAIR	
72	JUGLANS NIGRA	BLACK WALNUT	52"	POOR	
73	FRAXINUS PENNSYLVANICA	GREEN ASH	31"	FAIR	
74	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32.5"	FAIR	

KEY	BOTANICAL NAME	COMMON NAME	SIZE (DBH)	CONDITION	COMMENTS
75	LIRIODENDRON TULIPIFERA	TULIP POPLAR	42"	FAIR	
76	QUERCUS VELUTINA	BLACK OAK	32"	FAIR	
77	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33"	POOR	
78	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
79	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
80	FAGUS GRANDIFOLIA	AMERICAN BEECH	30"	GOOD	
81	QUERCUS FALCATA	SOUTHERN RED OAK	55"	GOOD	
82	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
83	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
84	LIRIODENDRON TULIPIFERA	TULIP POPLAR	51"	FAIR	
85	ACER RUBRUM	RED MAPLE	36"	POOR	
86	QUERCUS FALCATA	SOUTHERN RED OAK	55"	GOOD	
87	LIRIODENDRON TULIPIFERA	TULIP POPLAR	34"	GOOD	
88	QUERCUS FALCATA	SOUTHERN RED OAK	45"	GOOD	
89	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
90	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
91	LIRIODENDRON TULIPIFERA	TULIP POPLAR	31"	FAIR	
92	LIRIODENDRON TULIPIFERA	TULIP POPLAR	35"	FAIR	
93	LIRIODENDRON TULIPIFERA	TULIP POPLAR	39"	FAIR	
94	ACER RUBRUM	RED MAPLE	33"	FAIR	
95	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	FAIR	
96	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
97	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	FAIR	
98	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	FAIR	
99	LIRIODENDRON TULIPIFERA	TULIP POPLAR	37"	FAIR	
100	QUERCUS PALUSTRIS	PIN OAK	40"	FAIR	
101	QUERCUS FALCATA	SOUTHERN RED OAK	30"	FAIR	
102	QUERCUS IMBRICARIA	BARREN, SCRUB OAK	32"	FAIR	
103	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36"	FAIR	
104	JUGLANS NIGRA	BLACK WALNUT	37"	FAIR	
105	QUERCUS VELUTINA	BLACK OAK	44.5"	FAIR	
106	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30.5"	POOR	
107	LIRIODENDRON TULIPIFERA	TULIP POPLAR	34"	POOR	
108	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	GOOD	
109	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	POOR	
110	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32"	GOOD	
111	ACER RUBRUM	RED MAPLE	33"	GOOD	
112	QUERCUS FALCATA	SOUTHERN RED OAK	37"	GOOD	TWIN

FOREST STAND SUMMARY TABLE

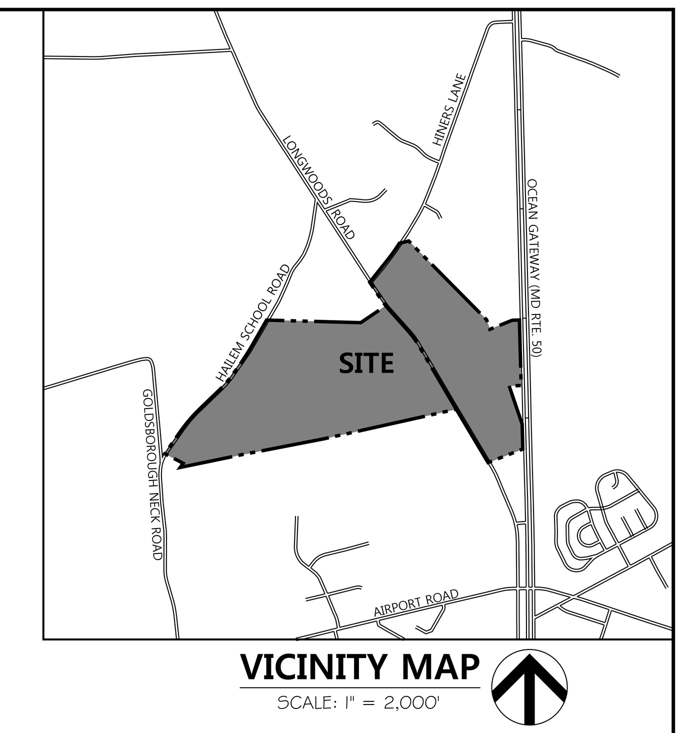
STAND	FOREST COVER TYPE	SIZE (±SF)	SIZE (±AC)	SERAL STAGE	CONDITION
A'	OAK/MAPLE/SWEETGUM/PINE	52,620	1.2	EARLY	FAIR
B'	CHERRY/KENTUCKY COFFEE/	17,490	0.4	EARLY	FAIR
C'	PINE/SWEETGUM/MAPLE/CHERRY	23,960	0.6	MID	FAIR
D'	BEECH/OAK/MAPLE/HICKORY	51,820	1.2	MID	GOOD
E'	BEECH/HICKORY/MAPLE	259,150	5.9	LATE	GOOD
F'	MAPLE/CHERRY/ELM/SWEETGUM	44,720	1.0	EARLY	FAIR
G'	SWEETGUM/MAPLE	21,930	0.5	EARLY	GOOD
H'	SWEETGUM/MAPLE	36,850	0.8	EARLY-MID	GOOD
J'	SWEETGUM/PINE/MAPLE/POPLAR	89,760	2.1	EARLY-MID	FAIR
K'	POPLAR/BEECH/CHERRY/OAK	34,090	0.8	MID	FAIR
L'	OAK/SWEETGUM/MAPLE	4,390	0.1	EARLY-MID	FAIR
M'	SWEETGUM/HICKORY	14,640	0.3	MID	GOOD
N'	MAPLE/SWEETGUM/OAK	19,990	0.5	MID	FAIR
O'	POPLAR/OAK	17,930	0.4	MID	GOOD
P'	SWEETGUM/CHERRY/OAK	47,150	1.1	EARLY-MID	FAIR
	TOTAL:	736,490	16.9		

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- 100-YR FLOODPLAIN
- SOILS
- DELINEATED FOREST STANDS
- EX. TREE LINE
- EX. WETLAND
- STREAM CENTERLINE
- FOREST STAND BREAK
- SPECIMEN TREE
- ≥25% STEEP SLOPES

SOILS TABLE

SYMBOL	SOIL NAME	SLOPE	K FACTOR	HYDRIC	COMMENTS
CoA	CORSICA MUCKY LOAM	0-2%	---	YES	
EmA	ELKTON SILT LOAM	0-2%	---	YES	
FacA	FALLSINGTON SANDY LOAM	0-2%	---	YES	
FgcA	FALLSINGTON LOAM	0-2%	0.32	YES	
HfB	HAMBROOK-SASSAFRAS COMPLEX	2-5%	0.32	NO	
HfC	HAMBROOK-SASSAFRAS COMPLEX	5-10%	0.32	NO	
IgB	INGLESIDE SANDY LOAM	2-5%	0.15	NO	
LgA	LENNI LOAM	0-2%	---	YES	
MtcA	MATTAPEX SILT LOAM	0-2%	0.49	NO	2-10% OTHELLO INCLUSIONS
MtcB	MATTAPEX SILT LOAM	2-5%	0.49	NO	2-10% OTHELLO INCLUSIONS
NsB	NASSAWANGO SILT LOAM	2-5%	0.49	NO	
WdcA	WOODSTOWN SANDY LOAM	0-2%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WdcB	WOODSTOWN SANDY LOAM	2-5%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WocA	WOODSTOWN LOAM	0-2%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
WocB	WOODSTOWN LOAM	2-5%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
Zk	ZEKIAH SILT LOAM	---	0.37	YES	



VICINITY MAP
SCALE: 1" = 2,000'

DATA SOURCE:

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON THE RESULTS OF FLOWN PHOTOGRAMMETRY PROVIDED BY AXIS GEOSPATIAL LLC, DATED MARCH 3, 2009. EXISTING TOPOGRAPHY SHOWN OUTSIDE THE PROPERTY IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006. EXISTING SOILS AND ZONING SHOWN HEREON IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006.
2. PROPERTY LINE(S) SHOWN HEREON ARE BASED UPON THE RESULTS OF A FIELD RUN SURVEY PERFORMED BY DMW, INC. ON 04/15/2009.
3. 100-YEAR FLOODPLAIN INFORMATION SHOWN HEREON IS PROVIDED BY FEMA FLOOD MAP SERVICE CENTER HTTP://MSC.FEMA.GOV ACCESSED 07/12/2023, CONSISTENT WITH FIRM NUMBER 24041C0180D, EFFECTIVE DATE SEPTEMBER 19, 2007.
4. THE LIMITS OF THE REGULATED RESOURCES (WATERS OF THE US, NONTIDAL WETLANDS, AND FARMED WETLANDS) SHOWN HEREON ARE FIELD LOCATED AND CONSISTENT WITH THE APPROVED JURISDICTIONAL DETERMINATION DATED JANUARY 12, 2011, ISSUED BY THE UNITED STATES ARMY CORPS OF ENGINEERS (COE) AND MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE). THE LIMITS ARE CONSISTENT WITH THE COE AUTHORIZATION OF PERMIT NUMBER 2011-61196 (TA DPW/SHORE HEALTH SYSTEMS REGIONAL MEDICAL CENTER) DATED SEPTEMBER 10, 2013 THAT REMAINS ACTIVE.

PROPERTY DATA

PROPERTY OWNER: SHORE HEALTH SYSTEM, INC., 219 S. WASHINGTON STREET, EASTON, MD 21601

DEVELOPER/APPLICANT: SHORE HEALTH SYSTEM, INC., UNIVERSITY OF MARYLAND MEDICAL SYSTEM, 219 SOUTH WASHINGTON STREET, EASTON, MD 21601

DESIGN CONSULTANT: DAFT MCCUNE WALKER, INC., 501 FAIRMOUNT AVE., TOWSON, MD 21286, (410) 296-3333

TAX MAP/GRID: 17/23

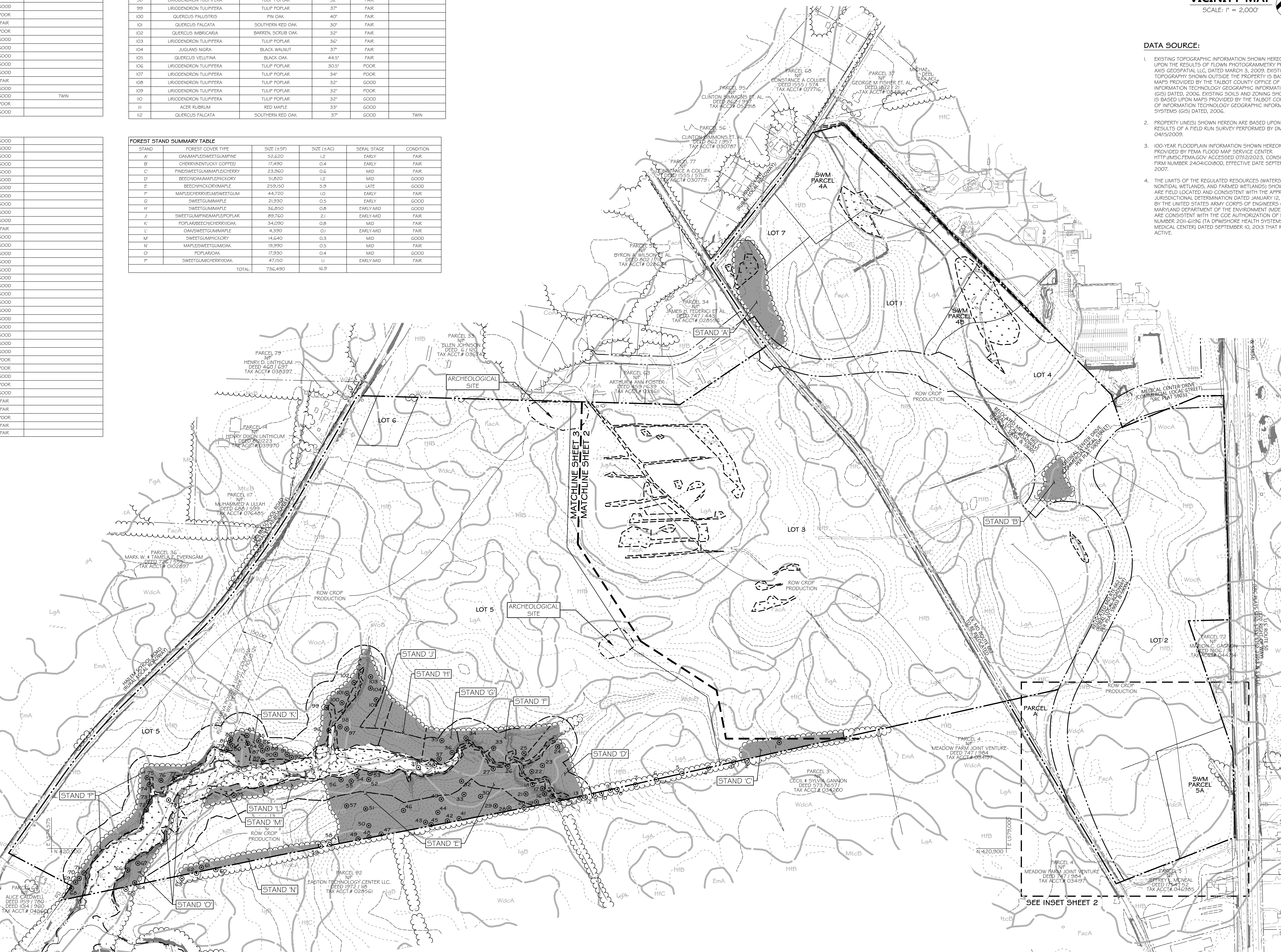
TAX ACCT. NO: 01-113771, 198769, 198770, 198771, 198774, 198777, 198778

PARCEL: 129

ZONING: RH - REGIONAL HEALTHCARE

ACREAGE: ±235.8 AC

EXISTING CONDITION: UNDEVELOPED AGRICULTURAL



PLAN

200 0 200 400
SCALE: 1" = 200'

NOT FOR CONSTRUCTION

PLOT DATE:
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Shore Health System
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OWNER'S CONSULTANT
FM Global
2100 Reston Parkway, Suite 600
Reston, VA 20191

MCS NAD83 (2011)

THIS PLAN HAS BEEN PREPARED BY ERIC J. CHODNICKI, A QUALIFIED PROFESSIONAL EMPLOYED WITH DAFT McCUNE WALKER, INC. WHO MEETS THE REQUIREMENTS OF COMAR 08.19.06.01.

SIGNATURE
DATE 09/05/23

REVISION

NO.	DESCRIPTION	DATE

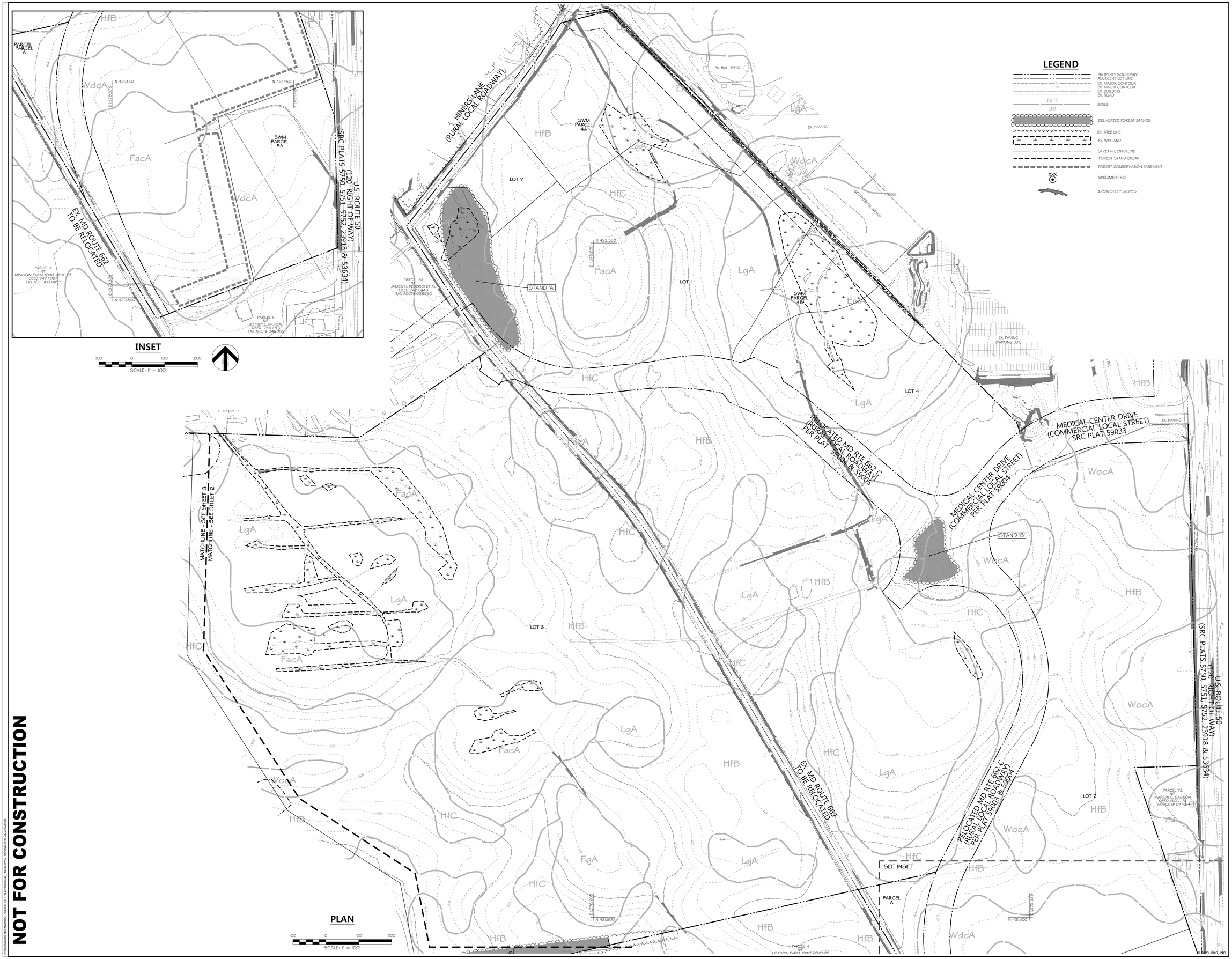
HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
FOREST STAND DELINEATION PLAN

SHEET NO.
5 OF 7



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MAGNETIC NORTH
GRID NORTH

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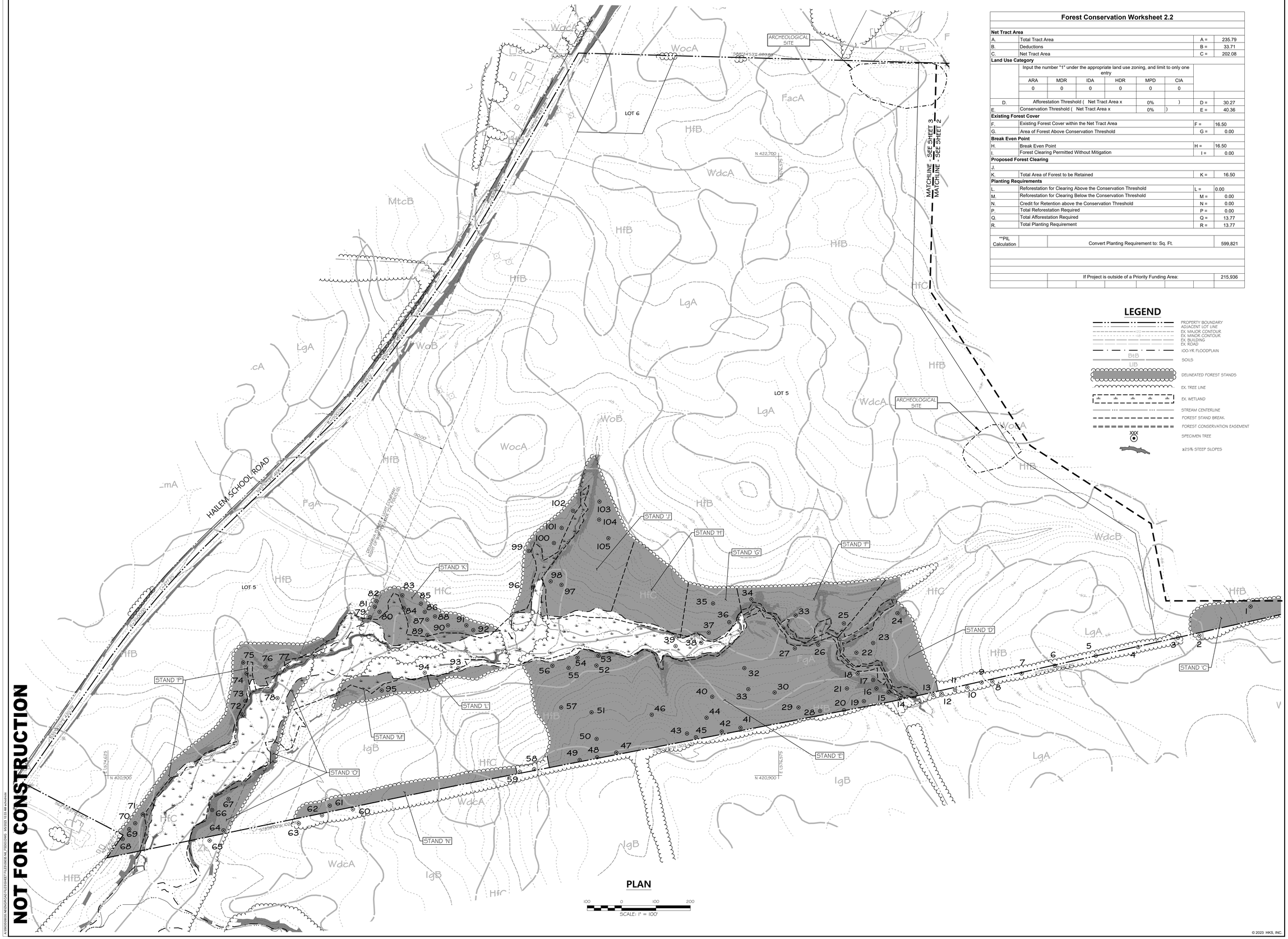
SHEET NO.
6 OF 7



Forest Conservation Worksheet 2.2

Net Tract Area			
A.	Total Tract Area	A =	235.79
B.	Deductions	B =	33.71
C.	Net Tract Area	C =	202.08
Land Use Category			

Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	0	0	0

D.	Afforestation Threshold (Net Tract Area x 0%)	D =	30.27
E.	Conservation Threshold (Net Tract Area x 0%)	E =	40.36
Existing Forest Cover			
F.	Existing Forest Cover within the Net Tract Area	F =	16.50
G.	Area of Forest Above Conservation Threshold	G =	0.00
Break Even Point			
H.	Break Even Point	H =	16.50
I.	Forest Clearing Permitted Without Mitigation	I =	0.00
Proposed Forest Clearing			
J.			
K.	Total Area of Forest to be Retained	K =	16.50
Planting Requirements			
L.	Reforestation for Clearing Above the Conservation Threshold	L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold	M =	0.00
N.	Credit for Retention above the Conservation Threshold	N =	0.00
P.	Total Reforestation Required	P =	0.00
Q.	Total Afforestation Required	Q =	13.77
R.	Total Planting Requirement	R =	13.77
**PIL Calculation	Convert Planting Requirement to: Sq. Ft.		599,821
	If Project is outside of a Priority Funding Area:		215,936

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- 100-YR FLOODPLAIN
- SOILS
- DELINEATED FOREST STANDS
- EX. TREE LINE
- EX. WETLAND
- STREAM CENTERLINE
- FOREST STAND BREAK
- FOREST CONSERVATION EASEMENT
- SPECIMEN TREE
- ≥25% STEEP SLOPES

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SHEET NO.
7 OF 7

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PLOT DATE:
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APPENDIX B-2

SKETCH STORMWATER MANAGEMENT PLAN
SUBMITTAL CHECKLIST

EFFECTIVE MAY 4, 2010

NOTE: THE FOLLOWING CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED FOR SUPPORT OF A STORMWATER MANAGEMENT CONCEPT PLAN, SITE DEVELOPMENT PLAN, AND/OR FINAL DESIGN PLAN. THE TOWN MAY REQUEST ADDITIONAL INFORMATION AS DEEMED NECESSARY.

COMPLETE THE APPROPRIATE CHECKLIST AND SUBMIT IT WITH THE PLANS, APPLICATION FORM, NARRATIVE OR REPORT, AND FEE. ITEMS IN BOLD ARE REQUIRED FOR CONCEPT AND/OR SITE DEVELOPMENT PHASE REVIEW.

I. Sketch Plan Submittal

A. Site and Resource Map

Natural Resources Identified on Plan, including, but not limited to:
Please use these responses for the following:
(Provided = P; Not Provided = NP; Not Applicable = N/A)

Tidal and Non-Tidal Wetland Boundaries ___P___
Wetland Buffers ___P___
Floodplain Boundaries and Elevations ___P___
Streams and other Waterways ___P___
Stream Buffers ___P___
Forest Boundaries ___P___
Forest Buffers ___P___
Critical Areas ___N/A___
Steep Slopes (>25%) ___P___
Erodible Soils ___P___
Areas of High Recharge ___P___
Springs ___P___
Soil Types and Hydrologic Soil Groups ___P___
Bedrock and/or other Geologic Features ___P___
Vegetative Cover ___P___
Existing Drainage Areas and Flow Patterns ___P___
Existing Stormwater Outfalls ___P___
Site and Resource Map field verified by a properly licensed design professional. ___P___

Existing contours (1' max intervals) and utilities shown. ___P___

Large tracts of contiguous open spaces, forested areas and other important resources protected by conservation easements. ___P___

Opportunities for afforestation identified. ___P___

Wetland, stream and forest buffers enhanced and/or

expanded. P

B. Site Fingerprinting and Development Layout

Locations of proposed impervious areas provided. P

Proposed contours (1' max intervals) and utilities shown. P

Preliminary locations of proposed Environmental Site Design (ESD) practices provided. P

Locations of stormwater outfalls and conveyance provided with offsite storm drains, culverts and grass channels with size and slope. P

Limit of disturbance and extent of clearing & grading. P

Site natural resources protected during construction. If site natural resources must be disturbed during construction, please include an explanation in the stormwater narrative. P

Better Site Design Techniques incorporated, including:

Sheetflow and overland flow provided wherever possible P
Building footprint and site layout designed to protect conservation areas P
Proposed streets, rights of way, and/or sidewalks with modifications to reduce impervious area P
Landscaped medians and/or cul-de-sacs P
Stormwater management features in medians or cul-de-sacs P
Private open road section with grass channels and/or biofilters P

Minimize numbers of parking spaces and sizes P
Narrow frontages to reduce road length P
Site graded to encourage runoff from impervious areas to pervious areas or other natural conveyance systems P

C. Stormwater Narrative

Title Page includes:

Job Name P
Owner/Developer P
Design Professional P
Date Prepared P
Seal and Signature (properly licensed Design Professional) P

Project is identified as new development or redevelopment. (Redevelopment projects have ≥40% total site imperviousness) P

Project and streets designed for 2-year and 10-year quantitative management. P

Project is identified as being within the Tanyard Branch Watershed. (Projects within this watershed must manage proposed 10-year storm flows to the existing 2-year storm discharge rate.) N/A

A narrative that supports the concept and describes how the design will achieve:

Natural resource protection and enhancement P
Maintenance of natural flow patterns P
Reduction of impervious areas through better site design, alternative surfaces, and non-structural practices P
Implementation of ESD planning techniques and practices to the Maximum Extent Practicable (MEP) P
Preliminary ESD sizing calculations provided P
Integration of erosion and sediment controls (ESC) into the stormwater strategy P

D. Sketch Plan Meeting

Following the Sketch Plan submittal, a meeting will be scheduled between the Town of Easton Planning & Zoning, Town Engineer, the Talbot County Soil Conservation District (SCD) ESC reviewer, the owner/developer, the SWM and ESC designer(s), and any other reviewers deemed necessary by the Town of Easton and/or the Talbot County SCD. Official Minutes from the Sketch Plan Meeting must be submitted for review and acceptance by all parties. These minutes must accompany all future submittals. NP

This checklist completed by Leslie Tillman Date 9/5/23

Quantity Stormwater Management Computations

Concept (Sketch Plan)

Shore Health System / University of Maryland Medical System
Regional Medical Center
Easton, MD (Talbot County)

DMW Project No. 09035.N6

August 2023

Prepared for:

Shore Health System
University of Maryland Medical System
219 South Washington Street
Easton, MD 21601

Prepared by:

Daft-McCune-Walker, Inc.
501 Fairmount Ave., Suite 300
Towson, Maryland 21286
410-296-3333
Fax 410-296-4705
Design: MM Review: KMB
kbischoff@dmw.com

I hereby certify that these documents were prepared, or approved, by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 28823 Exp. Date 1/7/2024

Table of Contents

SWM Narrative 2-4

Introduction 2

Project Location 2

Existing Conditions 2

Proposed Conditions 2

Stormwater Management Practices 2-3

Floodplain Information 3

Quantity Management 3

Table 1: Discharge Summary at Study Points 4

Table 2: Pond Maximum Water Surface Elevation (WSE) 4

Table 3: Pond Draw Down Summary 4

APPENDIX 5-445

I. TR-55 Analysis - Existing Conditions 5-10

II. TR-55 Analysis - Proposed Conditions 11-22

III.A. HydroCAD Design Point No. 1 – Existing Conditions 23-87

III.B. HydroCAD Design Point No. 1 – Proposed Conditions 88-230

IV.A. HydroCAD Design Point No. 3 – Existing Conditions 231-250

IV.B. HydroCAD Design Point No. 3 – Proposed Conditions 251-279

V.A. HydroCAD Design Point No. 4 – Existing Conditions 280-311

V.B. HydroCAD Design Point No. 4 – Proposed Conditions 312-445

SWM Narrative

Introduction:

The following report summarizes the proposed quantity stormwater management (SWM) design for the proposed hospital site development. The Environmental Site Design (ESD) is in a separate report. The SWM design for the relocation of Route 662C, US Route 50, and Medical Center Drive is also in a separate report that was previously reviewed and approved by both Talbot County and SHA. The design point and associated ponds that are affected by the hospital development are restudied within this report to ensure town and state requirements are met.

Project Location:

The subject property is located in Talbot County in the Town of Easton on a parcel of land roughly bordered by Route 50 to the east, Hiners Lane to the north, Hailem School Road to the west, and the Gannon Farm to the south. The project is approximately one mile north of the Easton Municipal Airport. The site is located on Tax Map 17, Grid 23 and includes parcel 129 and is comprised of 236.15 ac. +/-.

Existing Conditions:

The existing onsite conditions are primarily small grain row crops (conservatively modeled in the existing conditions analysis as meadow for onsite areas) with some areas of trees and impervious cover. There is a section of Route 662C that will be removed and relocated as a part of the overall development of the site. Offsite areas that drain onto the site are made up primarily of small grain row crops and woods. The existing site drains to eight different design points (DP). This study examines four points which are affected by the hospital improvements (DP1-4). Design Point One (DP1) is located at Goldsborough Neck Road at an existing 48-inch culvert. Design Point Two (DP2) is located at the northwest corner of the site and will not be disturbed; therefore, it is excluded from the remainder of this study. Design Point Three (DP3) is identified as the drainage to the north through Foster's Trailer Park. Design Point Four (DP4) is identified as the drainage to the northeast under Route 662C to an existing culvert at Hiners Lane. Flows to Design Point Four will pass through multiple ponds and culverts constructed during the relocation of Route 662C.

Proposed Improvements:

A portion of the site will be developed (30 acres +/- within the loop road and 76 acres +/- of total disturbance) to include a hospital building, medical office building, accessory structures, parking areas, the loop road, and SWM facilities. The remainder of the disturbance on the site will be graded and seeded.

Stormwater Management Practices:

The site has varying requirements for quantity control based upon the conditions of each DP. Each DP will be explored further later in this section. The site falls within a five-mile radius of an airport; therefore, the most stringent requirement between the Federal Aviation Administration (FAA) and the Maryland Aviation Administration (MAA) must be followed. Facilities with standing water that could attract waterfowl are not allowed within this radius. Quantity facilities must dewater the 1-year and 2-year storm within twenty-four hours and the 10-year storm within forty-eight hours.

Water quality facilities are required to dewater within twenty-four hours. All SWM facilities and ESD practices are required to be maintained to ensure that this criterion is met.

Floodplain Information:

A FEMA floodplain does exist on-site, below the stormwater outfall for proposed Pond 1. At this design point, 100-yr management is proposed and no impacts to the floodplain are anticipated.

Quantity Management:

Design Point 1 (DP1) – DP1 has been set at an existing 48-inch culvert crossing at Goldsborough Neck Road southeast of the property (see the drainage area maps). This culvert and roadway have a history of flooding problems that have been documented by the County. Flows for the 2-, 10-, and 100-year storm events have been reduced from existing conditions. Peak flows will be managed by Pond 1, a dry extended detention facility. DP1 has a significant area of bypass, most of which is outside of the LOD. Pond 1 will be a MD 378 pond and will be designed accordingly. Flows will be managed though a concrete riser. The 2-, 10-, and 100-yr storm events are required to be managed for this design point.

Design Point 3 (DP3) – DP3 is along the north side of the property and runoff flows primarily though Foster's Trailer Park (see the drainage area maps). Residents of the trailer park have commented on past flooding problems. As such, the drainage area and flows for all storm events have been greatly reduced from the existing condition. Flows for DP3 will be managed for the 2- and 10-year storm events and the pond has been designed to pass the 100-yr storm event. The pond is an extended detention dry pond (Pond 3) with a submerged gravel wetland base. Flows will be managed though a multistage concrete weir. Discharges from this pond were designed to not exceed the capacity of the existing earthen channel that runs through the trailer park and to stay below the locations of the existing trailers. Field run topographic information for the trailer park was obtained and entered into the HydroCAD model to ensure the existing channel was modeled correctly. The 2-yr and 10-yr storm events are required to be managed for this design point.

Design Point 4 (DP4) – DP4 is located northeast of the property at Hiners Lane (see the drainage area maps) at an existing 24" culvert. Management for this design point is provided during the relocation of RTE 662C and four ponds are proposed (4A, 4B, 6A, and 6B). To account for the additional impervious area proposed for the hospital construction, we propose one additional extended detention dry pond (6C). The 2-yr and 10-yr storm events are required to be managed for this design point and the pond has been designed to pass the 100-yr storm event.

The SWM plans and computations for the proposed conditions for the Route 662C relocation show eleven sub-areas for DP4 (4A, 4A.1, 4A.2, 4.3, 4B, 4B.1, 6A, 6B, and 10A, 10B, 10C). In this study, we have added one additional sub-area 4B.2, which is a bifurcation of the Route 662C sub-area 4B.1.

The proposed conditions drainage areas in this study are changed from the proposed conditions areas in the Route 662C study. This study will show the revised pond conditions for ponds 4, 4B, 6B, and 6A, but we proposed no change to the design of these facilities.

Table 1: Discharge Summary at Study Points

Design Point	Storm Event (Year)	Existing Condition (cfs)	Proposed Condition (cfs)
1	2	111.92	105.56
	10	307.09	284.70
	100	581.80	554.43
3	2	33.57	9.69
	10	94.89	23.74
	100	182.93	44.93
4	2	40.56	17.31
	10	115.23	43.66
	100	222.27	85.78

Table 2: Pond Maximum Water Surface Elevation (WSE)

Pond	2-year WSE	10-year WSE	100-year WSE	Top of Berm Elevation	Freeboard Provided for 100-year Storm
1	46.85	48.56	49.44	52.00	2.56'
3	52.67	53.15	53.63	55.10	1.47'
6C	52.33	53.53	54.62	57.00	2.38'
4A*	45.96	46.84	47.92	48.75	0.83'
4B*	49.96	50.69	50.94	51.75	0.81'
6A*	55.34	55.93	56.86	57.75	0.89'
6B*	54.32	54.72	55.52	57.00	1.48'

*These facilities will not be modified for this development

Table 3: Pond Peak Draw Down Summary

Pond	Storm	Draw Down Time (hr)
1	2-year 10-year	16 17
3	2-year 10-year	24 27
6C	2-year 10-year	23 26
4A*	2-year 10-year	26 34
4B*	2-year 10-year	22 28
6A*	2-year 10-year	16 20
6B*	2-year 10-year	18 24

*These facilities will not be modified for this development

Appendix I.

TR-55 Existing Conditions

Daft-McCune-Walker, Inc.

501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6
Drainage Area: Existing to DP No. 2
Existing: [X] Proposed [ ] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			4.43	256.89
C	Meadow	Good		71			2.95	209.69
D	Meadow	Good		78			0.40	30.83
A	Woods	Good		30				
B	Woods	Good		55				
C	Woods	Good		70				
D	Woods	Good		77				
	Impervious			98				
			Total Square Miles:		0.0122	Total Acres:	7.78	497.41

Weighted RCN= 63.95 , Use 64

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Meadow	100	0.130			1.0		0.1864
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	858				0.7	1.70	0.1401
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							7.00	
							0.00	
							0.00	
							Total	0.3266

Initial Abstraction Ia = 1.127 in. (Table 5-1) Use Tc= 0.33 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	1.127	1.127		1.127		1.127
Ia/P =	0.403	0.332		0.213		0.148
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.38	0.65		1.77		3.46
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.

501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6

Drainage Area: Existing
to DP No. 3

Existing: [X] Proposed [ ] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			25.48	1477.81
C	Meadow	Good		71			14.38	1021.29
D	Meadow	Good		78			8.20	639.37
A	Woods	Good		30				
B	Woods	Good		55			0.11	6.26
C	Woods	Good		70				
D	Woods	Good		77				
	Impervious			98			0.36	35.33
A	Agricultural (Small Grain SR) OFFSITE	Good		63				
B	Agricultural (Small Grain SR) OFFSITE	Good		75			5.05	378.84
C	Agricultural (Small Grain SR) OFFSITE	Good		83			2.99	247.88
D	Agricultural (Small Grain SR) OFFSITE	Good		87			1.25	108.86
			Total Square Miles:		0.0903	Total Acres:	57.82	3915.62

Weighted RCN= 67.72 , Use 68

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Cultivated Soils (Residue <20%)	100	0.060			0.8		0.1098
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	492				0.7	1.70	0.0804
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	Stream	2,304					7.00	0.0914
							0.00	
							0.00	
							Total	0.2816

Initial Abstraction Ia = 0.954 in. (Table 5-1) Use Tc= 0.28 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.954	0.954		0.954		0.954
Ia/P =	0.341	0.280		0.180		0.125
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.52	0.83		2.07		3.87
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.

501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 30, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6
Drainage Area: Existing to DP No. 4.1
Existing: [X] Proposed [ ] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			32.10	1861.80
C	Meadow	Good		71			4.62	328.00
D	Meadow	Good		78			13.10	1022.00
A	Woods	Good		30				
B	Woods	Good		55			0.27	15.01
C	Woods	Good		70				
D	Woods	Good		77			0.07	5.63
	Impervious			98			0.71	69.18
			Total Square Miles:		0.0795	Total Acres:	50.87	3301.63

Weighted RCN= 64.90 , Use 65

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Meadow	100	0.130			2.9		0.1218
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	559				1.4	2.43	0.0639
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	Stream	2,324					7.00	0.0922
							0.00	
							0.00	
							Total	0.2779

Initial Abstraction Ia = 1.082 in. (Table 5-1) Use Tc= 0.28 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	1.082	1.082		1.082		1.082
Ia/P =	0.386	0.318		0.204		0.142
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.41	0.70		1.85		3.56
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.
501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 30, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6
Drainage Area: Existing 4.2 to DP No. 4.2
Existing: [X] Proposed [ ] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			2.61	151.11
C	Meadow	Good		71			2.67	189.23
D	Meadow	Good		78			2.43	189.34
A	Woods	Good		30				
B	Woods	Good		55				
C	Woods	Good		70				
D	Woods	Good		77				
	Impervious			98			2.05	200.79
B	Lawn	Good		61			0.63	38.48
			Total Square Miles:		0.0162	Total Acres:	10.38	768.95

Weighted RCN= 74.10 , Use 74

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Meadow	100	0.130			2.8		0.1235
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	592				0.8	1.82	0.0904
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	Stream	529					7.00	0.0210
							0.00	
							0.00	
							Total	0.2349

Initial Abstraction Ia = 0.699 in. (Table 5-1) Use Tc= 0.23 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.699	0.699		0.699		0.699
Ia/P =	0.250	0.206		0.132		0.092
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.79	1.18		2.61		4.58
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.
501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N
Drainage Area: Existing 4.3 to DP No. 4
Existing: [X] Proposed [ ] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Lawn	Good		39				
B	Lawn	Good		61			1.78	108.81
C	Lawn	Good		74			3.77	279.01
D	Lawn	Good		80			2.76	220.96
A	Woods	Good		30				
B	Woods	Good		55				
C	Woods	Good		70				
D	Woods	Good		77				
	Impervious			98			1.21	118.30
			Total Square Miles:		0.0149	Total Acres:	9.52	727.07

Weighted RCN= 76.35 , Use 76

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Grass: Dense	100	0.240			3.5		0.1845
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	594				0.9	1.92	0.0860
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
	Trap	544	0.0			0.5	7.00	0.0216
							0.00	
							0.00	
							Total	0.2921

Initial Abstraction Ia = 0.620 in. (Table 5-1) Use Tc= 0.29 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.620	0.620		0.620		0.620
Ia/P =	0.221	0.182		0.117		0.082
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.90	1.32		2.82		4.83
Peak Dischg. (CFS)=						

Appendix II.

TR-55 - Proposed Conditions

Daft-McCune-Walker, Inc.

501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6

Drainage Area: Proposed
to DP No. 1
Pond 1

Existing: [ ] Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			18.23	1057.50
C	Meadow	Good		71			12.30	873.31
D	Meadow	Good		78			3.11	242.26
A	Woods	Good		30				
B	Woods	Good		55			0.73	40.08
C	Woods	Good		70			0.06	4.39
D	Woods	Good		77			0.18	14.01
	Impervious			98			7.09	694.52
B	Lawn(within ring road)	Good		61			3.88	236.97
C	Lawn(within ring road)	Good		74			2.30	169.91
D	Lawn(within ring road)	Good		80			1.20	95.78
			Total Square Miles:		0.0767	Total Acres:	49.08	3428.72

Weighted RCN= 69.86 , Use 70

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Lawn	100	0.150			1.2		0.1977
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	paved x unpaved	110				1.3	1.84	0.0166
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	Pipe	1,300					7.00	0.0516
							0.00	
							0.00	
							Total	0.2659

Initial Abstraction Ia = 0.863 in. (Table 5-1) Use Tc= 0.27

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.863	0.863		0.863		0.863
Ia/P =	0.308	0.254		0.163		0.114
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.60	0.94		2.25		4.11
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.
501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N6
Drainage Area: Proposed
bypass to DP No. 1
Existing: [ ] Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			44.02	2553.14
C	Meadow	Good		71			12.71	902.74
D	Meadow	Good		78			5.03	392.61
A	Woods	Good		30			1.64	49.06
B	Woods	Good		55			24.80	1364.18
C	Woods	Good		70			5.45	381.77
D	Woods	Good		77			8.53	656.81
	Impervious			98			3.05	298.50
A	Agricultural (Small Grain SR) OFFSITE	Good		63			1.25	78.88
B	Agricultural (Small Grain SR) OFFSITE	Good		75			58.30	4372.36
C	Agricultural (Small Grain SR) OFFSITE	Good		83			47.40	3934.18
D	Agricultural (Small Grain SR) OFFSITE	Good		87			9.51	827.56
			Total Square Miles:		0.3464	Total Acres:	221.70	15811.78

Weighted RCN= 71.32 , Use 71

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Cultivated Soils (Residue <20%)	100	0.060			1.0		0.1004
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	732				1.9	2.81	0.0723
C-D	X paved unpaved	2,026				2.0	2.86	0.1970
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
D-E	Stream	3,632					7.00	0.1441
							0.00	
							0.00	
							Total	0.5139

Initial Abstraction Ia = 0.804 in. (Table 5-1) Use Tc= 0.51 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.804	0.804		0.804		0.804
Ia/P =	0.287	0.237		0.152		0.106
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.66	1.02		2.37		4.27
Peak Dischg. (CFS)=						

Daft-McCune-Walker, Inc.

501 Fairmount Avenue, Suite 300, Towson, Maryland 21286

TR-55 DESIGN COMPUTATION

By: MM
Date: August 29, 2023
Check:
Date:
Sheet of

Project: UMMS - Easton
Job Number: 09035.N

Drainage Area: Proposed
to DP No. 2

Existing: [ ] Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			4.44	257.24
C	Meadow	Good		71			2.97	210.68
D	Meadow	Good		78			0.40	30.83
A	Woods	Good		30				
B	Woods	Good		55				
C	Woods	Good		70				
D	Woods	Good		77				
	Impervious			98				
			Total Square Miles:		0.0122	Total Acres:	7.80	498.74

Weighted RCN= 63.96 , Use 64

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Meadow	100	0.130			1.0		0.1864
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	858				0.7	1.70	0.1401
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							7.00	
							0.00	
							0.00	
							Total	0.3266

Initial Abstraction Ia = 1.127 in. (Table 5-1) Use Tc= 0.33 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	1.127	1.127		1.127		1.127
Ia/P =	0.402	0.331		0.213		0.148
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.38	0.65		1.78		3.46
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: Proposed
to DP No. 3
BYPASS
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow	Good		30				
B	Meadow	Good		58			5.21	302.23
C	Meadow	Good		71			3.58	254.09
D	Meadow	Good		78			1.41	109.88
	Impervious			98			0.04	4.07
B	Lawn	Good		61				
C	Lawn	Good		74				
D	Lawn	Good		80				
			Total Square Miles:		0.0160	Total Acres:	10.24	670.26

Weighted RCN= 65.46 , Use 65

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Lawn	100	0.150			0.8		0.2286
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	paved X unpaved	814				0.5	1.14	0.1982
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							7.00	
							0.00	
							0.00	
							Total	0.4267

Initial Abstraction Ia = 1.055 in. (Table 5-1) Use Tc= 0.43 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	1.055	1.055		1.055		1.055
Ia/P =	0.377	0.310		0.199		0.139
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.43	0.72		1.89		3.62
Peak Dischg. (CFS)=						

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Project: UMMS - Easton
Job Number: 09035.N6
Drainage Area: Proposed
to DP No. 3
Pond 3
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
A	Meadow (outside ring road)	Good		30				
B	Meadow (outside ring road)	Good		58			1.21	70.12
C	Meadow (outside ring road)	Good		71			1.53	108.73
D	Meadow (outside ring road)	Good		78			2.09	162.84
	Impervious			98			3.70	362.83
B	Lawn	Good		61			0.01	0.53
C	Lawn	Good		74			0.66	48.84
D	Lawn	Good		80			0.33	26.59
			Total Square Miles:		0.0149	Total Acres:	9.53	780.49

Weighted RCN= 81.88 , Use 82

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Lawn	100	0.150			0.6		0.2564
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	paved × unpaved	686				0.5	1.14	0.1670
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							7.00	
							0.00	
							0.00	
							Total	0.4235

Initial Abstraction Ia = 0.442 in. (Table 5-1) Use Tc= 0.42 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.442	0.442		0.442		0.442
Ia/P =	0.158	0.130		0.083		0.058
Peak Qu (csm/in.) =						
Runoff Q (in) =	1.22	1.69		3.34		5.47
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: 4A.1 to DP No. 4
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			2.08	126.69
C	Lawn	Good		74			0.23	16.85
D	Lawn	Good		80				
	Impervious			98			2.25	220.78
			Total Square Miles:		0.0071	Total Acres:	4.56	364.32

Weighted RCN= 79.94 , Use 80

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
						0.0		
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
	Stream						0.00	
							0.00	
							0.00	
						USE	MIN. Tc	0.1000
							Total	0.1000

Initial Abstraction Ia = 0.502 in. (Table 5-1) Use Tc= 0.10 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.502	0.502		0.502		0.502
Ia/P =	0.179	0.148		0.095		0.066
Peak Qu (csm/in.) =						
Runoff Q (in) =	1.10	1.55		3.15		5.24
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: 4A.2 to DP No. 4
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			0.66	39.97
C	Lawn	Good		74			0.24	17.54
D	Lawn	Good		80				
	Impervious			98			1.10	107.97
			Total Square Miles:		0.0031	Total Acres:	1.99	165.47

Weighted RCN= 82.99 , Use 83

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
						0.0		
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							0.00	
							0.00	
							0.00	
						USE	MIN. Tc	0.1000
							Total	0.1000

Initial Abstraction Ia = 0.410 in. (Table 5-1) Use Tc= 0.10 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.410	0.410		0.410		0.410
Ia/P =	0.146	0.121		0.077		0.054
Peak Qu (csm/in.) =						
Runoff Q (in) =	1.29	1.77		3.45		5.60
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: Proposed 4.B1
to DP No. 4
to Pond 6C
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			5.21	317.90
C	Lawn	Good		74				
D	Lawn	Good		80			0.56	44.49
	Impervious			98			6.12	599.52
			Total Square Miles:		0.0186	Total Acres:	11.89	961.91

Weighted RCN= 80.93 , Use 81

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	lawn	100	0.150			1.1		0.2050
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	X paved unpaved	137				1.0	2.03	0.0187
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	pipe	489					7.00	0.0194
							0.00	
							0.00	
							Total	0.2431

Initial Abstraction Ia = 0.471 in. (Table 5-1) Use Tc= 0.24

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.471	0.471		0.471		0.471
Ia/P =	0.168	0.139		0.089		0.062
Peak Qu (csm/in.) =						
Runoff Q (in) =	1.16	1.62		3.25		5.36
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: Proposed 4B.2 to DP No. 4
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			1.44	88.10
C	Lawn	Good		74				
D	Lawn	Good		80				
	Impervious			98			1.42	139.00
			Total Square Miles:		0.0045	Total Acres:	2.86	227.11

Weighted RCN= 79.33 , Use 79

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
						0.0		
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
	Stream						0.00	
							0.00	
							0.00	
						USE	MIN. Tc	0.1000
							Total	0.1000

Initial Abstraction Ia = 0.521 in. (Table 5-1) Use Tc= 0.10 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.521	0.521		0.521		0.521
Ia/P =	0.186	0.153		0.098		0.069
Peak Qu (csm/in.) =	975	980		1000		1000
Runoff Q (in) =	1.06	1.51		3.09		5.17
Peak Dischg. (CFS)=	4.64	6.63		13.83		23.15

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Job Number: 09035.N6

Drainage Area: Proposed 6B
to DP No. 4
Pond 6B

Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			0.29	17.39
C	Lawn	Good		74				
D	Lawn	Good		80			0.79	63.50
	Impervious			98			0.51	49.90
			Total Square Miles:		0.0025	Total Acres:	1.59	130.79

Weighted RCN= 82.36 , Use 82

TIME OF CONCENTRATIONS

ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	lawn	65	0.150			2.3		0.1061
B-C	pavement	35	0.011			2.3		0.0080
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
C-D	paved X unpaved	111				3.4	2.98	0.0104
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
							7.00	
							0.00	
							0.00	
							Total	0.1245

Initial Abstraction Ia = 0.428 in. (Table 5-1) Use Tc= 0.12 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.428	0.428		0.428		0.428
Ia/P =	0.153	0.126		0.081		0.056
Peak Qu (csm/in.) =						
Runoff Q (in) =	1.25	1.73		3.38		5.52
Peak Dischg. (CFS)=						

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Job Number: 09035.N6
Drainage Area: Proposed 6A
to DP No. 4
to Pond 6A
Existing: Proposed [X] Ultimate [ ]

Soil Group	Land Use or Zoning	Hydrologic Condition	% Imperv.	RCN Table 2-2	RCN Figure 2-3	RCN Figure 2-4	Area (Acre)	RCN x Area
B	Lawn	Good		61			0.72	43.79
C	Lawn	Good		74			0.32	23.69
D	Lawn	Good		80				
	Impervious			98			2.63	257.56
B	Meadow	Good		58			10.43	604.94
C	Meadow	Good		71			0.66	47.12
D	Meadow	Good		78			5.06	394.44
			Total Square Miles:		0.0310	Total Acres:	19.82	1371.55

Weighted RCN= 69.21 , Use 69

TIME OF CONCENTRATIONS

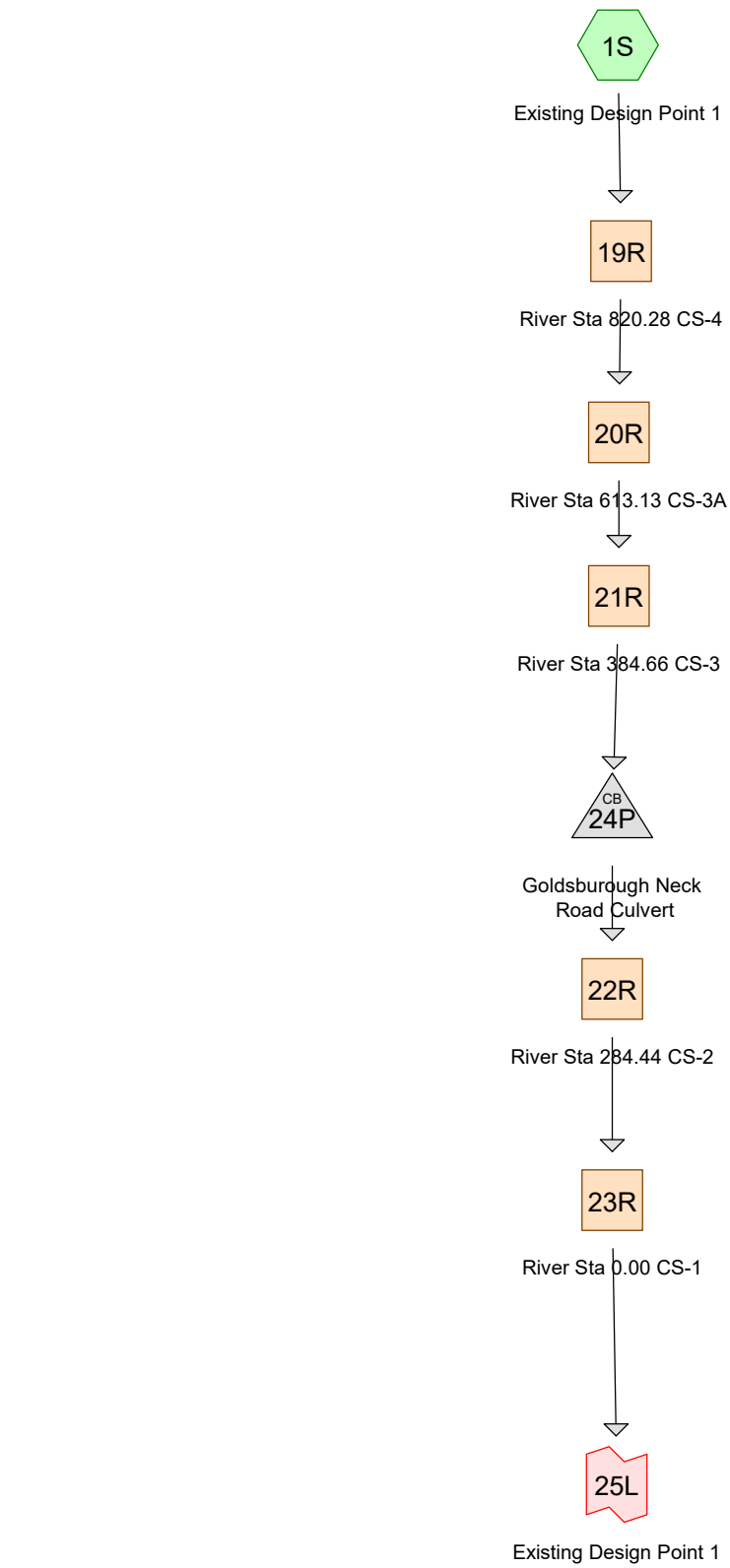
ID	Type of Flow	L(ft.)	n	A	WP	Slope (Percent)	Vel. (fps)	Time (Hours)
	Sheet Flow							
A-B	Cultivated Soils (Residue <20%)	100	0.060			0.6		0.1232
						0.0		
						0.0		
	Shallow Conc. Flow (fig. 3-1)							
B-C	paved x unpaved	273				0.9	1.53	0.0495
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	paved unpaved					0.0	0.00	
	Channel Flow							
C-D	swale	747					7.00	0.0296
D-E	pipe	54					7.00	0.0021
							0.00	
							Total	0.2045

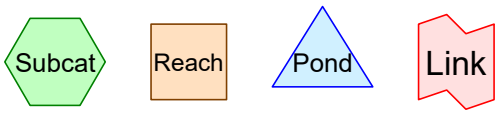
Initial Abstraction Ia = 0.890 in. (Table 5-1) Use Tc= 0.20 Tt=

Rainfall Freq. =	1 Year	2 Year		10 Years		100 Years
Rainfall, P =	2.8	3.4		5.3		7.6
Ia	0.890	0.890		0.890		0.890
Ia/P =	0.318	0.262		0.168		0.117
Peak Qu (csm/in.) =						
Runoff Q (in) =	0.57	0.91		2.20		4.04
Peak Dischg. (CFS)=						

Appendix III.A

HydroCAD – Study Point No. 1 – Existing Conditions





Routing Diagram for 09035 Study Point 1 riser
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09035 Study Point 1 riser
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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
265.410	70	Weighted CN from TR-55 (1S)
265.410	**70**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
265.410	Other	1S
265.410		**TOTAL AREA**

09035 Study Point 1 riser
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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	265.410	265.410	Weighted CN from TR-55	1S
0.000	**0.000**	**0.000**	**0.000**	**265.410**	**265.410**	**TOTAL AREA**	

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Existing Design Point 1 Runoff Area=265.410 ac 0.00% Impervious Runoff Depth=0.95"
Tc=30.6 min CN=70 Runoff=115.79 cfs 20.944 af

Reach 19R: River Sta 820.28 CS-4 Avg. Flow Depth=1.85' Max Vel=2.29 fps Inflow=115.79 cfs 20.944 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=114.82 cfs 20.944 af

Reach 20R: River Sta 613.13 CS-3A Avg. Flow Depth=1.85' Max Vel=2.69 fps Inflow=114.82 cfs 20.944 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=114.47 cfs 20.944 af

Reach 21R: River Sta 384.66 CS-3 Avg. Flow Depth=2.30' Max Vel=3.38 fps Inflow=114.47 cfs 20.944 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=114.34 cfs 20.943 af

Reach 22R: River Sta 284.44 CS-2 Avg. Flow Depth=2.72' Max Vel=0.43 fps Inflow=114.34 cfs 20.943 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=113.06 cfs 20.943 af

Reach 23R: River Sta 0.00 CS-1 Avg. Flow Depth=2.26' Max Vel=4.12 fps Inflow=113.06 cfs 20.943 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=111.92 cfs 20.943 af

Pond 24P: Goldsburough Neck Road Culvert Peak Elev=10.62' Inflow=114.34 cfs 20.943 af
Outflow=114.34 cfs 20.943 af

Link 25L: Existing Design Point 1 Inflow=111.92 cfs 20.943 af
Primary=111.92 cfs 20.943 af

Total Runoff Area = 265.410 ac Runoff Volume = 20.944 af Average Runoff Depth = 0.95"
100.00% Pervious = 265.410 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Existing Design Point 1

Runoff = 115.79 cfs @ 12.31 hrs, Volume= 20.944 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	265.410	70	Weighted CN from TR-55
	265.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TR-55 TC**

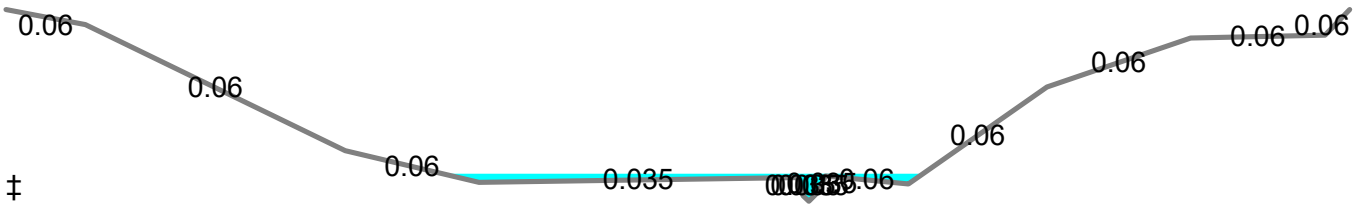
Summary for Reach 19R: River Sta 820.28 CS-4

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 115.79 cfs @ 12.31 hrs, Volume= 20.944 af
Outflow = 114.82 cfs @ 12.34 hrs, Volume= 20.944 af, Atten= 1%, Lag= 1.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 8.8 min

Peak Storage= 19,805 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.85'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 19R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

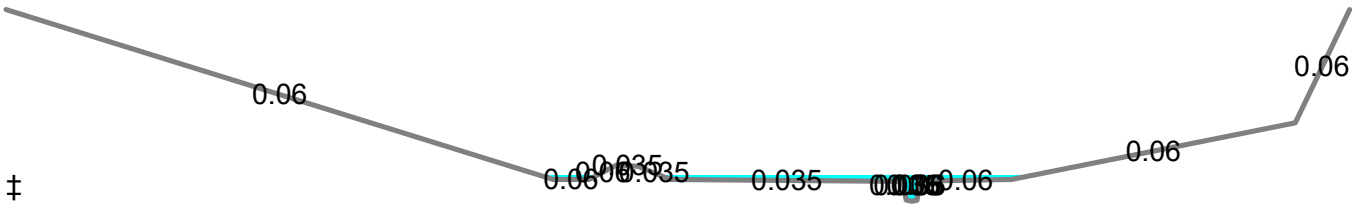
Summary for Reach 20R: River Sta 613.13 CS-3A

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 114.82 cfs @ 12.34 hrs, Volume= 20.944 af
Outflow = 114.47 cfs @ 12.37 hrs, Volume= 20.944 af, Atten= 0%, Lag= 1.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 14.7 min

Peak Storage= 15,265 cf @ 12.37 hrs
Average Depth at Peak Storage= 1.85'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 20R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

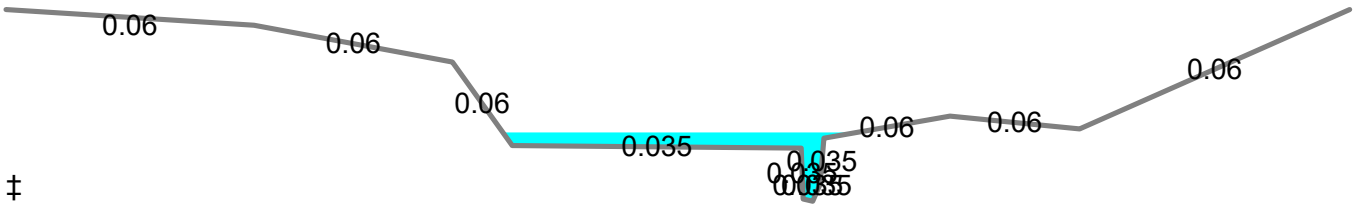
Summary for Reach 21R: River Sta 384.66 CS-3

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 114.47 cfs @ 12.37 hrs, Volume= 20.944 af
Outflow = 114.34 cfs @ 12.39 hrs, Volume= 20.943 af, Atten= 0%, Lag= 1.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 11.2 min

Peak Storage= 11,786 cf @ 12.39 hrs
Average Depth at Peak Storage= 2.30'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 21R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

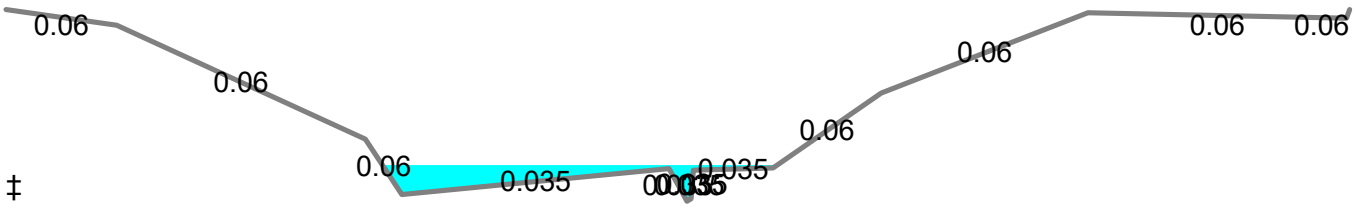
Summary for Reach 22R: River Sta 284.44 CS-2

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 114.34 cfs @ 12.40 hrs, Volume= 20.943 af
Outflow = 113.06 cfs @ 12.45 hrs, Volume= 20.943 af, Atten= 1%, Lag= 3.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.43 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 31.0 min

Peak Storage= 26,190 cf @ 12.45 hrs
Average Depth at Peak Storage= 2.72'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 22R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

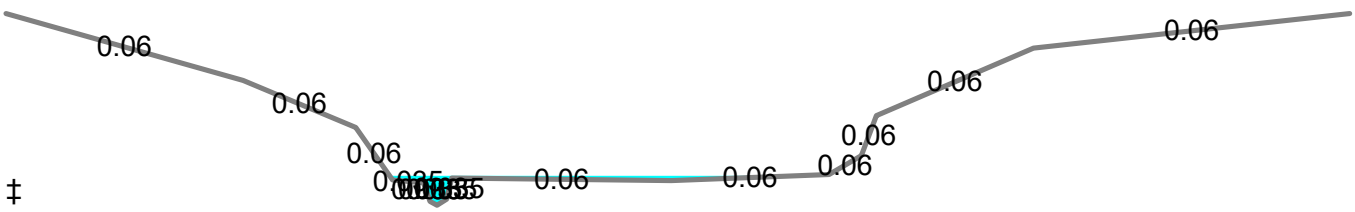
Summary for Reach 23R: River Sta 0.00 CS-1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 113.06 cfs @ 12.45 hrs, Volume= 20.943 af
Outflow = 111.92 cfs @ 12.50 hrs, Volume= 20.943 af, Atten= 1%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.12 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 8.0 min

Peak Storage= 14,899 cf @ 12.50 hrs
Average Depth at Peak Storage= 2.26'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 23R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 24P: Goldsburough Neck Road Culvert

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 114.34 cfs @ 12.39 hrs, Volume= 20.943 af
Outflow = 114.34 cfs @ 12.40 hrs, Volume= 20.943 af, Atten= 0%, Lag= 0.6 min
Primary = 114.34 cfs @ 12.40 hrs, Volume= 20.943 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 10.62' @ 12.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=114.12 cfs @ 12.40 hrs HW=10.62' TW=9.82' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 42.78 cfs @ 3.40 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 71.34 cfs @ 2.32 fps)

Stage-Discharge for Pond 24P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 25L: Existing Design Point 1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 111.92 cfs @ 12.50 hrs, Volume= 20.943 af
Primary = 111.92 cfs @ 12.51 hrs, Volume= 20.943 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Existing Design Point 1 Runoff Area=265.410 ac 0.00% Impervious Runoff Depth=2.26"
Tc=30.6 min CN=70 Runoff=310.55 cfs 50.017 af

Reach 19R: River Sta 820.28 CS-4 Avg. Flow Depth=2.24' Max Vel=2.32 fps Inflow=310.55 cfs 50.017 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=309.85 cfs 50.017 af

Reach 20R: River Sta 613.13 CS-3A Avg. Flow Depth=2.17' Max Vel=2.66 fps Inflow=309.85 cfs 50.017 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=309.40 cfs 50.017 af

Reach 21R: River Sta 384.66 CS-3 Avg. Flow Depth=2.75' Max Vel=3.43 fps Inflow=309.40 cfs 50.017 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=309.02 cfs 50.017 af

Reach 22R: River Sta 284.44 CS-2 Avg. Flow Depth=3.60' Max Vel=0.63 fps Inflow=309.02 cfs 50.016 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=307.78 cfs 50.016 af

Reach 23R: River Sta 0.00 CS-1 Avg. Flow Depth=2.70' Max Vel=4.16 fps Inflow=307.78 cfs 50.016 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=307.09 cfs 50.016 af

Pond 24P: Goldsburough Neck Road Culvert Peak Elev=11.31' Inflow=309.02 cfs 50.017 af
Outflow=309.02 cfs 50.016 af

Link 25L: Existing Design Point 1 Inflow=307.09 cfs 50.016 af
Primary=307.09 cfs 50.016 af

Total Runoff Area = 265.410 ac Runoff Volume = 50.017 af Average Runoff Depth = 2.26"
100.00% Pervious = 265.410 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Existing Design Point 1

Runoff = 310.55 cfs @ 12.31 hrs, Volume= 50.017 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	265.410	70	Weighted CN from TR-55
	265.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TR-55 TC**

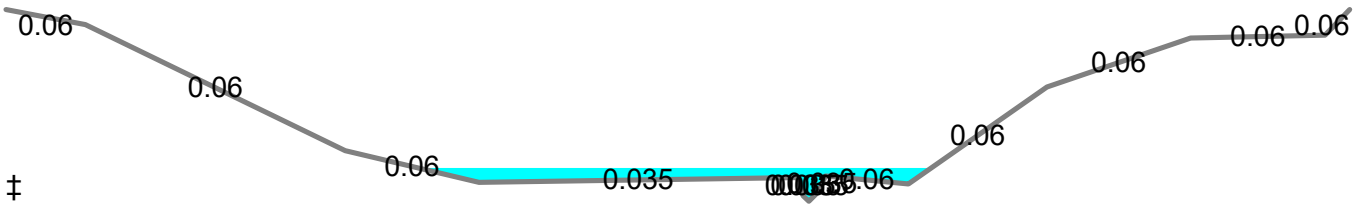
Summary for Reach 19R: River Sta 820.28 CS-4

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 310.55 cfs @ 12.31 hrs, Volume= 50.017 af
Outflow = 309.85 cfs @ 12.32 hrs, Volume= 50.017 af, Atten= 0%, Lag= 0.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.32 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 9.4 min

Peak Storage= 36,995 cf @ 12.32 hrs
Average Depth at Peak Storage= 2.24'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 19R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

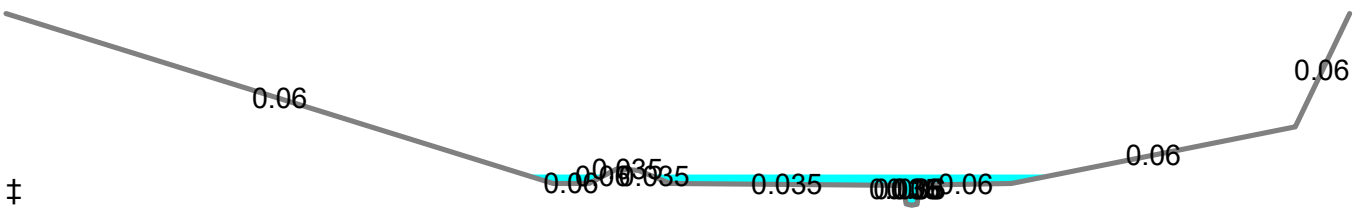
Summary for Reach 20R: River Sta 613.13 CS-3A

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 309.85 cfs @ 12.32 hrs, Volume= 50.017 af
Outflow = 309.40 cfs @ 12.33 hrs, Volume= 50.017 af, Atten= 0%, Lag= 0.9 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.66 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 15.1 min

Peak Storage= 29,187 cf @ 12.33 hrs
Average Depth at Peak Storage= 2.17'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 20R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

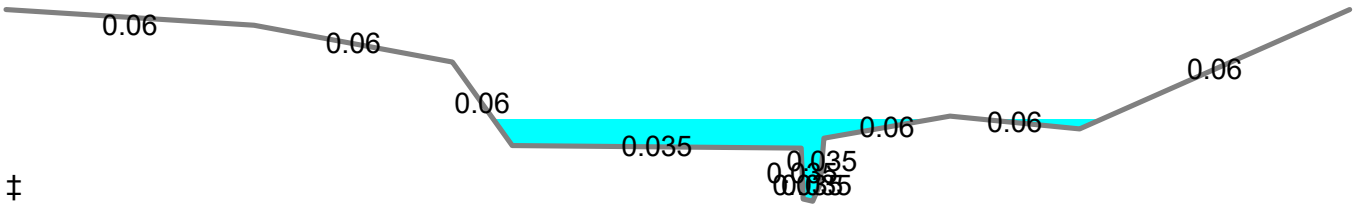
Summary for Reach 21R: River Sta 384.66 CS-3

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 309.40 cfs @ 12.33 hrs, Volume= 50.017 af
Outflow = 309.02 cfs @ 12.35 hrs, Volume= 50.017 af, Atten= 0%, Lag= 1.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.43 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 12.1 min

Peak Storage= 24,348 cf @ 12.35 hrs
Average Depth at Peak Storage= 2.75'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 21R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

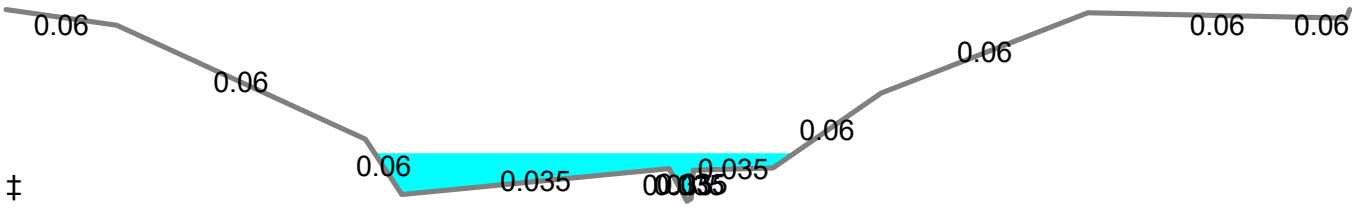
Summary for Reach 22R: River Sta 284.44 CS-2

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 309.02 cfs @ 12.36 hrs, Volume= 50.016 af
Outflow = 307.78 cfs @ 12.39 hrs, Volume= 50.016 af, Atten= 0%, Lag= 1.6 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 25.4 min

Peak Storage= 48,598 cf @ 12.39 hrs
Average Depth at Peak Storage= 3.60'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 10yr Talbot Rainfall=5.30"*
Prepared by DP Solutions Printed 8/29/2023
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 22R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

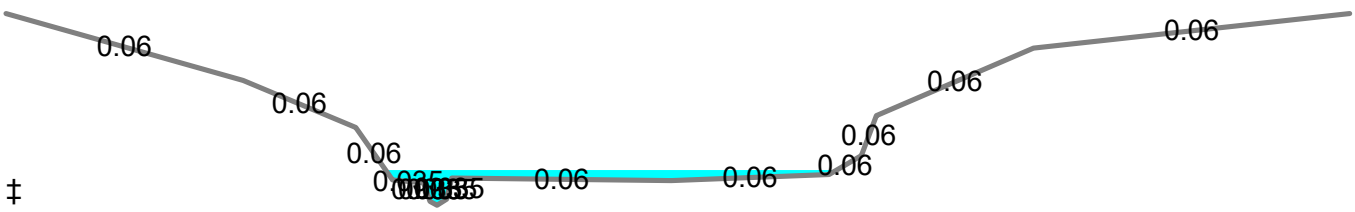
Summary for Reach 23R: River Sta 0.00 CS-1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 307.78 cfs @ 12.39 hrs, Volume= 50.016 af
Outflow = 307.09 cfs @ 12.41 hrs, Volume= 50.016 af, Atten= 0%, Lag= 1.4 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 6.8 min

Peak Storage= 34,304 cf @ 12.41 hrs
Average Depth at Peak Storage= 2.70'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 23R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 24P: Goldsburough Neck Road Culvert

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 309.02 cfs @ 12.35 hrs, Volume= 50.017 af
Outflow = 309.02 cfs @ 12.36 hrs, Volume= 50.016 af, Atten= 0%, Lag= 0.6 min
Primary = 309.02 cfs @ 12.36 hrs, Volume= 50.016 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 11.31' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=308.10 cfs @ 12.36 hrs HW=11.31' TW=10.71' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 37.20 cfs @ 2.96 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 270.89 cfs @ 3.04 fps)

Stage-Discharge for Pond 24P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 25L: Existing Design Point 1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 307.09 cfs @ 12.41 hrs, Volume= 50.016 af
Primary = 307.09 cfs @ 12.42 hrs, Volume= 50.016 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Existing Design Point 1 Runoff Area=265.410 ac 0.00% Impervious Runoff Depth=4.12"
Tc=30.6 min CN=70 Runoff=584.31 cfs 91.181 af

Reach 19R: River Sta 820.28 CS-4 Avg. Flow Depth=2.62' Max Vel=2.90 fps Inflow=584.31 cfs 91.181 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=583.97 cfs 91.181 af

Reach 20R: River Sta 613.13 CS-3A Avg. Flow Depth=2.51' Max Vel=2.69 fps Inflow=583.97 cfs 91.181 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=583.65 cfs 91.181 af

Reach 21R: River Sta 384.66 CS-3 Avg. Flow Depth=3.16' Max Vel=3.47 fps Inflow=583.65 cfs 91.181 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=583.39 cfs 91.181 af

Reach 22R: River Sta 284.44 CS-2 Avg. Flow Depth=4.50' Max Vel=0.80 fps Inflow=583.39 cfs 91.180 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=582.34 cfs 91.180 af

Reach 23R: River Sta 0.00 CS-1 Avg. Flow Depth=3.11' Max Vel=4.16 fps Inflow=582.34 cfs 91.180 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=581.80 cfs 91.180 af

Pond 24P: Goldsburough Neck Road Culvert Peak Elev=12.11' Inflow=583.39 cfs 91.181 af
Outflow=583.39 cfs 91.180 af

Link 25L: Existing Design Point 1 Inflow=581.80 cfs 91.180 af
Primary=581.80 cfs 91.180 af

Total Runoff Area = 265.410 ac Runoff Volume = 91.181 af Average Runoff Depth = 4.12"
100.00% Pervious = 265.410 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Existing Design Point 1

Runoff = 584.31 cfs @ 12.30 hrs, Volume= 91.181 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	265.410	70	Weighted CN from TR-55
	265.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TR-55 TC**

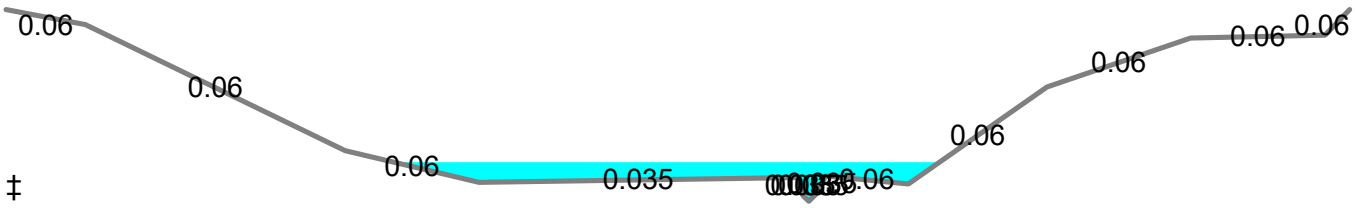
Summary for Reach 19R: River Sta 820.28 CS-4

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 584.31 cfs @ 12.30 hrs, Volume= 91.181 af
Outflow = 583.97 cfs @ 12.31 hrs, Volume= 91.181 af, Atten= 0%, Lag= 0.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 8.0 min

Peak Storage= 55,579 cf @ 12.31 hrs
Average Depth at Peak Storage= 2.62'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 19R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

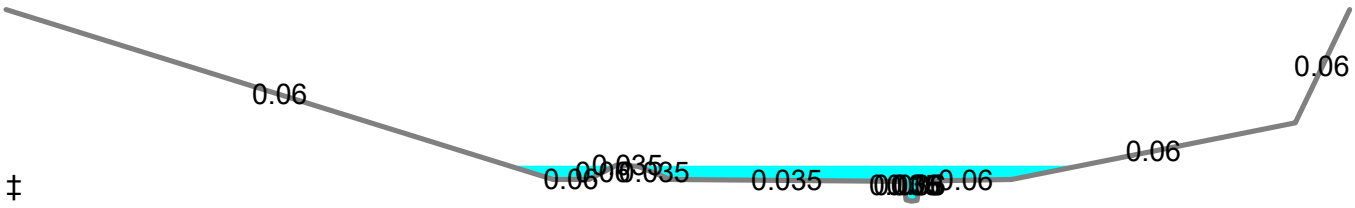
Summary for Reach 20R: River Sta 613.13 CS-3A

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 583.97 cfs @ 12.31 hrs, Volume= 91.181 af
Outflow = 583.65 cfs @ 12.33 hrs, Volume= 91.181 af, Atten= 0%, Lag= 0.9 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 12.2 min

Peak Storage= 45,241 cf @ 12.33 hrs
Average Depth at Peak Storage= 2.51'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 20R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

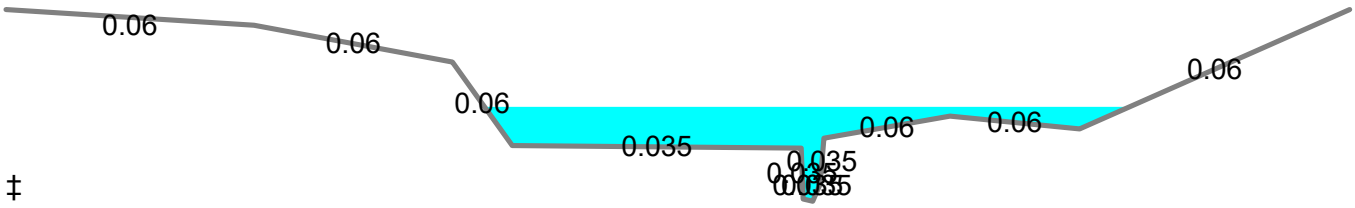
Summary for Reach 21R: River Sta 384.66 CS-3

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 583.65 cfs @ 12.33 hrs, Volume= 91.181 af
Outflow = 583.39 cfs @ 12.34 hrs, Volume= 91.181 af, Atten= 0%, Lag= 0.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 9.8 min

Peak Storage= 40,320 cf @ 12.34 hrs
Average Depth at Peak Storage= 3.16'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 21R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

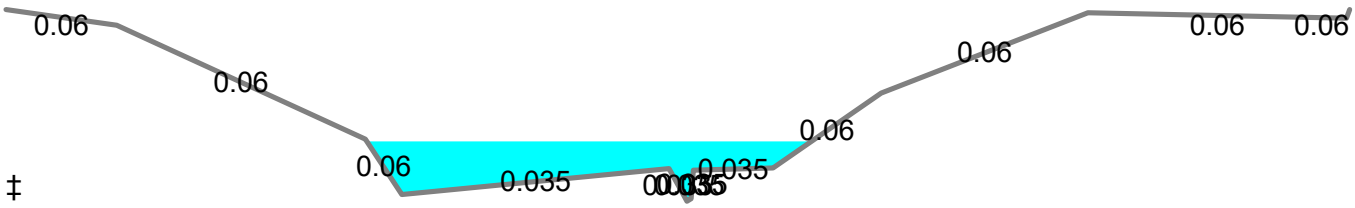
Summary for Reach 22R: River Sta 284.44 CS-2

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 583.39 cfs @ 12.35 hrs, Volume= 91.180 af
Outflow = 582.34 cfs @ 12.37 hrs, Volume= 91.180 af, Atten= 0%, Lag= 1.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.80 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 21.6 min

Peak Storage= 72,797 cf @ 12.37 hrs
Average Depth at Peak Storage= 4.50'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 22R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

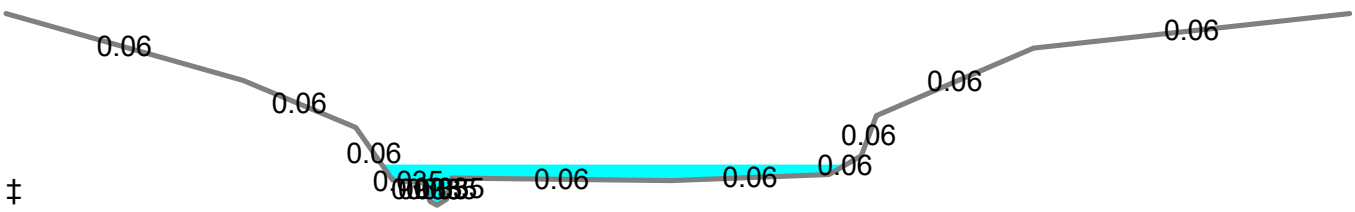
Summary for Reach 23R: River Sta 0.00 CS-1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 582.34 cfs @ 12.37 hrs, Volume= 91.180 af
Outflow = 581.80 cfs @ 12.39 hrs, Volume= 91.180 af, Atten= 0%, Lag= 1.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 6.2 min

Peak Storage= 53,511 cf @ 12.39 hrs
Average Depth at Peak Storage= 3.11'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 23R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 24P: Goldsburough Neck Road Culvert

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 583.39 cfs @ 12.34 hrs, Volume= 91.181 af
Outflow = 583.39 cfs @ 12.35 hrs, Volume= 91.180 af, Atten= 0%, Lag= 0.6 min
Primary = 583.39 cfs @ 12.35 hrs, Volume= 91.180 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 12.11' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=581.06 cfs @ 12.35 hrs HW=12.10' TW=11.61' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 33.68 cfs @ 2.68 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 547.38 cfs @ 3.08 fps)

Stage-Discharge for Pond 24P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 25L: Existing Design Point 1

Inflow Area = 265.410 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 581.80 cfs @ 12.39 hrs, Volume= 91.180 af
Primary = 581.80 cfs @ 12.40 hrs, Volume= 91.180 af, Atten= 0%, Lag= 0.6 min

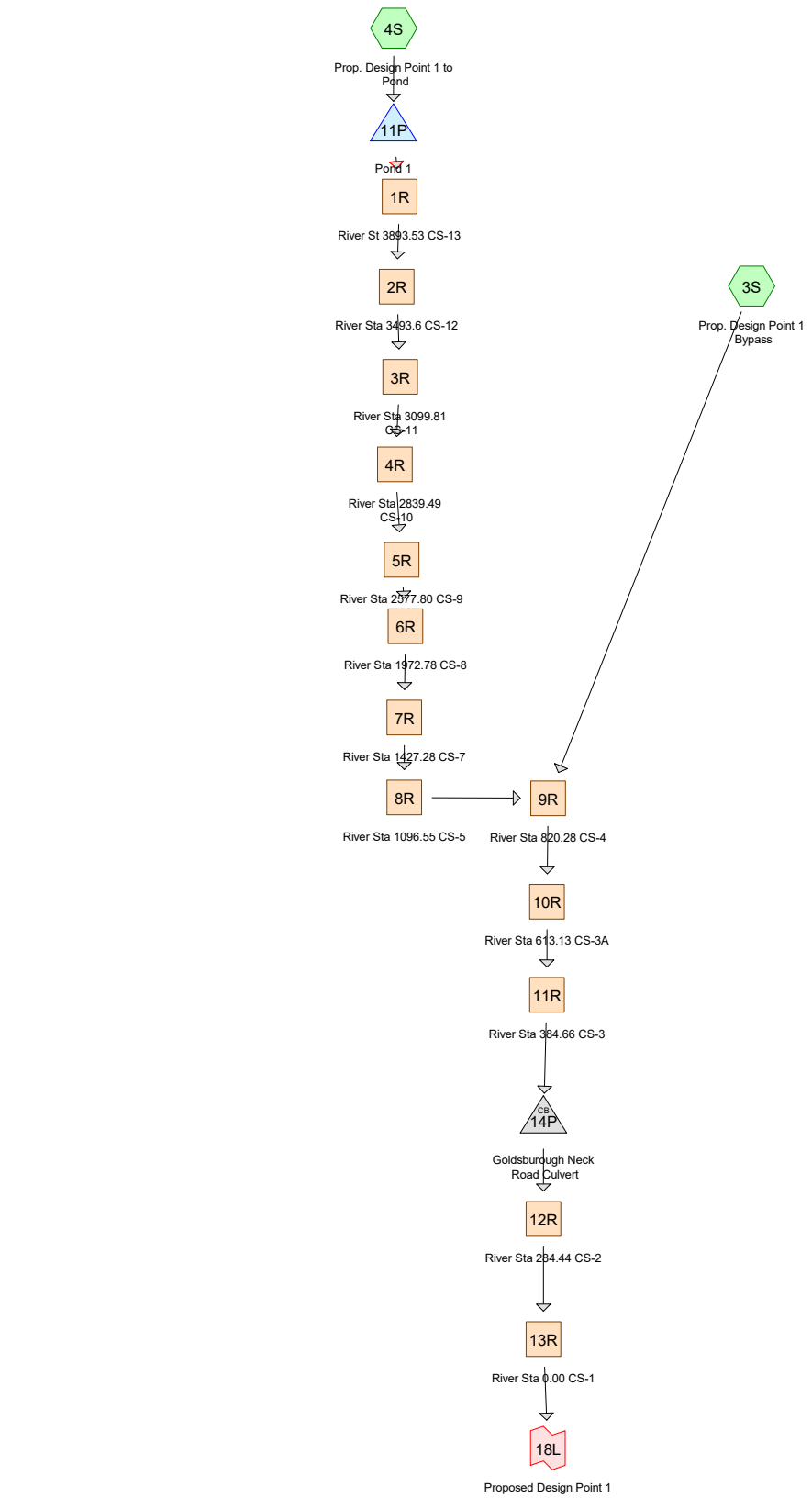
Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

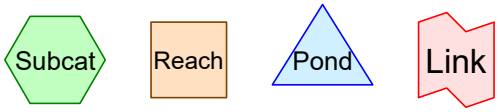
37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Appendix III.B

HydroCAD – Study Point No. 1 – Proposed Conditions





Routing Diagram for 09035 Study Point 1 riser
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09035 Study Point 1 riser
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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
221.700	71	Weighted CN from TR-55 (3S)
49.080	70	Weighted CN from TR-55 (4S)
270.780	**71**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
270.780	Other	3S, 4S
270.780		**TOTAL AREA**

09035 Study Point 1 riser
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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	270.780	270.780	Weighted CN from TR-55	3S, 4S
0.000	**0.000**	**0.000**	**0.000**	**270.780**	**270.780**	**TOTAL AREA**	

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 3S: Prop. Design Point 1 Runoff Area=221.700 ac 0.00% Impervious Runoff Depth=1.00"
Tc=30.6 min CN=71 Runoff=104.25 cfs 18.488 af

Subcatchment 4S: Prop. Design Point 1 to Runoff Area=49.080 ac 0.00% Impervious Runoff Depth=0.95"
Tc=16.2 min CN=70 Runoff=34.18 cfs 3.873 af

Reach 1R: River St 3893.53 CS-13 Avg. Flow Depth=1.46' Max Vel=3.62 fps Inflow=24.09 cfs 3.873 af
L=400.0' S=0.0089 '/' Capacity=30,715.83 cfs Outflow=24.07 cfs 3.873 af

Reach 2R: River Sta 3493.6 CS-12 Avg. Flow Depth=1.14' Max Vel=2.47 fps Inflow=24.07 cfs 3.873 af
L=393.8' S=0.0044 '/' Capacity=4,857.15 cfs Outflow=24.01 cfs 3.873 af

Reach 3R: River Sta 3099.81 CS-11 Avg. Flow Depth=0.82' Max Vel=1.46 fps Inflow=24.01 cfs 3.873 af
L=393.8' S=0.0044 '/' Capacity=4,820.08 cfs Outflow=23.74 cfs 3.873 af

Reach 4R: River Sta 2839.49 CS-10 Avg. Flow Depth=1.09' Max Vel=3.38 fps Inflow=23.74 cfs 3.873 af
L=260.3' S=0.0146 '/' Capacity=4,436.42 cfs Outflow=23.74 cfs 3.873 af

Reach 5R: River Sta 2577.80 CS-9 Avg. Flow Depth=1.66' Max Vel=1.58 fps Inflow=23.74 cfs 3.873 af
L=261.7' S=0.0037 '/' Capacity=3,809.00 cfs Outflow=23.27 cfs 3.873 af

Reach 6R: River Sta 1972.78 CS-8 Avg. Flow Depth=1.55' Max Vel=5.15 fps Inflow=23.27 cfs 3.873 af
L=605.0' S=0.0200 '/' Capacity=30,613.15 cfs Outflow=23.23 cfs 3.873 af

Reach 7R: River Sta 1427.28 CS-7 Avg. Flow Depth=1.11' Max Vel=0.79 fps Inflow=23.23 cfs 3.873 af
L=545.5' S=0.0023 '/' Capacity=5,579.78 cfs Outflow=21.19 cfs 3.873 af

Reach 8R: River Sta 1096.55 CS-5 Avg. Flow Depth=1.18' Max Vel=2.72 fps Inflow=21.19 cfs 3.873 af
L=330.7' S=0.0086 '/' Capacity=33,066.93 cfs Outflow=21.09 cfs 3.872 af

Reach 9R: River Sta 820.28 CS-4 Avg. Flow Depth=1.83' Max Vel=2.29 fps Inflow=107.17 cfs 22.361 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=106.98 cfs 22.361 af

Reach 10R: River Sta 613.13 CS-3A Avg. Flow Depth=1.83' Max Vel=2.65 fps Inflow=106.98 cfs 22.361 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=106.84 cfs 22.361 af

Reach 11R: River Sta 384.66 CS-3 Avg. Flow Depth=2.28' Max Vel=3.43 fps Inflow=106.84 cfs 22.361 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=106.77 cfs 22.361 af

Reach 12R: River Sta 284.44 CS-2 Avg. Flow Depth=2.68' Max Vel=0.42 fps Inflow=106.77 cfs 22.357 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=106.11 cfs 22.357 af

Reach 13R: River Sta 0.00 CS-1 Avg. Flow Depth=2.24' Max Vel=4.12 fps Inflow=106.11 cfs 22.357 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=105.56 cfs 22.357 af

Pond 11P: Pond 1 Peak Elev=46.85' Storage=17,948 cf Inflow=34.18 cfs 3.873 af
Outflow=24.09 cfs 3.873 af

Pond 14P: Goldsburough Neck Road Culvert Peak Elev=10.58' Inflow=106.77 cfs 22.361 af
Outflow=106.77 cfs 22.357 af

Link 18L: Proposed Design Point 1 Inflow=105.56 cfs 22.357 af
Primary=105.56 cfs 22.357 af

Total Runoff Area = 270.780 ac Runoff Volume = 22.361 af Average Runoff Depth = 0.99"
100.00% Pervious = 270.780 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Prop. Design Point 1 Bypass

Runoff = 104.25 cfs @ 12.31 hrs, Volume= 18.488 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	221.700	71	Weighted CN from TR-55
	221.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TC from TR-55**

Summary for Subcatchment 4S: Prop. Design Point 1 to Pond

Runoff = 34.18 cfs @ 12.13 hrs, Volume= 3.873 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	49.080	70	Weighted CN from TR-55
	49.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2					**Direct Entry, From TR-55**

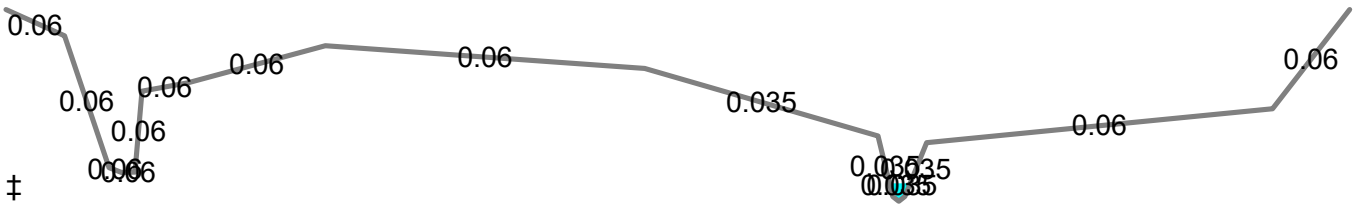
Summary for Reach 1R: River St 3893.53 CS-13

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 24.09 cfs @ 12.35 hrs, Volume= 3.873 af
Outflow = 24.07 cfs @ 12.38 hrs, Volume= 3.873 af, Atten= 0%, Lag= 1.4 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.62 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 11.8 min

Peak Storage= 2,664 cf @ 12.38 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 15.50' Flow Area= 2,974.4 sf, Capacity= 30,715.83 cfs

Custom cross-section, Length= 400.0' Slope= 0.0089 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 37.41', Outlet Invert= 33.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.91	0.00		
19.65	50.80	2.11	0.060	
34.56	40.13	12.78	0.060	
38.64	39.75	13.16	0.060	
43.17	39.76	13.15	0.060	
45.57	46.31	6.60	0.060	
60.88	46.99	5.92	0.060	
106.99	49.99	2.92	0.060	
213.92	48.16	4.75	0.060	
292.01	42.68	10.23	0.035	
296.95	37.81	15.10	0.035	
299.01	37.41	15.50	0.035	
301.05	37.81	15.10	0.035	
308.35	42.15	10.76	0.035	
424.22	44.88	8.03	0.060	
450.00	52.91	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 2yr Talbot Rainfall=3.40"*
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.40	0.8	4.2	328	1.11
2.34	13.8	10.7	5,539	65.72
2.35	14.0	15.4	5,586	66.32
2.72	20.1	21.0	8,035	93.27
4.74	67.8	33.5	27,109	386.86
5.27	89.0	58.2	35,609	520.79
7.47	345.1	189.2	138,024	1,641.80
8.90	623.1	218.4	249,237	3,633.81
9.58	774.2	246.9	309,687	4,807.44
10.75	1,074.1	287.6	429,650	7,561.94
12.58	1,711.1	432.0	684,458	14,019.18
13.39	2,052.7	436.1	821,092	18,072.48
15.50	2,974.4	463.0	1,189,741	30,715.83

Stage-Discharge for Reach 1R: River St 3893.53 CS-13

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
37.41	0.00	0.00
37.61	0.84	0.23
37.81	1.35	1.11
38.01	1.98	3.40
38.21	2.47	6.64
38.41	2.87	10.88
38.61	3.22	16.04
38.81	3.54	22.17
39.01	3.82	29.44
39.21	4.09	37.74
39.41	4.34	47.09
39.61	4.58	57.68
39.81	4.73	69.60
40.01	4.67	83.73
40.21	4.64	100.40
40.41	4.68	119.94
40.61	4.76	141.71
40.81	4.86	165.68
41.01	4.97	192.13
41.21	5.09	220.86
41.41	5.22	251.78
41.61	5.35	285.06
41.81	5.48	320.85
42.01	5.62	358.92
42.21	5.76	400.59
42.41	5.85	448.85
42.61	5.86	501.54
42.81	5.59	538.56
43.01	5.27	576.48
43.21	5.03	628.71
43.41	4.86	693.94
43.61	4.75	772.42
43.81	4.68	867.19
44.01	4.65	976.33
44.21	4.64	1,100.41
44.41	4.66	1,241.72
44.61	4.69	1,400.72
44.81	4.74	1,576.77
45.01	4.84	1,784.10
45.21	4.97	2,019.14
45.41	5.12	2,271.70
45.61	5.27	2,541.72
45.81	5.43	2,831.29
46.01	5.59	3,139.36
46.21	5.75	3,464.89
46.41	5.88	3,784.80
46.61	5.98	4,111.63
46.81	6.10	4,466.47
47.01	6.22	4,847.95
47.21	6.37	5,266.28
47.41	6.51	5,706.90
47.61	6.65	6,169.37
47.81	6.79	6,655.19
48.01	6.93	7,165.91
48.21	7.07	7,694.66
48.41	7.20	8,251.10
48.61	7.34	8,856.97
48.81	7.48	9,501.43
49.01	7.61	10,180.91
49.21	7.74	10,896.71
49.41	7.86	11,648.77
49.61	7.98	12,433.61
49.81	8.10	13,251.36
50.01	8.21	14,114.05
50.21	8.36	15,072.73
50.41	8.51	16,059.68
50.61	8.66	17,078.41
50.81	8.81	18,125.28
51.01	8.96	19,191.80
51.21	9.11	20,284.37
51.41	9.25	21,408.49
51.61	9.40	22,559.49
51.81	9.54	23,737.21
52.01	9.69	24,944.69
52.21	9.83	26,180.14
52.41	9.97	27,441.79
52.61	10.12	28,730.57
52.81	**10.26**	**30,048.98**

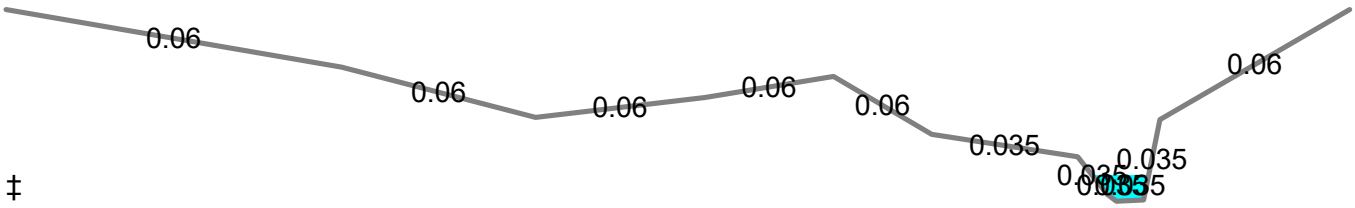
Summary for Reach 2R: River Sta 3493.6 CS-12

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 24.07 cfs @ 12.38 hrs, Volume= 3.873 af
Outflow = 24.01 cfs @ 12.41 hrs, Volume= 3.873 af, Atten= 0%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 30.3 min

Peak Storage= 3,831 cf @ 12.41 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 8.30' Flow Area= 915.0 sf, Capacity= 4,857.15 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	42.15	0.00		
66.72	39.65	2.50	0.060	
105.27	37.48	4.67	0.060	
138.90	38.34	3.81	0.060	
164.52	39.25	2.90	0.060	
184.02	36.75	5.40	0.060	
213.06	35.77	6.38	0.035	
218.87	34.15	8.00	0.035	
220.76	33.85	8.30	0.035	
226.16	33.90	8.25	0.035	
229.39	37.38	4.77	0.035	
267.12	42.15	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 2yr Talbot Rainfall=3.40"*
Prepared by DP Solutions Printed 8/29/2023
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.05	0.1	5.7	56	0.03
0.30	1.8	7.7	708	1.94
1.92	19.9	15.9	7,839	65.46
2.90	49.1	46.3	19,344	144.64
3.53	79.1	52.1	31,137	306.81
3.63	84.2	53.7	33,148	337.78
4.49	155.6	116.3	61,279	678.51
5.40	285.1	172.5	112,281	1,248.05
5.80	355.3	182.8	139,922	1,592.53
8.30	915.0	269.5	360,325	4,857.15

Stage-Discharge for Reach 2R: River Sta 3493.6 CS-12

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.48	0.24
34.05	0.82	0.92
34.15	1.08	1.94
34.25	1.31	3.39
34.35	1.51	5.14
34.45	1.69	7.24
34.55	1.86	9.64
34.65	2.01	12.36
34.75	2.16	15.38
34.85	2.29	18.72
34.95	2.42	22.41
35.05	2.54	26.43
35.15	2.65	30.76
35.25	2.77	35.43
35.35	2.87	40.45
35.45	2.98	45.84
35.55	3.08	51.58
35.65	3.17	57.68
35.75	3.27	64.13
35.85	3.11	66.02
35.95	2.97	68.62
36.05	2.89	72.93
36.15	2.84	78.78
36.25	2.82	86.06
36.35	2.82	94.86
36.45	2.83	105.15
36.55	2.86	116.85
36.65	2.90	130.01
36.75	2.94	144.64
36.85	3.11	167.04
36.95	3.27	190.73
37.05	3.42	215.66
37.15	3.57	241.84
37.25	3.71	269.24
37.35	3.84	297.98
37.45	3.97	328.41
37.55	4.09	359.95
37.65	4.18	393.06
37.75	4.25	428.01
37.85	4.29	465.13
37.95	4.32	504.29
38.05	4.34	545.57
38.15	4.36	589.09
38.25	4.36	634.97
38.35	4.36	683.60
38.45	4.36	735.22
38.55	4.36	789.34
38.65	4.36	846.09
38.75	4.36	905.60
38.85	4.36	968.22
38.95	4.36	1,033.67
39.05	4.37	1,102.04
39.15	4.37	1,173.38
39.25	4.38	1,248.05
39.35	4.40	1,329.60
39.45	4.42	1,414.31
39.55	4.45	1,502.00
39.65	4.48	1,592.53
39.75	4.51	1,684.87
39.85	4.54	1,780.31
39.95	4.57	1,878.73
40.05	4.60	1,980.15
40.15	4.63	2,084.57
40.25	4.66	2,192.24
40.35	4.70	2,303.17
40.45	4.73	2,417.17
40.55	4.76	2,534.24
40.65	4.80	2,654.42
40.75	4.83	2,778.01
40.85	4.87	2,904.91
40.95	4.90	3,034.96
41.05	4.93	3,168.21
41.15	4.97	3,304.65
41.25	5.00	3,444.69
41.35	5.04	3,588.08
41.45	5.07	3,734.74
41.55	5.10	3,884.69
41.65	5.14	4,037.96
41.75	5.17	4,194.99
41.85	5.21	4,355.44
41.95	5.24	4,519.27
42.05	5.27	4,686.50
42.15	**5.31**	**4,857.15**

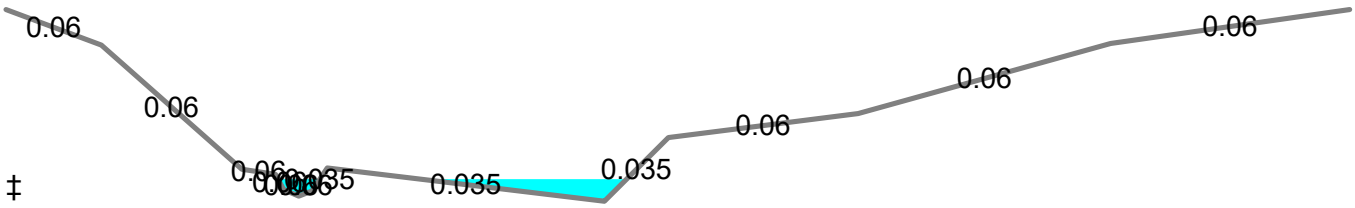
Summary for Reach 3R: River Sta 3099.81 CS-11

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 24.01 cfs @ 12.41 hrs, Volume= 3.873 af
Outflow = 23.74 cfs @ 12.48 hrs, Volume= 3.873 af, Atten= 1%, Lag= 4.1 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.46 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 35.0 min

Peak Storage= 6,436 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 7.10' Flow Area= 776.4 sf, Capacity= 4,820.08 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
116.06	39.20	0.00		
131.17	37.89	1.31	0.060	
153.42	33.28	5.92	0.060	
158.73	33.10	6.10	0.060	
160.06	32.53	6.67	0.060	
162.43	32.29	6.91	0.060	
164.53	32.48	6.72	0.060	
166.96	33.33	5.87	0.035	
210.85	32.10	7.10	0.035	
221.00	34.46	4.74	0.035	
251.08	35.35	3.85	0.060	
291.07	37.94	1.26	0.060	
328.96	39.20	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.19	0.7	7.6	284	0.42
0.38	3.3	19.2	1,286	2.82
0.43	4.3	21.9	1,691	4.00
1.00	24.1	47.9	9,474	40.19
1.18	33.8	61.0	13,306	61.32
1.23	36.9	63.4	14,522	68.88
2.36	113.9	74.0	44,835	402.36
3.25	194.4	108.4	76,540	850.90
5.79	533.2	160.3	209,963	3,125.68
5.84	541.2	161.6	213,110	3,183.12
7.10	776.4	214.1	305,742	4,820.08

Stage-Discharge for Reach 3R: River Sta 3099.81 CS-11

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.38	0.10
34.05	0.61	0.49
34.15	0.76	1.50
34.25	0.89	3.28
34.35	1.03	6.09
34.45	1.16	10.15
34.55	1.30	15.39
34.65	1.43	22.13
34.75	1.55	30.38
34.85	1.67	40.19
34.95	1.75	51.13
35.05	1.84	64.30
35.15	2.00	82.64
35.25	2.17	103.88
35.35	2.34	127.06
35.45	2.50	152.27
35.55	2.66	179.21
35.65	2.80	208.15
35.75	2.94	238.80
35.85	3.08	271.23
35.95	3.21	305.48
36.05	3.34	341.31
36.15	3.46	379.06
36.25	3.59	419.11
36.35	3.71	462.19
36.45	3.83	507.22
36.55	3.93	554.11
36.65	4.03	603.30
36.75	4.11	654.43
36.85	4.20	707.82
36.95	4.27	763.41
37.05	4.34	821.15
37.15	4.41	881.65
37.25	4.48	944.49
37.35	4.55	1,009.73
37.45	4.62	1,077.16
37.55	4.68	1,146.78
37.65	4.75	1,218.79
37.75	4.81	1,292.86
37.85	4.88	1,369.37
37.95	4.94	1,448.03
38.05	5.00	1,528.94
38.15	5.06	1,612.21
38.25	5.12	1,697.56
38.35	5.18	1,785.44
38.45	5.24	1,875.45
38.55	5.29	1,967.78
38.65	5.35	2,062.48
38.75	5.40	2,159.30
38.85	5.46	2,258.72
38.95	5.51	2,360.27
39.05	5.56	2,464.25
39.15	5.62	2,570.59
39.25	5.67	2,679.15
39.35	5.72	2,790.31
39.45	5.77	2,903.65
39.55	5.82	3,019.52
39.65	5.87	3,137.15
39.75	5.90	3,249.89
39.85	5.93	3,363.65
39.95	5.96	3,480.22
40.05	5.98	3,600.11
40.15	6.01	3,722.98
40.25	6.04	3,848.92
40.35	6.06	3,978.17
40.45	6.09	4,110.30
40.55	6.11	4,245.95
40.65	6.14	4,384.60
40.75	6.16	4,526.51
40.85	6.18	4,671.79
40.95	**6.21**	**4,820.08**

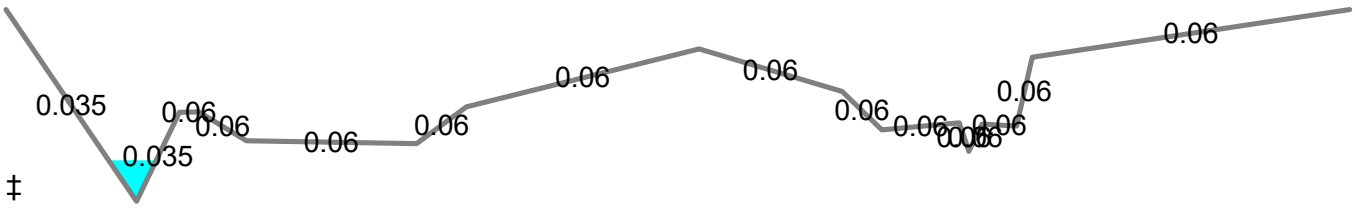
Summary for Reach 4R: River Sta 2839.49 CS-10

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 23.74 cfs @ 12.48 hrs, Volume= 3.873 af
Outflow = 23.74 cfs @ 12.50 hrs, Volume= 3.873 af, Atten= 0%, Lag= 1.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 10.5 min

Peak Storage= 1,831 cf @ 12.50 hrs
Average Depth at Peak Storage= 1.09'
Bank-Full Depth= 5.07' Flow Area= 775.1 sf, Capacity= 4,436.42 cfs

Custom cross-section, Length= 260.3' Slope= 0.0146 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 32.10', Outlet Invert= 28.31'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
132.58	33.38	0.00		
167.94	28.31	5.07	0.035	
179.60	30.66	2.72	0.035	
184.90	30.67	2.71	0.060	
197.68	29.91	3.47	0.060	
243.83	29.83	3.55	0.060	
257.41	30.81	2.57	0.060	
320.42	32.34	1.04	0.060	
359.18	31.21	2.17	0.060	
369.95	30.20	3.18	0.060	
390.93	30.38	3.00	0.060	
393.55	29.63	3.75	0.060	
397.11	30.35	3.03	0.060	
406.51	30.30	3.08	0.060	
410.77	32.12	1.26	0.060	
496.78	33.38	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.32	10.4	16.0	2,707	40.01
1.52	14.0	20.1	3,633	58.36
1.60	17.5	69.1	4,555	67.65
1.89	39.6	84.0	10,301	128.56
1.99	48.8	101.9	12,707	155.02
2.04	54.3	120.4	14,146	167.98
2.07	58.0	125.6	15,102	178.39
2.35	95.2	141.3	24,784	311.34
2.36	96.6	147.2	25,157	313.38
2.50	117.5	151.9	30,580	403.75
2.90	182.8	176.5	47,593	714.68
3.81	377.8	254.0	98,334	1,779.88
4.03	437.0	287.2	113,760	2,088.69
5.07	775.1	365.5	201,762	4,436.42

Stage-Discharge for Reach 4R: River Sta 2839.49 CS-10

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
32.10	0.00	0.00
32.14	0.35	0.01
32.18	0.59	0.03
32.22	0.77	0.07
32.26	0.94	0.15
32.30	1.09	0.26
32.34	1.23	0.43
32.38	1.37	0.65
32.42	1.49	0.93
32.46	1.62	1.26
32.50	1.74	1.66
32.54	1.85	2.15
32.58	1.96	2.71
32.62	2.07	3.35
32.66	2.17	4.07
32.70	2.27	4.90
32.74	2.37	5.82
32.78	2.47	6.84
32.82	2.57	7.96
32.86	2.66	9.18
32.90	2.75	10.54
32.94	2.85	12.01
32.98	2.94	13.59
33.02	3.02	15.29
33.06	3.11	17.12
33.10	3.20	19.10
33.14	3.28	21.21
33.18	3.37	23.45
33.22	3.45	25.82
33.26	3.53	28.36
33.30	3.61	31.05
33.34	3.69	33.89
33.38	3.77	36.88
33.42	3.85	40.01
33.46	3.92	43.34
33.50	3.99	46.84
33.54	4.06	50.51
33.58	4.12	54.35
33.62	4.18	58.36
33.66	4.08	62.75
33.70	3.87	67.65
33.74	3.65	73.91
33.78	3.49	80.75
33.82	3.38	88.37
33.86	3.32	96.81
33.90	3.28	105.88
33.94	3.26	115.58
33.98	3.25	125.87
34.02	3.22	135.99
34.06	3.20	146.67
34.10	3.16	157.55
34.14	3.09	167.98
34.18	3.08	182.37
34.22	3.09	198.89
34.26	3.11	216.33
34.30	3.14	234.63
34.34	3.17	253.80
34.38	3.20	273.87
34.42	3.24	295.06
34.46	3.24	313.38
34.50	3.30	338.18
34.54	3.35	363.68
34.58	3.41	390.19
34.62	3.46	417.14
34.66	3.51	444.56
34.70	3.56	472.78
34.74	3.60	501.86
34.78	3.65	532.03
34.82	3.70	563.19
34.86	3.75	595.23
34.90	3.79	628.15
34.94	3.84	661.97
34.98	3.89	696.98
35.02	3.93	732.05
35.06	3.96	767.37
35.10	4.00	803.58
35.14	4.04	840.83
35.18	4.07	879.35
35.22	4.11	918.87
35.26	4.15	959.40
35.30	4.18	1,000.94
35.34	4.22	1,043.68
35.38	4.25	1,087.67
35.42	4.29	1,132.71
35.46	4.32	1,178.81
35.50	4.36	1,225.97
35.54	4.39	1,274.50
35.58	4.43	1,324.24
35.62	4.46	1,375.08
35.66	4.50	1,427.04
35.70	4.53	1,480.11
35.74	4.57	1,534.72
35.78	4.60	1,590.49
35.82	4.64	1,647.42
35.86	4.67	1,705.51
35.90	4.70	1,764.87
35.94	4.72	1,819.18
35.98	4.73	1,872.89
36.02	4.74	1,928.13
36.06	4.76	1,984.96
36.10	4.77	2,043.66
36.14	4.79	2,106.67
36.18	4.83	2,179.40
36.22	4.87	2,253.25
36.26	4.90	2,328.40
36.30	4.94	2,405.20
36.34	4.98	2,483.44
36.38	5.02	2,562.99
36.42	5.05	2,643.88
36.46	5.09	2,726.10
36.50	5.13	2,810.14
36.54	5.16	2,895.53
36.58	5.20	2,982.28
36.62	5.24	3,070.38
36.66	5.27	3,160.00
36.70	5.31	3,251.36
36.74	5.35	3,344.10
36.78	5.38	3,438.24
36.82	5.42	3,533.77
36.86	5.45	3,630.99
36.90	5.49	3,729.86
36.94	5.52	3,830.15
36.98	5.56	3,931.87
37.02	5.59	4,035.02
37.06	5.63	4,140.05
37.10	5.66	4,246.63
37.14	5.70	4,354.66
37.18	**5.73**	**4,463.67**

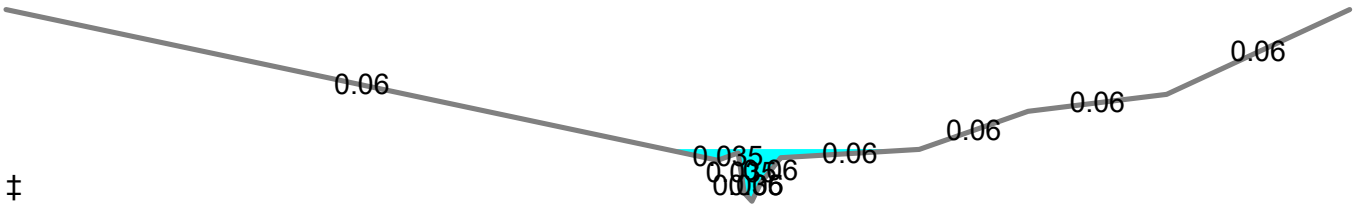
Summary for Reach 5R: River Sta 2577.80 CS-9

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 23.74 cfs @ 12.50 hrs, Volume= 3.873 af
Outflow = 23.27 cfs @ 12.58 hrs, Volume= 3.873 af, Atten= 2%, Lag= 5.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.58 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 19.7 min

Peak Storage= 6,434 cf @ 12.58 hrs
Average Depth at Peak Storage= 1.66'
Bank-Full Depth= 6.08' Flow Area= 1,195.3 sf, Capacity= 3,809.00 cfs

Custom cross-section, Length= 261.7' Slope= 0.0037 '/' (107 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 28.31', Outlet Invert= 27.33'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	32.11	0.00		
227.84	27.33	4.78	0.060	
234.43	27.56	4.55	0.035	
236.39	26.29	5.82	0.035	
238.78	26.03	6.08	0.035	
241.58	26.60	5.51	0.060	
248.02	27.41	4.70	0.060	
292.35	27.67	4.44	0.060	
327.25	28.88	3.23	0.060	
371.61	29.42	2.69	0.060	
430.19	32.11	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.26	0.5	3.7	125	0.27
0.57	1.9	5.8	503	2.05
1.30	8.6	13.0	2,248	13.57
1.38	9.9	19.9	2,584	13.66
1.53	15.6	57.2	4,079	14.38
1.64	23.1	81.2	6,060	21.63
2.85	176.8	173.8	46,274	311.44
3.39	289.3	243.9	75,716	550.66
6.08	1,195.3	430.8	312,808	3,809.00

Stage-Discharge for Reach 5R: River Sta 2577.80 CS-9

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
28.31	0.00	0.00
28.35	0.14	0.00
28.39	0.25	0.02
28.43	0.34	0.03
28.47	0.41	0.08
28.51	0.47	0.14
28.55	0.54	0.22
28.59	0.61	0.34
28.63	0.69	0.50
28.67	0.77	0.67
28.71	0.83	0.89
28.75	0.89	1.12
28.79	0.95	1.37
28.83	1.00	1.66
28.87	1.05	1.97
28.91	1.09	2.30
28.95	1.13	2.66
28.99	1.16	3.04
29.03	1.20	3.46
29.07	1.23	3.91
29.11	1.26	4.39
29.15	1.29	4.91
29.19	1.32	5.46
29.23	1.35	6.05
29.27	1.37	6.67
29.31	1.40	7.34
29.35	1.42	8.03
29.39	1.45	8.78
29.43	1.47	9.56
29.47	1.50	10.37
29.51	1.52	11.24
29.55	1.55	12.15
29.59	1.57	13.08
29.63	1.52	13.47
29.67	1.42	13.53
29.71	1.25	12.87
29.75	1.10	12.69
29.79	1.00	13.09
29.83	0.93	14.03
29.87	0.92	16.12
29.91	0.93	18.72
29.95	0.93	21.63
29.99	0.97	25.65
30.03	1.00	29.95
30.07	1.03	34.56
30.11	1.07	39.66
30.15	1.10	45.03
30.19	1.13	50.72
30.23	1.16	56.90
30.27	1.20	63.35
30.31	1.23	70.15
30.35	1.26	77.44
30.39	1.29	85.00
30.43	1.31	92.96
30.47	1.34	101.39
30.51	1.37	110.11
30.55	1.40	119.26
30.59	1.42	128.88
30.63	1.45	138.79
30.67	1.47	149.18
30.71	1.50	160.02
30.75	1.52	171.17
30.79	1.55	182.83
30.83	1.57	194.95
30.87	1.60	207.37
30.91	1.62	220.36
30.95	1.64	233.78
30.99	1.67	247.53
31.03	1.69	261.89
31.07	1.71	276.67
31.11	1.73	291.78
31.15	1.76	307.50
31.19	1.77	321.84
31.23	1.77	335.88
31.27	1.78	350.82
31.31	1.79	366.27
31.35	1.80	382.17
31.39	1.81	399.04
31.43	1.82	416.39
31.47	1.83	434.24
31.51	1.85	453.05
31.55	1.86	472.35
31.59	1.87	492.22
31.63	1.88	513.03
31.67	1.89	534.30
31.71	1.91	557.07
31.75	1.93	583.22
31.79	1.96	609.78
31.83	1.98	636.95
31.87	2.00	664.92
31.91	2.03	693.34
31.95	2.05	722.42
31.99	2.07	752.27
32.03	2.10	782.58
32.07	2.12	813.59
32.11	2.14	845.34
32.15	2.16	877.57
32.19	2.18	910.53
32.23	2.21	944.22
32.27	2.23	978.37
32.31	2.25	1,013.33
32.35	2.27	1,048.96
32.39	2.29	1,085.08
32.43	2.31	1,122.05
32.47	2.33	1,159.67
32.51	2.35	1,197.77
32.55	2.37	1,236.78
32.59	2.39	1,276.40
32.63	2.41	1,316.52
32.67	2.43	1,357.60
32.71	2.45	1,399.26
32.75	2.47	1,441.42
32.79	2.49	1,484.59
32.83	2.51	1,528.31
32.87	2.53	1,572.54
32.91	2.55	1,617.83
32.95	2.57	1,663.64
32.99	2.59	1,710.01
33.03	2.61	1,757.42
33.07	2.62	1,805.35
33.11	2.64	1,853.89
33.15	2.66	1,903.43
33.19	2.68	1,953.51
33.23	2.70	2,004.24
33.27	2.72	2,055.96
33.31	2.73	2,108.21
33.35	2.75	2,161.17
33.39	2.77	2,215.08
33.43	2.79	2,269.53
33.47	2.80	2,324.75
33.51	2.82	2,380.88
33.55	2.84	2,437.57
33.59	2.86	2,495.07
33.63	2.87	2,553.46
33.67	2.89	2,612.40
33.71	2.91	2,672.22
33.75	2.93	2,732.89
33.79	2.94	2,794.12
33.83	2.96	2,856.29
33.87	2.98	2,919.26
33.91	2.99	2,982.81
33.95	3.01	3,047.35
33.99	3.03	3,112.66
34.03	3.04	3,178.55
34.07	3.06	3,245.50
34.11	3.07	3,313.18
34.15	3.09	3,381.44
34.19	3.11	3,450.83
34.23	3.12	3,520.90
34.27	3.14	3,591.56
34.31	3.15	3,663.41
34.35	3.17	3,735.91
34.39	**3.19**	**3,809.00**

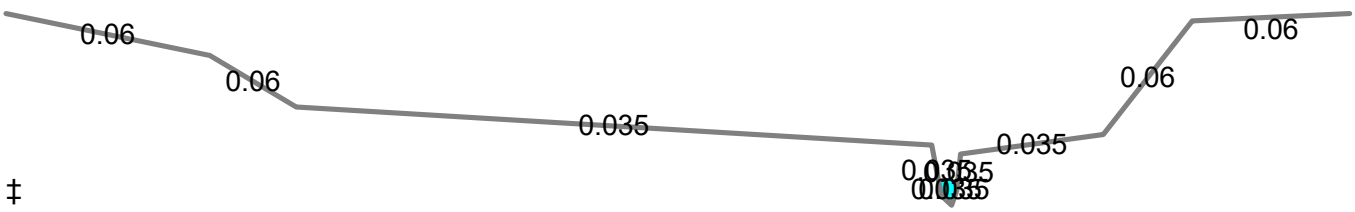
Summary for Reach 6R: River Sta 1972.78 CS-8

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 23.27 cfs @ 12.58 hrs, Volume= 3.873 af
Outflow = 23.23 cfs @ 12.61 hrs, Volume= 3.873 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.15 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 17.3 min

Peak Storage= 2,730 cf @ 12.61 hrs
Average Depth at Peak Storage= 1.55'
Bank-Full Depth= 11.89' Flow Area= 1,546.5 sf, Capacity= 30,613.15 cfs

Custom cross-section, Length= 605.0' Slope= 0.0200 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 27.33', Outlet Invert= 15.26'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	27.15	0.00		
45.60	24.54	2.61	0.060	
64.91	21.36	5.79	0.060	
206.97	18.99	8.16	0.035	
209.13	15.86	11.29	0.035	
211.40	15.26	11.89	0.035	
212.59	16.16	10.99	0.035	
213.40	18.44	8.71	0.035	
245.31	19.64	7.51	0.035	
265.19	26.69	0.46	0.060	
300.42	27.15	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.60	0.9	3.3	556	2.33
0.90	1.9	4.2	1,167	6.88
3.18	13.0	9.4	7,869	96.89
3.73	20.5	24.7	12,379	108.23
4.38	52.4	81.0	31,718	235.32
6.10	278.2	189.2	168,324	2,155.48
9.28	912.3	218.3	551,928	14,423.80
11.43	1,418.3	262.4	858,047	27,530.87
11.89	1,546.5	305.6	935,633	30,613.15

Stage-Discharge for Reach 6R: River Sta 1972.78 CS-8

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
27.33	0.00	0.00
27.48	0.99	0.07
27.63	1.59	0.40
27.78	2.09	1.11
27.93	2.54	2.33
28.08	3.09	4.38
28.23	3.57	6.88
28.38	4.01	10.02
28.53	4.40	13.56
28.68	4.75	17.53
28.83	5.06	21.87
28.98	5.34	26.59
29.13	5.61	31.70
29.28	5.85	37.21
29.43	6.08	43.09
29.58	6.30	49.33
29.73	6.50	55.99
29.88	6.70	63.03
30.03	6.89	70.46
30.18	7.07	78.26
30.33	7.25	86.50
30.48	7.42	95.13
30.63	6.42	89.43
30.78	5.69	89.03
30.93	5.40	97.10
31.08	5.16	107.84
31.23	4.49	113.70
31.38	4.29	135.73
31.53	4.32	173.24
31.68	4.46	224.02
31.83	4.75	295.69
31.98	5.06	383.14
32.13	5.37	486.62
32.28	5.66	605.65
32.43	5.96	741.11
32.58	6.24	895.68
32.73	6.52	1,069.80
32.88	6.79	1,263.05
33.03	7.06	1,476.22
33.18	7.32	1,712.89
33.33	7.58	1,972.05
33.48	7.91	2,276.17
33.63	8.40	2,650.52
33.78	8.87	3,049.80
33.93	9.33	3,470.77
34.08	9.77	3,912.83
34.23	10.19	4,376.07
34.38	10.61	4,862.76
34.53	11.01	5,369.48
34.68	11.41	5,895.99
34.83	11.79	6,443.03
34.98	12.17	7,011.66
35.13	12.54	7,599.33
35.28	12.90	8,205.86
35.43	13.25	8,832.58
35.58	13.60	9,479.45
35.73	13.94	10,144.63
35.88	14.27	10,827.99
36.03	14.60	11,531.39
36.18	14.92	12,253.75
36.33	15.23	12,993.86
36.48	15.55	13,751.63
36.63	15.85	14,528.19
36.78	16.14	15,316.93
36.93	16.42	16,124.31
37.08	16.70	16,950.39
37.23	16.97	17,798.16
37.38	17.24	18,664.38
37.53	17.50	19,549.01
37.68	17.75	20,452.59
37.83	17.99	21,377.11
37.98	18.24	22,320.01
38.13	18.47	23,281.30
38.28	18.70	24,262.13
38.43	18.93	25,263.42
38.58	19.15	26,283.16
38.73	19.37	27,321.40
38.88	19.50	28,270.41
39.03	19.63	29,273.22
39.18	**19.76**	**30,327.52**

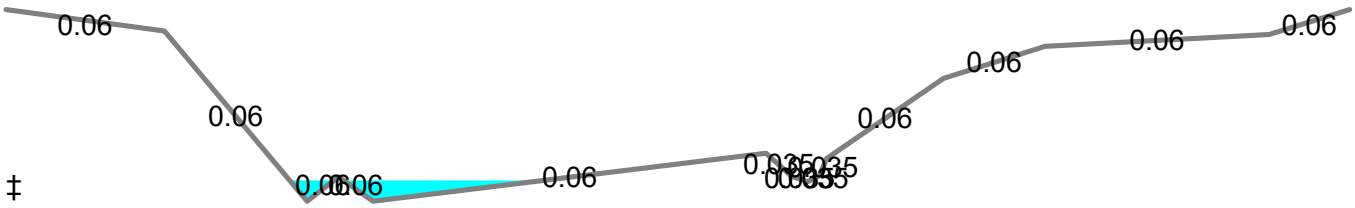
Summary for Reach 7R: River Sta 1427.28 CS-7

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 23.23 cfs @ 12.61 hrs, Volume= 3.873 af
Outflow = 21.19 cfs @ 12.80 hrs, Volume= 3.873 af, Atten= 9%, Lag= 11.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 11.5 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 81.8 min

Peak Storage= 14,651 cf @ 12.80 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 10.23' Flow Area= 1,372.9 sf, Capacity= 5,579.78 cfs

Custom cross-section, Length= 545.5' Slope= 0.0023 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 15.26', Outlet Invert= 14.03'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
110.04	23.22	0.00		
141.25	22.07	1.15	0.060	
169.44	12.99	10.23	0.060	
175.62	14.28	8.94	0.060	
182.43	12.99	10.23	0.060	
259.88	15.56	7.66	0.060	
264.98	14.32	8.90	0.035	
268.12	14.03	9.19	0.035	
270.40	14.34	8.88	0.035	
271.88	15.28	7.94	0.035	
294.91	19.55	3.67	0.060	
314.93	21.26	1.96	0.060	
359.13	21.88	1.34	0.060	
375.00	23.22	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.04	23.4	45.4	12,777	17.71
1.29	36.6	60.9	19,968	31.74
1.33	39.1	63.0	21,309	34.70
1.35	40.3	63.9	21,995	36.25
2.29	117.1	101.0	63,870	159.21
2.57	146.7	113.1	80,052	217.42
6.56	661.0	148.0	360,571	2,315.97
8.27	932.0	173.7	508,421	3,789.48
8.89	1,052.4	219.9	574,111	4,358.78
9.08	1,094.0	222.8	596,779	4,578.02
10.23	1,372.9	267.7	748,934	5,579.78

Stage-Discharge for Reach 7R: River Sta 1427.28 CS-7

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
15.26	0.00	0.00
15.41	0.21	0.13
15.56	0.33	0.65
15.71	0.43	1.95
15.86	0.52	4.12
16.01	0.61	7.48
16.16	0.69	12.10
16.31	0.76	18.20
16.46	0.83	26.12
16.61	0.90	36.25
16.76	0.98	49.35
16.91	1.06	64.65
17.06	1.13	82.55
17.21	1.20	102.86
17.36	1.27	126.08
17.51	1.34	151.82
17.66	1.41	180.98
17.81	1.47	212.95
17.96	1.57	254.15
18.11	1.68	299.16
18.26	1.77	347.41
18.41	1.87	398.58
18.56	1.96	452.78
18.71	2.05	509.89
18.86	2.14	569.86
19.01	2.22	632.77
19.16	2.30	698.39
19.31	2.38	766.99
19.46	2.46	838.15
19.61	2.54	912.33
19.76	2.61	988.98
19.91	2.68	1,068.67
20.06	2.76	1,150.81
20.21	2.83	1,235.87
20.36	2.89	1,323.46
20.51	2.96	1,413.86
20.66	3.03	1,506.85
20.81	3.09	1,602.56
20.96	3.16	1,700.93
21.11	3.22	1,801.91
21.26	3.28	1,905.64
21.41	3.34	2,011.89
21.56	3.40	2,120.95
21.71	3.46	2,232.46
21.86	3.52	2,346.17
22.01	3.57	2,460.68
22.16	3.62	2,578.42
22.31	3.68	2,698.84
22.46	3.73	2,822.43
22.61	3.78	2,948.80
22.76	3.83	3,078.26
22.91	3.87	3,210.61
23.06	3.92	3,345.98
23.21	3.97	3,484.36
23.36	4.01	3,625.69
23.51	4.06	3,770.09
23.66	4.08	3,895.30
23.81	4.10	4,028.07
23.96	4.12	4,169.05
24.11	4.14	4,318.21
24.26	**4.17**	4,484.95
24.41	**4.17**	4,627.67
24.56	4.14	4,738.20
24.71	4.12	4,856.37
24.86	4.10	4,981.11
25.01	4.09	5,113.02
25.16	4.08	5,251.55
25.31	4.07	5,396.87
25.46	4.07	**5,548.90**

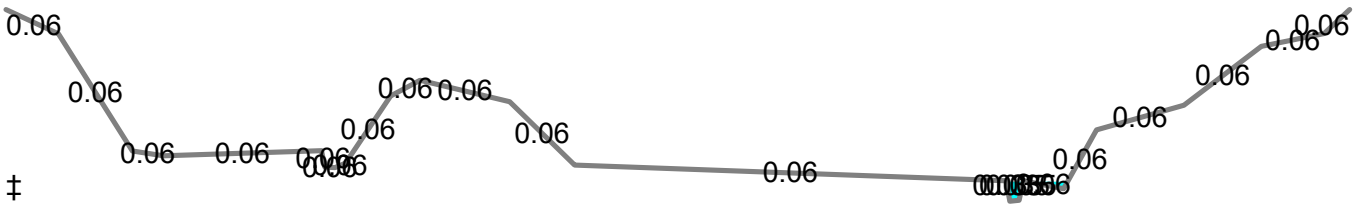
Summary for Reach 8R: River Sta 1096.55 CS-5

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 21.19 cfs @ 12.80 hrs, Volume= 3.873 af
Outflow = 21.09 cfs @ 12.85 hrs, Volume= 3.872 af, Atten= 0%, Lag= 2.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 15.3 min

Peak Storage= 2,839 cf @ 12.85 hrs
Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 11.67' Flow Area= 3,698.5 sf, Capacity= 33,066.93 cfs

Custom cross-section, Length= 330.7' Slope= 0.0086 '/' (119 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 14.03', Outlet Invert= 11.19'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.86	0.00		
19.48	21.37	1.49	0.060	
46.99	14.25	8.61	0.060	
58.64	13.96	8.90	0.060	
117.45	14.26	8.60	0.060	
118.64	13.28	9.58	0.060	
122.39	13.23	9.63	0.060	
126.30	13.51	9.35	0.060	
143.11	17.60	5.26	0.060	
154.13	18.56	4.30	0.060	
187.43	17.24	5.62	0.060	
211.60	13.40	9.46	0.060	
372.09	12.43	10.43	0.060	
373.56	11.19	11.67	0.035	
376.99	11.25	11.61	0.035	
378.50	12.44	10.42	0.035	
393.57	11.95	10.91	0.060	
405.78	15.54	7.32	0.060	
438.28	17.03	5.83	0.060	
467.19	20.61	2.25	0.060	
490.49	21.39	1.47	0.060	
500.00	22.86	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.06	0.1	3.5	35	0.04
0.76	3.2	5.7	1,044	8.34
1.24	9.9	23.7	3,267	23.95
1.25	10.1	25.7	3,346	24.49
2.04	82.4	159.3	27,250	164.02
2.09	90.6	172.2	29,973	180.41
2.21	112.5	194.3	37,200	228.97
2.32	133.9	197.1	44,277	288.62
2.77	223.6	204.2	73,934	604.31
3.06	292.9	277.2	96,864	779.93
3.07	295.7	279.4	97,778	787.98
4.35	665.6	302.6	220,102	2,700.59
5.84	1,153.0	356.9	381,311	6,021.98
6.05	1,227.9	361.7	406,062	6,618.72
6.41	1,359.7	376.7	449,655	7,615.56
7.37	1,740.8	423.6	575,675	10,572.29
9.42	2,627.5	448.5	868,906	20,147.10
10.18	2,975.2	474.2	983,914	24,102.93
10.20	2,984.7	475.1	987,028	24,206.23
11.67	3,698.5	504.0	1,223,110	33,066.93

Stage-Discharge for Reach 8R: River Sta 1096.55 CS-5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
14.03	0.00	0.00
14.18	0.90	0.44
14.33	1.50	1.57
14.48	1.94	3.25
14.63	2.31	5.45
14.78	2.62	8.15
14.93	2.69	11.54
15.08	2.57	15.95
15.23	2.45	22.08
15.38	2.33	31.75
15.53	2.13	46.10
15.68	2.00	67.24
15.83	1.96	97.00
15.98	1.97	136.02
16.13	1.99	184.14
16.28	2.08	250.51
16.43	2.25	337.75
16.58	2.43	437.13
16.73	2.62	548.60
16.88	2.68	645.97
17.03	2.66	738.12
17.18	2.76	877.36
17.33	2.93	1,057.31
17.48	3.11	1,251.23
17.63	3.27	1,458.68
17.78	3.44	1,680.45
17.93	3.60	1,916.37
18.08	3.76	2,164.94
18.23	3.91	2,425.95
18.38	4.06	2,700.59
18.53	4.18	2,970.28
18.68	4.30	3,253.91
18.83	4.42	3,553.13
18.98	4.54	3,867.71
19.13	4.66	4,196.01
19.28	4.77	4,537.86
19.43	4.89	4,895.47
19.58	5.01	5,266.50
19.73	5.12	5,650.82
19.88	5.23	6,050.11
20.03	5.35	6,475.02
20.18	5.45	6,888.75
20.33	5.54	7,302.85
20.48	5.62	7,727.87
20.63	5.70	8,155.01
20.78	5.77	8,595.64
20.93	5.84	9,050.99
21.08	5.92	9,521.54
21.23	5.99	10,006.04
21.38	6.06	10,504.65
21.53	6.18	11,101.07
21.68	6.31	11,724.05
21.83	6.43	12,360.84
21.98	6.55	13,012.42
22.13	6.67	13,679.04
22.28	6.79	14,359.23
22.43	6.90	15,052.92
22.58	7.02	15,762.31
22.73	7.13	16,485.24
22.88	7.25	17,221.48
23.03	7.36	17,972.00
23.18	7.47	18,737.10
23.33	7.58	19,515.36
23.48	7.68	20,294.50
23.63	7.77	21,043.43
23.78	7.86	21,809.79
23.93	7.94	22,593.17
24.08	8.03	23,394.60
24.23	8.11	24,206.23
24.38	8.20	25,050.11
24.53	8.28	25,906.18
24.68	8.37	26,777.64
24.83	8.46	27,662.53
24.98	8.54	28,560.64
25.13	8.63	29,472.94
25.28	8.71	30,399.91
25.43	8.79	31,340.13
25.58	**8.88**	**32,293.59**

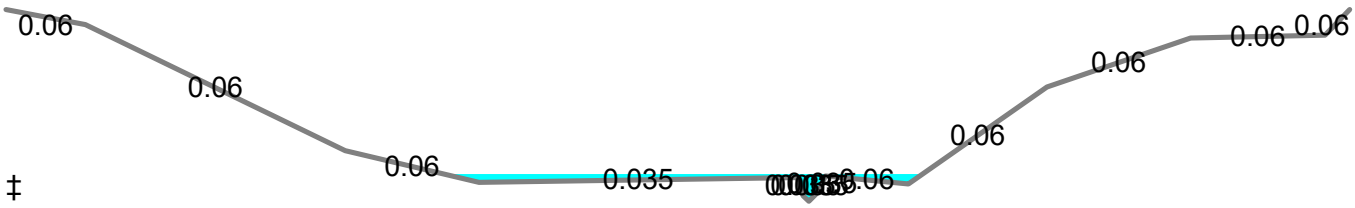
Summary for Reach 9R: River Sta 820.28 CS-4

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 107.17 cfs @ 12.33 hrs, Volume= 22.361 af
Outflow = 106.98 cfs @ 12.39 hrs, Volume= 22.361 af, Atten= 0%, Lag= 3.4 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 13.6 min

Peak Storage= 18,948 cf @ 12.39 hrs
Average Depth at Peak Storage= 1.83'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 2yr Talbot Rainfall=3.40"*
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 9R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

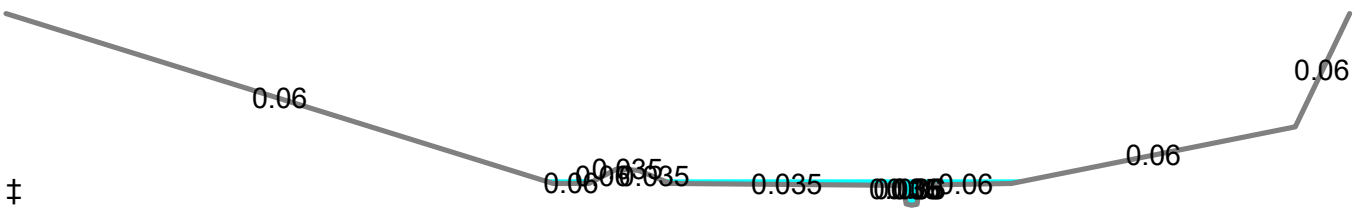
Summary for Reach 10R: River Sta 613.13 CS-3A

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 106.98 cfs @ 12.39 hrs, Volume= 22.361 af
Outflow = 106.84 cfs @ 12.41 hrs, Volume= 22.361 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.65 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 12.8 min

Peak Storage= 14,607 cf @ 12.41 hrs
Average Depth at Peak Storage= 1.83'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 10R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

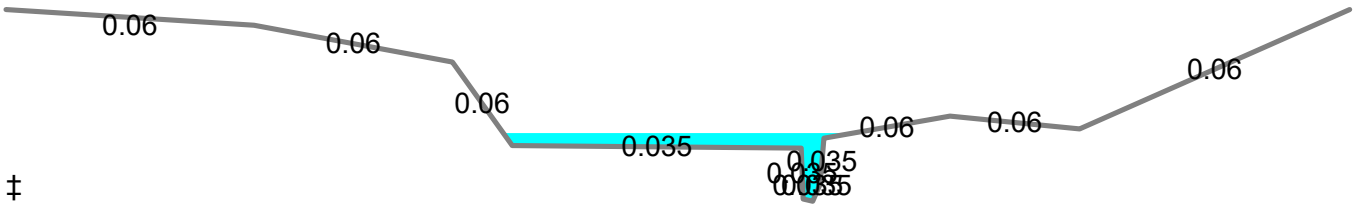
Summary for Reach 11R: River Sta 384.66 CS-3

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 106.84 cfs @ 12.41 hrs, Volume= 22.361 af
Outflow = 106.77 cfs @ 12.43 hrs, Volume= 22.361 af, Atten= 0%, Lag= 1.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.43 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 9.9 min

Peak Storage= 11,277 cf @ 12.43 hrs
Average Depth at Peak Storage= 2.28'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 11R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

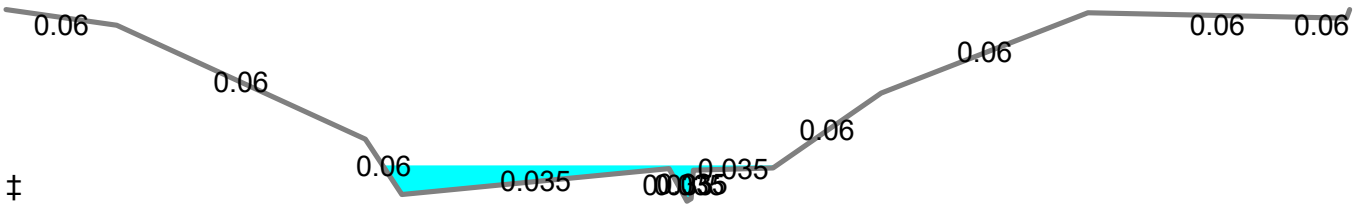
Summary for Reach 12R: River Sta 284.44 CS-2

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 106.77 cfs @ 12.44 hrs, Volume= 22.357 af
Outflow = 106.11 cfs @ 12.50 hrs, Volume= 22.357 af, Atten= 1%, Lag= 3.6 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 28.1 min

Peak Storage= 25,202 cf @ 12.50 hrs
Average Depth at Peak Storage= 2.68'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 12R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

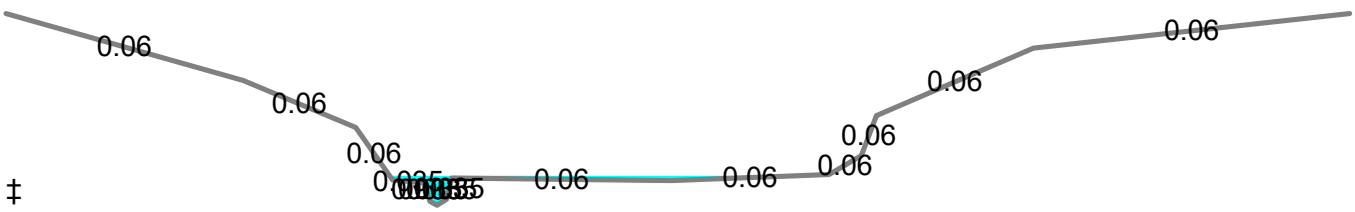
Summary for Reach 13R: River Sta 0.00 CS-1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 106.11 cfs @ 12.50 hrs, Volume= 22.357 af
Outflow = 105.56 cfs @ 12.56 hrs, Volume= 22.357 af, Atten= 1%, Lag= 3.4 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.12 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 9.4 min

Peak Storage= 14,014 cf @ 12.56 hrs
Average Depth at Peak Storage= 2.24'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 13R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 11P: Pond 1

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 0.95" for 2yr Talbot event
Inflow = 34.18 cfs @ 12.13 hrs, Volume= 3.873 af
Outflow = 24.09 cfs @ 12.35 hrs, Volume= 3.873 af, Atten= 30%, Lag= 13.7 min
Primary = 24.09 cfs @ 12.35 hrs, Volume= 3.873 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 46.85' @ 12.35 hrs Surf.Area= 16,850 sf Storage= 17,948 cf

Plug-Flow detention time= 7.0 min calculated for 3.873 af (100% of inflow)
Center-of-Mass det. time= 7.0 min (894.4 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	189,394 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
45.00	0	0.0	0	0	0
46.00	14,235	515.0	4,745	4,745	21,108
47.00	17,332	556.0	15,758	20,503	24,643
48.00	21,715	639.0	19,482	39,985	32,558
49.00	26,977	704.0	24,298	64,284	39,537
50.00	33,980	771.0	30,411	94,695	47,436
51.00	42,797	845.0	38,304	132,999	56,986
52.00	71,191	1,014.0	56,395	189,394	82,005

Device	Routing	Invert	Outlet Devices
#1	Primary	43.75'	**36.0" Round Culvert X 2.00** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.75' / 43.25' S= 0.0111 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Device 1	45.00'	**14.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	46.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#4	Device 1	48.10'	**28.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=24.09 cfs @ 12.35 hrs HW=46.85' TW=38.86' (Dynamic Tailwater)
└─**1=Culvert** (Passes 24.09 cfs of 81.36 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 17.38 cfs @ 5.42 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 6.70 cfs @ 3.14 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 11P: Pond 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
45.00	0.00	47.08	27.53	49.16	134.60	51.24	166.60
45.04	0.02	47.12	28.08	49.20	135.29	51.28	167.15
45.08	0.09	47.16	28.61	49.24	135.97	51.32	167.71
45.12	0.21	47.20	29.13	49.28	136.65	51.36	168.26
45.16	0.36	47.24	29.63	49.32	137.33	51.40	168.81
45.20	0.56	47.28	30.13	49.36	138.00	51.44	169.36
45.24	0.79	47.32	30.62	49.40	138.67	51.48	169.90
45.28	1.07	47.36	31.10	49.44	139.34	51.52	170.45
45.32	1.38	47.40	31.58	49.48	140.00	51.56	170.99
45.36	1.72	47.44	32.04	49.52	140.66	51.60	171.53
45.40	2.09	47.48	32.50	49.56	141.32	51.64	172.07
45.44	2.50	47.52	32.95	49.60	141.97	51.68	172.61
45.48	2.93	47.56	33.39	49.64	142.62	51.72	173.14
45.52	3.39	47.60	33.83	49.68	143.27	51.76	173.68
45.56	3.88	47.64	34.26	49.72	143.92	51.80	174.21
45.60	4.38	47.68	34.68	49.76	144.56	51.84	174.74
45.64	4.91	47.72	35.10	49.80	145.20	51.88	175.27
45.68	5.45	47.76	35.52	49.84	145.84	51.92	175.80
45.72	6.00	47.80	35.93	49.88	146.47	51.96	176.33
45.76	6.57	47.84	36.33	49.92	147.10	52.00	**176.85**
45.80	7.14	47.88	36.73	49.96	147.73		
45.84	7.71	47.92	37.12	50.00	148.36		
45.88	8.29	47.96	37.51	50.04	148.98		
45.92	8.86	48.00	37.90	50.08	149.60		
45.96	9.42	48.04	38.28	50.12	150.22		
46.00	9.96	48.08	38.66	50.16	150.83		
46.04	10.50	48.12	39.29	50.20	151.45		
46.08	11.05	48.16	40.75	50.24	152.06		
46.12	11.59	48.20	42.67	50.28	152.67		
46.16	12.08	48.24	44.93	50.32	153.27		
46.20	12.64	48.28	47.49	50.36	153.87		
46.24	13.24	48.32	50.30	50.40	154.48		
46.28	13.86	48.36	53.34	50.44	155.07		
46.32	14.51	48.40	56.60	50.48	155.67		
46.36	15.17	48.44	60.05	50.52	156.27		
46.40	15.85	48.48	63.69	50.56	156.86		
46.44	16.55	48.52	67.51	50.60	157.45		
46.48	17.26	48.56	71.49	50.64	158.03		
46.52	17.98	48.60	75.63	50.68	158.62		
46.56	18.72	48.64	79.93	50.72	159.20		
46.60	19.46	48.68	84.37	50.76	159.78		
46.64	20.21	48.72	88.95	50.80	160.36		
46.68	20.96	48.76	93.67	50.84	160.94		
46.72	21.71	48.80	98.52	50.88	161.51		
46.76	22.45	48.84	103.51	50.92	162.09		
46.80	23.19	48.88	108.61	50.96	162.66		
46.84	23.90	48.92	113.84	51.00	163.23		
46.88	24.60	48.96	119.19	51.04	163.79		
46.92	25.26	49.00	124.66	51.08	164.36		
46.96	25.87	49.04	130.24	51.12	164.92		
47.00	26.40	49.08	133.22	51.16	165.48		
47.04	26.97	49.12	133.91	51.20	166.04		

Summary for Pond 14P: Goldsburough Neck Road Culvert

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 106.77 cfs @ 12.43 hrs, Volume= 22.361 af
Outflow = 106.77 cfs @ 12.44 hrs, Volume= 22.357 af, Atten= 0%, Lag= 0.6 min
Primary = 106.77 cfs @ 12.44 hrs, Volume= 22.357 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 10.58' @ 12.46 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=106.65 cfs @ 12.44 hrs HW=10.58' TW=9.78' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 42.74 cfs @ 3.40 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 63.91 cfs @ 2.25 fps)

Stage-Discharge for Pond 14P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 18L: Proposed Design Point 1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2yr Talbot event
Inflow = 105.56 cfs @ 12.56 hrs, Volume= 22.357 af
Primary = 105.56 cfs @ 12.57 hrs, Volume= 22.357 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 3S: Prop. Design Point 1 Runoff Area=221.700 ac 0.00% Impervious Runoff Depth=2.35"
Tc=30.6 min CN=71 Runoff=270.80 cfs 43.339 af

Subcatchment 4S: Prop. Design Point 1 to Runoff Area=49.080 ac 0.00% Impervious Runoff Depth=2.26"
Tc=16.2 min CN=70 Runoff=90.38 cfs 9.249 af

Reach 1R: River St 3893.53 CS-13 Avg. Flow Depth=2.42' Max Vel=4.75 fps Inflow=71.22 cfs 9.249 af
L=400.0' S=0.0089 '/' Capacity=30,715.83 cfs Outflow=70.76 cfs 9.249 af

Reach 2R: River Sta 3493.6 CS-12 Avg. Flow Depth=2.09' Max Vel=3.27 fps Inflow=70.76 cfs 9.249 af
L=393.8' S=0.0044 '/' Capacity=4,857.15 cfs Outflow=68.27 cfs 9.249 af

Reach 3R: River Sta 3099.81 CS-11 Avg. Flow Depth=1.22' Max Vel=1.86 fps Inflow=68.27 cfs 9.249 af
L=393.8' S=0.0044 '/' Capacity=4,820.08 cfs Outflow=67.36 cfs 9.249 af

Reach 4R: River Sta 2839.49 CS-10 Avg. Flow Depth=1.59' Max Vel=4.18 fps Inflow=67.36 cfs 9.249 af
L=260.3' S=0.0146 '/' Capacity=4,436.42 cfs Outflow=66.97 cfs 9.249 af

Reach 5R: River Sta 2577.80 CS-9 Avg. Flow Depth=1.98' Max Vel=1.57 fps Inflow=66.97 cfs 9.249 af
L=261.7' S=0.0037 '/' Capacity=3,809.00 cfs Outflow=66.23 cfs 9.249 af

Reach 6R: River Sta 1972.78 CS-8 Avg. Flow Depth=2.61' Max Vel=6.78 fps Inflow=66.23 cfs 9.249 af
L=605.0' S=0.0200 '/' Capacity=30,613.15 cfs Outflow=66.15 cfs 9.249 af

Reach 7R: River Sta 1427.28 CS-7 Avg. Flow Depth=1.61' Max Vel=1.04 fps Inflow=66.15 cfs 9.249 af
L=545.5' S=0.0023 '/' Capacity=5,579.78 cfs Outflow=60.28 cfs 9.249 af

Reach 8R: River Sta 1096.55 CS-5 Avg. Flow Depth=1.60' Max Vel=2.72 fps Inflow=60.28 cfs 9.249 af
L=330.7' S=0.0086 '/' Capacity=33,066.93 cfs Outflow=59.15 cfs 9.249 af

Reach 9R: River Sta 820.28 CS-4 Avg. Flow Depth=2.20' Max Vel=2.29 fps Inflow=286.66 cfs 52.588 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=285.59 cfs 52.588 af

Reach 10R: River Sta 613.13 CS-3A Avg. Flow Depth=2.14' Max Vel=2.67 fps Inflow=285.59 cfs 52.588 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=285.42 cfs 52.588 af

Reach 11R: River Sta 384.66 CS-3 Avg. Flow Depth=2.71' Max Vel=3.40 fps Inflow=285.42 cfs 52.588 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=285.28 cfs 52.588 af

Reach 12R: River Sta 284.44 CS-2 Avg. Flow Depth=3.52' Max Vel=0.62 fps Inflow=285.28 cfs 52.585 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=284.93 cfs 52.585 af

Reach 13R: River Sta 0.00 CS-1 Avg. Flow Depth=2.66' Max Vel=4.17 fps Inflow=284.93 cfs 52.585 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=284.70 cfs 52.585 af

Pond 11P: Pond 1 Peak Elev=48.56' Storage=52,878 cf Inflow=90.38 cfs 9.249 af
Outflow=71.22 cfs 9.249 af

Pond 14P: Goldsburough Neck Road Culvert Peak Elev=11.24' Inflow=285.28 cfs 52.588 af
Outflow=285.28 cfs 52.585 af

Link 18L: Proposed Design Point 1 Inflow=284.70 cfs 52.585 af
Primary=284.70 cfs 52.585 af

Total Runoff Area = 270.780 ac Runoff Volume = 52.588 af Average Runoff Depth = 2.33"
100.00% Pervious = 270.780 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Prop. Design Point 1 Bypass

Runoff = 270.80 cfs @ 12.31 hrs, Volume= 43.339 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	221.700	71	Weighted CN from TR-55
	221.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TC from TR-55**

Summary for Subcatchment 4S: Prop. Design Point 1 to Pond

Runoff = 90.38 cfs @ 12.10 hrs, Volume= 9.249 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	49.080	70	Weighted CN from TR-55
	49.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2					**Direct Entry, From TR-55**

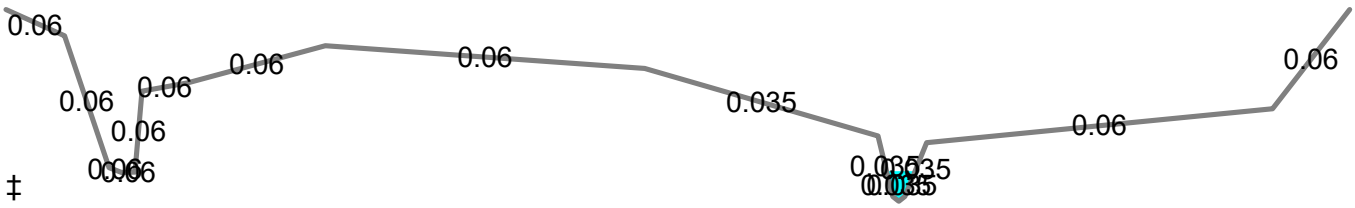
Summary for Reach 1R: River St 3893.53 CS-13

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 71.22 cfs @ 12.27 hrs, Volume= 9.249 af
Outflow = 70.76 cfs @ 12.29 hrs, Volume= 9.249 af, Atten= 1%, Lag= 1.6 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.75 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 9.2 min

Peak Storage= 6,002 cf @ 12.29 hrs
Average Depth at Peak Storage= 2.42'
Bank-Full Depth= 15.50' Flow Area= 2,974.4 sf, Capacity= 30,715.83 cfs

Custom cross-section, Length= 400.0' Slope= 0.0089 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 37.41', Outlet Invert= 33.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.91	0.00		
19.65	50.80	2.11	0.060	
34.56	40.13	12.78	0.060	
38.64	39.75	13.16	0.060	
43.17	39.76	13.15	0.060	
45.57	46.31	6.60	0.060	
60.88	46.99	5.92	0.060	
106.99	49.99	2.92	0.060	
213.92	48.16	4.75	0.060	
292.01	42.68	10.23	0.035	
296.95	37.81	15.10	0.035	
299.01	37.41	15.50	0.035	
301.05	37.81	15.10	0.035	
308.35	42.15	10.76	0.035	
424.22	44.88	8.03	0.060	
450.00	52.91	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.40	0.8	4.2	328	1.11
2.34	13.8	10.7	5,539	65.72
2.35	14.0	15.4	5,586	66.32
2.72	20.1	21.0	8,035	93.27
4.74	67.8	33.5	27,109	386.86
5.27	89.0	58.2	35,609	520.79
7.47	345.1	189.2	138,024	1,641.80
8.90	623.1	218.4	249,237	3,633.81
9.58	774.2	246.9	309,687	4,807.44
10.75	1,074.1	287.6	429,650	7,561.94
12.58	1,711.1	432.0	684,458	14,019.18
13.39	2,052.7	436.1	821,092	18,072.48
15.50	2,974.4	463.0	1,189,741	30,715.83

Stage-Discharge for Reach 1R: River St 3893.53 CS-13

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
37.41	0.00	0.00
37.61	0.84	0.23
37.81	1.35	1.11
38.01	1.98	3.40
38.21	2.47	6.64
38.41	2.87	10.88
38.61	3.22	16.04
38.81	3.54	22.17
39.01	3.82	29.44
39.21	4.09	37.74
39.41	4.34	47.09
39.61	4.58	57.68
39.81	4.73	69.60
40.01	4.67	83.73
40.21	4.64	100.40
40.41	4.68	119.94
40.61	4.76	141.71
40.81	4.86	165.68
41.01	4.97	192.13
41.21	5.09	220.86
41.41	5.22	251.78
41.61	5.35	285.06
41.81	5.48	320.85
42.01	5.62	358.92
42.21	5.76	400.59
42.41	5.85	448.85
42.61	5.86	501.54
42.81	5.59	538.56
43.01	5.27	576.48
43.21	5.03	628.71
43.41	4.86	693.94
43.61	4.75	772.42
43.81	4.68	867.19
44.01	4.65	976.33
44.21	4.64	1,100.41
44.41	4.66	1,241.72
44.61	4.69	1,400.72
44.81	4.74	1,576.77
45.01	4.84	1,784.10
45.21	4.97	2,019.14
45.41	5.12	2,271.70
45.61	5.27	2,541.72
45.81	5.43	2,831.29
46.01	5.59	3,139.36
46.21	5.75	3,464.89
46.41	5.88	3,784.80
46.61	5.98	4,111.63
46.81	6.10	4,466.47
47.01	6.22	4,847.95
47.21	6.37	5,266.28
47.41	6.51	5,706.90
47.61	6.65	6,169.37
47.81	6.79	6,655.19
48.01	6.93	7,165.91
48.21	7.07	7,694.66
48.41	7.20	8,251.10
48.61	7.34	8,856.97
48.81	7.48	9,501.43
49.01	7.61	10,180.91
49.21	7.74	10,896.71
49.41	7.86	11,648.77
49.61	7.98	12,433.61
49.81	8.10	13,251.36
50.01	8.21	14,114.05
50.21	8.36	15,072.73
50.41	8.51	16,059.68
50.61	8.66	17,078.41
50.81	8.81	18,125.28
51.01	8.96	19,191.80
51.21	9.11	20,284.37
51.41	9.25	21,408.49
51.61	9.40	22,559.49
51.81	9.54	23,737.21
52.01	9.69	24,944.69
52.21	9.83	26,180.14
52.41	9.97	27,441.79
52.61	10.12	28,730.57
52.81	**10.26**	**30,048.98**

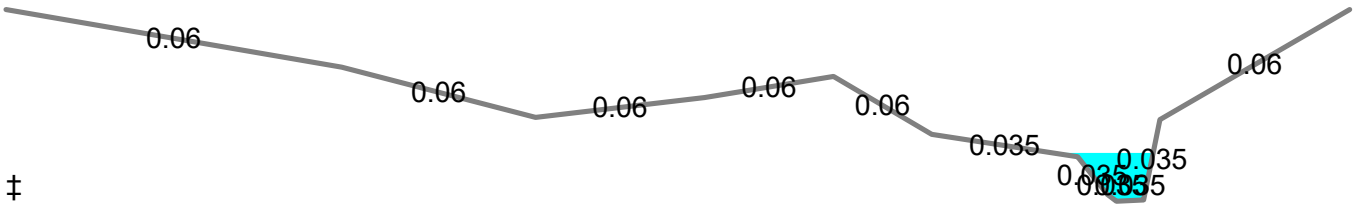
Summary for Reach 2R: River Sta 3493.6 CS-12

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 70.76 cfs @ 12.29 hrs, Volume= 9.249 af
Outflow = 68.27 cfs @ 12.36 hrs, Volume= 9.249 af, Atten= 4%, Lag= 3.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.27 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 23.5 min

Peak Storage= 9,040 cf @ 12.36 hrs
Average Depth at Peak Storage= 2.09'
Bank-Full Depth= 8.30' Flow Area= 915.0 sf, Capacity= 4,857.15 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	42.15	0.00		
66.72	39.65	2.50	0.060	
105.27	37.48	4.67	0.060	
138.90	38.34	3.81	0.060	
164.52	39.25	2.90	0.060	
184.02	36.75	5.40	0.060	
213.06	35.77	6.38	0.035	
218.87	34.15	8.00	0.035	
220.76	33.85	8.30	0.035	
226.16	33.90	8.25	0.035	
229.39	37.38	4.77	0.035	
267.12	42.15	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.05	0.1	5.7	56	0.03
0.30	1.8	7.7	708	1.94
1.92	19.9	15.9	7,839	65.46
2.90	49.1	46.3	19,344	144.64
3.53	79.1	52.1	31,137	306.81
3.63	84.2	53.7	33,148	337.78
4.49	155.6	116.3	61,279	678.51
5.40	285.1	172.5	112,281	1,248.05
5.80	355.3	182.8	139,922	1,592.53
8.30	915.0	269.5	360,325	4,857.15

Stage-Discharge for Reach 2R: River Sta 3493.6 CS-12

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.48	0.24
34.05	0.82	0.92
34.15	1.08	1.94
34.25	1.31	3.39
34.35	1.51	5.14
34.45	1.69	7.24
34.55	1.86	9.64
34.65	2.01	12.36
34.75	2.16	15.38
34.85	2.29	18.72
34.95	2.42	22.41
35.05	2.54	26.43
35.15	2.65	30.76
35.25	2.77	35.43
35.35	2.87	40.45
35.45	2.98	45.84
35.55	3.08	51.58
35.65	3.17	57.68
35.75	3.27	64.13
35.85	3.11	66.02
35.95	2.97	68.62
36.05	2.89	72.93
36.15	2.84	78.78
36.25	2.82	86.06
36.35	2.82	94.86
36.45	2.83	105.15
36.55	2.86	116.85
36.65	2.90	130.01
36.75	2.94	144.64
36.85	3.11	167.04
36.95	3.27	190.73
37.05	3.42	215.66
37.15	3.57	241.84
37.25	3.71	269.24
37.35	3.84	297.98
37.45	3.97	328.41
37.55	4.09	359.95
37.65	4.18	393.06
37.75	4.25	428.01
37.85	4.29	465.13
37.95	4.32	504.29
38.05	4.34	545.57
38.15	4.36	589.09
38.25	4.36	634.97
38.35	4.36	683.60
38.45	4.36	735.22
38.55	4.36	789.34
38.65	4.36	846.09
38.75	4.36	905.60
38.85	4.36	968.22
38.95	4.36	1,033.67
39.05	4.37	1,102.04
39.15	4.37	1,173.38
39.25	4.38	1,248.05
39.35	4.40	1,329.60
39.45	4.42	1,414.31
39.55	4.45	1,502.00
39.65	4.48	1,592.53
39.75	4.51	1,684.87
39.85	4.54	1,780.31
39.95	4.57	1,878.73
40.05	4.60	1,980.15
40.15	4.63	2,084.57
40.25	4.66	2,192.24
40.35	4.70	2,303.17
40.45	4.73	2,417.17
40.55	4.76	2,534.24
40.65	4.80	2,654.42
40.75	4.83	2,778.01
40.85	4.87	2,904.91
40.95	4.90	3,034.96
41.05	4.93	3,168.21
41.15	4.97	3,304.65
41.25	5.00	3,444.69
41.35	5.04	3,588.08
41.45	5.07	3,734.74
41.55	5.10	3,884.69
41.65	5.14	4,037.96
41.75	5.17	4,194.99
41.85	5.21	4,355.44
41.95	5.24	4,519.27
42.05	5.27	4,686.50
42.15	**5.31**	**4,857.15**

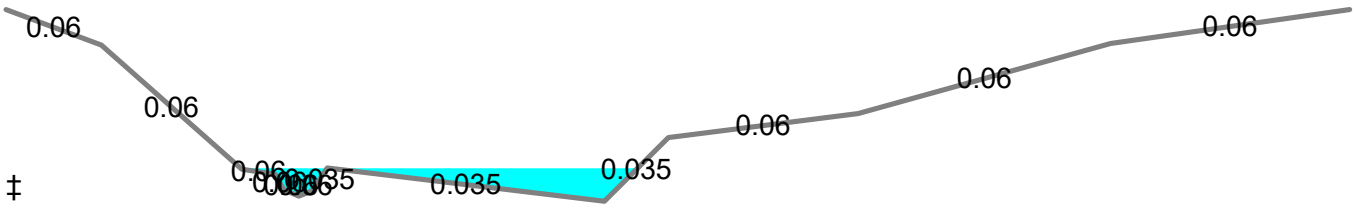
Summary for Reach 3R: River Sta 3099.81 CS-11

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 68.27 cfs @ 12.36 hrs, Volume= 9.249 af
Outflow = 67.36 cfs @ 12.40 hrs, Volume= 9.249 af, Atten= 1%, Lag= 2.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.86 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 29.9 min

Peak Storage= 14,282 cf @ 12.40 hrs
Average Depth at Peak Storage= 1.22'
Bank-Full Depth= 7.10' Flow Area= 776.4 sf, Capacity= 4,820.08 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
116.06	39.20	0.00		
131.17	37.89	1.31	0.060	
153.42	33.28	5.92	0.060	
158.73	33.10	6.10	0.060	
160.06	32.53	6.67	0.060	
162.43	32.29	6.91	0.060	
164.53	32.48	6.72	0.060	
166.96	33.33	5.87	0.035	
210.85	32.10	7.10	0.035	
221.00	34.46	4.74	0.035	
251.08	35.35	3.85	0.060	
291.07	37.94	1.26	0.060	
328.96	39.20	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.19	0.7	7.6	284	0.42
0.38	3.3	19.2	1,286	2.82
0.43	4.3	21.9	1,691	4.00
1.00	24.1	47.9	9,474	40.19
1.18	33.8	61.0	13,306	61.32
1.23	36.9	63.4	14,522	68.88
2.36	113.9	74.0	44,835	402.36
3.25	194.4	108.4	76,540	850.90
5.79	533.2	160.3	209,963	3,125.68
5.84	541.2	161.6	213,110	3,183.12
7.10	776.4	214.1	305,742	4,820.08

Stage-Discharge for Reach 3R: River Sta 3099.81 CS-11

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.38	0.10
34.05	0.61	0.49
34.15	0.76	1.50
34.25	0.89	3.28
34.35	1.03	6.09
34.45	1.16	10.15
34.55	1.30	15.39
34.65	1.43	22.13
34.75	1.55	30.38
34.85	1.67	40.19
34.95	1.75	51.13
35.05	1.84	64.30
35.15	2.00	82.64
35.25	2.17	103.88
35.35	2.34	127.06
35.45	2.50	152.27
35.55	2.66	179.21
35.65	2.80	208.15
35.75	2.94	238.80
35.85	3.08	271.23
35.95	3.21	305.48
36.05	3.34	341.31
36.15	3.46	379.06
36.25	3.59	419.11
36.35	3.71	462.19
36.45	3.83	507.22
36.55	3.93	554.11
36.65	4.03	603.30
36.75	4.11	654.43
36.85	4.20	707.82
36.95	4.27	763.41
37.05	4.34	821.15
37.15	4.41	881.65
37.25	4.48	944.49
37.35	4.55	1,009.73
37.45	4.62	1,077.16
37.55	4.68	1,146.78
37.65	4.75	1,218.79
37.75	4.81	1,292.86
37.85	4.88	1,369.37
37.95	4.94	1,448.03
38.05	5.00	1,528.94
38.15	5.06	1,612.21
38.25	5.12	1,697.56
38.35	5.18	1,785.44
38.45	5.24	1,875.45
38.55	5.29	1,967.78
38.65	5.35	2,062.48
38.75	5.40	2,159.30
38.85	5.46	2,258.72
38.95	5.51	2,360.27
39.05	5.56	2,464.25
39.15	5.62	2,570.59
39.25	5.67	2,679.15
39.35	5.72	2,790.31
39.45	5.77	2,903.65
39.55	5.82	3,019.52
39.65	5.87	3,137.15
39.75	5.90	3,249.89
39.85	5.93	3,363.65
39.95	5.96	3,480.22
40.05	5.98	3,600.11
40.15	6.01	3,722.98
40.25	6.04	3,848.92
40.35	6.06	3,978.17
40.45	6.09	4,110.30
40.55	6.11	4,245.95
40.65	6.14	4,384.60
40.75	6.16	4,526.51
40.85	6.18	4,671.79
40.95	**6.21**	**4,820.08**

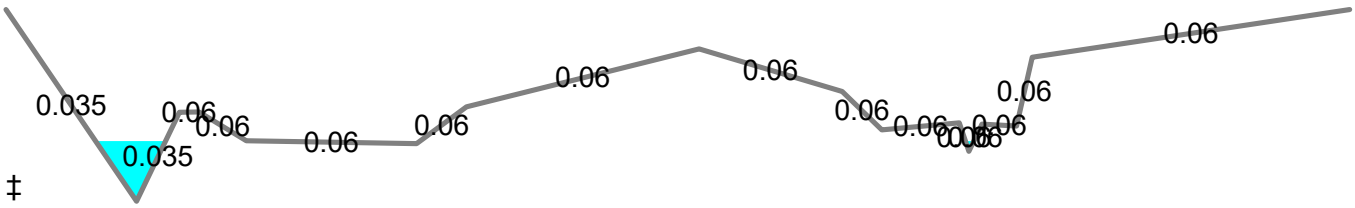
Summary for Reach 4R: River Sta 2839.49 CS-10

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 67.36 cfs @ 12.40 hrs, Volume= 9.249 af
Outflow = 66.97 cfs @ 12.44 hrs, Volume= 9.249 af, Atten= 1%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.18 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 8.8 min

Peak Storage= 4,476 cf @ 12.44 hrs
Average Depth at Peak Storage= 1.59'
Bank-Full Depth= 5.07' Flow Area= 775.1 sf, Capacity= 4,436.42 cfs

Custom cross-section, Length= 260.3' Slope= 0.0146 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 32.10', Outlet Invert= 28.31'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
132.58	33.38	0.00		
167.94	28.31	5.07	0.035	
179.60	30.66	2.72	0.035	
184.90	30.67	2.71	0.060	
197.68	29.91	3.47	0.060	
243.83	29.83	3.55	0.060	
257.41	30.81	2.57	0.060	
320.42	32.34	1.04	0.060	
359.18	31.21	2.17	0.060	
369.95	30.20	3.18	0.060	
390.93	30.38	3.00	0.060	
393.55	29.63	3.75	0.060	
397.11	30.35	3.03	0.060	
406.51	30.30	3.08	0.060	
410.77	32.12	1.26	0.060	
496.78	33.38	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 10yr Talbot Rainfall=5.30"*
Prepared by DP Solutions Printed 8/29/2023
HydroCAD® 10.00-26 s/n 07537 © 2020 HydroCAD Software Solutions LLC

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.32	10.4	16.0	2,707	40.01
1.52	14.0	20.1	3,633	58.36
1.60	17.5	69.1	4,555	67.65
1.89	39.6	84.0	10,301	128.56
1.99	48.8	101.9	12,707	155.02
2.04	54.3	120.4	14,146	167.98
2.07	58.0	125.6	15,102	178.39
2.35	95.2	141.3	24,784	311.34
2.36	96.6	147.2	25,157	313.38
2.50	117.5	151.9	30,580	403.75
2.90	182.8	176.5	47,593	714.68
3.81	377.8	254.0	98,334	1,779.88
4.03	437.0	287.2	113,760	2,088.69
5.07	775.1	365.5	201,762	4,436.42

Stage-Discharge for Reach 4R: River Sta 2839.49 CS-10

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
32.10	0.00	0.00
32.14	0.35	0.01
32.18	0.59	0.03
32.22	0.77	0.07
32.26	0.94	0.15
32.30	1.09	0.26
32.34	1.23	0.43
32.38	1.37	0.65
32.42	1.49	0.93
32.46	1.62	1.26
32.50	1.74	1.66
32.54	1.85	2.15
32.58	1.96	2.71
32.62	2.07	3.35
32.66	2.17	4.07
32.70	2.27	4.90
32.74	2.37	5.82
32.78	2.47	6.84
32.82	2.57	7.96
32.86	2.66	9.18
32.90	2.75	10.54
32.94	2.85	12.01
32.98	2.94	13.59
33.02	3.02	15.29
33.06	3.11	17.12
33.10	3.20	19.10
33.14	3.28	21.21
33.18	3.37	23.45
33.22	3.45	25.82
33.26	3.53	28.36
33.30	3.61	31.05
33.34	3.69	33.89
33.38	3.77	36.88
33.42	3.85	40.01
33.46	3.92	43.34
33.50	3.99	46.84
33.54	4.06	50.51
33.58	4.12	54.35
33.62	4.18	58.36
33.66	4.08	62.75
33.70	3.87	67.65
33.74	3.65	73.91
33.78	3.49	80.75
33.82	3.38	88.37
33.86	3.32	96.81
33.90	3.28	105.88
33.94	3.26	115.58
33.98	3.25	125.87
34.02	3.22	135.99
34.06	3.20	146.67
34.10	3.16	157.55
34.14	3.09	167.98
34.18	3.08	182.37
34.22	3.09	198.89
34.26	3.11	216.33
34.30	3.14	234.63
34.34	3.17	253.80
34.38	3.20	273.87
34.42	3.24	295.06
34.46	3.24	313.38
34.50	3.30	338.18
34.54	3.35	363.68
34.58	3.41	390.19
34.62	3.46	417.14
34.66	3.51	444.56
34.70	3.56	472.78
34.74	3.60	501.86
34.78	3.65	532.03
34.82	3.70	563.19
34.86	3.75	595.23
34.90	3.79	628.15
34.94	3.84	661.97
34.98	3.89	696.98
35.02	3.93	732.05
35.06	3.96	767.37
35.10	4.00	803.58
35.14	4.04	840.83
35.18	4.07	879.35
35.22	4.11	918.87
35.26	4.15	959.40
35.30	4.18	1,000.94
35.34	4.22	1,043.68
35.38	4.25	1,087.67
35.42	4.29	1,132.71
35.46	4.32	1,178.81
35.50	4.36	1,225.97
35.54	4.39	1,274.50
35.58	4.43	1,324.24
35.62	4.46	1,375.08
35.66	4.50	1,427.04
35.70	4.53	1,480.11
35.74	4.57	1,534.72
35.78	4.60	1,590.49
35.82	4.64	1,647.42
35.86	4.67	1,705.51
35.90	4.70	1,764.87
35.94	4.72	1,819.18
35.98	4.73	1,872.89
36.02	4.74	1,928.13
36.06	4.76	1,984.96
36.10	4.77	2,043.66
36.14	4.79	2,106.67
36.18	4.83	2,179.40
36.22	4.87	2,253.25
36.26	4.90	2,328.40
36.30	4.94	2,405.20
36.34	4.98	2,483.44
36.38	5.02	2,562.99
36.42	5.05	2,643.88
36.46	5.09	2,726.10
36.50	5.13	2,810.14
36.54	5.16	2,895.53
36.58	5.20	2,982.28
36.62	5.24	3,070.38
36.66	5.27	3,160.00
36.70	5.31	3,251.36
36.74	5.35	3,344.10
36.78	5.38	3,438.24
36.82	5.42	3,533.77
36.86	5.45	3,630.99
36.90	5.49	3,729.86
36.94	5.52	3,830.15
36.98	5.56	3,931.87
37.02	5.59	4,035.02
37.06	5.63	4,140.05
37.10	5.66	4,246.63
37.14	5.70	4,354.66
37.18	**5.73**	**4,463.67**

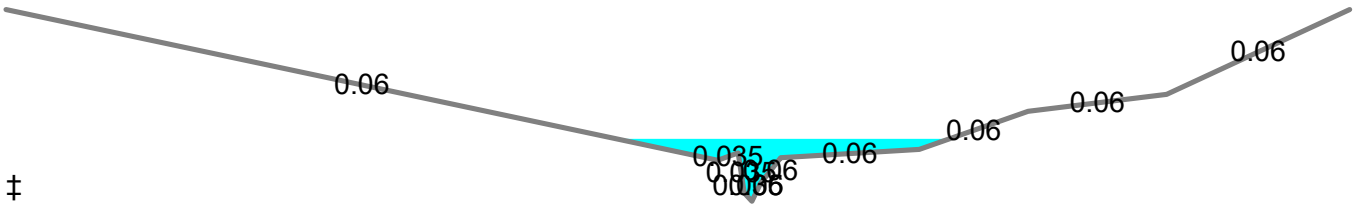
Summary for Reach 5R: River Sta 2577.80 CS-9

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 66.97 cfs @ 12.44 hrs, Volume= 9.249 af
Outflow = 66.23 cfs @ 12.49 hrs, Volume= 9.249 af, Atten= 1%, Lag= 3.1 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.57 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 17.1 min

Peak Storage= 14,338 cf @ 12.49 hrs
Average Depth at Peak Storage= 1.98'
Bank-Full Depth= 6.08' Flow Area= 1,195.3 sf, Capacity= 3,809.00 cfs

Custom cross-section, Length= 261.7' Slope= 0.0037 '/' (107 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 28.31', Outlet Invert= 27.33'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	32.11	0.00		
227.84	27.33	4.78	0.060	
234.43	27.56	4.55	0.035	
236.39	26.29	5.82	0.035	
238.78	26.03	6.08	0.035	
241.58	26.60	5.51	0.060	
248.02	27.41	4.70	0.060	
292.35	27.67	4.44	0.060	
327.25	28.88	3.23	0.060	
371.61	29.42	2.69	0.060	
430.19	32.11	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.26	0.5	3.7	125	0.27
0.57	1.9	5.8	503	2.05
1.30	8.6	13.0	2,248	13.57
1.38	9.9	19.9	2,584	13.66
1.53	15.6	57.2	4,079	14.38
1.64	23.1	81.2	6,060	21.63
2.85	176.8	173.8	46,274	311.44
3.39	289.3	243.9	75,716	550.66
6.08	1,195.3	430.8	312,808	3,809.00

Stage-Discharge for Reach 5R: River Sta 2577.80 CS-9

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
28.31	0.00	0.00
28.35	0.14	0.00
28.39	0.25	0.02
28.43	0.34	0.03
28.47	0.41	0.08
28.51	0.47	0.14
28.55	0.54	0.22
28.59	0.61	0.34
28.63	0.69	0.50
28.67	0.77	0.67
28.71	0.83	0.89
28.75	0.89	1.12
28.79	0.95	1.37
28.83	1.00	1.66
28.87	1.05	1.97
28.91	1.09	2.30
28.95	1.13	2.66
28.99	1.16	3.04
29.03	1.20	3.46
29.07	1.23	3.91
29.11	1.26	4.39
29.15	1.29	4.91
29.19	1.32	5.46
29.23	1.35	6.05
29.27	1.37	6.67
29.31	1.40	7.34
29.35	1.42	8.03
29.39	1.45	8.78
29.43	1.47	9.56
29.47	1.50	10.37
29.51	1.52	11.24
29.55	1.55	12.15
29.59	1.57	13.08
29.63	1.52	13.47
29.67	1.42	13.53
29.71	1.25	12.87
29.75	1.10	12.69
29.79	1.00	13.09
29.83	0.93	14.03
29.87	0.92	16.12
29.91	0.93	18.72
29.95	0.93	21.63
29.99	0.97	25.65
30.03	1.00	29.95
30.07	1.03	34.56
30.11	1.07	39.66
30.15	1.10	45.03
30.19	1.13	50.72
30.23	1.16	56.90
30.27	1.20	63.35
30.31	1.23	70.15
30.35	1.26	77.44
30.39	1.29	85.00
30.43	1.31	92.96
30.47	1.34	101.39
30.51	1.37	110.11
30.55	1.40	119.26
30.59	1.42	128.88
30.63	1.45	138.79
30.67	1.47	149.18
30.71	1.50	160.02
30.75	1.52	171.17
30.79	1.55	182.83
30.83	1.57	194.95
30.87	1.60	207.37
30.91	1.62	220.36
30.95	1.64	233.78
30.99	1.67	247.53
31.03	1.69	261.89
31.07	1.71	276.67
31.11	1.73	291.78
31.15	1.76	307.50
31.19	1.77	321.84
31.23	1.77	335.88
31.27	1.78	350.82
31.31	1.79	366.27
31.35	1.80	382.17
31.39	1.81	399.04
31.43	1.82	416.39
31.47	1.83	434.24
31.51	1.85	453.05
31.55	1.86	472.35
31.59	1.87	492.22
31.63	1.88	513.03
31.67	1.89	534.30
31.71	1.91	557.07
31.75	1.93	583.22
31.79	1.96	609.78
31.83	1.98	636.95
31.87	2.00	664.92
31.91	2.03	693.34
31.95	2.05	722.42
31.99	2.07	752.27
32.03	2.10	782.58
32.07	2.12	813.59
32.11	2.14	845.34
32.15	2.16	877.57
32.19	2.18	910.53
32.23	2.21	944.22
32.27	2.23	978.37
32.31	2.25	1,013.33
32.35	2.27	1,048.96
32.39	2.29	1,085.08
32.43	2.31	1,122.05
32.47	2.33	1,159.67
32.51	2.35	1,197.77
32.55	2.37	1,236.78
32.59	2.39	1,276.40
32.63	2.41	1,316.52
32.67	2.43	1,357.60
32.71	2.45	1,399.26
32.75	2.47	1,441.42
32.79	2.49	1,484.59
32.83	2.51	1,528.31
32.87	2.53	1,572.54
32.91	2.55	1,617.83
32.95	2.57	1,663.64
32.99	2.59	1,710.01
33.03	2.61	1,757.42
33.07	2.62	1,805.35
33.11	2.64	1,853.89
33.15	2.66	1,903.43
33.19	2.68	1,953.51
33.23	2.70	2,004.24
33.27	2.72	2,055.96
33.31	2.73	2,108.21
33.35	2.75	2,161.17
33.39	2.77	2,215.08
33.43	2.79	2,269.53
33.47	2.80	2,324.75
33.51	2.82	2,380.88
33.55	2.84	2,437.57
33.59	2.86	2,495.07
33.63	2.87	2,553.46
33.67	2.89	2,612.40
33.71	2.91	2,672.22
33.75	2.93	2,732.89
33.79	2.94	2,794.12
33.83	2.96	2,856.29
33.87	2.98	2,919.26
33.91	2.99	2,982.81
33.95	3.01	3,047.35
33.99	3.03	3,112.66
34.03	3.04	3,178.55
34.07	3.06	3,245.50
34.11	3.07	3,313.18
34.15	3.09	3,381.44
34.19	3.11	3,450.83
34.23	3.12	3,520.90
34.27	3.14	3,591.56
34.31	3.15	3,663.41
34.35	3.17	3,735.91
34.39	**3.19**	**3,809.00**

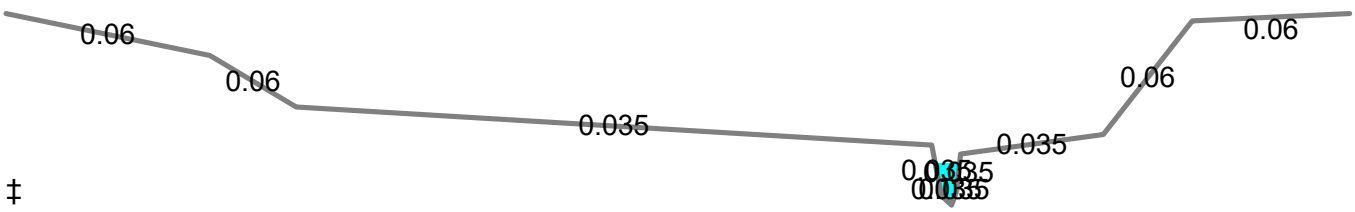
Summary for Reach 6R: River Sta 1972.78 CS-8

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 66.23 cfs @ 12.49 hrs, Volume= 9.249 af
Outflow = 66.15 cfs @ 12.51 hrs, Volume= 9.249 af, Atten= 0%, Lag= 1.1 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.78 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 14.3 min

Peak Storage= 5,900 cf @ 12.51 hrs
Average Depth at Peak Storage= 2.61'
Bank-Full Depth= 11.89' Flow Area= 1,546.5 sf, Capacity= 30,613.15 cfs

Custom cross-section, Length= 605.0' Slope= 0.0200 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 27.33', Outlet Invert= 15.26'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	27.15	0.00		
45.60	24.54	2.61	0.060	
64.91	21.36	5.79	0.060	
206.97	18.99	8.16	0.035	
209.13	15.86	11.29	0.035	
211.40	15.26	11.89	0.035	
212.59	16.16	10.99	0.035	
213.40	18.44	8.71	0.035	
245.31	19.64	7.51	0.035	
265.19	26.69	0.46	0.060	
300.42	27.15	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.60	0.9	3.3	556	2.33
0.90	1.9	4.2	1,167	6.88
3.18	13.0	9.4	7,869	96.89
3.73	20.5	24.7	12,379	108.23
4.38	52.4	81.0	31,718	235.32
6.10	278.2	189.2	168,324	2,155.48
9.28	912.3	218.3	551,928	14,423.80
11.43	1,418.3	262.4	858,047	27,530.87
11.89	1,546.5	305.6	935,633	30,613.15

Stage-Discharge for Reach 6R: River Sta 1972.78 CS-8

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
27.33	0.00	0.00
27.48	0.99	0.07
27.63	1.59	0.40
27.78	2.09	1.11
27.93	2.54	2.33
28.08	3.09	4.38
28.23	3.57	6.88
28.38	4.01	10.02
28.53	4.40	13.56
28.68	4.75	17.53
28.83	5.06	21.87
28.98	5.34	26.59
29.13	5.61	31.70
29.28	5.85	37.21
29.43	6.08	43.09
29.58	6.30	49.33
29.73	6.50	55.99
29.88	6.70	63.03
30.03	6.89	70.46
30.18	7.07	78.26
30.33	7.25	86.50
30.48	7.42	95.13
30.63	6.42	89.43
30.78	5.69	89.03
30.93	5.40	97.10
31.08	5.16	107.84
31.23	4.49	113.70
31.38	4.29	135.73
31.53	4.32	173.24
31.68	4.46	224.02
31.83	4.75	295.69
31.98	5.06	383.14
32.13	5.37	486.62
32.28	5.66	605.65
32.43	5.96	741.11
32.58	6.24	895.68
32.73	6.52	1,069.80
32.88	6.79	1,263.05
33.03	7.06	1,476.22
33.18	7.32	1,712.89
33.33	7.58	1,972.05
33.48	7.91	2,276.17
33.63	8.40	2,650.52
33.78	8.87	3,049.80
33.93	9.33	3,470.77
34.08	9.77	3,912.83
34.23	10.19	4,376.07
34.38	10.61	4,862.76
34.53	11.01	5,369.48
34.68	11.41	5,895.99
34.83	11.79	6,443.03
34.98	12.17	7,011.66
35.13	12.54	7,599.33
35.28	12.90	8,205.86
35.43	13.25	8,832.58
35.58	13.60	9,479.45
35.73	13.94	10,144.63
35.88	14.27	10,827.99
36.03	14.60	11,531.39
36.18	14.92	12,253.75
36.33	15.23	12,993.86
36.48	15.55	13,751.63
36.63	15.85	14,528.19
36.78	16.14	15,316.93
36.93	16.42	16,124.31
37.08	16.70	16,950.39
37.23	16.97	17,798.16
37.38	17.24	18,664.38
37.53	17.50	19,549.01
37.68	17.75	20,452.59
37.83	17.99	21,377.11
37.98	18.24	22,320.01
38.13	18.47	23,281.30
38.28	18.70	24,262.13
38.43	18.93	25,263.42
38.58	19.15	26,283.16
38.73	19.37	27,321.40
38.88	19.50	28,270.41
39.03	19.63	29,273.22
39.18	**19.76**	**30,327.52**

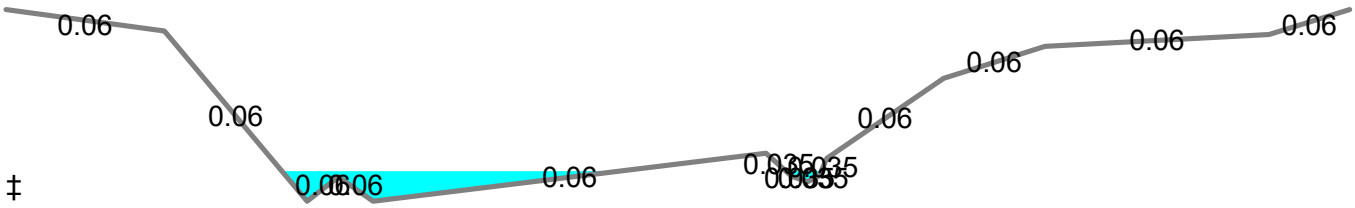
Summary for Reach 7R: River Sta 1427.28 CS-7

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 66.15 cfs @ 12.51 hrs, Volume= 9.249 af
Outflow = 60.28 cfs @ 12.61 hrs, Volume= 9.249 af, Atten= 9%, Lag= 6.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.04 fps, Min. Travel Time= 8.8 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 70.0 min

Peak Storage= 31,734 cf @ 12.61 hrs
Average Depth at Peak Storage= 1.61'
Bank-Full Depth= 10.23' Flow Area= 1,372.9 sf, Capacity= 5,579.78 cfs

Custom cross-section, Length= 545.5' Slope= 0.0023 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 15.26', Outlet Invert= 14.03'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
110.04	23.22	0.00		
141.25	22.07	1.15	0.060	
169.44	12.99	10.23	0.060	
175.62	14.28	8.94	0.060	
182.43	12.99	10.23	0.060	
259.88	15.56	7.66	0.060	
264.98	14.32	8.90	0.035	
268.12	14.03	9.19	0.035	
270.40	14.34	8.88	0.035	
271.88	15.28	7.94	0.035	
294.91	19.55	3.67	0.060	
314.93	21.26	1.96	0.060	
359.13	21.88	1.34	0.060	
375.00	23.22	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.04	23.4	45.4	12,777	17.71
1.29	36.6	60.9	19,968	31.74
1.33	39.1	63.0	21,309	34.70
1.35	40.3	63.9	21,995	36.25
2.29	117.1	101.0	63,870	159.21
2.57	146.7	113.1	80,052	217.42
6.56	661.0	148.0	360,571	2,315.97
8.27	932.0	173.7	508,421	3,789.48
8.89	1,052.4	219.9	574,111	4,358.78
9.08	1,094.0	222.8	596,779	4,578.02
10.23	1,372.9	267.7	748,934	5,579.78

Stage-Discharge for Reach 7R: River Sta 1427.28 CS-7

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
15.26	0.00	0.00
15.41	0.21	0.13
15.56	0.33	0.65
15.71	0.43	1.95
15.86	0.52	4.12
16.01	0.61	7.48
16.16	0.69	12.10
16.31	0.76	18.20
16.46	0.83	26.12
16.61	0.90	36.25
16.76	0.98	49.35
16.91	1.06	64.65
17.06	1.13	82.55
17.21	1.20	102.86
17.36	1.27	126.08
17.51	1.34	151.82
17.66	1.41	180.98
17.81	1.47	212.95
17.96	1.57	254.15
18.11	1.68	299.16
18.26	1.77	347.41
18.41	1.87	398.58
18.56	1.96	452.78
18.71	2.05	509.89
18.86	2.14	569.86
19.01	2.22	632.77
19.16	2.30	698.39
19.31	2.38	766.99
19.46	2.46	838.15
19.61	2.54	912.33
19.76	2.61	988.98
19.91	2.68	1,068.67
20.06	2.76	1,150.81
20.21	2.83	1,235.87
20.36	2.89	1,323.46
20.51	2.96	1,413.86
20.66	3.03	1,506.85
20.81	3.09	1,602.56
20.96	3.16	1,700.93
21.11	3.22	1,801.91
21.26	3.28	1,905.64
21.41	3.34	2,011.89
21.56	3.40	2,120.95
21.71	3.46	2,232.46
21.86	3.52	2,346.17
22.01	3.57	2,460.68
22.16	3.62	2,578.42
22.31	3.68	2,698.84
22.46	3.73	2,822.43
22.61	3.78	2,948.80
22.76	3.83	3,078.26
22.91	3.87	3,210.61
23.06	3.92	3,345.98
23.21	3.97	3,484.36
23.36	4.01	3,625.69
23.51	4.06	3,770.09
23.66	4.08	3,895.30
23.81	4.10	4,028.07
23.96	4.12	4,169.05
24.11	4.14	4,318.21
24.26	**4.17**	4,484.95
24.41	**4.17**	4,627.67
24.56	4.14	4,738.20
24.71	4.12	4,856.37
24.86	4.10	4,981.11
25.01	4.09	5,113.02
25.16	4.08	5,251.55
25.31	4.07	5,396.87
25.46	4.07	**5,548.90**

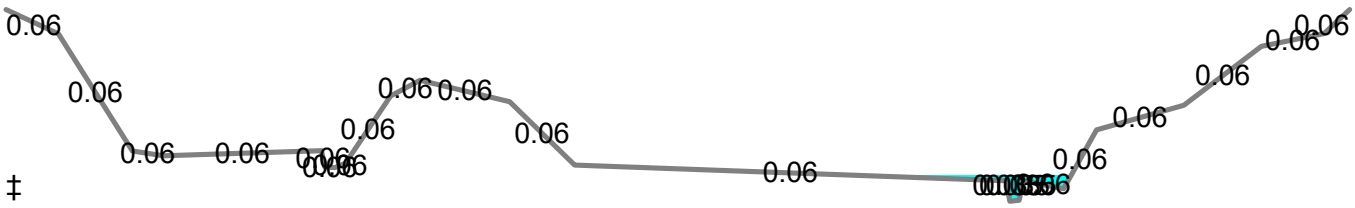
Summary for Reach 8R: River Sta 1096.55 CS-5

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 60.28 cfs @ 12.61 hrs, Volume= 9.249 af
Outflow = 59.15 cfs @ 12.66 hrs, Volume= 9.249 af, Atten= 2%, Lag= 3.4 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 13.0 min

Peak Storage= 9,730 cf @ 12.66 hrs
Average Depth at Peak Storage= 1.60'
Bank-Full Depth= 11.67' Flow Area= 3,698.5 sf, Capacity= 33,066.93 cfs

Custom cross-section, Length= 330.7' Slope= 0.0086 '/' (119 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 14.03', Outlet Invert= 11.19'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.86	0.00		
19.48	21.37	1.49	0.060	
46.99	14.25	8.61	0.060	
58.64	13.96	8.90	0.060	
117.45	14.26	8.60	0.060	
118.64	13.28	9.58	0.060	
122.39	13.23	9.63	0.060	
126.30	13.51	9.35	0.060	
143.11	17.60	5.26	0.060	
154.13	18.56	4.30	0.060	
187.43	17.24	5.62	0.060	
211.60	13.40	9.46	0.060	
372.09	12.43	10.43	0.060	
373.56	11.19	11.67	0.035	
376.99	11.25	11.61	0.035	
378.50	12.44	10.42	0.035	
393.57	11.95	10.91	0.060	
405.78	15.54	7.32	0.060	
438.28	17.03	5.83	0.060	
467.19	20.61	2.25	0.060	
490.49	21.39	1.47	0.060	
500.00	22.86	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.06	0.1	3.5	35	0.04
0.76	3.2	5.7	1,044	8.34
1.24	9.9	23.7	3,267	23.95
1.25	10.1	25.7	3,346	24.49
2.04	82.4	159.3	27,250	164.02
2.09	90.6	172.2	29,973	180.41
2.21	112.5	194.3	37,200	228.97
2.32	133.9	197.1	44,277	288.62
2.77	223.6	204.2	73,934	604.31
3.06	292.9	277.2	96,864	779.93
3.07	295.7	279.4	97,778	787.98
4.35	665.6	302.6	220,102	2,700.59
5.84	1,153.0	356.9	381,311	6,021.98
6.05	1,227.9	361.7	406,062	6,618.72
6.41	1,359.7	376.7	449,655	7,615.56
7.37	1,740.8	423.6	575,675	10,572.29
9.42	2,627.5	448.5	868,906	20,147.10
10.18	2,975.2	474.2	983,914	24,102.93
10.20	2,984.7	475.1	987,028	24,206.23
11.67	3,698.5	504.0	1,223,110	33,066.93

Stage-Discharge for Reach 8R: River Sta 1096.55 CS-5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
14.03	0.00	0.00
14.18	0.90	0.44
14.33	1.50	1.57
14.48	1.94	3.25
14.63	2.31	5.45
14.78	2.62	8.15
14.93	2.69	11.54
15.08	2.57	15.95
15.23	2.45	22.08
15.38	2.33	31.75
15.53	2.13	46.10
15.68	2.00	67.24
15.83	1.96	97.00
15.98	1.97	136.02
16.13	1.99	184.14
16.28	2.08	250.51
16.43	2.25	337.75
16.58	2.43	437.13
16.73	2.62	548.60
16.88	2.68	645.97
17.03	2.66	738.12
17.18	2.76	877.36
17.33	2.93	1,057.31
17.48	3.11	1,251.23
17.63	3.27	1,458.68
17.78	3.44	1,680.45
17.93	3.60	1,916.37
18.08	3.76	2,164.94
18.23	3.91	2,425.95
18.38	4.06	2,700.59
18.53	4.18	2,970.28
18.68	4.30	3,253.91
18.83	4.42	3,553.13
18.98	4.54	3,867.71
19.13	4.66	4,196.01
19.28	4.77	4,537.86
19.43	4.89	4,895.47
19.58	5.01	5,266.50
19.73	5.12	5,650.82
19.88	5.23	6,050.11
20.03	5.35	6,475.02
20.18	5.45	6,888.75
20.33	5.54	7,302.85
20.48	5.62	7,727.87
20.63	5.70	8,155.01
20.78	5.77	8,595.64
20.93	5.84	9,050.99
21.08	5.92	9,521.54
21.23	5.99	10,006.04
21.38	6.06	10,504.65
21.53	6.18	11,101.07
21.68	6.31	11,724.05
21.83	6.43	12,360.84
21.98	6.55	13,012.42
22.13	6.67	13,679.04
22.28	6.79	14,359.23
22.43	6.90	15,052.92
22.58	7.02	15,762.31
22.73	7.13	16,485.24
22.88	7.25	17,221.48
23.03	7.36	17,972.00
23.18	7.47	18,737.10
23.33	7.58	19,515.36
23.48	7.68	20,294.50
23.63	7.77	21,043.43
23.78	7.86	21,809.79
23.93	7.94	22,593.17
24.08	8.03	23,394.60
24.23	8.11	24,206.23
24.38	8.20	25,050.11
24.53	8.28	25,906.18
24.68	8.37	26,777.64
24.83	8.46	27,662.53
24.98	8.54	28,560.64
25.13	8.63	29,472.94
25.28	8.71	30,399.91
25.43	8.79	31,340.13
25.58	**8.88**	**32,293.59**

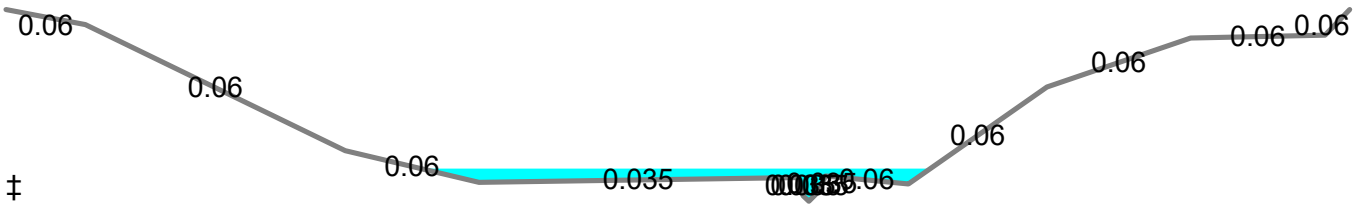
Summary for Reach 9R: River Sta 820.28 CS-4

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 286.66 cfs @ 12.31 hrs, Volume= 52.588 af
Outflow = 285.59 cfs @ 12.34 hrs, Volume= 52.588 af, Atten= 0%, Lag= 1.6 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 13.9 min

Peak Storage= 35,115 cf @ 12.34 hrs
Average Depth at Peak Storage= 2.20'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 9R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

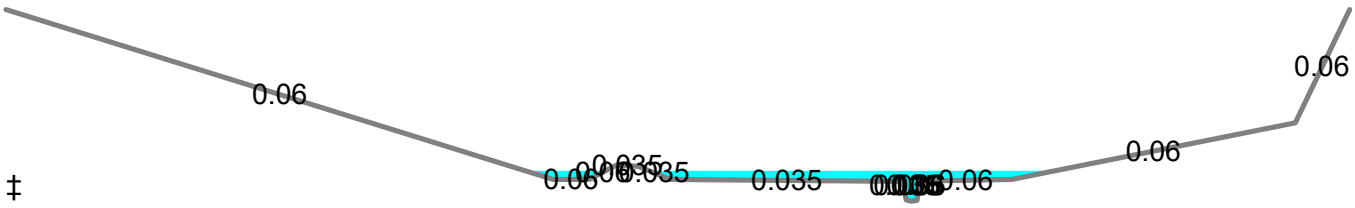
Summary for Reach 10R: River Sta 613.13 CS-3A

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 285.59 cfs @ 12.34 hrs, Volume= 52.588 af
Outflow = 285.42 cfs @ 12.36 hrs, Volume= 52.588 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 12.9 min

Peak Storage= 27,678 cf @ 12.36 hrs
Average Depth at Peak Storage= 2.14'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 10R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

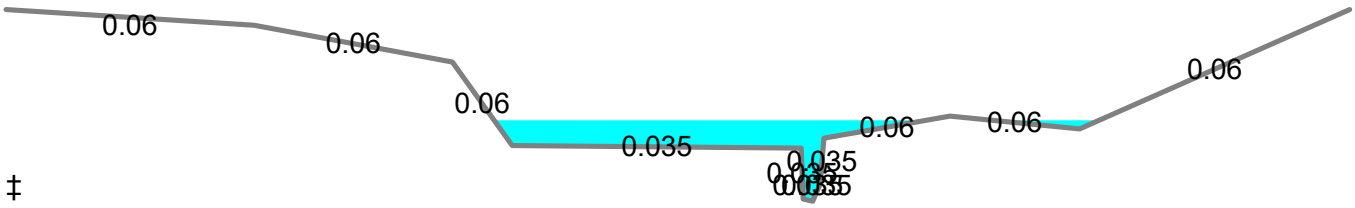
Summary for Reach 11R: River Sta 384.66 CS-3

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 285.42 cfs @ 12.36 hrs, Volume= 52.588 af
Outflow = 285.28 cfs @ 12.39 hrs, Volume= 52.588 af, Atten= 0%, Lag= 1.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.40 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 10.4 min

Peak Storage= 22,805 cf @ 12.39 hrs
Average Depth at Peak Storage= 2.71'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 11R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

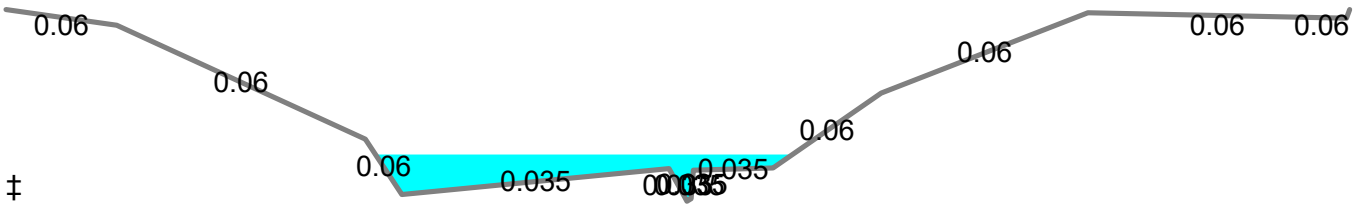
Summary for Reach 12R: River Sta 284.44 CS-2

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 285.28 cfs @ 12.40 hrs, Volume= 52.585 af
Outflow = 284.93 cfs @ 12.44 hrs, Volume= 52.585 af, Atten= 0%, Lag= 2.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.62 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 23.4 min

Peak Storage= 46,311 cf @ 12.44 hrs
Average Depth at Peak Storage= 3.52'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 12R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

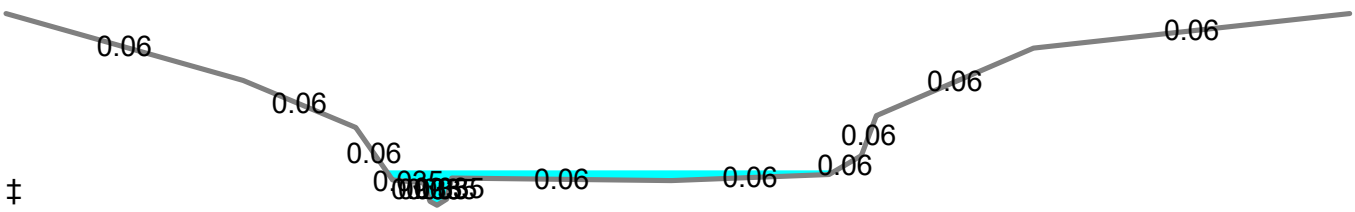
Summary for Reach 13R: River Sta 0.00 CS-1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 284.93 cfs @ 12.44 hrs, Volume= 52.585 af
Outflow = 284.70 cfs @ 12.47 hrs, Volume= 52.585 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 8.0 min

Peak Storage= 32,466 cf @ 12.47 hrs
Average Depth at Peak Storage= 2.66'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 10yr Talbot Rainfall=5.30"*
Prepared by DP Solutions Printed 8/29/2023
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 13R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 11P: Pond 1

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10yr Talbot event
Inflow = 90.38 cfs @ 12.10 hrs, Volume= 9.249 af
Outflow = 71.22 cfs @ 12.27 hrs, Volume= 9.249 af, Atten= 21%, Lag= 9.8 min
Primary = 71.22 cfs @ 12.27 hrs, Volume= 9.249 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 48.56' @ 12.27 hrs Surf.Area= 24,577 sf Storage= 52,878 cf

Plug-Flow detention time= 10.5 min calculated for 9.249 af (100% of inflow)
Center-of-Mass det. time= 10.3 min (870.8 - 860.6)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	189,394 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
45.00	0	0.0	0	0	0
46.00	14,235	515.0	4,745	4,745	21,108
47.00	17,332	556.0	15,758	20,503	24,643
48.00	21,715	639.0	19,482	39,985	32,558
49.00	26,977	704.0	24,298	64,284	39,537
50.00	33,980	771.0	30,411	94,695	47,436
51.00	42,797	845.0	38,304	132,999	56,986
52.00	71,191	1,014.0	56,395	189,394	82,005

Device	Routing	Invert	Outlet Devices
#1	Primary	43.75'	**36.0" Round Culvert X 2.00** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.75' / 43.25' S= 0.0111 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Device 1	45.00'	**14.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	46.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#4	Device 1	48.10'	**28.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=71.20 cfs @ 12.27 hrs HW=48.56' TW=39.82' (Dynamic Tailwater)
└─**1=Culvert** (Passes 71.20 cfs of 123.79 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 26.63 cfs @ 8.30 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 16.27 cfs @ 6.91 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 28.30 cfs @ 2.21 fps)

Stage-Discharge for Pond 11P: Pond 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
45.00	0.00	47.08	27.53	49.16	134.60	51.24	166.60
45.04	0.02	47.12	28.08	49.20	135.29	51.28	167.15
45.08	0.09	47.16	28.61	49.24	135.97	51.32	167.71
45.12	0.21	47.20	29.13	49.28	136.65	51.36	168.26
45.16	0.36	47.24	29.63	49.32	137.33	51.40	168.81
45.20	0.56	47.28	30.13	49.36	138.00	51.44	169.36
45.24	0.79	47.32	30.62	49.40	138.67	51.48	169.90
45.28	1.07	47.36	31.10	49.44	139.34	51.52	170.45
45.32	1.38	47.40	31.58	49.48	140.00	51.56	170.99
45.36	1.72	47.44	32.04	49.52	140.66	51.60	171.53
45.40	2.09	47.48	32.50	49.56	141.32	51.64	172.07
45.44	2.50	47.52	32.95	49.60	141.97	51.68	172.61
45.48	2.93	47.56	33.39	49.64	142.62	51.72	173.14
45.52	3.39	47.60	33.83	49.68	143.27	51.76	173.68
45.56	3.88	47.64	34.26	49.72	143.92	51.80	174.21
45.60	4.38	47.68	34.68	49.76	144.56	51.84	174.74
45.64	4.91	47.72	35.10	49.80	145.20	51.88	175.27
45.68	5.45	47.76	35.52	49.84	145.84	51.92	175.80
45.72	6.00	47.80	35.93	49.88	146.47	51.96	176.33
45.76	6.57	47.84	36.33	49.92	147.10	52.00	**176.85**
45.80	7.14	47.88	36.73	49.96	147.73		
45.84	7.71	47.92	37.12	50.00	148.36		
45.88	8.29	47.96	37.51	50.04	148.98		
45.92	8.86	48.00	37.90	50.08	149.60		
45.96	9.42	48.04	38.28	50.12	150.22		
46.00	9.96	48.08	38.66	50.16	150.83		
46.04	10.50	48.12	39.29	50.20	151.45		
46.08	11.05	48.16	40.75	50.24	152.06		
46.12	11.59	48.20	42.67	50.28	152.67		
46.16	12.08	48.24	44.93	50.32	153.27		
46.20	12.64	48.28	47.49	50.36	153.87		
46.24	13.24	48.32	50.30	50.40	154.48		
46.28	13.86	48.36	53.34	50.44	155.07		
46.32	14.51	48.40	56.60	50.48	155.67		
46.36	15.17	48.44	60.05	50.52	156.27		
46.40	15.85	48.48	63.69	50.56	156.86		
46.44	16.55	48.52	67.51	50.60	157.45		
46.48	17.26	48.56	71.49	50.64	158.03		
46.52	17.98	48.60	75.63	50.68	158.62		
46.56	18.72	48.64	79.93	50.72	159.20		
46.60	19.46	48.68	84.37	50.76	159.78		
46.64	20.21	48.72	88.95	50.80	160.36		
46.68	20.96	48.76	93.67	50.84	160.94		
46.72	21.71	48.80	98.52	50.88	161.51		
46.76	22.45	48.84	103.51	50.92	162.09		
46.80	23.19	48.88	108.61	50.96	162.66		
46.84	23.90	48.92	113.84	51.00	163.23		
46.88	24.60	48.96	119.19	51.04	163.79		
46.92	25.26	49.00	124.66	51.08	164.36		
46.96	25.87	49.04	130.24	51.12	164.92		
47.00	26.40	49.08	133.22	51.16	165.48		
47.04	26.97	49.12	133.91	51.20	166.04		

Summary for Pond 14P: Goldsburough Neck Road Culvert

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 285.28 cfs @ 12.39 hrs, Volume= 52.588 af
Outflow = 285.28 cfs @ 12.40 hrs, Volume= 52.585 af, Atten= 0%, Lag= 0.6 min
Primary = 285.28 cfs @ 12.40 hrs, Volume= 52.585 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 11.24' @ 12.43 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=284.92 cfs @ 12.40 hrs HW=11.24' TW=10.62' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 37.56 cfs @ 2.99 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 247.36 cfs @ 3.01 fps)

Stage-Discharge for Pond 14P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 18L: Proposed Design Point 1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 2.33" for 10yr Talbot event
Inflow = 284.70 cfs @ 12.47 hrs, Volume= 52.585 af
Primary = 284.70 cfs @ 12.48 hrs, Volume= 52.585 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 3S: Prop. Design Point 1 Runoff Area=221.700 ac 0.00% Impervious Runoff Depth=4.23"
Tc=30.6 min CN=71 Runoff=502.32 cfs 78.218 af

Subcatchment 4S: Prop. Design Point 1 to Runoff Area=49.080 ac 0.00% Impervious Runoff Depth=4.12"
Tc=16.2 min CN=70 Runoff=168.96 cfs 16.861 af

Reach 1R: River St 3893.53 CS-13 Avg. Flow Depth=3.18' Max Vel=4.75 fps Inflow=139.32 cfs 16.861 af
L=400.0' S=0.0089 '/' Capacity=30,715.83 cfs Outflow=139.25 cfs 16.861 af

Reach 2R: River Sta 3493.6 CS-12 Avg. Flow Depth=2.86' Max Vel=3.28 fps Inflow=139.25 cfs 16.861 af
L=393.8' S=0.0044 '/' Capacity=4,857.15 cfs Outflow=138.97 cfs 16.861 af

Reach 3R: River Sta 3099.81 CS-11 Avg. Flow Depth=1.55' Max Vel=2.42 fps Inflow=138.97 cfs 16.861 af
L=393.8' S=0.0044 '/' Capacity=4,820.08 cfs Outflow=138.73 cfs 16.861 af

Reach 4R: River Sta 2839.49 CS-10 Avg. Flow Depth=1.93' Max Vel=4.18 fps Inflow=138.73 cfs 16.861 af
L=260.3' S=0.0146 '/' Capacity=4,436.42 cfs Outflow=138.54 cfs 16.861 af

Reach 5R: River Sta 2577.80 CS-9 Avg. Flow Depth=2.32' Max Vel=1.58 fps Inflow=138.54 cfs 16.861 af
L=261.7' S=0.0037 '/' Capacity=3,809.00 cfs Outflow=137.90 cfs 16.861 af

Reach 6R: River Sta 1972.78 CS-8 Avg. Flow Depth=4.06' Max Vel=7.44 fps Inflow=137.90 cfs 16.861 af
L=605.0' S=0.0200 '/' Capacity=30,613.15 cfs Outflow=136.67 cfs 16.861 af

Reach 7R: River Sta 1427.28 CS-7 Avg. Flow Depth=2.12' Max Vel=1.29 fps Inflow=136.67 cfs 16.861 af
L=545.5' S=0.0023 '/' Capacity=5,579.78 cfs Outflow=129.93 cfs 16.861 af

Reach 8R: River Sta 1096.55 CS-5 Avg. Flow Depth=1.93' Max Vel=2.72 fps Inflow=129.93 cfs 16.861 af
L=330.7' S=0.0086 '/' Capacity=33,066.93 cfs Outflow=128.13 cfs 16.861 af

Reach 9R: River Sta 820.28 CS-4 Avg. Flow Depth=2.59' Max Vel=2.85 fps Inflow=554.99 cfs 95.079 af
L=276.3' S=0.0048 '/' Capacity=29,920.03 cfs Outflow=554.88 cfs 95.079 af

Reach 10R: River Sta 613.13 CS-3A Avg. Flow Depth=2.47' Max Vel=2.70 fps Inflow=554.88 cfs 95.079 af
L=207.1' S=0.0067 '/' Capacity=58,962.20 cfs Outflow=554.82 cfs 95.079 af

Reach 11R: River Sta 384.66 CS-3 Avg. Flow Depth=3.12' Max Vel=3.47 fps Inflow=554.82 cfs 95.079 af
L=228.5' S=0.0061 '/' Capacity=5,622.13 cfs Outflow=554.76 cfs 95.079 af

Reach 12R: River Sta 284.44 CS-2 Avg. Flow Depth=4.42' Max Vel=0.79 fps Inflow=554.76 cfs 95.076 af
L=100.2' S=0.0001 '/' Capacity=8,158.02 cfs Outflow=554.55 cfs 95.076 af

Reach 13R: River Sta 0.00 CS-1 Avg. Flow Depth=3.08' Max Vel=4.16 fps Inflow=554.55 cfs 95.076 af
L=284.4' S=0.0086 '/' Capacity=29,924.85 cfs Outflow=554.43 cfs 95.076 af

Pond 11P: Pond 1 Peak Elev=49.44' Storage=76,774 cf Inflow=168.96 cfs 16.861 af
Outflow=139.32 cfs 16.861 af

Pond 14P: Goldsburough Neck Road Culvert Peak Elev=12.03' Inflow=554.76 cfs 95.079 af
Outflow=554.76 cfs 95.076 af

Link 18L: Proposed Design Point 1 Inflow=554.43 cfs 95.076 af
Primary=554.43 cfs 95.076 af

Total Runoff Area = 270.780 ac Runoff Volume = 95.079 af Average Runoff Depth = 4.21"
100.00% Pervious = 270.780 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Prop. Design Point 1 Bypass

Runoff = 502.32 cfs @ 12.30 hrs, Volume= 78.218 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	221.700	71	Weighted CN from TR-55
	221.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.6					**Direct Entry, TC from TR-55**

Summary for Subcatchment 4S: Prop. Design Point 1 to Pond

Runoff = 168.96 cfs @ 12.10 hrs, Volume= 16.861 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	49.080	70	Weighted CN from TR-55
	49.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2					**Direct Entry, From TR-55**

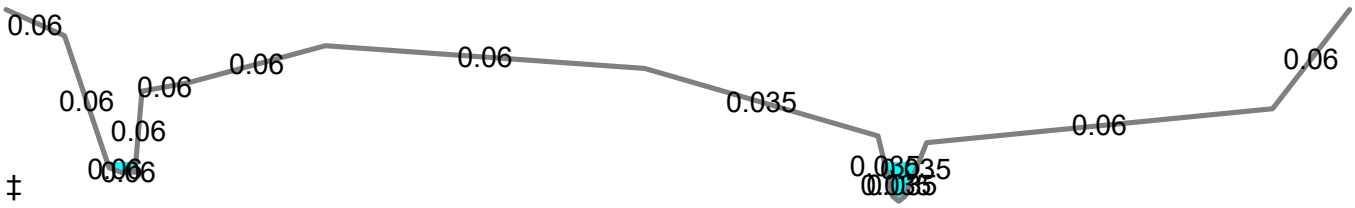
Summary for Reach 1R: River St 3893.53 CS-13

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 139.32 cfs @ 12.23 hrs, Volume= 16.861 af
Outflow = 139.25 cfs @ 12.26 hrs, Volume= 16.861 af, Atten= 0%, Lag= 1.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.75 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 7.8 min

Peak Storage= 11,743 cf @ 12.26 hrs
Average Depth at Peak Storage= 3.18'
Bank-Full Depth= 15.50' Flow Area= 2,974.4 sf, Capacity= 30,715.83 cfs

Custom cross-section, Length= 400.0' Slope= 0.0089 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 37.41', Outlet Invert= 33.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.91	0.00		
19.65	50.80	2.11	0.060	
34.56	40.13	12.78	0.060	
38.64	39.75	13.16	0.060	
43.17	39.76	13.15	0.060	
45.57	46.31	6.60	0.060	
60.88	46.99	5.92	0.060	
106.99	49.99	2.92	0.060	
213.92	48.16	4.75	0.060	
292.01	42.68	10.23	0.035	
296.95	37.81	15.10	0.035	
299.01	37.41	15.50	0.035	
301.05	37.81	15.10	0.035	
308.35	42.15	10.76	0.035	
424.22	44.88	8.03	0.060	
450.00	52.91	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.40	0.8	4.2	328	1.11
2.34	13.8	10.7	5,539	65.72
2.35	14.0	15.4	5,586	66.32
2.72	20.1	21.0	8,035	93.27
4.74	67.8	33.5	27,109	386.86
5.27	89.0	58.2	35,609	520.79
7.47	345.1	189.2	138,024	1,641.80
8.90	623.1	218.4	249,237	3,633.81
9.58	774.2	246.9	309,687	4,807.44
10.75	1,074.1	287.6	429,650	7,561.94
12.58	1,711.1	432.0	684,458	14,019.18
13.39	2,052.7	436.1	821,092	18,072.48
15.50	2,974.4	463.0	1,189,741	30,715.83

Stage-Discharge for Reach 1R: River St 3893.53 CS-13

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
37.41	0.00	0.00
37.61	0.84	0.23
37.81	1.35	1.11
38.01	1.98	3.40
38.21	2.47	6.64
38.41	2.87	10.88
38.61	3.22	16.04
38.81	3.54	22.17
39.01	3.82	29.44
39.21	4.09	37.74
39.41	4.34	47.09
39.61	4.58	57.68
39.81	4.73	69.60
40.01	4.67	83.73
40.21	4.64	100.40
40.41	4.68	119.94
40.61	4.76	141.71
40.81	4.86	165.68
41.01	4.97	192.13
41.21	5.09	220.86
41.41	5.22	251.78
41.61	5.35	285.06
41.81	5.48	320.85
42.01	5.62	358.92
42.21	5.76	400.59
42.41	5.85	448.85
42.61	5.86	501.54
42.81	5.59	538.56
43.01	5.27	576.48
43.21	5.03	628.71
43.41	4.86	693.94
43.61	4.75	772.42
43.81	4.68	867.19
44.01	4.65	976.33
44.21	4.64	1,100.41
44.41	4.66	1,241.72
44.61	4.69	1,400.72
44.81	4.74	1,576.77
45.01	4.84	1,784.10
45.21	4.97	2,019.14
45.41	5.12	2,271.70
45.61	5.27	2,541.72
45.81	5.43	2,831.29
46.01	5.59	3,139.36
46.21	5.75	3,464.89
46.41	5.88	3,784.80
46.61	5.98	4,111.63
46.81	6.10	4,466.47
47.01	6.22	4,847.95
47.21	6.37	5,266.28
47.41	6.51	5,706.90
47.61	6.65	6,169.37
47.81	6.79	6,655.19
48.01	6.93	7,165.91
48.21	7.07	7,694.66
48.41	7.20	8,251.10
48.61	7.34	8,856.97
48.81	7.48	9,501.43
49.01	7.61	10,180.91
49.21	7.74	10,896.71
49.41	7.86	11,648.77
49.61	7.98	12,433.61
49.81	8.10	13,251.36
50.01	8.21	14,114.05
50.21	8.36	15,072.73
50.41	8.51	16,059.68
50.61	8.66	17,078.41
50.81	8.81	18,125.28
51.01	8.96	19,191.80
51.21	9.11	20,284.37
51.41	9.25	21,408.49
51.61	9.40	22,559.49
51.81	9.54	23,737.21
52.01	9.69	24,944.69
52.21	9.83	26,180.14
52.41	9.97	27,441.79
52.61	10.12	28,730.57
52.81	**10.26**	**30,048.98**

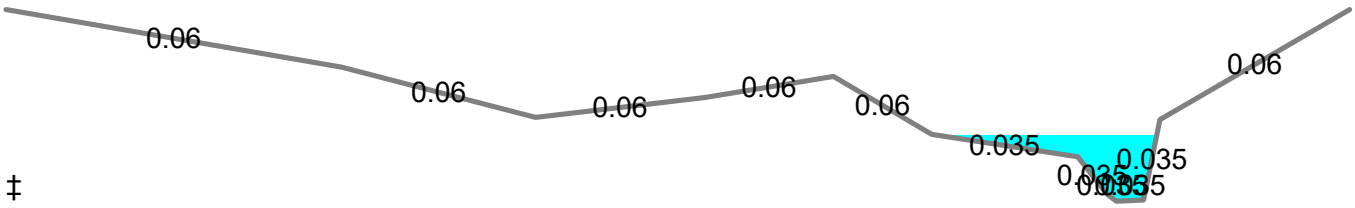
Summary for Reach 2R: River Sta 3493.6 CS-12

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 139.25 cfs @ 12.26 hrs, Volume= 16.861 af
Outflow = 138.97 cfs @ 12.29 hrs, Volume= 16.861 af, Atten= 0%, Lag= 2.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 19.7 min

Peak Storage= 18,704 cf @ 12.29 hrs
Average Depth at Peak Storage= 2.86'
Bank-Full Depth= 8.30' Flow Area= 915.0 sf, Capacity= 4,857.15 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	42.15	0.00		
66.72	39.65	2.50	0.060	
105.27	37.48	4.67	0.060	
138.90	38.34	3.81	0.060	
164.52	39.25	2.90	0.060	
184.02	36.75	5.40	0.060	
213.06	35.77	6.38	0.035	
218.87	34.15	8.00	0.035	
220.76	33.85	8.30	0.035	
226.16	33.90	8.25	0.035	
229.39	37.38	4.77	0.035	
267.12	42.15	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.05	0.1	5.7	56	0.03
0.30	1.8	7.7	708	1.94
1.92	19.9	15.9	7,839	65.46
2.90	49.1	46.3	19,344	144.64
3.53	79.1	52.1	31,137	306.81
3.63	84.2	53.7	33,148	337.78
4.49	155.6	116.3	61,279	678.51
5.40	285.1	172.5	112,281	1,248.05
5.80	355.3	182.8	139,922	1,592.53
8.30	915.0	269.5	360,325	4,857.15

Stage-Discharge for Reach 2R: River Sta 3493.6 CS-12

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.48	0.24
34.05	0.82	0.92
34.15	1.08	1.94
34.25	1.31	3.39
34.35	1.51	5.14
34.45	1.69	7.24
34.55	1.86	9.64
34.65	2.01	12.36
34.75	2.16	15.38
34.85	2.29	18.72
34.95	2.42	22.41
35.05	2.54	26.43
35.15	2.65	30.76
35.25	2.77	35.43
35.35	2.87	40.45
35.45	2.98	45.84
35.55	3.08	51.58
35.65	3.17	57.68
35.75	3.27	64.13
35.85	3.11	66.02
35.95	2.97	68.62
36.05	2.89	72.93
36.15	2.84	78.78
36.25	2.82	86.06
36.35	2.82	94.86
36.45	2.83	105.15
36.55	2.86	116.85
36.65	2.90	130.01
36.75	2.94	144.64
36.85	3.11	167.04
36.95	3.27	190.73
37.05	3.42	215.66
37.15	3.57	241.84
37.25	3.71	269.24
37.35	3.84	297.98
37.45	3.97	328.41
37.55	4.09	359.95
37.65	4.18	393.06
37.75	4.25	428.01
37.85	4.29	465.13
37.95	4.32	504.29
38.05	4.34	545.57
38.15	4.36	589.09
38.25	4.36	634.97
38.35	4.36	683.60
38.45	4.36	735.22
38.55	4.36	789.34
38.65	4.36	846.09
38.75	4.36	905.60
38.85	4.36	968.22
38.95	4.36	1,033.67
39.05	4.37	1,102.04
39.15	4.37	1,173.38
39.25	4.38	1,248.05
39.35	4.40	1,329.60
39.45	4.42	1,414.31
39.55	4.45	1,502.00
39.65	4.48	1,592.53
39.75	4.51	1,684.87
39.85	4.54	1,780.31
39.95	4.57	1,878.73
40.05	4.60	1,980.15
40.15	4.63	2,084.57
40.25	4.66	2,192.24
40.35	4.70	2,303.17
40.45	4.73	2,417.17
40.55	4.76	2,534.24
40.65	4.80	2,654.42
40.75	4.83	2,778.01
40.85	4.87	2,904.91
40.95	4.90	3,034.96
41.05	4.93	3,168.21
41.15	4.97	3,304.65
41.25	5.00	3,444.69
41.35	5.04	3,588.08
41.45	5.07	3,734.74
41.55	5.10	3,884.69
41.65	5.14	4,037.96
41.75	5.17	4,194.99
41.85	5.21	4,355.44
41.95	5.24	4,519.27
42.05	5.27	4,686.50
42.15	**5.31**	**4,857.15**

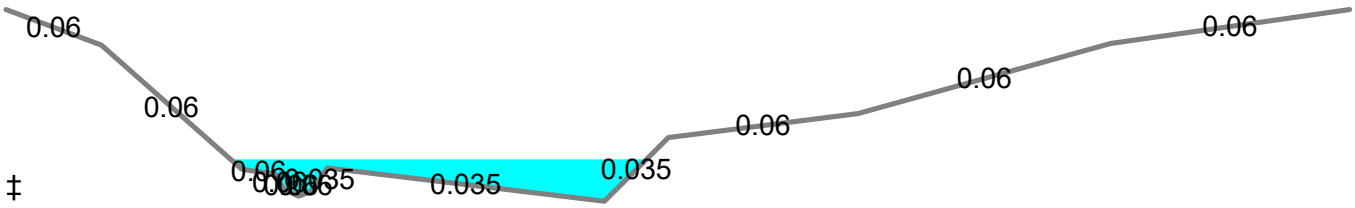
Summary for Reach 3R: River Sta 3099.81 CS-11

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 138.97 cfs @ 12.29 hrs, Volume= 16.861 af
Outflow = 138.73 cfs @ 12.33 hrs, Volume= 16.861 af, Atten= 0%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 26.0 min

Peak Storage= 22,578 cf @ 12.33 hrs
Average Depth at Peak Storage= 1.55'
Bank-Full Depth= 7.10' Flow Area= 776.4 sf, Capacity= 4,820.08 cfs

Custom cross-section, Length= 393.8' Slope= 0.0044 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 33.85', Outlet Invert= 32.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
116.06	39.20	0.00		
131.17	37.89	1.31	0.060	
153.42	33.28	5.92	0.060	
158.73	33.10	6.10	0.060	
160.06	32.53	6.67	0.060	
162.43	32.29	6.91	0.060	
164.53	32.48	6.72	0.060	
166.96	33.33	5.87	0.035	
210.85	32.10	7.10	0.035	
221.00	34.46	4.74	0.035	
251.08	35.35	3.85	0.060	
291.07	37.94	1.26	0.060	
328.96	39.20	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.19	0.7	7.6	284	0.42
0.38	3.3	19.2	1,286	2.82
0.43	4.3	21.9	1,691	4.00
1.00	24.1	47.9	9,474	40.19
1.18	33.8	61.0	13,306	61.32
1.23	36.9	63.4	14,522	68.88
2.36	113.9	74.0	44,835	402.36
3.25	194.4	108.4	76,540	850.90
5.79	533.2	160.3	209,963	3,125.68
5.84	541.2	161.6	213,110	3,183.12
7.10	776.4	214.1	305,742	4,820.08

Stage-Discharge for Reach 3R: River Sta 3099.81 CS-11

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
33.85	0.00	0.00
33.95	0.38	0.10
34.05	0.61	0.49
34.15	0.76	1.50
34.25	0.89	3.28
34.35	1.03	6.09
34.45	1.16	10.15
34.55	1.30	15.39
34.65	1.43	22.13
34.75	1.55	30.38
34.85	1.67	40.19
34.95	1.75	51.13
35.05	1.84	64.30
35.15	2.00	82.64
35.25	2.17	103.88
35.35	2.34	127.06
35.45	2.50	152.27
35.55	2.66	179.21
35.65	2.80	208.15
35.75	2.94	238.80
35.85	3.08	271.23
35.95	3.21	305.48
36.05	3.34	341.31
36.15	3.46	379.06
36.25	3.59	419.11
36.35	3.71	462.19
36.45	3.83	507.22
36.55	3.93	554.11
36.65	4.03	603.30
36.75	4.11	654.43
36.85	4.20	707.82
36.95	4.27	763.41
37.05	4.34	821.15
37.15	4.41	881.65
37.25	4.48	944.49
37.35	4.55	1,009.73
37.45	4.62	1,077.16
37.55	4.68	1,146.78
37.65	4.75	1,218.79
37.75	4.81	1,292.86
37.85	4.88	1,369.37
37.95	4.94	1,448.03
38.05	5.00	1,528.94
38.15	5.06	1,612.21
38.25	5.12	1,697.56
38.35	5.18	1,785.44
38.45	5.24	1,875.45
38.55	5.29	1,967.78
38.65	5.35	2,062.48
38.75	5.40	2,159.30
38.85	5.46	2,258.72
38.95	5.51	2,360.27
39.05	5.56	2,464.25
39.15	5.62	2,570.59
39.25	5.67	2,679.15
39.35	5.72	2,790.31
39.45	5.77	2,903.65
39.55	5.82	3,019.52
39.65	5.87	3,137.15
39.75	5.90	3,249.89
39.85	5.93	3,363.65
39.95	5.96	3,480.22
40.05	5.98	3,600.11
40.15	6.01	3,722.98
40.25	6.04	3,848.92
40.35	6.06	3,978.17
40.45	6.09	4,110.30
40.55	6.11	4,245.95
40.65	6.14	4,384.60
40.75	6.16	4,526.51
40.85	6.18	4,671.79
40.95	**6.21**	**4,820.08**

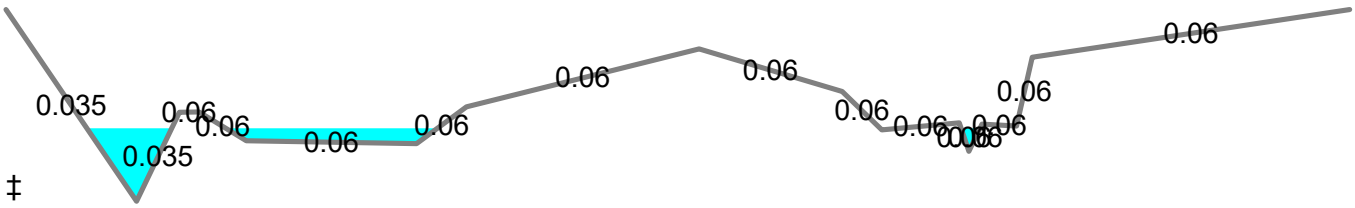
Summary for Reach 4R: River Sta 2839.49 CS-10

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 138.73 cfs @ 12.33 hrs, Volume= 16.861 af
Outflow = 138.54 cfs @ 12.36 hrs, Volume= 16.861 af, Atten= 0%, Lag= 1.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.18 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 7.7 min

Peak Storage= 11,215 cf @ 12.36 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 5.07' Flow Area= 775.1 sf, Capacity= 4,436.42 cfs

Custom cross-section, Length= 260.3' Slope= 0.0146 '/' (111 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 32.10', Outlet Invert= 28.31'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
132.58	33.38	0.00		
167.94	28.31	5.07	0.035	
179.60	30.66	2.72	0.035	
184.90	30.67	2.71	0.060	
197.68	29.91	3.47	0.060	
243.83	29.83	3.55	0.060	
257.41	30.81	2.57	0.060	
320.42	32.34	1.04	0.060	
359.18	31.21	2.17	0.060	
369.95	30.20	3.18	0.060	
390.93	30.38	3.00	0.060	
393.55	29.63	3.75	0.060	
397.11	30.35	3.03	0.060	
406.51	30.30	3.08	0.060	
410.77	32.12	1.26	0.060	
496.78	33.38	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.32	10.4	16.0	2,707	40.01
1.52	14.0	20.1	3,633	58.36
1.60	17.5	69.1	4,555	67.65
1.89	39.6	84.0	10,301	128.56
1.99	48.8	101.9	12,707	155.02
2.04	54.3	120.4	14,146	167.98
2.07	58.0	125.6	15,102	178.39
2.35	95.2	141.3	24,784	311.34
2.36	96.6	147.2	25,157	313.38
2.50	117.5	151.9	30,580	403.75
2.90	182.8	176.5	47,593	714.68
3.81	377.8	254.0	98,334	1,779.88
4.03	437.0	287.2	113,760	2,088.69
5.07	775.1	365.5	201,762	4,436.42

Stage-Discharge for Reach 4R: River Sta 2839.49 CS-10

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
32.10	0.00	0.00
32.14	0.35	0.01
32.18	0.59	0.03
32.22	0.77	0.07
32.26	0.94	0.15
32.30	1.09	0.26
32.34	1.23	0.43
32.38	1.37	0.65
32.42	1.49	0.93
32.46	1.62	1.26
32.50	1.74	1.66
32.54	1.85	2.15
32.58	1.96	2.71
32.62	2.07	3.35
32.66	2.17	4.07
32.70	2.27	4.90
32.74	2.37	5.82
32.78	2.47	6.84
32.82	2.57	7.96
32.86	2.66	9.18
32.90	2.75	10.54
32.94	2.85	12.01
32.98	2.94	13.59
33.02	3.02	15.29
33.06	3.11	17.12
33.10	3.20	19.10
33.14	3.28	21.21
33.18	3.37	23.45
33.22	3.45	25.82
33.26	3.53	28.36
33.30	3.61	31.05
33.34	3.69	33.89
33.38	3.77	36.88
33.42	3.85	40.01
33.46	3.92	43.34
33.50	3.99	46.84
33.54	4.06	50.51
33.58	4.12	54.35
33.62	4.18	58.36
33.66	4.08	62.75
33.70	3.87	67.65
33.74	3.65	73.91
33.78	3.49	80.75
33.82	3.38	88.37
33.86	3.32	96.81
33.90	3.28	105.88
33.94	3.26	115.58
33.98	3.25	125.87
34.02	3.22	135.99
34.06	3.20	146.67
34.10	3.16	157.55
34.14	3.09	167.98
34.18	3.08	182.37
34.22	3.09	198.89
34.26	3.11	216.33
34.30	3.14	234.63
34.34	3.17	253.80
34.38	3.20	273.87
34.42	3.24	295.06
34.46	3.24	313.38
34.50	3.30	338.18
34.54	3.35	363.68
34.58	3.41	390.19
34.62	3.46	417.14
34.66	3.51	444.56
34.70	3.56	472.78
34.74	3.60	501.86
34.78	3.65	532.03
34.82	3.70	563.19
34.86	3.75	595.23
34.90	3.79	628.15
34.94	3.84	661.97
34.98	3.89	696.98
35.02	3.93	732.05
35.06	3.96	767.37
35.10	4.00	803.58
35.14	4.04	840.83
35.18	4.07	879.35
35.22	4.11	918.87
35.26	4.15	959.40
35.30	4.18	1,000.94
35.34	4.22	1,043.68
35.38	4.25	1,087.67
35.42	4.29	1,132.71
35.46	4.32	1,178.81
35.50	4.36	1,225.97
35.54	4.39	1,274.50
35.58	4.43	1,324.24
35.62	4.46	1,375.08
35.66	4.50	1,427.04
35.70	4.53	1,480.11
35.74	4.57	1,534.72
35.78	4.60	1,590.49
35.82	4.64	1,647.42
35.86	4.67	1,705.51
35.90	4.70	1,764.87
35.94	4.72	1,819.18
35.98	4.73	1,872.89
36.02	4.74	1,928.13
36.06	4.76	1,984.96
36.10	4.77	2,043.66
36.14	4.79	2,106.67
36.18	4.83	2,179.40
36.22	4.87	2,253.25
36.26	4.90	2,328.40
36.30	4.94	2,405.20
36.34	4.98	2,483.44
36.38	5.02	2,562.99
36.42	5.05	2,643.88
36.46	5.09	2,726.10
36.50	5.13	2,810.14
36.54	5.16	2,895.53
36.58	5.20	2,982.28
36.62	5.24	3,070.38
36.66	5.27	3,160.00
36.70	5.31	3,251.36
36.74	5.35	3,344.10
36.78	5.38	3,438.24
36.82	5.42	3,533.77
36.86	5.45	3,630.99
36.90	5.49	3,729.86
36.94	5.52	3,830.15
36.98	5.56	3,931.87
37.02	5.59	4,035.02
37.06	5.63	4,140.05
37.10	5.66	4,246.63
37.14	5.70	4,354.66
37.18	**5.73**	**4,463.67**

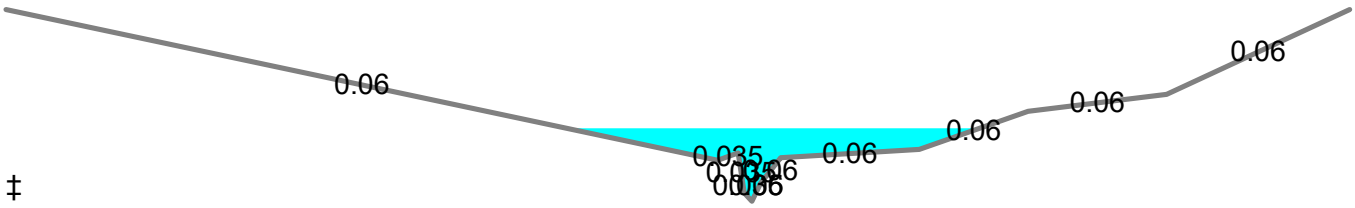
Summary for Reach 5R: River Sta 2577.80 CS-9

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 138.54 cfs @ 12.36 hrs, Volume= 16.861 af
Outflow = 137.90 cfs @ 12.41 hrs, Volume= 16.861 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.58 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 15.3 min

Peak Storage= 24,941 cf @ 12.41 hrs
Average Depth at Peak Storage= 2.32'
Bank-Full Depth= 6.08' Flow Area= 1,195.3 sf, Capacity= 3,809.00 cfs

Custom cross-section, Length= 261.7' Slope= 0.0037 '/' (107 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 28.31', Outlet Invert= 27.33'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	32.11	0.00		
227.84	27.33	4.78	0.060	
234.43	27.56	4.55	0.035	
236.39	26.29	5.82	0.035	
238.78	26.03	6.08	0.035	
241.58	26.60	5.51	0.060	
248.02	27.41	4.70	0.060	
292.35	27.67	4.44	0.060	
327.25	28.88	3.23	0.060	
371.61	29.42	2.69	0.060	
430.19	32.11	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.26	0.5	3.7	125	0.27
0.57	1.9	5.8	503	2.05
1.30	8.6	13.0	2,248	13.57
1.38	9.9	19.9	2,584	13.66
1.53	15.6	57.2	4,079	14.38
1.64	23.1	81.2	6,060	21.63
2.85	176.8	173.8	46,274	311.44
3.39	289.3	243.9	75,716	550.66
6.08	1,195.3	430.8	312,808	3,809.00

Stage-Discharge for Reach 5R: River Sta 2577.80 CS-9

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
28.31	0.00	0.00
28.35	0.14	0.00
28.39	0.25	0.02
28.43	0.34	0.03
28.47	0.41	0.08
28.51	0.47	0.14
28.55	0.54	0.22
28.59	0.61	0.34
28.63	0.69	0.50
28.67	0.77	0.67
28.71	0.83	0.89
28.75	0.89	1.12
28.79	0.95	1.37
28.83	1.00	1.66
28.87	1.05	1.97
28.91	1.09	2.30
28.95	1.13	2.66
28.99	1.16	3.04
29.03	1.20	3.46
29.07	1.23	3.91
29.11	1.26	4.39
29.15	1.29	4.91
29.19	1.32	5.46
29.23	1.35	6.05
29.27	1.37	6.67
29.31	1.40	7.34
29.35	1.42	8.03
29.39	1.45	8.78
29.43	1.47	9.56
29.47	1.50	10.37
29.51	1.52	11.24
29.55	1.55	12.15
29.59	1.57	13.08
29.63	1.52	13.47
29.67	1.42	13.53
29.71	1.25	12.87
29.75	1.10	12.69
29.79	1.00	13.09
29.83	0.93	14.03
29.87	0.92	16.12
29.91	0.93	18.72
29.95	0.93	21.63
29.99	0.97	25.65
30.03	1.00	29.95
30.07	1.03	34.56
30.11	1.07	39.66
30.15	1.10	45.03
30.19	1.13	50.72
30.23	1.16	56.90
30.27	1.20	63.35
30.31	1.23	70.15
30.35	1.26	77.44
30.39	1.29	85.00
30.43	1.31	92.96
30.47	1.34	101.39
30.51	1.37	110.11
30.55	1.40	119.26
30.59	1.42	128.88
30.63	1.45	138.79
30.67	1.47	149.18
30.71	1.50	160.02
30.75	1.52	171.17
30.79	1.55	182.83
30.83	1.57	194.95
30.87	1.60	207.37
30.91	1.62	220.36
30.95	1.64	233.78
30.99	1.67	247.53
31.03	1.69	261.89
31.07	1.71	276.67
31.11	1.73	291.78
31.15	1.76	307.50
31.19	1.77	321.84
31.23	1.77	335.88
31.27	1.78	350.82
31.31	1.79	366.27
31.35	1.80	382.17
31.39	1.81	399.04
31.43	1.82	416.39
31.47	1.83	434.24
31.51	1.85	453.05
31.55	1.86	472.35
31.59	1.87	492.22
31.63	1.88	513.03
31.67	1.89	534.30
31.71	1.91	557.07
31.75	1.93	583.22
31.79	1.96	609.78
31.83	1.98	636.95
31.87	2.00	664.92
31.91	2.03	693.34
31.95	2.05	722.42
31.99	2.07	752.27
32.03	2.10	782.58
32.07	2.12	813.59
32.11	2.14	845.34
32.15	2.16	877.57
32.19	2.18	910.53
32.23	2.21	944.22
32.27	2.23	978.37
32.31	2.25	1,013.33
32.35	2.27	1,048.96
32.39	2.29	1,085.08
32.43	2.31	1,122.05
32.47	2.33	1,159.67
32.51	2.35	1,197.77
32.55	2.37	1,236.78
32.59	2.39	1,276.40
32.63	2.41	1,316.52
32.67	2.43	1,357.60
32.71	2.45	1,399.26
32.75	2.47	1,441.42
32.79	2.49	1,484.59
32.83	2.51	1,528.31
32.87	2.53	1,572.54
32.91	2.55	1,617.83
32.95	2.57	1,663.64
32.99	2.59	1,710.01
33.03	2.61	1,757.42
33.07	2.62	1,805.35
33.11	2.64	1,853.89
33.15	2.66	1,903.43
33.19	2.68	1,953.51
33.23	2.70	2,004.24
33.27	2.72	2,055.96
33.31	2.73	2,108.21
33.35	2.75	2,161.17
33.39	2.77	2,215.08
33.43	2.79	2,269.53
33.47	2.80	2,324.75
33.51	2.82	2,380.88
33.55	2.84	2,437.57
33.59	2.86	2,495.07
33.63	2.87	2,553.46
33.67	2.89	2,612.40
33.71	2.91	2,672.22
33.75	2.93	2,732.89
33.79	2.94	2,794.12
33.83	2.96	2,856.29
33.87	2.98	2,919.26
33.91	2.99	2,982.81
33.95	3.01	3,047.35
33.99	3.03	3,112.66
34.03	3.04	3,178.55
34.07	3.06	3,245.50
34.11	3.07	3,313.18
34.15	3.09	3,381.44
34.19	3.11	3,450.83
34.23	3.12	3,520.90
34.27	3.14	3,591.56
34.31	3.15	3,663.41
34.35	3.17	3,735.91
34.39	**3.19**	**3,809.00**

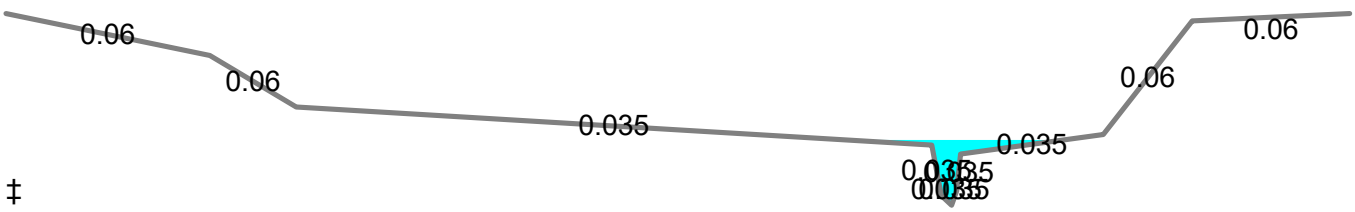
Summary for Reach 6R: River Sta 1972.78 CS-8

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 137.90 cfs @ 12.41 hrs, Volume= 16.861 af
Outflow = 136.67 cfs @ 12.47 hrs, Volume= 16.861 af, Atten= 1%, Lag= 3.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.44 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 12.4 min

Peak Storage= 19,348 cf @ 12.47 hrs
Average Depth at Peak Storage= 4.06'
Bank-Full Depth= 11.89' Flow Area= 1,546.5 sf, Capacity= 30,613.15 cfs

Custom cross-section, Length= 605.0' Slope= 0.0200 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 27.33', Outlet Invert= 15.26'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	27.15	0.00		
45.60	24.54	2.61	0.060	
64.91	21.36	5.79	0.060	
206.97	18.99	8.16	0.035	
209.13	15.86	11.29	0.035	
211.40	15.26	11.89	0.035	
212.59	16.16	10.99	0.035	
213.40	18.44	8.71	0.035	
245.31	19.64	7.51	0.035	
265.19	26.69	0.46	0.060	
300.42	27.15	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.60	0.9	3.3	556	2.33
0.90	1.9	4.2	1,167	6.88
3.18	13.0	9.4	7,869	96.89
3.73	20.5	24.7	12,379	108.23
4.38	52.4	81.0	31,718	235.32
6.10	278.2	189.2	168,324	2,155.48
9.28	912.3	218.3	551,928	14,423.80
11.43	1,418.3	262.4	858,047	27,530.87
11.89	1,546.5	305.6	935,633	30,613.15

Stage-Discharge for Reach 6R: River Sta 1972.78 CS-8

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
27.33	0.00	0.00
27.48	0.99	0.07
27.63	1.59	0.40
27.78	2.09	1.11
27.93	2.54	2.33
28.08	3.09	4.38
28.23	3.57	6.88
28.38	4.01	10.02
28.53	4.40	13.56
28.68	4.75	17.53
28.83	5.06	21.87
28.98	5.34	26.59
29.13	5.61	31.70
29.28	5.85	37.21
29.43	6.08	43.09
29.58	6.30	49.33
29.73	6.50	55.99
29.88	6.70	63.03
30.03	6.89	70.46
30.18	7.07	78.26
30.33	7.25	86.50
30.48	7.42	95.13
30.63	6.42	89.43
30.78	5.69	89.03
30.93	5.40	97.10
31.08	5.16	107.84
31.23	4.49	113.70
31.38	4.29	135.73
31.53	4.32	173.24
31.68	4.46	224.02
31.83	4.75	295.69
31.98	5.06	383.14
32.13	5.37	486.62
32.28	5.66	605.65
32.43	5.96	741.11
32.58	6.24	895.68
32.73	6.52	1,069.80
32.88	6.79	1,263.05
33.03	7.06	1,476.22
33.18	7.32	1,712.89
33.33	7.58	1,972.05
33.48	7.91	2,276.17
33.63	8.40	2,650.52
33.78	8.87	3,049.80
33.93	9.33	3,470.77
34.08	9.77	3,912.83
34.23	10.19	4,376.07
34.38	10.61	4,862.76
34.53	11.01	5,369.48
34.68	11.41	5,895.99
34.83	11.79	6,443.03
34.98	12.17	7,011.66
35.13	12.54	7,599.33
35.28	12.90	8,205.86
35.43	13.25	8,832.58
35.58	13.60	9,479.45
35.73	13.94	10,144.63
35.88	14.27	10,827.99
36.03	14.60	11,531.39
36.18	14.92	12,253.75
36.33	15.23	12,993.86
36.48	15.55	13,751.63
36.63	15.85	14,528.19
36.78	16.14	15,316.93
36.93	16.42	16,124.31
37.08	16.70	16,950.39
37.23	16.97	17,798.16
37.38	17.24	18,664.38
37.53	17.50	19,549.01
37.68	17.75	20,452.59
37.83	17.99	21,377.11
37.98	18.24	22,320.01
38.13	18.47	23,281.30
38.28	18.70	24,262.13
38.43	18.93	25,263.42
38.58	19.15	26,283.16
38.73	19.37	27,321.40
38.88	19.50	28,270.41
39.03	19.63	29,273.22
39.18	**19.76**	**30,327.52**

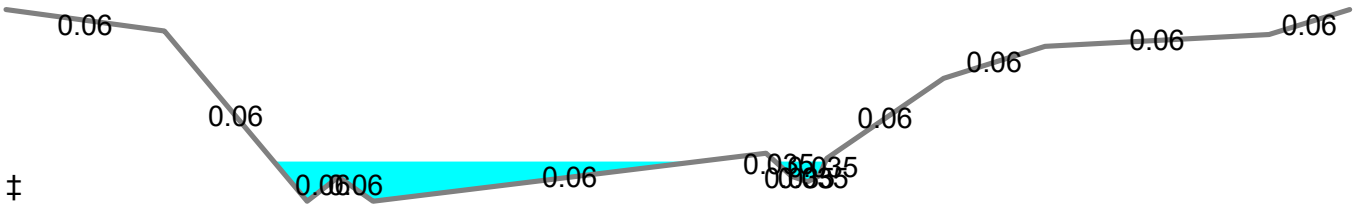
Summary for Reach 7R: River Sta 1427.28 CS-7

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 136.67 cfs @ 12.47 hrs, Volume= 16.861 af
Outflow = 129.93 cfs @ 12.56 hrs, Volume= 16.861 af, Atten= 5%, Lag= 5.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.29 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 61.3 min

Peak Storage= 55,148 cf @ 12.56 hrs
Average Depth at Peak Storage= 2.12'
Bank-Full Depth= 10.23' Flow Area= 1,372.9 sf, Capacity= 5,579.78 cfs

Custom cross-section, Length= 545.5' Slope= 0.0023 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 15.26', Outlet Invert= 14.03'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
110.04	23.22	0.00		
141.25	22.07	1.15	0.060	
169.44	12.99	10.23	0.060	
175.62	14.28	8.94	0.060	
182.43	12.99	10.23	0.060	
259.88	15.56	7.66	0.060	
264.98	14.32	8.90	0.035	
268.12	14.03	9.19	0.035	
270.40	14.34	8.88	0.035	
271.88	15.28	7.94	0.035	
294.91	19.55	3.67	0.060	
314.93	21.26	1.96	0.060	
359.13	21.88	1.34	0.060	
375.00	23.22	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.04	23.4	45.4	12,777	17.71
1.29	36.6	60.9	19,968	31.74
1.33	39.1	63.0	21,309	34.70
1.35	40.3	63.9	21,995	36.25
2.29	117.1	101.0	63,870	159.21
2.57	146.7	113.1	80,052	217.42
6.56	661.0	148.0	360,571	2,315.97
8.27	932.0	173.7	508,421	3,789.48
8.89	1,052.4	219.9	574,111	4,358.78
9.08	1,094.0	222.8	596,779	4,578.02
10.23	1,372.9	267.7	748,934	5,579.78

Stage-Discharge for Reach 7R: River Sta 1427.28 CS-7

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
15.26	0.00	0.00
15.41	0.21	0.13
15.56	0.33	0.65
15.71	0.43	1.95
15.86	0.52	4.12
16.01	0.61	7.48
16.16	0.69	12.10
16.31	0.76	18.20
16.46	0.83	26.12
16.61	0.90	36.25
16.76	0.98	49.35
16.91	1.06	64.65
17.06	1.13	82.55
17.21	1.20	102.86
17.36	1.27	126.08
17.51	1.34	151.82
17.66	1.41	180.98
17.81	1.47	212.95
17.96	1.57	254.15
18.11	1.68	299.16
18.26	1.77	347.41
18.41	1.87	398.58
18.56	1.96	452.78
18.71	2.05	509.89
18.86	2.14	569.86
19.01	2.22	632.77
19.16	2.30	698.39
19.31	2.38	766.99
19.46	2.46	838.15
19.61	2.54	912.33
19.76	2.61	988.98
19.91	2.68	1,068.67
20.06	2.76	1,150.81
20.21	2.83	1,235.87
20.36	2.89	1,323.46
20.51	2.96	1,413.86
20.66	3.03	1,506.85
20.81	3.09	1,602.56
20.96	3.16	1,700.93
21.11	3.22	1,801.91
21.26	3.28	1,905.64
21.41	3.34	2,011.89
21.56	3.40	2,120.95
21.71	3.46	2,232.46
21.86	3.52	2,346.17
22.01	3.57	2,460.68
22.16	3.62	2,578.42
22.31	3.68	2,698.84
22.46	3.73	2,822.43
22.61	3.78	2,948.80
22.76	3.83	3,078.26
22.91	3.87	3,210.61
23.06	3.92	3,345.98
23.21	3.97	3,484.36
23.36	4.01	3,625.69
23.51	4.06	3,770.09
23.66	4.08	3,895.30
23.81	4.10	4,028.07
23.96	4.12	4,169.05
24.11	4.14	4,318.21
24.26	**4.17**	4,484.95
24.41	**4.17**	4,627.67
24.56	4.14	4,738.20
24.71	4.12	4,856.37
24.86	4.10	4,981.11
25.01	4.09	5,113.02
25.16	4.08	5,251.55
25.31	4.07	5,396.87
25.46	4.07	**5,548.90**

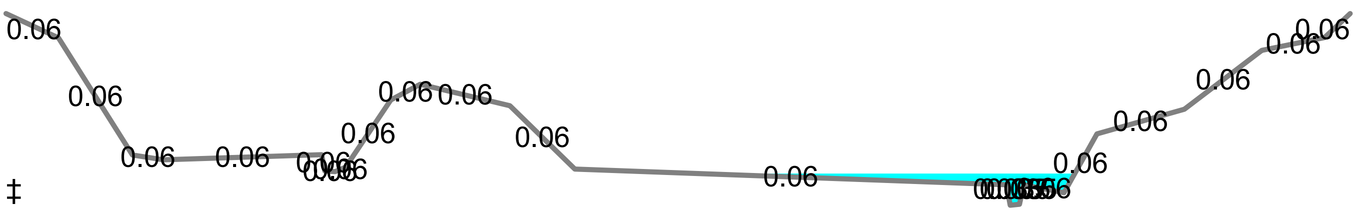
Summary for Reach 8R: River Sta 1096.55 CS-5

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 129.93 cfs @ 12.56 hrs, Volume= 16.861 af
Outflow = 128.13 cfs @ 12.60 hrs, Volume= 16.861 af, Atten= 1%, Lag= 2.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 11.4 min

Peak Storage= 21,704 cf @ 12.60 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 11.67' Flow Area= 3,698.5 sf, Capacity= 33,066.93 cfs

Custom cross-section, Length= 330.7' Slope= 0.0086 '/' (119 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 14.03', Outlet Invert= 11.19'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.86	0.00		
19.48	21.37	1.49	0.060	
46.99	14.25	8.61	0.060	
58.64	13.96	8.90	0.060	
117.45	14.26	8.60	0.060	
118.64	13.28	9.58	0.060	
122.39	13.23	9.63	0.060	
126.30	13.51	9.35	0.060	
143.11	17.60	5.26	0.060	
154.13	18.56	4.30	0.060	
187.43	17.24	5.62	0.060	
211.60	13.40	9.46	0.060	
372.09	12.43	10.43	0.060	
373.56	11.19	11.67	0.035	
376.99	11.25	11.61	0.035	
378.50	12.44	10.42	0.035	
393.57	11.95	10.91	0.060	
405.78	15.54	7.32	0.060	
438.28	17.03	5.83	0.060	
467.19	20.61	2.25	0.060	
490.49	21.39	1.47	0.060	
500.00	22.86	0.00	0.060	

09035 Study Point 1 riser *Type II 24-hr 100yr Talbot Rainfall=7.60"*
Prepared by DP Solutions Printed 8/29/2023
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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.06	0.1	3.5	35	0.04
0.76	3.2	5.7	1,044	8.34
1.24	9.9	23.7	3,267	23.95
1.25	10.1	25.7	3,346	24.49
2.04	82.4	159.3	27,250	164.02
2.09	90.6	172.2	29,973	180.41
2.21	112.5	194.3	37,200	228.97
2.32	133.9	197.1	44,277	288.62
2.77	223.6	204.2	73,934	604.31
3.06	292.9	277.2	96,864	779.93
3.07	295.7	279.4	97,778	787.98
4.35	665.6	302.6	220,102	2,700.59
5.84	1,153.0	356.9	381,311	6,021.98
6.05	1,227.9	361.7	406,062	6,618.72
6.41	1,359.7	376.7	449,655	7,615.56
7.37	1,740.8	423.6	575,675	10,572.29
9.42	2,627.5	448.5	868,906	20,147.10
10.18	2,975.2	474.2	983,914	24,102.93
10.20	2,984.7	475.1	987,028	24,206.23
11.67	3,698.5	504.0	1,223,110	33,066.93

Stage-Discharge for Reach 8R: River Sta 1096.55 CS-5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
14.03	0.00	0.00
14.18	0.90	0.44
14.33	1.50	1.57
14.48	1.94	3.25
14.63	2.31	5.45
14.78	2.62	8.15
14.93	2.69	11.54
15.08	2.57	15.95
15.23	2.45	22.08
15.38	2.33	31.75
15.53	2.13	46.10
15.68	2.00	67.24
15.83	1.96	97.00
15.98	1.97	136.02
16.13	1.99	184.14
16.28	2.08	250.51
16.43	2.25	337.75
16.58	2.43	437.13
16.73	2.62	548.60
16.88	2.68	645.97
17.03	2.66	738.12
17.18	2.76	877.36
17.33	2.93	1,057.31
17.48	3.11	1,251.23
17.63	3.27	1,458.68
17.78	3.44	1,680.45
17.93	3.60	1,916.37
18.08	3.76	2,164.94
18.23	3.91	2,425.95
18.38	4.06	2,700.59
18.53	4.18	2,970.28
18.68	4.30	3,253.91
18.83	4.42	3,553.13
18.98	4.54	3,867.71
19.13	4.66	4,196.01
19.28	4.77	4,537.86
19.43	4.89	4,895.47
19.58	5.01	5,266.50
19.73	5.12	5,650.82
19.88	5.23	6,050.11
20.03	5.35	6,475.02
20.18	5.45	6,888.75
20.33	5.54	7,302.85
20.48	5.62	7,727.87
20.63	5.70	8,155.01
20.78	5.77	8,595.64
20.93	5.84	9,050.99
21.08	5.92	9,521.54
21.23	5.99	10,006.04
21.38	6.06	10,504.65
21.53	6.18	11,101.07
21.68	6.31	11,724.05
21.83	6.43	12,360.84
21.98	6.55	13,012.42
22.13	6.67	13,679.04
22.28	6.79	14,359.23
22.43	6.90	15,052.92
22.58	7.02	15,762.31
22.73	7.13	16,485.24
22.88	7.25	17,221.48
23.03	7.36	17,972.00
23.18	7.47	18,737.10
23.33	7.58	19,515.36
23.48	7.68	20,294.50
23.63	7.77	21,043.43
23.78	7.86	21,809.79
23.93	7.94	22,593.17
24.08	8.03	23,394.60
24.23	8.11	24,206.23
24.38	8.20	25,050.11
24.53	8.28	25,906.18
24.68	8.37	26,777.64
24.83	8.46	27,662.53
24.98	8.54	28,560.64
25.13	8.63	29,472.94
25.28	8.71	30,399.91
25.43	8.79	31,340.13
25.58	**8.88**	**32,293.59**

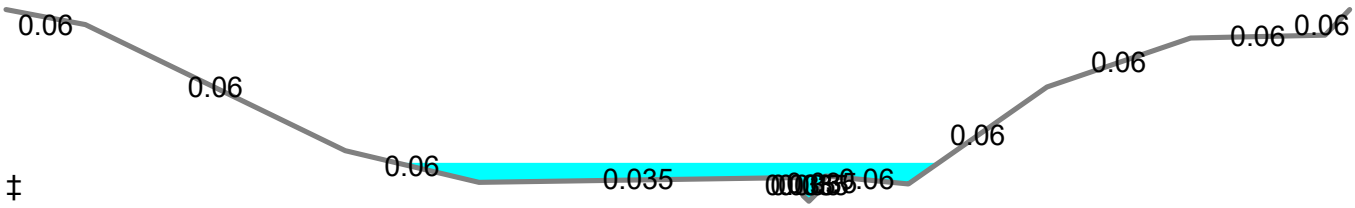
Summary for Reach 9R: River Sta 820.28 CS-4

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.99 cfs @ 12.38 hrs, Volume= 95.079 af
Outflow = 554.88 cfs @ 12.39 hrs, Volume= 95.079 af, Atten= 0%, Lag= 0.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.85 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 12.3 min

Peak Storage= 53,759 cf @ 12.39 hrs
Average Depth at Peak Storage= 2.59'
Bank-Full Depth= 12.88' Flow Area= 3,176.9 sf, Capacity= 29,920.03 cfs

Custom cross-section, Length= 276.3' Slope= 0.0048 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 11.19', Outlet Invert= 9.85'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.73	0.00		
26.01	21.72	1.01	0.060	
111.05	13.24	9.49	0.060	
154.92	11.12	11.61	0.060	
259.10	11.45	11.28	0.035	
261.07	10.22	12.51	0.035	
262.92	9.85	12.88	0.035	
266.04	10.49	12.24	0.035	
268.39	11.54	11.19	0.035	
295.48	11.01	11.72	0.060	
340.86	17.53	5.20	0.060	
387.97	20.82	1.91	0.060	
431.96	21.01	1.72	0.060	
440.00	22.73	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.37	0.7	3.7	187	0.64
0.64	1.9	5.6	525	2.74
1.16	5.2	7.8	1,445	11.80
1.27	6.4	14.7	1,773	14.61
1.60	32.8	146.4	9,060	32.90
1.69	46.2	153.7	12,773	56.79
3.39	346.2	200.8	95,651	1,331.30
7.68	1,360.3	274.2	375,852	10,019.94
10.97	2,389.7	354.6	660,271	21,401.97
11.16	2,461.1	400.5	680,004	21,624.03
11.87	2,748.0	411.1	759,268	25,001.84
12.88	3,176.9	441.9	877,767	29,920.03

Stage-Discharge for Reach 9R: River Sta 820.28 CS-4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
11.19	0.00	0.00
11.34	0.51	0.07
11.49	0.82	0.39
11.64	1.11	1.14
11.79	1.38	2.37
11.94	1.64	4.17
12.09	1.89	6.50
12.24	2.11	9.38
12.39	2.26	12.82
12.54	1.27	11.15
12.69	0.93	19.65
12.84	1.13	45.91
12.99	1.49	94.10
13.14	1.80	157.01
13.29	2.08	232.46
13.44	2.34	319.55
13.59	2.58	417.81
13.74	2.80	526.86
13.89	3.01	646.43
14.04	3.21	777.27
14.19	3.39	918.50
14.34	3.57	1,069.68
14.49	3.75	1,230.72
14.64	3.91	1,402.07
14.79	4.08	1,584.69
14.94	4.24	1,777.28
15.09	4.39	1,979.49
15.24	4.54	2,190.87
15.39	4.69	2,411.33
15.54	4.84	2,640.80
15.69	4.98	2,879.21
15.84	5.11	3,127.17
15.99	5.25	3,384.36
16.14	5.38	3,650.32
16.29	5.50	3,925.01
16.44	5.63	4,208.38
16.59	5.75	4,500.42
16.74	5.87	4,801.68
16.89	5.99	5,112.02
17.04	6.10	5,430.95
17.19	6.22	5,758.45
17.34	6.33	6,094.49
17.49	6.44	6,439.08
17.64	6.55	6,792.70
17.79	6.65	7,155.39
17.94	6.76	7,526.60
18.09	6.86	7,906.32
18.24	6.96	8,294.54
18.39	7.06	8,691.28
18.54	7.16	9,096.93
18.69	7.25	9,511.73
18.84	7.35	9,934.57
18.99	7.43	10,355.43
19.14	7.51	10,781.99
19.29	7.59	11,217.75
19.44	7.67	11,663.08
19.59	7.75	12,118.42
19.74	7.83	12,583.00
19.89	7.91	13,056.86
20.04	7.98	13,540.02
20.19	8.06	14,032.49
20.34	8.13	14,534.60
20.49	8.20	15,046.97
20.64	8.27	15,568.75
20.79	8.35	16,099.97
20.94	8.42	16,640.66
21.09	8.48	17,190.85
21.24	8.55	17,750.78
21.39	8.62	18,321.27
21.54	8.69	18,901.37
21.69	8.75	19,491.11
21.84	8.82	20,090.54
21.99	8.88	20,699.68
22.14	8.95	21,318.63
22.29	8.83	21,525.41
22.44	8.83	22,039.53
22.59	8.89	22,739.40
22.74	8.96	23,450.00
22.89	9.02	24,171.32
23.04	9.09	24,903.34
23.19	9.14	25,601.72
23.34	9.19	26,306.03
23.49	9.23	27,023.42
23.64	9.28	27,753.83
23.79	9.33	28,497.19
23.94	9.38	29,253.46
24.09	**9.42**	**30,022.59**

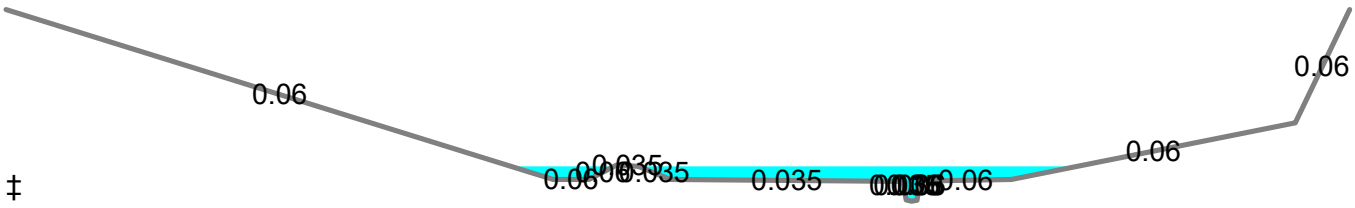
Summary for Reach 10R: River Sta 613.13 CS-3A

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.88 cfs @ 12.39 hrs, Volume= 95.079 af
Outflow = 554.82 cfs @ 12.40 hrs, Volume= 95.079 af, Atten= 0%, Lag= 0.8 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.70 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 10.8 min

Peak Storage= 43,277 cf @ 12.40 hrs
Average Depth at Peak Storage= 2.47'
Bank-Full Depth= 13.54' Flow Area= 5,281.7 sf, Capacity= 58,962.20 cfs

Custom cross-section, Length= 207.1' Slope= 0.0067 '/' (108 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 9.85', Outlet Invert= 8.46'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	22.00	0.00		
244.35	10.00	12.00	0.060	
260.39	10.00	12.00	0.060	
272.62	11.02	10.98	0.060	
282.37	10.93	11.07	0.035	
296.68	10.00	12.00	0.035	
400.59	9.87	12.13	0.035	
401.95	8.56	13.44	0.035	`
404.35	8.46	13.54	0.035	
406.75	8.53	13.47	0.060	
408.13	9.89	12.11	0.060	
448.91	10.00	12.00	0.060	
575.67	14.00	8.00	0.060	
600.00	22.00	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.07	0.1	4.1	30	0.04
0.10	0.3	4.8	57	0.11
1.41	8.4	8.6	1,733	22.56
1.43	8.7	24.6	1,797	14.13
1.54	18.3	169.4	3,799	12.89
2.47	209.2	243.3	43,322	555.67
2.56	231.7	258.9	47,980	625.78
5.54	1,230.6	414.1	254,858	7,194.30
13.54	5,281.7	602.8	1,093,837	58,962.20

Stage-Discharge for Reach 10R: River Sta 613.13 CS-3A

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
9.85	0.00	0.00
10.00	0.58	0.33
10.15	1.03	1.37
10.30	1.37	2.92
10.45	1.65	4.92
10.60	1.89	7.32
10.75	2.10	10.13
10.90	2.29	13.32
11.05	2.47	16.90
11.20	2.63	20.86
11.35	0.72	9.71
11.50	1.05	40.65
11.65	1.44	95.50
11.80	1.78	169.07
11.95	2.06	260.19
12.10	2.32	368.27
12.25	2.55	492.99
12.40	2.70	617.99
12.55	2.92	784.01
12.70	3.14	970.09
12.85	3.35	1,174.20
13.00	3.55	1,395.32
13.15	3.74	1,633.29
13.30	3.92	1,888.03
13.45	4.09	2,159.48
13.60	4.25	2,447.60
13.75	4.41	2,752.37
13.90	4.56	3,073.81
14.05	4.71	3,412.19
14.20	4.85	3,768.50
14.35	4.99	4,141.57
14.50	5.12	4,531.46
14.65	5.25	4,938.23
14.80	5.38	5,361.94
14.95	5.50	5,802.67
15.10	5.62	6,260.50
15.25	5.74	6,735.50
15.40	5.86	7,229.54
15.55	5.99	7,768.09
15.70	6.12	8,323.84
15.85	6.25	8,896.64
16.00	6.38	9,486.37
16.15	6.51	10,092.95
16.30	6.63	10,716.30
16.45	6.75	11,356.36
16.60	6.88	12,013.06
16.75	6.99	12,686.34
16.90	7.11	13,377.06
17.05	7.23	14,084.79
17.20	7.34	14,808.95
17.35	7.46	15,549.50
17.50	7.57	16,306.39
17.65	7.68	17,079.61
17.80	7.79	17,869.12
17.95	7.90	18,674.90
18.10	8.01	19,496.92
18.25	8.11	20,335.67
18.40	8.22	21,191.56
18.55	8.32	22,063.64
18.70	8.42	22,951.89
18.85	8.52	23,856.32
19.00	8.62	24,776.91
19.15	8.72	25,713.65
19.30	8.82	26,666.54
19.45	8.92	27,635.58
19.60	9.01	28,620.88
19.75	9.11	29,623.64
19.90	9.20	30,642.56
20.05	9.29	31,677.63
20.20	9.39	32,728.85
20.35	9.48	33,796.24
20.50	9.57	34,879.79
20.65	9.66	35,979.53
20.80	9.75	37,095.45
20.95	9.83	38,227.57
21.10	9.92	39,377.06
21.25	10.01	40,543.05
21.40	10.09	41,725.27
21.55	10.18	42,923.75
21.70	10.26	44,138.48
21.85	10.35	45,369.50
22.00	10.43	46,616.81
22.15	10.51	47,880.43
22.30	10.59	49,160.38
22.45	10.67	50,457.46
22.60	10.75	51,771.58
22.75	10.83	53,102.09
22.90	10.91	54,449.00
23.05	10.99	55,812.35
23.20	11.07	57,192.14
23.35	**11.14**	**58,588.41**

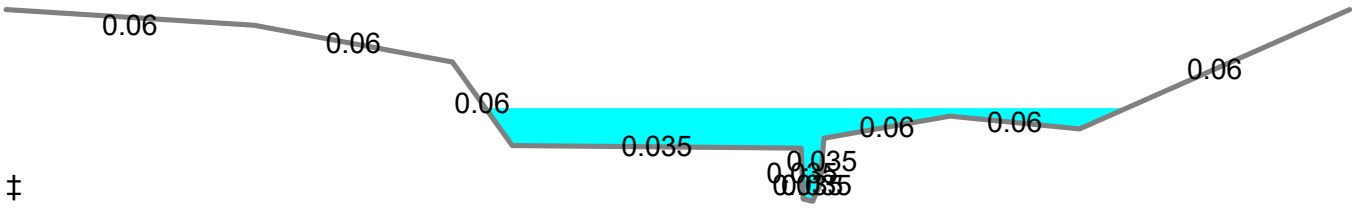
Summary for Reach 11R: River Sta 384.66 CS-3

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.82 cfs @ 12.40 hrs, Volume= 95.079 af
Outflow = 554.76 cfs @ 12.42 hrs, Volume= 95.079 af, Atten= 0%, Lag= 0.9 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.44 fps, Avg. Travel Time= 8.7 min

Peak Storage= 38,823 cf @ 12.42 hrs
Average Depth at Peak Storage= 3.12'
Bank-Full Depth= 6.42' Flow Area= 962.3 sf, Capacity= 5,622.13 cfs

Custom cross-section, Length= 228.5' Slope= 0.0061 '/' (109 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 8.46', Outlet Invert= 7.07'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	13.49	0.00		
68.73	12.97	0.52	0.060	
123.80	11.73	1.76	0.060	
140.31	8.94	4.55	0.060	
220.49	8.85	4.64	0.035	
221.04	7.15	6.34	0.035	
223.64	7.07	6.42	0.035	
225.71	7.64	5.85	0.035	
226.76	9.18	4.31	0.035	
261.72	9.92	3.57	0.060	
297.64	9.49	4.00	0.060	
372.53	13.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.9	26	0.04
0.57	2.0	5.3	459	3.49
1.78	8.6	8.0	1,962	29.80
1.87	12.7	88.3	2,911	11.61
2.11	33.6	90.0	7,687	58.00
2.42	63.4	106.5	14,494	156.37
2.85	122.7	173.4	28,031	365.90
4.66	472.9	218.2	108,051	2,298.31
5.90	789.0	296.5	180,280	4,479.71
6.42	962.3	375.0	219,882	5,622.13

Stage-Discharge for Reach 11R: River Sta 384.66 CS-3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
8.46	0.00	0.00
8.56	0.49	0.09
8.66	0.90	0.44
8.76	1.18	1.01
8.86	1.42	1.77
8.96	1.61	2.72
9.06	1.81	3.90
9.16	2.02	5.34
9.26	2.20	6.94
9.36	2.38	8.69
9.46	2.53	10.59
9.56	2.68	12.62
9.66	2.82	14.79
9.76	2.94	17.09
9.86	3.07	19.50
9.96	3.18	22.05
10.06	3.29	24.71
10.16	3.39	27.50
10.26	1.69	14.99
10.36	1.03	16.01
10.46	1.38	33.37
10.56	1.69	55.63
10.66	1.97	82.47
10.76	2.21	113.53
10.86	2.42	148.89
10.96	2.60	188.24
11.06	2.74	232.64
11.16	2.85	281.76
11.26	2.94	336.70
11.36	3.03	397.98
11.46	3.13	465.99
11.56	3.24	539.25
11.66	3.35	617.58
11.76	3.47	701.11
11.86	3.58	789.23
11.96	3.69	882.58
12.06	3.80	980.30
12.16	3.91	1,083.04
12.26	4.01	1,190.18
12.36	4.12	1,302.02
12.46	4.22	1,418.39
12.56	4.32	1,539.18
12.66	4.42	1,664.66
12.76	4.52	1,794.28
12.86	4.62	1,928.76
12.96	4.71	2,067.31
13.06	4.81	2,210.54
13.16	4.89	2,354.99
13.26	4.96	2,501.04
13.36	5.04	2,653.44
13.46	5.11	2,811.46
13.56	5.18	2,975.31
13.66	5.25	3,144.17
13.76	5.32	3,318.95
13.86	5.38	3,498.67
13.96	5.45	3,684.09
14.06	5.51	3,874.75
14.16	5.57	4,070.92
14.26	5.62	4,272.69
14.36	5.68	4,479.71
14.46	5.72	4,682.11
14.56	5.75	4,892.50
14.66	5.78	5,112.02
14.76	5.81	5,339.03
14.86	**5.84**	**5,574.46**

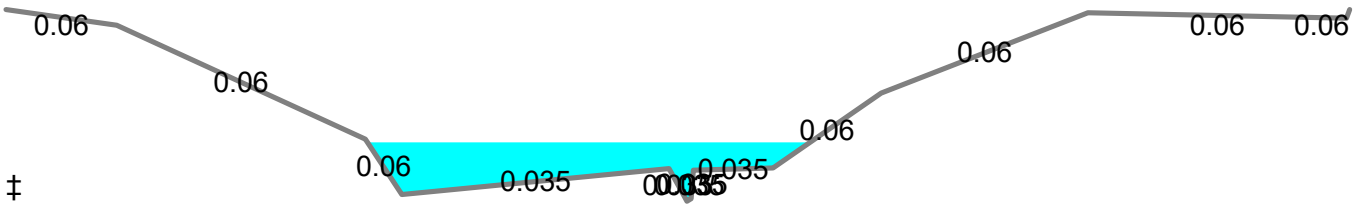
Summary for Reach 12R: River Sta 284.44 CS-2

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.76 cfs @ 12.43 hrs, Volume= 95.076 af
Outflow = 554.55 cfs @ 12.45 hrs, Volume= 95.076 af, Atten= 0%, Lag= 1.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 20.2 min

Peak Storage= 70,553 cf @ 12.45 hrs
Average Depth at Peak Storage= 4.42'
Bank-Full Depth= 14.39' Flow Area= 5,200.3 sf, Capacity= 8,158.02 cfs

Custom cross-section, Length= 100.2' Slope= 0.0001 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.11', Outlet Invert= 7.10'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	21.49	0.00		
68.92	20.32	1.17	0.060	
223.87	11.77	9.72	0.060	
246.65	7.60	13.89	0.060	
413.08	9.56	11.93	0.035	
424.20	7.10	14.39	0.035	
426.70	7.30	14.19	0.035	
428.26	9.42	12.07	0.035	
477.81	9.60	11.89	0.035	
545.13	15.21	6.28	0.060	
674.00	21.26	0.23	0.060	
835.04	20.84	0.65	0.060	
837.00	21.49	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.20	0.3	3.4	34	0.03
0.50	1.6	5.2	160	0.31
2.32	169.0	180.5	16,939	67.15
2.46	197.7	232.4	19,814	73.54
2.50	207.2	243.6	20,761	77.03
4.67	773.6	281.8	77,519	642.25
8.11	1,915.0	385.7	191,883	2,393.01
13.22	4,389.9	587.4	439,871	6,994.87
13.74	4,705.0	629.1	471,441	7,567.27
14.16	5,009.4	825.2	501,942	7,851.33
14.39	5,200.3	839.5	521,068	8,158.02

Stage-Discharge for Reach 12R: River Sta 284.44 CS-2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.11	0.00	0.00
7.26	0.07	0.01
7.41	0.13	0.10
7.56	0.18	0.25
7.71	0.14	0.37
7.86	0.14	0.89
8.01	0.17	1.97
8.16	0.20	3.78
8.31	0.22	6.48
8.46	0.25	10.19
8.61	0.27	15.07
8.76	0.30	21.22
8.91	0.32	28.76
9.06	0.34	37.83
9.21	0.37	48.51
9.36	0.39	60.93
9.51	0.38	70.65
9.66	0.39	84.77
9.81	0.43	109.45
9.96	0.47	136.52
10.11	0.50	166.00
10.26	0.54	197.83
10.41	0.57	231.94
10.56	0.60	268.28
10.71	0.63	306.84
10.86	0.66	347.59
11.01	0.69	390.44
11.16	0.72	435.36
11.31	0.75	482.33
11.46	0.78	531.31
11.61	0.80	582.29
11.76	0.83	635.08
11.91	0.85	689.34
12.06	0.87	745.40
12.21	0.90	803.53
12.36	0.92	863.72
12.51	0.94	925.94
12.66	0.96	990.17
12.81	0.98	1,056.41
12.96	1.00	1,124.65
13.11	1.02	1,194.88
13.26	1.04	1,267.09
13.41	1.06	1,341.29
13.56	1.07	1,417.46
13.71	1.09	1,495.61
13.86	1.11	1,575.74
14.01	1.13	1,657.85
14.16	1.14	1,741.94
14.31	1.16	1,828.07
14.46	1.17	1,916.19
14.61	1.19	2,006.30
14.76	1.20	2,098.39
14.91	1.22	2,192.47
15.06	1.23	2,288.53
15.21	1.25	2,386.42
15.36	1.26	2,485.51
15.51	1.28	2,586.44
15.66	1.29	2,689.47
15.81	1.30	2,794.61
15.96	1.31	2,901.87
16.11	1.33	3,011.25
16.26	1.34	3,122.76
16.41	1.35	3,236.40
16.56	1.36	3,352.19
16.71	1.37	3,470.13
16.86	1.38	3,590.23
17.01	1.39	3,712.50
17.16	1.40	3,836.94
17.31	1.41	3,963.58
17.46	1.42	4,092.41
17.61	1.43	4,223.45
17.76	1.44	4,356.72
17.91	1.45	4,492.28
18.06	1.46	4,630.08
18.21	1.47	4,770.12
18.36	1.48	4,912.42
18.51	1.49	5,056.98
18.66	1.50	5,203.81
18.81	1.51	5,352.93
18.96	1.52	5,504.34
19.11	1.53	5,658.06
19.26	1.54	5,814.09
19.41	1.54	5,972.44
19.56	1.55	6,133.12
19.71	1.56	6,296.15
19.86	1.57	6,461.53
20.01	1.58	6,629.28
20.16	1.58	6,799.40
20.31	1.59	6,971.80
20.46	1.60	7,134.27
20.61	1.60	7,298.07
20.76	**1.61**	7,465.38
20.91	**1.60**	7,589.61
21.06	1.58	7,677.49
21.21	1.57	7,797.10
21.36	1.57	7,970.24
21.51	1.57	**8,171.44**

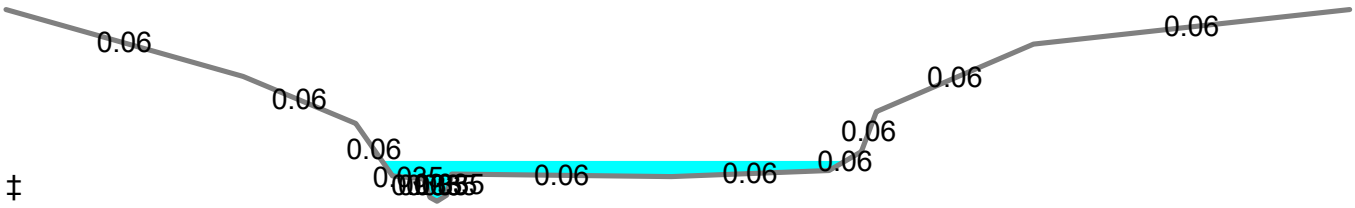
Summary for Reach 13R: River Sta 0.00 CS-1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.55 cfs @ 12.45 hrs, Volume= 95.076 af
Outflow = 554.43 cfs @ 12.47 hrs, Volume= 95.076 af, Atten= 0%, Lag= 1.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 7.2 min

Peak Storage= 51,785 cf @ 12.47 hrs
Average Depth at Peak Storage= 3.08'
Bank-Full Depth= 14.64' Flow Area= 3,217.7 sf, Capacity= 29,924.85 cfs

Custom cross-section, Length= 284.4' Slope= 0.0086 '/' (110 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 7.10', Outlet Invert= 4.64'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	19.28	0.00		
84.01	14.16	5.12	0.060	
123.92	10.59	8.69	0.060	
136.93	6.56	12.72	0.060	
147.92	6.36	12.92	0.035	
150.29	4.93	14.35	0.035	
152.70	4.64	14.64	0.035	
156.15	5.11	14.17	0.035	
157.99	6.72	12.56	0.035	
235.71	6.52	12.76	0.060	
291.60	6.99	12.29	0.060	
303.10	8.43	10.85	0.060	
308.39	11.49	7.79	0.060	
364.05	16.63	2.65	0.060	
476.12	19.28	0.00	0.060	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.29	0.7	4.6	188	0.72
0.47	1.6	6.3	461	2.60
1.72	11.5	10.6	3,272	48.06
1.88	13.8	19.6	3,916	42.95
1.92	15.0	42.2	4,256	43.90
2.08	28.1	124.2	7,994	66.53
2.35	65.8	157.2	18,711	142.10
3.79	302.1	173.6	85,929	1,184.50
5.95	685.7	185.2	195,005	4,274.07
6.85	855.5	197.1	243,311	5,994.66
9.52	1,453.4	256.2	413,340	12,283.05
11.99	2,162.1	323.6	614,897	20,487.24
14.64	3,217.7	479.3	915,113	29,924.85

Stage-Discharge for Reach 13R: River Sta 0.00 CS-1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
7.10	0.00	0.00
7.25	0.70	0.13
7.40	1.12	0.81
7.55	1.55	2.34
7.70	2.01	4.96
7.85	2.41	8.38
8.00	2.76	12.55
8.15	3.07	17.44
8.30	3.35	23.05
8.45	3.61	29.38
8.60	3.85	36.44
8.75	4.08	44.22
8.90	3.55	44.35
9.05	2.83	47.91
9.20	2.33	71.24
9.35	2.17	110.67
9.50	2.21	163.13
9.65	2.36	230.90
9.80	2.55	310.15
9.95	2.75	400.28
10.10	2.95	500.72
10.25	3.14	611.03
10.40	3.33	730.86
10.55	3.52	859.92
10.70	3.70	997.98
10.85	3.87	1,144.56
11.00	4.05	1,302.78
11.15	4.23	1,470.17
11.30	4.41	1,645.96
11.45	4.58	1,830.01
11.60	4.75	2,022.15
11.75	4.91	2,222.26
11.90	5.08	2,430.20
12.05	5.24	2,645.88
12.20	5.39	2,869.17
12.35	5.55	3,099.99
12.50	5.70	3,338.24
12.65	5.85	3,583.85
12.80	5.99	3,836.72
12.95	6.14	4,096.80
13.10	6.28	4,362.25
13.25	6.41	4,632.13
13.40	6.54	4,910.04
13.55	6.67	5,195.74
13.70	6.80	5,489.14
13.85	6.92	5,790.07
14.00	7.04	6,090.10
14.15	7.13	6,380.26
14.30	7.22	6,677.94
14.45	7.31	6,983.19
14.60	7.39	7,296.07
14.75	7.48	7,616.64
14.90	7.56	7,944.95
15.05	7.65	8,281.07
15.20	7.73	8,625.07
15.35	7.81	8,977.00
15.50	7.89	9,336.94
15.65	7.97	9,704.94
15.80	8.04	10,081.09
15.95	8.12	10,465.43
16.10	8.20	10,858.05
16.25	8.27	11,259.01
16.40	8.34	11,668.36
16.55	8.42	12,086.19
16.70	8.49	12,509.31
16.85	8.55	12,938.69
17.00	8.62	13,377.20
17.15	8.69	13,824.97
17.30	8.75	14,282.10
17.45	8.82	14,748.64
17.60	8.88	15,224.69
17.75	8.94	15,710.32
17.90	9.00	16,205.62
18.05	9.06	16,710.66
18.20	9.13	17,225.54
18.35	9.19	17,750.34
18.50	9.25	18,285.14
18.65	9.30	18,830.04
18.80	9.36	19,385.10
18.95	9.42	19,950.43
19.10	**9.47**	20,511.27
19.25	9.43	20,882.68
19.40	9.40	21,274.81
19.55	9.37	21,687.45
19.70	9.34	22,120.13
19.85	9.32	22,572.62
20.00	9.30	23,044.73
20.15	9.28	23,536.30
20.30	9.27	24,047.20
20.45	9.27	24,577.35
20.60	9.26	25,126.67
20.75	9.26	25,695.13
20.90	9.26	26,282.71
21.05	9.26	26,889.39
21.20	9.27	27,515.20
21.35	9.27	28,160.17
21.50	9.28	28,824.33
21.65	9.29	**29,507.75**

Summary for Pond 11P: Pond 1

Inflow Area = 49.080 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100yr Talbot event
Inflow = 168.96 cfs @ 12.10 hrs, Volume= 16.861 af
Outflow = 139.32 cfs @ 12.23 hrs, Volume= 16.861 af, Atten= 18%, Lag= 8.1 min
Primary = 139.32 cfs @ 12.23 hrs, Volume= 16.861 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.44' @ 12.23 hrs Surf.Area= 29,952 sf Storage= 76,774 cf

Plug-Flow detention time= 9.8 min calculated for 16.861 af (100% of inflow)
Center-of-Mass det. time= 9.6 min (852.9 - 843.3)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	189,394 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
45.00	0	0.0	0	0	0
46.00	14,235	515.0	4,745	4,745	21,108
47.00	17,332	556.0	15,758	20,503	24,643
48.00	21,715	639.0	19,482	39,985	32,558
49.00	26,977	704.0	24,298	64,284	39,537
50.00	33,980	771.0	30,411	94,695	47,436
51.00	42,797	845.0	38,304	132,999	56,986
52.00	71,191	1,014.0	56,395	189,394	82,005

Device	Routing	Invert	Outlet Devices
#1	Primary	43.75'	**36.0" Round Culvert X 2.00** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.75' / 43.25' S= 0.0111 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Device 1	45.00'	**14.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	46.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#4	Device 1	48.10'	**28.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=139.31 cfs @ 12.23 hrs HW=49.44' TW=40.59' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 139.31 cfs @ 9.85 fps)
  ├─**2=Orifice/Grate** (Passes < 30.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 19.45 cfs potential flow)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 141.80 cfs potential flow)

Stage-Discharge for Pond 11P: Pond 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
45.00	0.00	47.08	27.53	49.16	134.60	51.24	166.60
45.04	0.02	47.12	28.08	49.20	135.29	51.28	167.15
45.08	0.09	47.16	28.61	49.24	135.97	51.32	167.71
45.12	0.21	47.20	29.13	49.28	136.65	51.36	168.26
45.16	0.36	47.24	29.63	49.32	137.33	51.40	168.81
45.20	0.56	47.28	30.13	49.36	138.00	51.44	169.36
45.24	0.79	47.32	30.62	49.40	138.67	51.48	169.90
45.28	1.07	47.36	31.10	49.44	139.34	51.52	170.45
45.32	1.38	47.40	31.58	49.48	140.00	51.56	170.99
45.36	1.72	47.44	32.04	49.52	140.66	51.60	171.53
45.40	2.09	47.48	32.50	49.56	141.32	51.64	172.07
45.44	2.50	47.52	32.95	49.60	141.97	51.68	172.61
45.48	2.93	47.56	33.39	49.64	142.62	51.72	173.14
45.52	3.39	47.60	33.83	49.68	143.27	51.76	173.68
45.56	3.88	47.64	34.26	49.72	143.92	51.80	174.21
45.60	4.38	47.68	34.68	49.76	144.56	51.84	174.74
45.64	4.91	47.72	35.10	49.80	145.20	51.88	175.27
45.68	5.45	47.76	35.52	49.84	145.84	51.92	175.80
45.72	6.00	47.80	35.93	49.88	146.47	51.96	176.33
45.76	6.57	47.84	36.33	49.92	147.10	52.00	**176.85**
45.80	7.14	47.88	36.73	49.96	147.73		
45.84	7.71	47.92	37.12	50.00	148.36		
45.88	8.29	47.96	37.51	50.04	148.98		
45.92	8.86	48.00	37.90	50.08	149.60		
45.96	9.42	48.04	38.28	50.12	150.22		
46.00	9.96	48.08	38.66	50.16	150.83		
46.04	10.50	48.12	39.29	50.20	151.45		
46.08	11.05	48.16	40.75	50.24	152.06		
46.12	11.59	48.20	42.67	50.28	152.67		
46.16	12.08	48.24	44.93	50.32	153.27		
46.20	12.64	48.28	47.49	50.36	153.87		
46.24	13.24	48.32	50.30	50.40	154.48		
46.28	13.86	48.36	53.34	50.44	155.07		
46.32	14.51	48.40	56.60	50.48	155.67		
46.36	15.17	48.44	60.05	50.52	156.27		
46.40	15.85	48.48	63.69	50.56	156.86		
46.44	16.55	48.52	67.51	50.60	157.45		
46.48	17.26	48.56	71.49	50.64	158.03		
46.52	17.98	48.60	75.63	50.68	158.62		
46.56	18.72	48.64	79.93	50.72	159.20		
46.60	19.46	48.68	84.37	50.76	159.78		
46.64	20.21	48.72	88.95	50.80	160.36		
46.68	20.96	48.76	93.67	50.84	160.94		
46.72	21.71	48.80	98.52	50.88	161.51		
46.76	22.45	48.84	103.51	50.92	162.09		
46.80	23.19	48.88	108.61	50.96	162.66		
46.84	23.90	48.92	113.84	51.00	163.23		
46.88	24.60	48.96	119.19	51.04	163.79		
46.92	25.26	49.00	124.66	51.08	164.36		
46.96	25.87	49.04	130.24	51.12	164.92		
47.00	26.40	49.08	133.22	51.16	165.48		
47.04	26.97	49.12	133.91	51.20	166.04		

Summary for Pond 14P: Goldsburough Neck Road Culvert

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.76 cfs @ 12.42 hrs, Volume= 95.079 af
Outflow = 554.76 cfs @ 12.43 hrs, Volume= 95.076 af, Atten= 0%, Lag= 0.6 min
Primary = 554.76 cfs @ 12.43 hrs, Volume= 95.076 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 12.03' @ 12.45 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.44'	**48.0" Round CMP_Round 48"** L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.44' / 5.43' S= 0.0003 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 12.57 sf
#2	Primary	9.91'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.80 1.20 1.60 2.20 2.60 3.00 3.40 3.80 4.20 Width (feet) 0.00 56.60 73.40 90.20 107.00 123.80 156.20 183.80 211.40 239.00 266.50

Primary OutFlow Max=554.20 cfs @ 12.43 hrs HW=12.03' TW=11.53' (Dynamic Tailwater)
└─**1=CMP_Round 48"** (Inlet Controls 33.87 cfs @ 2.70 fps)
└─**2=Custom Weir/Orifice** (Weir Controls 520.33 cfs @ 3.08 fps)

Stage-Discharge for Pond 14P: Goldsburough Neck Road Culvert

Elevation (feet)	Primary (cfs)
5.44	0.00
5.54	0.00
5.64	0.00
5.74	0.00
5.84	0.00
5.94	0.00
6.04	0.00
6.14	0.00
6.24	0.00
6.34	0.00
6.44	0.00
6.54	0.00
6.64	0.00
6.74	0.00
6.84	0.00
6.94	0.00
7.04	0.00
7.14	2.96
7.24	6.71
7.34	9.68
7.44	12.51
7.54	15.34
7.64	18.22
7.74	20.40
7.84	22.12
7.94	23.90
8.04	25.71
8.14	27.58
8.24	29.48
8.34	31.42
8.44	33.39
8.54	35.40
8.64	37.43
8.74	39.49
8.84	41.56
8.94	43.65
9.04	45.76
9.14	47.86
9.24	49.98
9.34	52.08
9.44	54.18
9.54	56.26
9.64	58.33
9.74	60.36
9.84	62.36
9.94	64.34
10.04	67.34
10.14	72.74
10.24	81.38
10.34	93.89
10.44	110.07
10.54	129.40
10.64	151.68
10.74	176.68
10.84	205.76
10.94	239.04
11.04	275.41
11.14	314.90
11.24	357.58
11.34	403.50
11.44	452.71
11.54	505.26
11.64	561.10
11.74	619.61
11.84	680.86
11.94	745.31
12.04	812.97
12.14	883.83
12.24	958.31
12.34	1,036.94
12.44	1,120.04
12.54	1,207.89
12.64	1,300.61
12.74	1,398.30
12.84	1,501.08
12.94	1,609.06
13.04	1,722.37
13.14	1,841.13
13.24	1,965.44
13.34	2,095.42
13.44	2,231.17
13.54	2,372.81
13.64	2,520.44
13.74	2,674.15
13.84	2,834.05
13.94	3,000.23
14.04	**3,172.78**

Summary for Link 18L: Proposed Design Point 1

Inflow Area = 270.780 ac, 0.00% Impervious, Inflow Depth = 4.21" for 100yr Talbot event
Inflow = 554.43 cfs @ 12.47 hrs, Volume= 95.076 af
Primary = 554.43 cfs @ 12.48 hrs, Volume= 95.076 af, Atten= 0%, Lag= 0.6 min

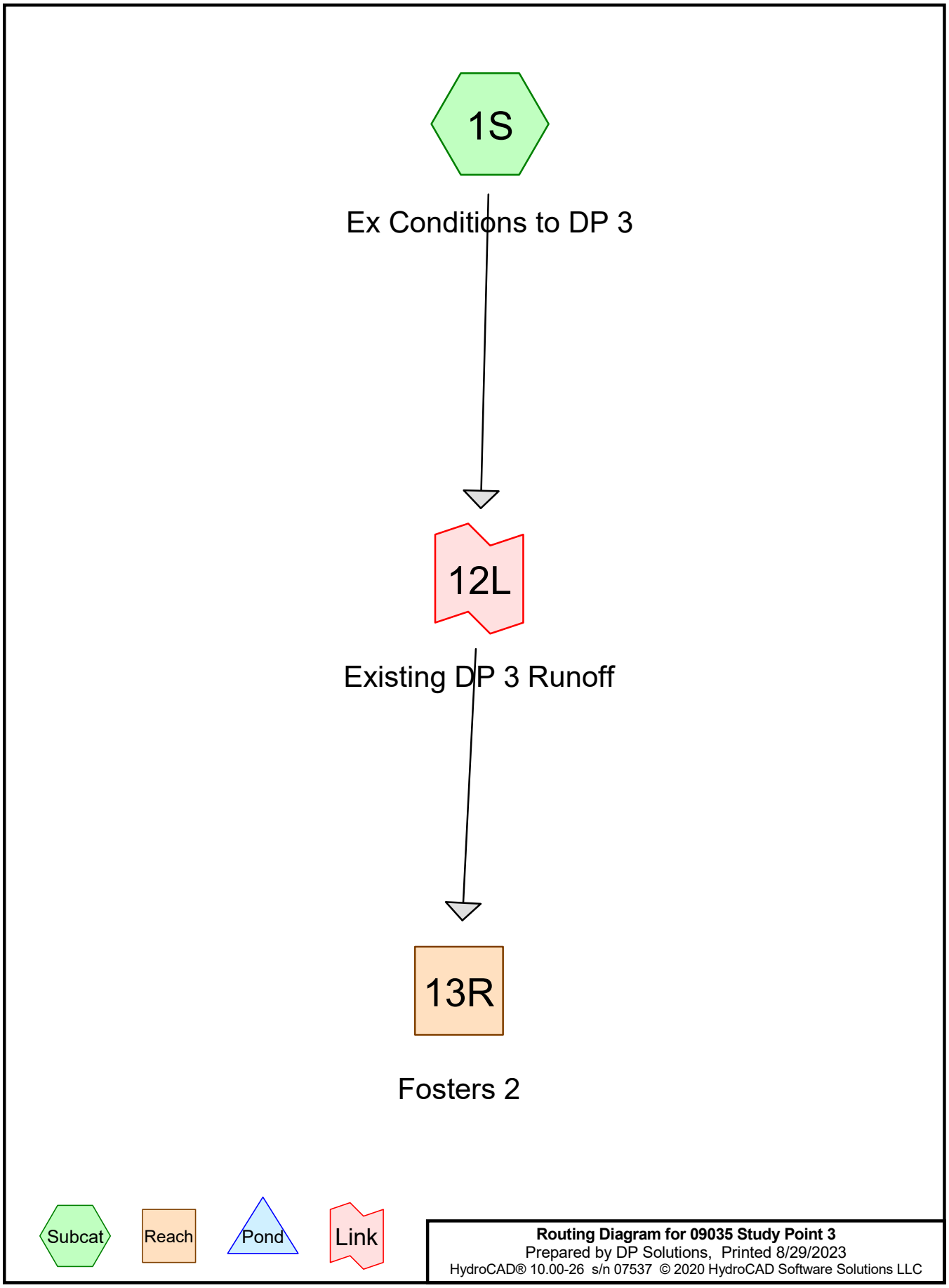
Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

37 Point manual elevation table, To= 5.00 hrs, dt= 1.00 hrs, feet =

7.10	7.26	7.42	7.57	7.73	8.04	8.34	9.12	9.90
9.60	9.29	9.13	8.96	8.73	8.51	8.42	8.33	8.30
8.27	8.21	8.14	8.08	8.01	7.95	7.88	7.82	7.75
7.69	7.63	7.56	7.50	7.43	7.37	7.30	7.24	7.17
7.11								

Appendix IV.A

HydroCAD – Study Point No. 3 – Existing Conditions


1S
Ex Conditions to DP 3
12L
Existing DP 3 Runoff
13R
Fosters 2
Subcat
Reach
Pond
Link
Routing Diagram for 09035 Study Point 3
Prepared by DP Solutions, Printed 8/29/2023
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
57.820	68	From TR-55 (1S)
57.820	**68**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
57.820	Other	1S
57.820		**TOTAL AREA**

09035 Study Point 3
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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	57.820	57.820	From TR-55	1S
0.000	**0.000**	**0.000**	**0.000**	**57.820**	**57.820**	**TOTAL AREA**	

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Ex Conditions to DP 3 Runoff Area=57.820 ac 0.00% Impervious Runoff Depth=0.84"
Tc=16.8 min CN=68 Runoff=33.57 cfs 4.066 af

Reach 13R: Fosters 2 Avg. Flow Depth=1.01' Max Vel=5.03 fps Inflow=33.57 cfs 4.066 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=33.62 cfs 4.066 af

Link 12L: Existing DP 3 Runoff Inflow=33.57 cfs 4.066 af
Primary=33.57 cfs 4.066 af

Total Runoff Area = 57.820 ac Runoff Volume = 4.066 af Average Runoff Depth = 0.84"
100.00% Pervious = 57.820 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Ex Conditions to DP 3

Runoff = 33.57 cfs @ 12.13 hrs, Volume= 4.066 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	57.820	68	From TR-55
	57.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, from TR-55**

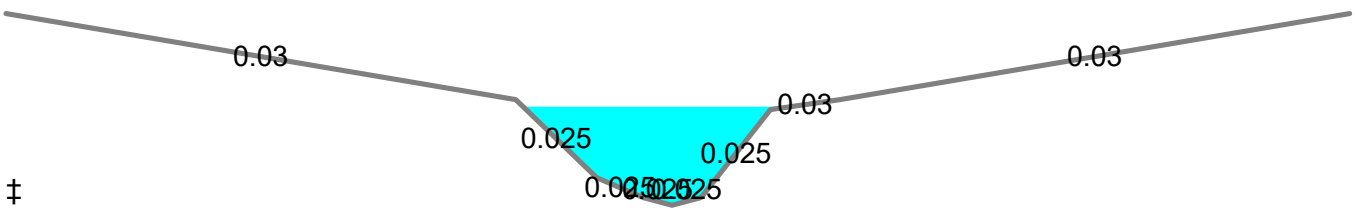
Summary for Reach 13R: Fosters 2

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 0.84" for 2yr Talbot event
Inflow = 33.57 cfs @ 12.14 hrs, Volume= 4.066 af
Outflow = 33.62 cfs @ 12.15 hrs, Volume= 4.066 af, Atten= 0%, Lag= 0.4 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.03 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.92 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,063 cf @ 12.15 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 13R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

Summary for Link 12L: Existing DP 3 Runoff

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 0.84" for 2yr Talbot event
Inflow = 33.57 cfs @ 12.13 hrs, Volume= 4.066 af
Primary = 33.57 cfs @ 12.14 hrs, Volume= 4.066 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Ex Conditions to DP 3 Runoff Area=57.820 ac 0.00% Impervious Runoff Depth=2.10"
Tc=16.8 min CN=68 Runoff=94.89 cfs 10.099 af

Reach 13R: Fosters 2 Avg. Flow Depth=1.47' Max Vel=5.68 fps Inflow=94.89 cfs 10.099 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=94.86 cfs 10.099 af

Link 12L: Existing DP 3 Runoff Inflow=94.89 cfs 10.099 af
Primary=94.89 cfs 10.099 af

Total Runoff Area = 57.820 ac Runoff Volume = 10.099 af Average Runoff Depth = 2.10"
100.00% Pervious = 57.820 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Ex Conditions to DP 3

Runoff = 94.89 cfs @ 12.13 hrs, Volume= 10.099 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	57.820	68	From TR-55
	57.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, from TR-55**

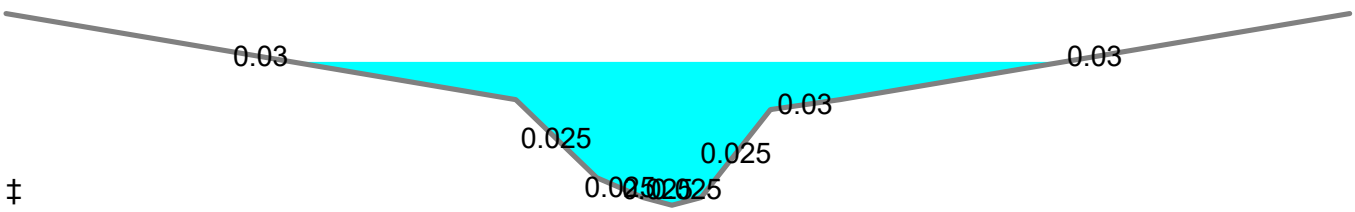
Summary for Reach 13R: Fosters 2

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 2.10" for 10yr Talbot event
Inflow = 94.89 cfs @ 12.14 hrs, Volume= 10.099 af
Outflow = 94.86 cfs @ 12.12 hrs, Volume= 10.099 af, Atten= 0%, Lag= 0.0 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.68 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.1 min

Peak Storage= 2,658 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.47'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 13R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

Summary for Link 12L: Existing DP 3 Runoff

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 2.10" for 10yr Talbot event
Inflow = 94.89 cfs @ 12.13 hrs, Volume= 10.099 af
Primary = 94.89 cfs @ 12.14 hrs, Volume= 10.099 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: Ex Conditions to DP 3 Runoff Area=57.820 ac 0.00% Impervious Runoff Depth=3.90"
Tc=16.8 min CN=68 Runoff=182.93 cfs 18.799 af

Reach 13R: Fosters 2 Avg. Flow Depth=1.81' Max Vel=5.89 fps Inflow=182.93 cfs 18.799 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=183.14 cfs 18.799 af

Link 12L: Existing DP 3 Runoff Inflow=182.93 cfs 18.799 af
Primary=182.93 cfs 18.799 af

Total Runoff Area = 57.820 ac Runoff Volume = 18.799 af Average Runoff Depth = 3.90"
100.00% Pervious = 57.820 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Ex Conditions to DP 3

Runoff = 182.93 cfs @ 12.10 hrs, Volume= 18.799 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	57.820	68	From TR-55
	57.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, from TR-55**

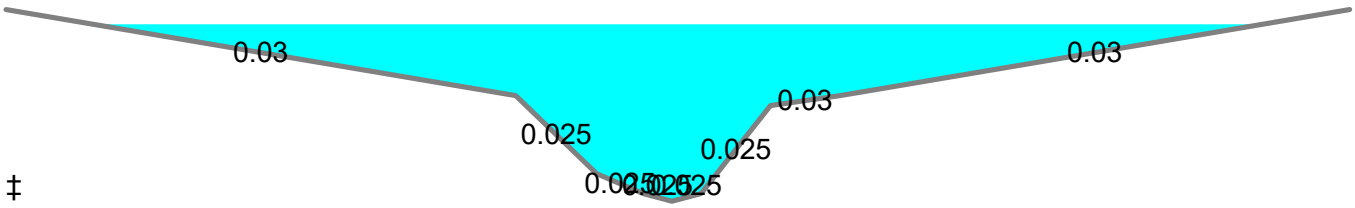
Summary for Reach 13R: Fosters 2

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 3.90" for 100yr Talbot event
Inflow = 182.93 cfs @ 12.11 hrs, Volume= 18.799 af
Outflow = 183.14 cfs @ 12.12 hrs, Volume= 18.799 af, Atten= 0%, Lag= 0.4 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.89 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.0 min

Peak Storage= 4,946 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.81'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 13R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

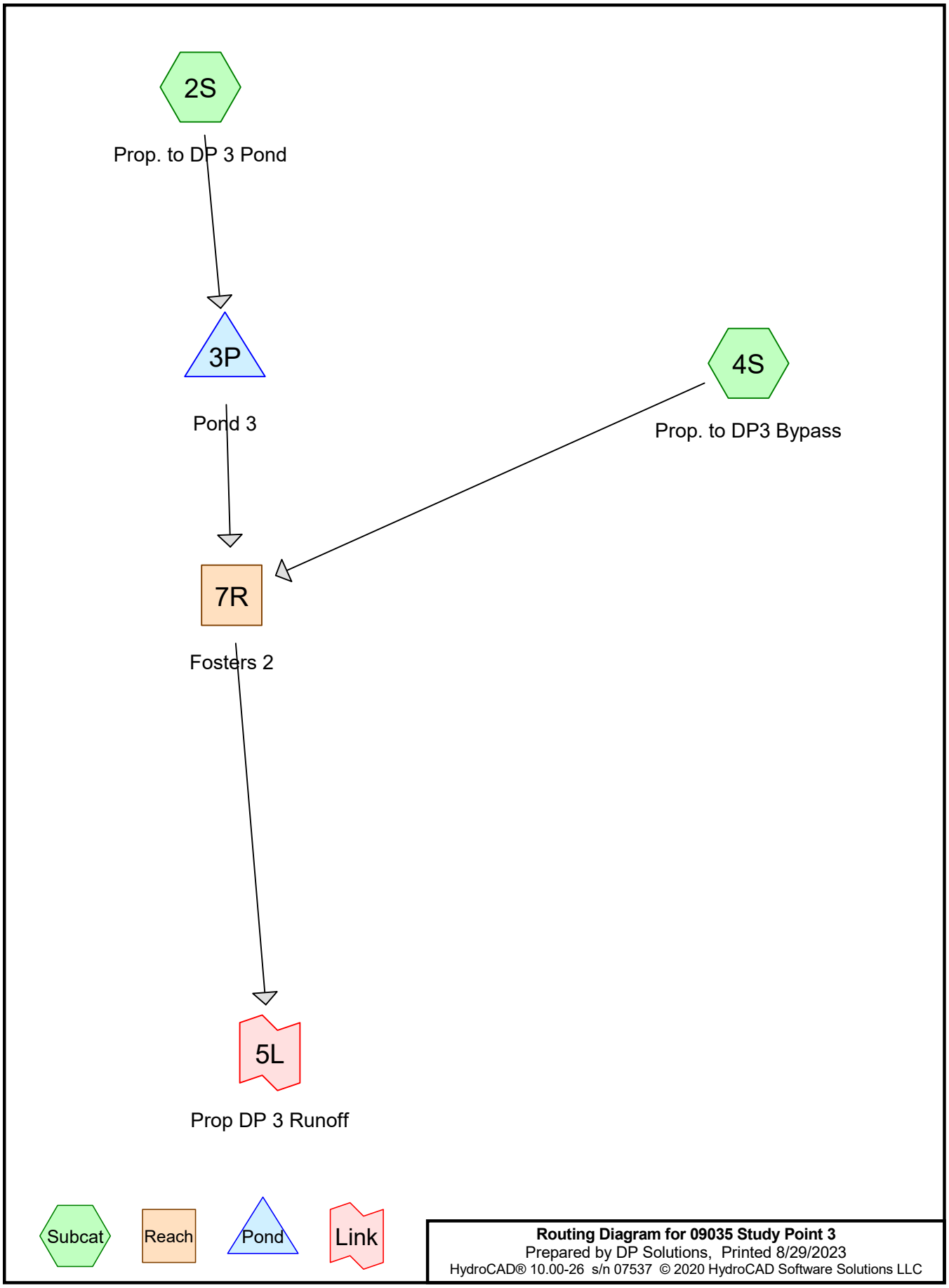
Summary for Link 12L: Existing DP 3 Runoff

Inflow Area = 57.820 ac, 0.00% Impervious, Inflow Depth = 3.90" for 100yr Talbot event
Inflow = 182.93 cfs @ 12.10 hrs, Volume= 18.799 af
Primary = 182.93 cfs @ 12.11 hrs, Volume= 18.799 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Appendix IV.B

HydroCAD – Study Point No. 3 – Proposed Conditions


2S
Prop. to DP 3 Pond
3P
Pond 3
4S
Prop. to DP3 Bypass
7R
Fosters 2
5L
Prop DP 3 Runoff
Subcat
Reach
Pond
Link
Routing Diagram for 09035 Study Point 3
Prepared by DP Solutions, Printed 8/29/2023
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09035 Study Point 3
Prepared by DP Solutions
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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.530	82	From TR-55 (2S)
10.240	65	From TR-55 (4S)
19.770	**73**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
19.770	Other	2S, 4S
19.770		**TOTAL AREA**

09035 Study Point 3
Prepared by DP Solutions
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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	19.770	19.770	From TR-55	2S, 4S
0.000	**0.000**	**0.000**	**0.000**	**19.770**	**19.770**	**TOTAL AREA**	

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: Prop. to DP 3 Pond Runoff Area=9.530 ac 0.00% Impervious Runoff Depth=1.70"
Tc=25.2 min CN=82 Runoff=9.94 cfs 1.350 af

Subcatchment 4S: Prop. to DP3 Bypass Runoff Area=10.240 ac 0.00% Impervious Runoff Depth=0.70"
Tc=25.8 min CN=65 Runoff=3.29 cfs 0.597 af

Reach 7R: Fosters 2 Avg. Flow Depth=0.58' Max Vel=3.55 fps Inflow=9.69 cfs 1.948 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=9.69 cfs 1.948 af

Pond 3P: Pond 3 Peak Elev=52.67' Storage=10,562 cf Inflow=9.94 cfs 1.350 af
Outflow=6.96 cfs 1.350 af

Link 5L: Prop DP 3 Runoff Inflow=9.69 cfs 1.948 af
Primary=9.69 cfs 1.948 af

Total Runoff Area = 19.770 ac Runoff Volume = 1.948 af Average Runoff Depth = 1.18"
100.00% Pervious = 19.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 2S: Prop. to DP 3 Pond

Runoff = 9.94 cfs @ 12.21 hrs, Volume= 1.350 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	9.530	82	From TR-55
	9.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry, From TR-55**

Summary for Subcatchment 4S: Prop. to DP3 Bypass

Runoff = 3.29 cfs @ 12.27 hrs, Volume= 0.597 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	10.240	65	From TR-55
	10.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8					**Direct Entry, from TR-55**

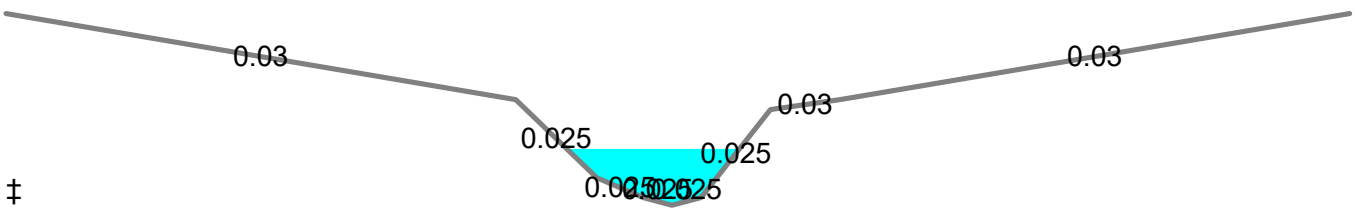
Summary for Reach 7R: Fosters 2

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 1.18" for 2yr Talbot event
Inflow = 9.69 cfs @ 12.50 hrs, Volume= 1.948 af
Outflow = 9.69 cfs @ 12.51 hrs, Volume= 1.948 af, Atten= 0%, Lag= 0.5 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.55 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 5.7 min

Peak Storage= 435 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 7R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

Summary for Pond 3P: Pond 3

Inflow Area = 9.530 ac, 0.00% Impervious, Inflow Depth = 1.70" for 2yr Talbot event
Inflow = 9.94 cfs @ 12.21 hrs, Volume= 1.350 af
Outflow = 6.96 cfs @ 12.57 hrs, Volume= 1.350 af, Atten= 30%, Lag= 21.3 min
Primary = 6.96 cfs @ 12.57 hrs, Volume= 1.350 af

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 52.67' @ 12.56 hrs Surf.Area= 16,461 sf Storage= 10,562 cf

Plug-Flow detention time= 39.6 min calculated for 1.350 af (100% of inflow)
Center-of-Mass det. time= 39.8 min (903.1 - 863.3)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	78,568 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	13,877	681.0	0	0	13,877
53.00	17,734	747.0	15,766	15,766	21,411
54.00	21,920	824.0	19,790	35,556	31,069
55.00	55,553	1,034.0	37,456	73,012	62,133
55.10	55,554	1,045.0	5,555	78,568	63,955

Device	Routing	Invert	Outlet Devices
#1	Primary	52.00'	**4.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	53.50'	**15.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.96 cfs @ 12.57 hrs HW=52.67' TW=52.27' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 6.96 cfs @ 2.38 fps)
└─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 3P: Pond 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
52.00	0.00	53.04	14.89	54.08	62.28
52.02	0.04	53.06	15.30	54.10	63.97
52.04	0.12	53.08	15.72	54.12	65.69
52.06	0.22	53.10	16.15	54.14	67.42
52.08	0.33	53.12	16.57	54.16	69.17
52.10	0.46	53.14	17.00	54.18	70.95
52.12	0.61	53.16	17.44	54.20	72.74
52.14	0.77	53.18	17.87	54.22	74.55
52.16	0.94	53.20	18.31	54.24	76.38
52.18	1.11	53.22	18.75	54.26	78.23
52.20	1.30	53.24	19.20	54.28	80.09
52.22	1.50	53.26	19.65	54.30	81.97
52.24	1.71	53.28	20.10	54.32	83.87
52.26	1.93	53.30	20.55	54.34	85.79
52.28	2.15	53.32	21.01	54.36	87.73
52.30	2.39	53.34	21.47	54.38	89.68
52.32	2.63	53.36	21.93	54.40	91.65
52.34	2.87	53.38	22.39	54.42	93.63
52.36	3.13	53.40	22.86	54.44	95.63
52.38	3.39	53.42	23.33	54.46	97.65
52.40	3.66	53.44	23.80	54.48	99.69
52.42	3.93	53.46	24.27	54.50	101.73
52.44	4.21	53.48	24.75	54.52	103.80
52.46	4.50	53.50	25.23	54.54	105.88
52.48	4.79	53.52	25.86	54.56	107.97
52.50	5.09	53.54	26.60	54.58	110.08
52.52	5.39	53.56	27.43	54.60	112.21
52.54	5.70	53.58	28.32	54.62	114.35
52.56	6.01	53.60	29.26	54.64	116.50
52.58	6.33	53.62	30.26	54.66	118.67
52.60	6.66	53.64	31.30	54.68	120.85
52.62	6.99	53.66	32.39	54.70	123.05
52.64	7.32	53.68	33.51	54.72	125.26
52.66	7.66	53.70	34.67	54.74	127.48
52.68	8.00	53.72	35.87	54.76	129.72
52.70	8.35	53.74	37.10	54.78	131.97
52.72	8.70	53.76	38.37	54.80	134.23
52.74	9.06	53.78	39.66	54.82	136.51
52.76	9.42	53.80	40.99	54.84	138.80
52.78	9.79	53.82	42.34	54.86	141.10
52.80	10.15	53.84	43.73	54.88	143.42
52.82	10.53	53.86	45.14	54.90	145.75
52.84	10.91	53.88	46.58	54.92	148.09
52.86	11.29	53.90	48.04	54.94	150.44
52.88	11.67	53.92	49.53	54.96	152.81
52.90	12.06	53.94	51.04	54.98	155.19
52.92	12.45	53.96	52.58	55.00	157.58
52.94	12.85	53.98	54.14	55.02	159.98
52.96	13.25	54.00	55.72	55.04	162.40
52.98	13.65	54.02	57.33	55.06	164.82
53.00	14.06	54.04	58.96	55.08	167.26
53.02	14.47	54.06	60.61	55.10	**169.71**

Summary for Link 5L: Prop DP 3 Runoff

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 1.18" for 2yr Talbot event
Inflow = 9.69 cfs @ 12.51 hrs, Volume= 1.948 af
Primary = 9.69 cfs @ 12.52 hrs, Volume= 1.948 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: Prop. to DP 3 Pond Runoff Area=9.530 ac 0.00% Impervious Runoff Depth=3.35"
Tc=25.2 min CN=82 Runoff=19.88 cfs 2.659 af

Subcatchment 4S: Prop. to DP3 Bypass Runoff Area=10.240 ac 0.00% Impervious Runoff Depth=1.86"
Tc=25.8 min CN=65 Runoff=10.67 cfs 1.584 af

Reach 7R: Fosters 2 Avg. Flow Depth=0.86' Max Vel=4.56 fps Inflow=23.74 cfs 4.243 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=23.74 cfs 4.243 af

Pond 3P: Pond 3 Peak Elev=53.15' Storage=18,829 cf Inflow=19.88 cfs 2.659 af
Outflow=14.79 cfs 2.659 af

Link 5L: Prop DP 3 Runoff Inflow=23.74 cfs 4.243 af
Primary=23.74 cfs 4.243 af

Total Runoff Area = 19.770 ac Runoff Volume = 4.243 af Average Runoff Depth = 2.58"
100.00% Pervious = 19.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 2S: Prop. to DP 3 Pond

Runoff = 19.88 cfs @ 12.21 hrs, Volume= 2.659 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	9.530	82	From TR-55
	9.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry, From TR-55**

Summary for Subcatchment 4S: Prop. to DP3 Bypass

Runoff = 10.67 cfs @ 12.22 hrs, Volume= 1.584 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	10.240	65	From TR-55
	10.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8					**Direct Entry, from TR-55**

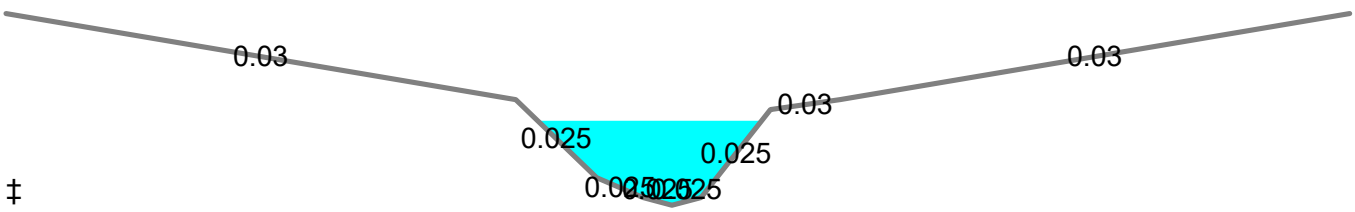
Summary for Reach 7R: Fosters 2

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 2.58" for 10yr Talbot event
Inflow = 23.74 cfs @ 12.39 hrs, Volume= 4.243 af
Outflow = 23.74 cfs @ 12.40 hrs, Volume= 4.243 af, Atten= 0%, Lag= 0.4 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 4.7 min

Peak Storage= 827 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 7R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

Summary for Pond 3P: Pond 3

Inflow Area = 9.530 ac, 0.00% Impervious, Inflow Depth = 3.35" for 10yr Talbot event
Inflow = 19.88 cfs @ 12.21 hrs, Volume= 2.659 af
Outflow = 14.79 cfs @ 12.50 hrs, Volume= 2.659 af, Atten= 26%, Lag= 17.7 min
Primary = 14.79 cfs @ 12.50 hrs, Volume= 2.659 af

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.15' @ 12.49 hrs Surf.Area= 18,382 sf Storage= 18,829 cf

Plug-Flow detention time= 33.0 min calculated for 2.659 af (100% of inflow)
Center-of-Mass det. time= 32.9 min (876.8 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	78,568 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	13,877	681.0	0	0	13,877
53.00	17,734	747.0	15,766	15,766	21,411
54.00	21,920	824.0	19,790	35,556	31,069
55.00	55,553	1,034.0	37,456	73,012	62,133
55.10	55,554	1,045.0	5,555	78,568	63,955

Device	Routing	Invert	Outlet Devices
#1	Primary	52.00'	**4.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	53.50'	**15.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=14.80 cfs @ 12.50 hrs HW=53.15' TW=52.56' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 14.80 cfs @ 3.00 fps)
└─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 3P: Pond 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
52.00	0.00	53.04	14.89	54.08	62.28
52.02	0.04	53.06	15.30	54.10	63.97
52.04	0.12	53.08	15.72	54.12	65.69
52.06	0.22	53.10	16.15	54.14	67.42
52.08	0.33	53.12	16.57	54.16	69.17
52.10	0.46	53.14	17.00	54.18	70.95
52.12	0.61	53.16	17.44	54.20	72.74
52.14	0.77	53.18	17.87	54.22	74.55
52.16	0.94	53.20	18.31	54.24	76.38
52.18	1.11	53.22	18.75	54.26	78.23
52.20	1.30	53.24	19.20	54.28	80.09
52.22	1.50	53.26	19.65	54.30	81.97
52.24	1.71	53.28	20.10	54.32	83.87
52.26	1.93	53.30	20.55	54.34	85.79
52.28	2.15	53.32	21.01	54.36	87.73
52.30	2.39	53.34	21.47	54.38	89.68
52.32	2.63	53.36	21.93	54.40	91.65
52.34	2.87	53.38	22.39	54.42	93.63
52.36	3.13	53.40	22.86	54.44	95.63
52.38	3.39	53.42	23.33	54.46	97.65
52.40	3.66	53.44	23.80	54.48	99.69
52.42	3.93	53.46	24.27	54.50	101.73
52.44	4.21	53.48	24.75	54.52	103.80
52.46	4.50	53.50	25.23	54.54	105.88
52.48	4.79	53.52	25.86	54.56	107.97
52.50	5.09	53.54	26.60	54.58	110.08
52.52	5.39	53.56	27.43	54.60	112.21
52.54	5.70	53.58	28.32	54.62	114.35
52.56	6.01	53.60	29.26	54.64	116.50
52.58	6.33	53.62	30.26	54.66	118.67
52.60	6.66	53.64	31.30	54.68	120.85
52.62	6.99	53.66	32.39	54.70	123.05
52.64	7.32	53.68	33.51	54.72	125.26
52.66	7.66	53.70	34.67	54.74	127.48
52.68	8.00	53.72	35.87	54.76	129.72
52.70	8.35	53.74	37.10	54.78	131.97
52.72	8.70	53.76	38.37	54.80	134.23
52.74	9.06	53.78	39.66	54.82	136.51
52.76	9.42	53.80	40.99	54.84	138.80
52.78	9.79	53.82	42.34	54.86	141.10
52.80	10.15	53.84	43.73	54.88	143.42
52.82	10.53	53.86	45.14	54.90	145.75
52.84	10.91	53.88	46.58	54.92	148.09
52.86	11.29	53.90	48.04	54.94	150.44
52.88	11.67	53.92	49.53	54.96	152.81
52.90	12.06	53.94	51.04	54.98	155.19
52.92	12.45	53.96	52.58	55.00	157.58
52.94	12.85	53.98	54.14	55.02	159.98
52.96	13.25	54.00	55.72	55.04	162.40
52.98	13.65	54.02	57.33	55.06	164.82
53.00	14.06	54.04	58.96	55.08	167.26
53.02	14.47	54.06	60.61	55.10	**169.71**

Summary for Link 5L: Prop DP 3 Runoff

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 2.58" for 10yr Talbot event
Inflow = 23.74 cfs @ 12.40 hrs, Volume= 4.243 af
Primary = 23.74 cfs @ 12.41 hrs, Volume= 4.243 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Time span=3.00-100.00 hrs, dt=0.01 hrs, 9701 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: Prop. to DP 3 Pond Runoff Area=9.530 ac 0.00% Impervious Runoff Depth=5.48"
Tc=25.2 min CN=82 Runoff=32.39 cfs 4.353 af

Subcatchment 4S: Prop. to DP3 Bypass Runoff Area=10.240 ac 0.00% Impervious Runoff Depth=3.57"
Tc=25.8 min CN=65 Runoff=21.86 cfs 3.049 af

Reach 7R: Fosters 2 Avg. Flow Depth=1.13' Max Vel=5.38 fps Inflow=44.93 cfs 7.402 af
L=159.0' S=0.0138 '/' Capacity=236.92 cfs Outflow=44.93 cfs 7.402 af

Pond 3P: Pond 3 Peak Elev=53.63' Storage=28,160 cf Inflow=32.39 cfs 4.353 af
Outflow=26.07 cfs 4.353 af

Link 5L: Prop DP 3 Runoff Inflow=44.93 cfs 7.402 af
Primary=44.93 cfs 7.402 af

Total Runoff Area = 19.770 ac Runoff Volume = 7.402 af Average Runoff Depth = 4.49"
100.00% Pervious = 19.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 2S: Prop. to DP 3 Pond

Runoff = 32.39 cfs @ 12.21 hrs, Volume= 4.353 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	9.530	82	From TR-55
	9.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry, From TR-55**

Summary for Subcatchment 4S: Prop. to DP3 Bypass

Runoff = 21.86 cfs @ 12.21 hrs, Volume= 3.049 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	10.240	65	From TR-55
	10.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8					**Direct Entry, from TR-55**

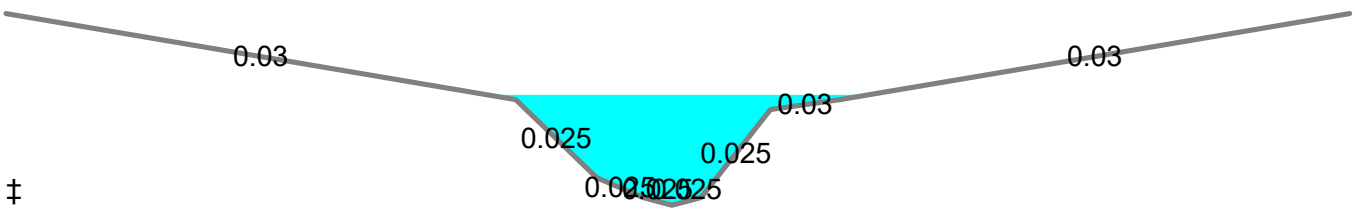
Summary for Reach 7R: Fosters 2

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 4.49" for 100yr Talbot event
Inflow = 44.93 cfs @ 12.37 hrs, Volume= 7.402 af
Outflow = 44.93 cfs @ 12.37 hrs, Volume= 7.402 af, Atten= 0%, Lag= 0.4 min

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.38 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 4.1 min

Peak Storage= 1,329 cf @ 12.37 hrs
Average Depth at Peak Storage= 1.13'
Bank-Full Depth= 1.96' Flow Area= 39.3 sf, Capacity= 236.92 cfs

Custom cross-section, Length= 159.0' Slope= 0.0138 '/' (101 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 51.70', Outlet Invert= 49.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	52.88	0.00		
22.00	52.00	0.88	0.030	
25.50	51.20	1.68	0.025	
27.50	51.00	1.88	0.025	
28.75	50.92	1.96	0.025	
30.00	51.00	1.88	0.025	
33.00	51.90	0.98	0.025	
36.00	52.00	0.88	0.030	
58.00	52.88	0.00	0.030	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.08	0.1	2.5	16	0.08
0.28	0.9	5.2	138	1.83
0.98	6.4	10.8	1,013	31.36
1.08	7.6	14.2	1,209	39.74
1.96	39.3	58.3	6,246	236.92

Stage-Discharge for Reach 7R: Fosters 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
51.70	0.00	0.00
51.72	0.32	0.00
51.74	0.51	0.01
51.76	0.67	0.04
51.78	0.82	0.08
51.80	1.01	0.16
51.82	1.18	0.25
51.84	1.33	0.36
51.86	1.46	0.50
51.88	1.59	0.66
51.90	1.70	0.85
51.92	1.81	1.05
51.94	1.92	1.29
51.96	2.02	1.55
51.98	2.11	1.83
52.00	2.24	2.18
52.02	2.35	2.54
52.04	2.46	2.94
52.06	2.57	3.36
52.08	2.67	3.81
52.10	2.77	4.28
52.12	2.87	4.79
52.14	2.97	5.32
52.16	3.06	5.88
52.18	3.15	6.47
52.20	3.23	7.08
52.22	3.32	7.73
52.24	3.40	8.41
52.26	3.48	9.11
52.28	3.56	9.85
52.30	3.64	10.61
52.32	3.72	11.41
52.34	3.79	12.23
52.36	3.87	13.09
52.38	3.94	13.98
52.40	4.01	14.91
52.42	4.08	15.86
52.44	4.15	16.85
52.46	4.22	17.87
52.48	4.29	18.92
52.50	4.35	20.01
52.52	4.42	21.13
52.54	4.48	22.28
52.56	4.55	23.47
52.58	4.61	24.70
52.60	4.68	25.96
52.62	4.74	27.26
52.64	4.80	28.59
52.66	4.86	29.96
52.68	4.92	31.36
52.70	5.00	32.94
52.72	5.07	34.56
52.74	5.13	36.23
52.76	5.18	37.95
52.78	5.23	39.74
52.80	5.29	41.77
52.82	5.35	43.89
52.84	5.40	46.07
52.86	5.44	48.33
52.88	5.48	50.67
52.90	5.51	53.10
52.92	5.53	55.61
52.94	5.55	58.21
52.96	5.57	60.91
52.98	5.59	63.71
53.00	5.60	66.60
53.02	5.61	69.61
53.04	5.62	72.72
53.06	5.63	75.94
53.08	5.64	79.27
53.10	5.65	82.72
53.12	5.66	86.29
53.14	5.67	89.98
53.16	5.67	93.79
53.18	5.68	97.74
53.20	5.69	101.81
53.22	5.70	106.01
53.24	5.71	110.35
53.26	5.72	114.83
53.28	5.73	119.45
53.30	5.74	124.21
53.32	5.75	129.11
53.34	5.76	134.16
53.36	5.77	139.36
53.38	5.79	144.72
53.40	5.80	150.23
53.42	5.82	155.89
53.44	5.83	161.72
53.46	5.85	167.70
53.48	5.86	173.85
53.50	5.88	180.17
53.52	5.90	186.65
53.54	5.91	193.30
53.56	5.93	200.13
53.58	5.95	207.13
53.60	5.97	214.31
53.62	5.99	221.66
53.64	6.01	229.20
53.66	**6.03**	**236.92**

Summary for Pond 3P: Pond 3

Inflow Area = 9.530 ac, 0.00% Impervious, Inflow Depth = 5.48" for 100yr Talbot event
Inflow = 32.39 cfs @ 12.21 hrs, Volume= 4.353 af
Outflow = 26.07 cfs @ 12.42 hrs, Volume= 4.353 af, Atten= 19%, Lag= 12.9 min
Primary = 26.07 cfs @ 12.42 hrs, Volume= 4.353 af

Routing by Sim-Route method, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.63' @ 12.42 hrs Surf.Area= 20,356 sf Storage= 28,160 cf

Plug-Flow detention time= 29.2 min calculated for 4.353 af (100% of inflow)
Center-of-Mass det. time= 29.1 min (859.1 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	78,568 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	13,877	681.0	0	0	13,877
53.00	17,734	747.0	15,766	15,766	21,411
54.00	21,920	824.0	19,790	35,556	31,069
55.00	55,553	1,034.0	37,456	73,012	62,133
55.10	55,554	1,045.0	5,555	78,568	63,955

Device	Routing	Invert	Outlet Devices
#1	Primary	52.00'	**4.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	53.50'	**15.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=26.09 cfs @ 12.42 hrs HW=53.63' TW=52.83' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 23.82 cfs @ 3.51 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.27 cfs @ 1.16 fps)

Stage-Discharge for Pond 3P: Pond 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
52.00	0.00	53.04	14.89	54.08	62.28
52.02	0.04	53.06	15.30	54.10	63.97
52.04	0.12	53.08	15.72	54.12	65.69
52.06	0.22	53.10	16.15	54.14	67.42
52.08	0.33	53.12	16.57	54.16	69.17
52.10	0.46	53.14	17.00	54.18	70.95
52.12	0.61	53.16	17.44	54.20	72.74
52.14	0.77	53.18	17.87	54.22	74.55
52.16	0.94	53.20	18.31	54.24	76.38
52.18	1.11	53.22	18.75	54.26	78.23
52.20	1.30	53.24	19.20	54.28	80.09
52.22	1.50	53.26	19.65	54.30	81.97
52.24	1.71	53.28	20.10	54.32	83.87
52.26	1.93	53.30	20.55	54.34	85.79
52.28	2.15	53.32	21.01	54.36	87.73
52.30	2.39	53.34	21.47	54.38	89.68
52.32	2.63	53.36	21.93	54.40	91.65
52.34	2.87	53.38	22.39	54.42	93.63
52.36	3.13	53.40	22.86	54.44	95.63
52.38	3.39	53.42	23.33	54.46	97.65
52.40	3.66	53.44	23.80	54.48	99.69
52.42	3.93	53.46	24.27	54.50	101.73
52.44	4.21	53.48	24.75	54.52	103.80
52.46	4.50	53.50	25.23	54.54	105.88
52.48	4.79	53.52	25.86	54.56	107.97
52.50	5.09	53.54	26.60	54.58	110.08
52.52	5.39	53.56	27.43	54.60	112.21
52.54	5.70	53.58	28.32	54.62	114.35
52.56	6.01	53.60	29.26	54.64	116.50
52.58	6.33	53.62	30.26	54.66	118.67
52.60	6.66	53.64	31.30	54.68	120.85
52.62	6.99	53.66	32.39	54.70	123.05
52.64	7.32	53.68	33.51	54.72	125.26
52.66	7.66	53.70	34.67	54.74	127.48
52.68	8.00	53.72	35.87	54.76	129.72
52.70	8.35	53.74	37.10	54.78	131.97
52.72	8.70	53.76	38.37	54.80	134.23
52.74	9.06	53.78	39.66	54.82	136.51
52.76	9.42	53.80	40.99	54.84	138.80
52.78	9.79	53.82	42.34	54.86	141.10
52.80	10.15	53.84	43.73	54.88	143.42
52.82	10.53	53.86	45.14	54.90	145.75
52.84	10.91	53.88	46.58	54.92	148.09
52.86	11.29	53.90	48.04	54.94	150.44
52.88	11.67	53.92	49.53	54.96	152.81
52.90	12.06	53.94	51.04	54.98	155.19
52.92	12.45	53.96	52.58	55.00	157.58
52.94	12.85	53.98	54.14	55.02	159.98
52.96	13.25	54.00	55.72	55.04	162.40
52.98	13.65	54.02	57.33	55.06	164.82
53.00	14.06	54.04	58.96	55.08	167.26
53.02	14.47	54.06	60.61	55.10	**169.71**

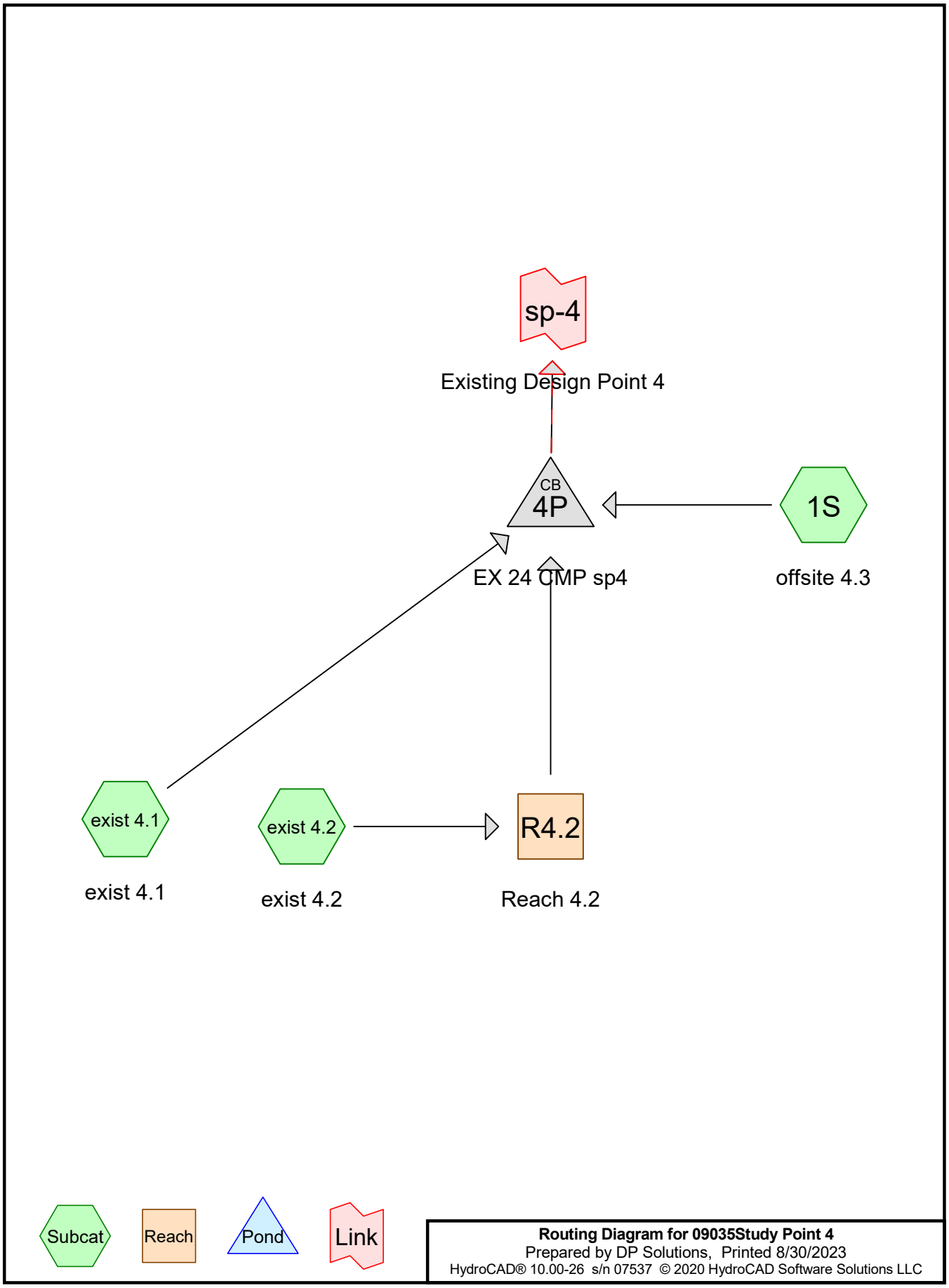
Summary for Link 5L: Prop DP 3 Runoff

Inflow Area = 19.770 ac, 0.00% Impervious, Inflow Depth = 4.49" for 100yr Talbot event
Inflow = 44.93 cfs @ 12.37 hrs, Volume= 7.402 af
Primary = 44.93 cfs @ 12.38 hrs, Volume= 7.402 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 3.00-100.00 hrs, dt= 0.01 hrs

Appendix V.A

HydroCAD – Study Point No. 4 – Existing Conditions


sp-4
Existing Design Point 4
CB
4P
EX 24 CMP sp4
1S
offsite 4.3
exist 4.1
exist 4.1
exist 4.2
exist 4.2
R4.2
Reach 4.2
Subcat
Reach
Pond
Link
Routing Diagram for 09035Study Point 4
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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.520	76	(1S)
50.870	65	(exist 4.1)
10.380	74	(exist 4.2)
70.770	**68**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
70.770	Other	1S, exist 4.1, exist 4.2
70.770		**TOTAL AREA**

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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	70.770	70.770		1S, exist 4.1, exist 4.2
0.000	**0.000**	**0.000**	**0.000**	**70.770**	**70.770**	**TOTAL AREA**	

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: offsite 4.3 Runoff Area=9.520 ac 0.00% Impervious Runoff Depth=1.29"
Tc=17.4 min CN=76 Runoff=9.34 cfs 1.026 af

Subcatchment exist 4.1: exist 4.1 Runoff Area=50.870 ac 0.00% Impervious Runoff Depth=0.70"
Tc=16.8 min CN=65 Runoff=22.54 cfs 2.968 af

Subcatchment exist 4.2: exist 4.2 Runoff Area=10.380 ac 0.00% Impervious Runoff Depth=1.17"
Tc=13.8 min CN=74 Runoff=10.60 cfs 1.013 af

Reach R4.2: Reach 4.2 Avg. Flow Depth=0.79' Max Vel=2.15 fps Inflow=10.60 cfs 1.013 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=9.03 cfs 1.013 af

Pond 4P: EX 24 CMP sp4 Peak Elev=48.84' Inflow=40.56 cfs 5.007 af
Primary=22.54 cfs 4.543 af Secondary=18.02 cfs 0.464 af Outflow=40.56 cfs 5.007 af

Link sp-4: Existing Design Point 4 Inflow=40.56 cfs 5.007 af
Primary=40.56 cfs 5.007 af

Total Runoff Area = 70.770 ac Runoff Volume = 5.007 af Average Runoff Depth = 0.85"
100.00% Pervious = 70.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: offsite 4.3

Runoff = 9.34 cfs @ 12.14 hrs, Volume= 1.026 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	9.520	76	
	9.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry,**

Summary for Subcatchment exist 4.1: exist 4.1

Runoff = 22.54 cfs @ 12.13 hrs, Volume= 2.968 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	50.870	65	
	50.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry,**

Summary for Subcatchment exist 4.2: exist 4.2

Runoff = 10.60 cfs @ 12.08 hrs, Volume= 1.013 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	10.380	74	
	10.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Reach R4.2: Reach 4.2

Inflow Area = 10.380 ac, 0.00% Impervious, Inflow Depth = 1.17" for 2yr Talbot event
Inflow = 10.60 cfs @ 12.08 hrs, Volume= 1.013 af
Outflow = 9.03 cfs @ 12.19 hrs, Volume= 1.013 af, Atten= 15%, Lag= 6.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.15 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 102.5 min

Peak Storage= 4,208 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'

Stage-Discharge for Reach R4.2: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

Summary for Pond 4P: EX 24 CMP sp4

Inflow Area =	70.770 ac,	0.00% Impervious,	Inflow Depth =	0.85"	for 2yr Talbot event
Inflow =	40.56 cfs @	12.14 hrs,	Volume=	5.007 af	
Outflow =	40.56 cfs @	12.15 hrs,	Volume=	5.007 af,	Atten= 0%, Lag= 0.6 min
Primary =	22.54 cfs @	12.15 hrs,	Volume=	4.543 af	
Secondary =	18.02 cfs @	12.15 hrs,	Volume=	0.464 af	

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 48.84' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Heiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=22.54 cfs @ 12.15 hrs HW=48.84' TW=45.36' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 22.54 cfs @ 7.17 fps)

Secondary OutFlow Max=18.01 cfs @ 12.15 hrs HW=48.84' TW=45.36' (Dynamic Tailwater)
└─**2=CL Heiners Lane as Weir** (Weir Controls 18.01 cfs @ 1.29 fps)

Stage-Discharge for Pond 4P: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Link sp-4: Existing Design Point 4

Inflow Area = 70.770 ac, 0.00% Impervious, Inflow Depth = 0.85" for 2yr Talbot event
Inflow = 40.56 cfs @ 12.15 hrs, Volume= 5.007 af
Primary = 40.56 cfs @ 12.16 hrs, Volume= 5.007 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: offsite 4.3 Runoff Area=9.520 ac 0.00% Impervious Runoff Depth=2.78"
Tc=17.4 min CN=76 Runoff=21.03 cfs 2.209 af

Subcatchment exist 4.1: exist 4.1 Runoff Area=50.870 ac 0.00% Impervious Runoff Depth=1.86"
Tc=16.8 min CN=65 Runoff=72.20 cfs 7.869 af

Subcatchment exist 4.2: exist 4.2 Runoff Area=10.380 ac 0.00% Impervious Runoff Depth=2.61"
Tc=13.8 min CN=74 Runoff=24.84 cfs 2.254 af

Reach R4.2: Reach 4.2 Avg. Flow Depth=1.22' Max Vel=2.74 fps Inflow=24.84 cfs 2.254 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=22.36 cfs 2.254 af

Pond 4P: EX 24 CMP sp4 Peak Elev=49.07' Inflow=115.23 cfs 12.332 af
Primary=23.42 cfs 8.312 af Secondary=91.81 cfs 4.020 af Outflow=115.23 cfs 12.332 af

Link sp-4: Existing Design Point 4 Inflow=115.23 cfs 12.332 af
Primary=115.23 cfs 12.332 af

Total Runoff Area = 70.770 ac Runoff Volume = 12.332 af Average Runoff Depth = 2.09"
100.00% Pervious = 70.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: offsite 4.3

Runoff = 21.03 cfs @ 12.11 hrs, Volume= 2.209 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	9.520	76	
	9.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry,**

Summary for Subcatchment exist 4.1: exist 4.1

Runoff = 72.20 cfs @ 12.13 hrs, Volume= 7.869 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	50.870	65	
	50.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry,**

Summary for Subcatchment exist 4.2: exist 4.2

Runoff = 24.84 cfs @ 12.08 hrs, Volume= 2.254 af, Depth= 2.61"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	10.380	74	
	10.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Reach R4.2: Reach 4.2

Inflow Area = 10.380 ac, 0.00% Impervious, Inflow Depth = 2.61" for 10yr Talbot event
Inflow = 24.84 cfs @ 12.08 hrs, Volume= 2.254 af
Outflow = 22.36 cfs @ 12.16 hrs, Volume= 2.254 af, Atten= 10%, Lag= 4.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.74 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 79.3 min

Peak Storage= 8,168 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.22'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'

Stage-Discharge for Reach R4.2: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

Summary for Pond 4P: EX 24 CMP sp4

Inflow Area =	70.770 ac,	0.00% Impervious,	Inflow Depth =	2.09"	for 10yr Talbot event
Inflow =	115.23 cfs @	12.13 hrs,	Volume=	12.332 af	
Outflow =	115.23 cfs @	12.14 hrs,	Volume=	12.332 af,	Atten= 0%, Lag= 0.6 min
Primary =	23.42 cfs @	12.14 hrs,	Volume=	8.312 af	
Secondary =	91.81 cfs @	12.14 hrs,	Volume=	4.020 af	

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.07' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Heiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=23.42 cfs @ 12.14 hrs HW=49.07' TW=45.31' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 23.42 cfs @ 7.46 fps)

Secondary OutFlow Max=91.81 cfs @ 12.14 hrs HW=49.07' TW=45.31' (Dynamic Tailwater)
└─**2=CL Heiners Lane as Weir** (Weir Controls 91.81 cfs @ 1.80 fps)

Stage-Discharge for Pond 4P: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Link sp-4: Existing Design Point 4

Inflow Area = 70.770 ac, 0.00% Impervious, Inflow Depth = 2.09" for 10yr Talbot event
Inflow = 115.23 cfs @ 12.14 hrs, Volume= 12.332 af
Primary = 115.23 cfs @ 12.15 hrs, Volume= 12.332 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: offsite 4.3 Runoff Area=9.520 ac 0.00% Impervious Runoff Depth=4.80"
Tc=17.4 min CN=76 Runoff=36.46 cfs 3.804 af

Subcatchment exist 4.1: exist 4.1 Runoff Area=50.870 ac 0.00% Impervious Runoff Depth=3.57"
Tc=16.8 min CN=65 Runoff=146.06 cfs 15.148 af

Subcatchment exist 4.2: exist 4.2 Runoff Area=10.380 ac 0.00% Impervious Runoff Depth=4.57"
Tc=13.8 min CN=74 Runoff=43.89 cfs 3.953 af

Reach R4.2: Reach 4.2 Avg. Flow Depth=1.62' Max Vel=3.20 fps Inflow=43.89 cfs 3.953 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=40.56 cfs 3.953 af

Pond 4P: EX 24 CMP sp4 Peak Elev=49.25' Inflow=222.27 cfs 22.905 af
Primary=24.13 cfs 12.626 af Secondary=198.15 cfs 10.279 af Outflow=222.27 cfs 22.905 af

Link sp-4: Existing Design Point 4 Inflow=222.27 cfs 22.905 af
Primary=222.27 cfs 22.905 af

Total Runoff Area = 70.770 ac Runoff Volume = 22.905 af Average Runoff Depth = 3.88"
100.00% Pervious = 70.770 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: offsite 4.3

Runoff = 36.46 cfs @ 12.11 hrs, Volume= 3.804 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	9.520	76	
	9.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry,**

Summary for Subcatchment exist 4.1: exist 4.1

Runoff = 146.06 cfs @ 12.10 hrs, Volume= 15.148 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	50.870	65	
	50.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry,**

Summary for Subcatchment exist 4.2: exist 4.2

Runoff = 43.89 cfs @ 12.08 hrs, Volume= 3.953 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	10.380	74	
	10.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Reach R4.2: Reach 4.2

Inflow Area = 10.380 ac, 0.00% Impervious, Inflow Depth = 4.57" for 100yr Talbot event
Inflow = 43.89 cfs @ 12.08 hrs, Volume= 3.953 af
Outflow = 40.56 cfs @ 12.14 hrs, Volume= 3.953 af, Atten= 8%, Lag= 3.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.20 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 65.4 min

Peak Storage= 12,688 cf @ 12.14 hrs
Average Depth at Peak Storage= 1.62'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'

Stage-Discharge for Reach R4.2: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

Summary for Pond 4P: EX 24 CMP sp4

Inflow Area =	70.770 ac,	0.00% Impervious,	Inflow Depth =	3.88"	for 100yr Talbot event
Inflow =	222.27 cfs @	12.12 hrs,	Volume=	22.905 af	
Outflow =	222.27 cfs @	12.13 hrs,	Volume=	22.905 af,	Atten= 0%, Lag= 0.6 min
Primary =	24.13 cfs @	12.13 hrs,	Volume=	12.626 af	
Secondary =	198.15 cfs @	12.13 hrs,	Volume=	10.279 af	

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.25' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Heiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=24.13 cfs @ 12.13 hrs HW=49.25' TW=45.28' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 24.13 cfs @ 7.68 fps)

Secondary OutFlow Max=198.13 cfs @ 12.13 hrs HW=49.25' TW=45.28' (Dynamic Tailwater)
└─**2=CL Heiners Lane as Weir** (Weir Controls 198.13 cfs @ 2.20 fps)

Stage-Discharge for Pond 4P: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Link sp-4: Existing Design Point 4

Inflow Area = 70.770 ac, 0.00% Impervious, Inflow Depth = 3.88" for 100yr Talbot event
Inflow = 222.27 cfs @ 12.13 hrs, Volume= 22.905 af
Primary = 222.27 cfs @ 12.14 hrs, Volume= 22.905 af, Atten= 0%, Lag= 0.6 min

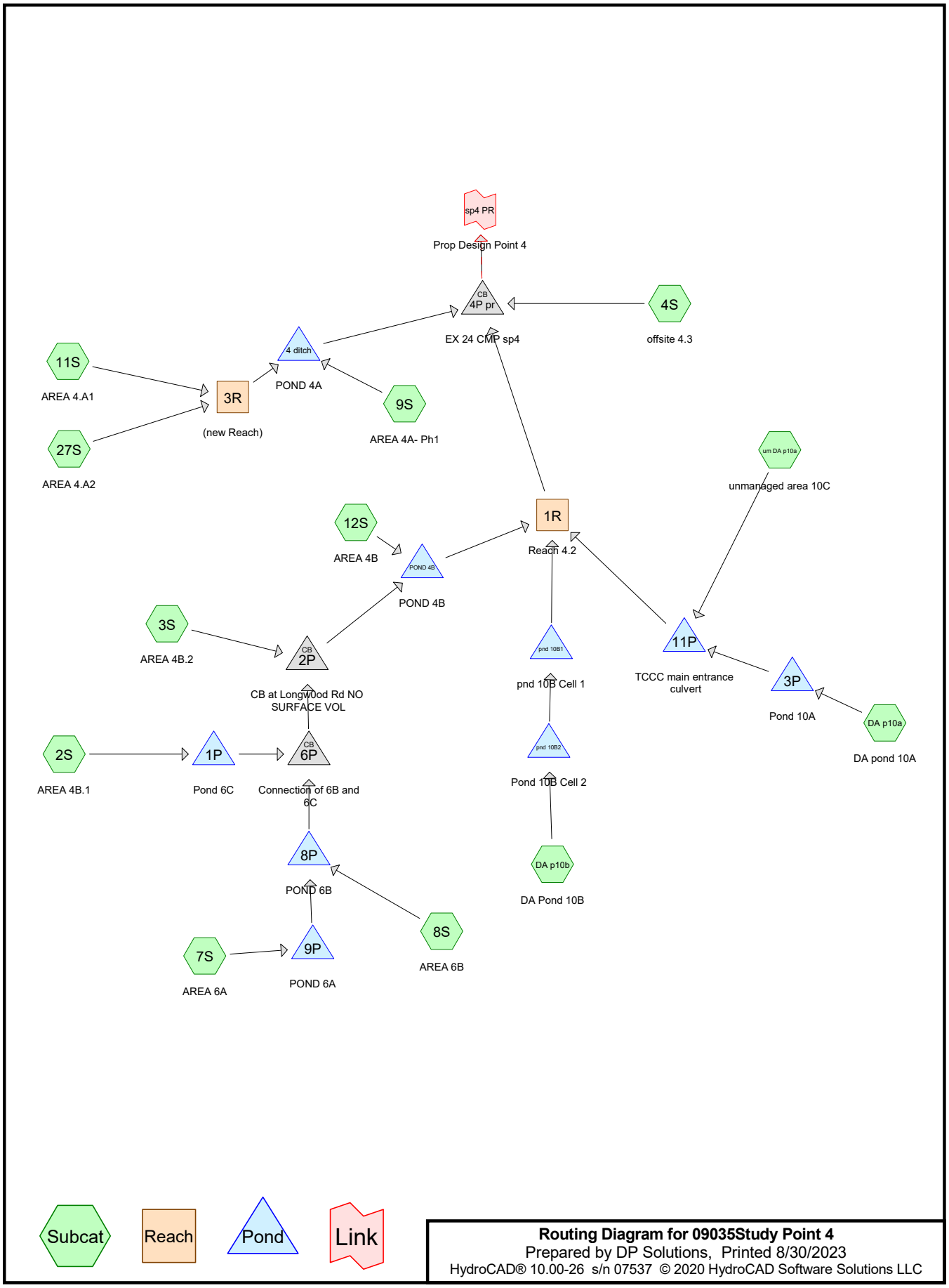
Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

Appendix V.B

HydroCAD – Study Point No. 4 – Proposed Conditions



Routing Diagram for 09035Study Point 4
Prepared by DP Solutions, Printed 8/30/2023
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.860	79	(3S)
19.820	69	(7S)
4.560	80	(11S)
1.990	83	(27S)
7.746	61	>75% Grass cover, Good, HSG B (4S, 9S, 12S, DA p10a, DA p10b)
3.687	74	>75% Grass cover, Good, HSG C (4S, DA p10b, um DA p10a)
21.751	80	>75% Grass cover, Good, HSG D (4S, 9S, 12S, DA p10a, DA p10b, um DA p10a)
11.890	81	From TR-55 (2S)
1.590	82	From TR-55 (8S)
1.927	98	Paved parking, (9S, 12S)
1.964	98	Paved parking, HSG B (DA p10a, DA p10b)
0.174	98	Paved parking, HSG C (DA p10b, um DA p10a)
2.326	98	Paved parking, HSG D (4S, DA p10a, DA p10b, um DA p10a)
82.285	**77**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
9.710	HSG B	4S, 9S, 12S, DA p10a, DA p10b
3.861	HSG C	4S, DA p10b, um DA p10a
24.077	HSG D	4S, 9S, 12S, DA p10a, DA p10b, um DA p10a
44.637	Other	2S, 3S, 7S, 8S, 9S, 11S, 12S, 27S
82.285		**TOTAL AREA**

09035Study Point 4
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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	29.230	29.230		3S, 7S, 11S, 27S
0.000	7.746	3.687	21.751	0.000	33.183	>75% Grass cover, Good	4S, 9S, 12S, DA p10a, DA p10b, um DA p10a
0.000	0.000	0.000	0.000	13.480	13.480	From TR-55	2S, 8S
0.000	1.964	0.174	2.326	0.000	4.465	Paved parking	4S, DA p10a, DA p10b, um DA p10a
0.000	0.000	0.000	0.000	1.927	1.927	Paved parking,	9S, 12S
0.000	**9.710**	**3.861**	**24.077**	**44.637**	**82.285**	**TOTAL AREA**	

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: AREA 4B.1 Runoff Area=11.890 ac 0.00% Impervious Runoff Depth=1.63"
Tc=14.4 min CN=81 Runoff=17.23 cfs 1.613 af

Subcatchment 3S: AREA 4B.2 Runoff Area=2.860 ac 0.00% Impervious Runoff Depth=1.49"
Tc=6.0 min CN=79 Runoff=5.99 cfs 0.355 af

Subcatchment 4S: offsite 4.3 Runoff Area=418,500 sf 12.64% Impervious Runoff Depth=1.36"
Flow Length=1,238' Tc=19.5 min CN=77 Runoff=9.23 cfs 1.086 af

Subcatchment 7S: AREA 6A Runoff Area=19.820 ac 0.00% Impervious Runoff Depth=0.89"
Tc=12.0 min CN=69 Runoff=15.68 cfs 1.478 af

Subcatchment 8S: AREA 6B Runoff Area=1.590 ac 0.00% Impervious Runoff Depth=1.70"
Tc=7.2 min CN=82 Runoff=3.53 cfs 0.225 af

Subcatchment 9S: AREA 4A- Ph1 Runoff Area=695,700 sf 3.90% Impervious Runoff Depth=1.36"
Flow Length=900' Tc=27.1 min CN=77 Runoff=12.11 cfs 1.806 af

Subcatchment 11S: AREA 4.A1 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=80 Runoff=10.01 cfs 0.592 af

Subcatchment 12S: AREA 4B Runoff Area=153,250 sf 37.10% Impervious Runoff Depth=2.01"
Flow Length=900' Tc=19.9 min CN=86 Runoff=5.16 cfs 0.589 af

Subcatchment 27S: AREA 4.A2 Runoff Area=1.990 ac 0.00% Impervious Runoff Depth=1.77"
Tc=6.0 min CN=83 Runoff=4.98 cfs 0.294 af

Subcatchment DA p10a: DA pond 10A Runoff Area=132,672 sf 67.46% Impervious Runoff Depth=2.26"
Flow Length=380' Tc=5.0 min CN=89 Runoff=10.22 cfs 0.575 af

Subcatchment DA p10b: DA Pond 10B Runoff Area=269,381 sf 15.20% Impervious Runoff Depth=1.29"
Flow Length=515' Tc=15.1 min CN=76 Runoff=6.67 cfs 0.666 af

Subcatchment um DA p10a: unmanaged Runoff Area=54,385 sf 20.47% Impervious Runoff Depth=1.70"
Flow Length=240' Tc=18.3 min CN=82 Runoff=1.63 cfs 0.177 af

Reach 1R: Reach 4.2 Avg. Flow Depth=0.93' Max Vel=2.35 fps Inflow=12.97 cfs 6.770 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=12.61 cfs 6.763 af

Reach 3R: (new Reach) Avg. Flow Depth=0.96' Max Vel=2.92 fps Inflow=14.99 cfs 0.886 af
n=0.030 L=700.0' S=0.0071 '/' Capacity=378.49 cfs Outflow=13.73 cfs 0.886 af

Pond 1P: Pond 6C Peak Elev=52.33' Storage=19,587 cf Inflow=17.23 cfs 1.613 af
Outflow=7.33 cfs 1.613 af

Pond 2P: CB at Longw0od Rd NO SURFACE VOL Peak Elev=51.56' Inflow=9.27 cfs 3.724 af
Outflow=9.27 cfs 3.724 af

Pond 3P: Pond 10A Peak Elev=50.68' Storage=8,674 cf Inflow=10.22 cfs 0.575 af
Outflow=4.03 cfs 0.606 af

Pond 4 ditch: POND 4A Peak Elev=45.96' Storage=86,194 cf Inflow=21.15 cfs 2.692 af
Outflow=5.44 cfs 2.692 af

Pond 4P pr: EX 24 CMP sp4 Peak Elev=47.70' Inflow=17.31 cfs 10.541 af
Primary=17.31 cfs 10.541 af Secondary=0.00 cfs 0.000 af Outflow=17.31 cfs 10.541 af

Pond 6P: Connection of 6B and 6C Peak Elev=51.88' Inflow=8.39 cfs 3.369 af
Outflow=8.39 cfs 3.369 af

Pond 8P: POND 6B Peak Elev=54.32' Storage=9,472 cf Inflow=4.40 cfs 1.704 af
Outflow=2.83 cfs 1.756 af

Pond 9P: POND 6A Peak Elev=55.34' Storage=23,920 cf Inflow=15.68 cfs 1.478 af
Outflow=3.19 cfs 1.479 af

Pond 11P: TCCC main entrance culvert Peak Elev=49.54' Storage=768 cf Inflow=5.64 cfs 0.783 af
Outflow=5.34 cfs 0.781 af

Pond pnd 10B1: pnd 10B Cell 1 Peak Elev=50.46' Storage=2,764 cf Inflow=3.30 cfs 0.666 af
Outflow=1.83 cfs 1.224 af

Pond pnd 10B2: Pond 10B Cell 2 Peak Elev=50.48' Storage=6,155 cf Inflow=6.67 cfs 0.666 af
Outflow=3.30 cfs 0.666 af

Pond POND 4B: POND 4B Peak Elev=49.96' Storage=28,429 cf Inflow=14.14 cfs 4.313 af
Outflow=9.47 cfs 4.765 af

Link sp4 PR: Prop Design Point 4 Inflow=17.31 cfs 10.541 af
Primary=17.31 cfs 10.541 af

Total Runoff Area = 82.285 ac Runoff Volume = 9.456 af Average Runoff Depth = 1.38"
92.23% Pervious = 75.893 ac 7.77% Impervious = 6.392 ac

Summary for Subcatchment 2S: AREA 4B.1

Runoff = 17.23 cfs @ 12.09 hrs, Volume= 1.613 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	11.890	81	From TR-55
	11.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, From TR-55**

Summary for Subcatchment 3S: AREA 4B.2

Runoff = 5.99 cfs @ 11.99 hrs, Volume= 0.355 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	2.860	79	
	2.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4S: offsite 4.3

Runoff = 9.23 cfs @ 12.14 hrs, Volume= 1.086 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

Area (sf)	CN	Description
81,840	61	>75% Grass cover, Good, HSG B
139,500	74	>75% Grass cover, Good, HSG C
52,900	98	Paved parking, HSG D
144,260	80	>75% Grass cover, Good, HSG D
418,500	77	Weighted Average
365,600		87.36% Pervious Area
52,900		12.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0350	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
6.5	594	0.0089	1.52		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	544	0.0050	4.87	175.23	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 3.0 '/' Top.W=21.00' n= 0.030
19.5	1,238	Total			

Summary for Subcatchment 7S: AREA 6A

Runoff = 15.68 cfs @ 12.07 hrs, Volume= 1.478 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	19.820	69	
	19.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, From TR-55**

Summary for Subcatchment 8S: AREA 6B

Runoff = 3.53 cfs @ 12.00 hrs, Volume= 0.225 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	1.590	82	From TR-55
	1.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, From TR-55**

Summary for Subcatchment 9S: AREA 4A- Ph1

Runoff = 12.11 cfs @ 12.23 hrs, Volume= 1.806 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (sf)	CN	Description
	132,700	61	>75% Grass cover, Good, HSG B
	535,900	80	>75% Grass cover, Good, HSG D
*	27,100	98	Paved parking,
	695,700	77	Weighted Average
	668,600		96.10% Pervious Area
	27,100		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
8.8	800	0.0088	1.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
27.1	900	Total			

Summary for Subcatchment 11S: AREA 4.A1

Runoff = 10.01 cfs @ 11.99 hrs, Volume= 0.592 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	4.560	80	
	4.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment 12S: AREA 4B

Runoff = 5.16 cfs @ 12.16 hrs, Volume= 0.589 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (sf)	CN	Description
	8,600	61	>75% Grass cover, Good, HSG B
	87,800	80	>75% Grass cover, Good, HSG D
*	56,850	98	Paved parking,
	153,250	86	Weighted Average
	96,400		62.90% Pervious Area
	56,850		37.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.9	800	0.0097	4.65	64.47	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 4.0 & 3.0 '/' Top.W=14.50' n= 0.030 Earth, grassed & winding
19.9	900	Total			

Summary for Subcatchment 27S: AREA 4.A2

Runoff = 4.98 cfs @ 11.99 hrs, Volume= 0.294 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

	Area (ac)	CN	Description
*	1.990	83	
	1.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment DA p10a: DA pond 10A

Runoff = 10.22 cfs @ 11.97 hrs, Volume= 0.575 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

Area (sf)	CN	Description
79,300	98	Paved parking, HSG B
10,200	98	Paved parking, HSG D
18,643	80	>75% Grass cover, Good, HSG D
24,529	61	>75% Grass cover, Good, HSG B
132,672	89	Weighted Average
43,172		32.54% Pervious Area
89,500		67.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0080	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
1.7	210	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	70	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.9	380	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment DA p10b: DA Pond 10B

Runoff = 6.67 cfs @ 12.10 hrs, Volume= 0.666 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

Area (sf)	CN	Description
89,750	61	>75% Grass cover, Good, HSG B
6,250	98	Paved parking, HSG B
4,240	74	>75% Grass cover, Good, HSG C
4,260	98	Paved parking, HSG C
134,451	80	>75% Grass cover, Good, HSG D
30,430	98	Paved parking, HSG D
269,381	76	Weighted Average
228,441		84.80% Pervious Area
40,940		15.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0280	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
3.0	415	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.1	515	Total			

Summary for Subcatchment um DA p10a: unmanaged area 10C

Runoff = 1.63 cfs @ 12.12 hrs, Volume= 0.177 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2yr Talbot Rainfall=3.40"

Area (sf)	CN	Description
16,850	74	>75% Grass cover, Good, HSG C
26,401	80	>75% Grass cover, Good, HSG D
3,330	98	Paved parking, HSG C
7,804	98	Paved parking, HSG D
54,385	82	Weighted Average
43,251		79.53% Pervious Area
11,134		20.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0140	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.3	140	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	240	Total			

Summary for Reach 1R: Reach 4.2

Inflow Area = 50.157 ac, 9.08% Impervious, Inflow Depth > 1.62" for 2yr Talbot event
Inflow = 12.97 cfs @ 13.35 hrs, Volume= 6.770 af
Outflow = 12.61 cfs @ 12.95 hrs, Volume= 6.763 af, Atten= 3%, Lag= 0.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.35 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 21.0 min

Peak Storage= 5,366 cf @ 12.95 hrs
Average Depth at Peak Storage= 0.93'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'

Stage-Discharge for Reach 1R: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

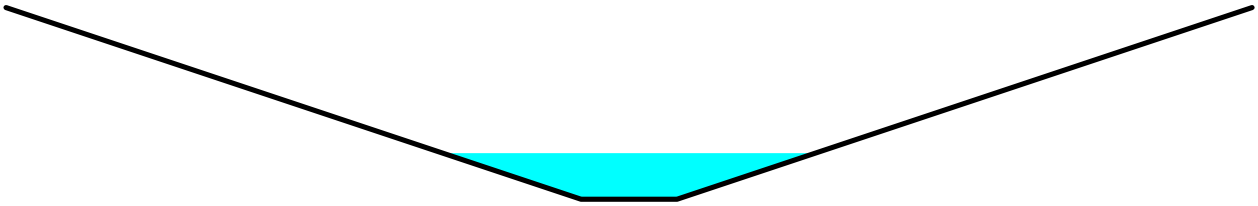
Summary for Reach 3R: (new Reach)

Inflow Area = 6.550 ac, 0.00% Impervious, Inflow Depth = 1.62" for 2yr Talbot event
Inflow = 14.99 cfs @ 11.99 hrs, Volume= 0.886 af
Outflow = 13.73 cfs @ 12.03 hrs, Volume= 0.886 af, Atten= 8%, Lag= 2.7 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.92 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 46.9 min

Peak Storage= 3,294 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.96'
Bank-Full Depth= 4.00' Flow Area= 56.0 sf, Capacity= 378.49 cfs

2.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 26.00'
Length= 700.0' Slope= 0.0071 '/'
Inlet Invert= 52.00', Outlet Invert= 47.00'



Stage-Discharge for Reach 3R: (new Reach)

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
52.00	0.00	0.00
52.05	0.53	0.06
52.10	0.82	0.19
52.15	1.04	0.39
52.20	1.23	0.64
52.25	1.39	0.96
52.30	1.54	1.35
52.35	1.68	1.79
52.40	1.80	2.31
52.45	1.92	2.90
52.50	2.03	3.57
52.55	2.14	4.31
52.60	2.25	5.13
52.65	2.35	6.03
52.70	2.45	7.03
52.75	2.54	8.10
52.80	2.63	9.27
52.85	2.72	10.53
52.90	2.81	11.89
52.95	2.90	13.35
53.00	2.98	14.90
53.05	3.06	16.57
53.10	3.14	18.34
53.15	3.22	20.21
53.20	3.30	22.19
53.25	3.38	24.30
53.30	3.46	26.52
53.35	3.53	28.86
53.40	3.61	31.31
53.45	3.68	33.89
53.50	3.75	36.60
53.55	3.82	39.43
53.60	3.90	42.39
53.65	3.97	45.49
53.70	4.04	48.72
53.75	4.10	52.09
53.80	4.17	55.58
53.85	4.24	59.24
53.90	4.31	63.03
53.95	4.37	66.96
54.00	4.44	71.04
54.05	4.51	75.28
54.10	4.57	79.67
54.15	4.63	84.20
54.20	4.70	88.89
54.25	4.76	93.75
54.30	4.82	98.77
54.35	4.89	103.94
54.40	4.95	109.27
54.45	5.01	114.79
54.50	5.07	120.46
54.55	5.13	126.31
54.60	5.19	132.31
54.65	5.25	138.51
54.70	5.31	144.88
54.75	5.37	151.43
54.80	5.43	158.14
54.85	5.49	165.06
54.90	5.55	172.16
54.95	5.61	179.43
55.00	5.66	186.88
55.05	5.72	194.55
55.10	5.78	202.40
55.15	5.83	210.44
55.20	5.89	218.66
55.25	5.95	227.11
55.30	6.00	235.74
55.35	6.06	244.57
55.40	6.11	253.60
55.45	6.17	262.85
55.50	6.22	272.30
55.55	6.28	281.95
55.60	6.33	291.80
55.65	6.39	301.89
55.70	6.44	312.19
55.75	6.49	322.69
55.80	6.55	333.40
55.85	6.60	344.35
55.90	6.65	355.52
55.95	6.71	366.90
56.00	**6.76**	**378.49**

Summary for Pond 1P: Pond 6C

Inflow Area = 11.890 ac, 0.00% Impervious, Inflow Depth = 1.63" for 2yr Talbot event
Inflow = 17.23 cfs @ 12.09 hrs, Volume= 1.613 af
Outflow = 7.33 cfs @ 12.53 hrs, Volume= 1.613 af, Atten= 57%, Lag= 26.5 min
Primary = 7.33 cfs @ 12.53 hrs, Volume= 1.613 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 52.33' @ 12.52 hrs Surf.Area= 21,729 sf Storage= 19,587 cf

Plug-Flow detention time= 49.6 min calculated for 1.613 af (100% of inflow)
Center-of-Mass det. time= 49.9 min (899.7 - 849.9)

Volume	Invert	Avail.Storage	Storage Description
#1	51.10'	196,107 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.10	9,830	540.0	0	0	9,830
52.00	19,068	765.0	12,777	12,777	33,203
53.00	27,550	1,028.0	23,179	35,956	70,739
54.00	42,813	1,255.0	34,902	70,858	111,996
55.00	61,819	1,649.0	52,026	122,884	203,058
56.00	85,254	2,232.0	73,223	196,107	383,122

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**24.0" Round Culvert** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 50.50' / 50.35' S= 0.0033 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	51.10'	**28.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	52.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	55.50'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.33 cfs @ 12.53 hrs HW=52.33' TW=51.88' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.33 cfs of 9.05 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 7.33 cfs @ 3.14 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Discharge for Pond 1P: Pond 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
51.10	0.00	53.70	17.16
51.15	0.08	53.75	17.38
51.20	0.24	53.80	17.60
51.25	0.44	53.85	17.81
51.30	0.67	53.90	18.02
51.35	0.94	53.95	18.23
51.40	1.23	54.00	18.43
51.45	1.55	54.05	18.63
51.50	1.89	54.10	18.83
51.55	2.26	54.15	19.03
51.60	2.65	54.20	19.23
51.65	3.06	54.25	19.42
51.70	3.48	54.30	19.61
51.75	3.93	54.35	19.80
51.80	4.39	54.40	19.99
51.85	4.86	54.45	20.17
51.90	5.36	54.50	20.36
51.95	5.87	54.55	20.54
52.00	6.40	54.60	20.72
52.05	6.94	54.65	20.90
52.10	7.49	54.70	21.08
52.15	7.97	54.75	21.26
52.20	8.40	54.80	21.43
52.25	8.80	54.85	21.60
52.30	9.18	54.90	21.78
52.35	9.53	54.95	21.95
52.40	9.87	55.00	22.12
52.45	10.20	55.05	22.28
52.50	10.51	55.10	22.45
52.55	10.82	55.15	22.62
52.60	11.14	55.20	22.78
52.65	11.46	55.25	22.94
52.70	11.79	55.30	23.10
52.75	12.12	55.35	23.26
52.80	12.44	55.40	23.42
52.85	12.77	55.45	23.58
52.90	13.09	55.50	23.74
52.95	13.40	55.55	24.33
53.00	13.69	55.60	25.29
53.05	13.98	55.65	26.49
53.10	14.25	55.70	27.87
53.15	14.52	55.75	29.42
53.20	14.79	55.80	31.11
53.25	15.04	55.85	31.55
53.30	15.30	55.90	31.73
53.35	15.54	55.95	31.91
53.40	15.79	56.00	**32.09**
53.45	16.03		
53.50	16.26		
53.55	16.49		
53.60	16.72		
53.65	16.94		

Summary for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Inflow Area = 36.160 ac, 0.00% Impervious, Inflow Depth = 1.24" for 2yr Talbot event
Inflow = 9.27 cfs @ 12.34 hrs, Volume= 3.724 af
Outflow = 9.27 cfs @ 12.35 hrs, Volume= 3.724 af, Atten= 0%, Lag= 0.6 min
Primary = 9.27 cfs @ 12.35 hrs, Volume= 3.724 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.56' @ 12.35 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.05'	**42.0" Round Culvert** L= 214.9' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.05' / 49.85' S= 0.0009 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.10'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=9.27 cfs @ 12.35 hrs HW=51.56' TW=49.75' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 9.27 cfs @ 3.44 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 9.27 cfs of 15.62 cfs potential flow)

Stage-Discharge for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.05	0.00	52.65	26.51
50.10	0.00	52.70	27.43
50.15	0.02	52.75	28.35
50.20	0.06	52.80	29.29
50.25	0.12	52.85	30.23
50.30	0.19	52.90	31.17
50.35	0.28	52.95	32.12
50.40	0.40	53.00	33.07
50.45	0.53	53.05	34.03
50.50	0.69	53.10	34.98
50.55	0.87	53.15	35.94
50.60	1.08	53.20	36.90
50.65	1.30	53.25	37.85
50.70	1.55	53.30	38.81
50.75	1.82	53.35	39.76
50.80	2.12	53.40	40.71
50.85	2.43	53.45	41.66
50.90	2.77	53.50	42.60
50.95	3.14	53.55	43.53
51.00	3.52	53.60	44.46
51.05	3.93	53.65	45.37
51.10	4.36	53.70	46.28
51.15	4.81	53.75	47.18
51.20	5.28	53.80	48.06
51.25	5.77	53.85	48.93
51.30	6.28	53.90	49.78
51.35	6.82	53.95	50.61
51.40	7.37	54.00	51.43
51.45	7.94	54.05	52.22
51.50	8.54	54.10	52.98
51.55	9.15	54.15	53.72
51.60	9.78	54.20	54.43
51.65	10.43	54.25	55.11
51.70	11.09	54.30	55.74
51.75	11.77	54.35	56.34
51.80	12.48	54.40	56.88
51.85	13.19	54.45	57.37
51.90	13.92	54.50	**57.78**
51.95	14.67		
52.00	15.44		
52.05	16.21		
52.10	17.01		
52.15	17.81		
52.20	18.63		
52.25	19.46		
52.30	20.31		
52.35	21.16		
52.40	22.03		
52.45	22.91		
52.50	23.79		
52.55	24.69		
52.60	25.59		

Summary for Pond 3P: Pond 10A

Inflow Area = 3.046 ac, 67.46% Impervious, Inflow Depth = 2.26" for 2yr Talbot event
Inflow = 10.22 cfs @ 11.97 hrs, Volume= 0.575 af
Outflow = 4.03 cfs @ 12.14 hrs, Volume= 0.606 af, Atten= 61%, Lag= 9.9 min
Primary = 4.03 cfs @ 12.14 hrs, Volume= 0.606 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.68' @ 12.14 hrs Surf.Area= 8,374 sf Storage= 8,674 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.1 min (887.9 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	49.50'	23,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.50	6,556	0	0
50.00	7,153	3,427	3,427
51.00	8,960	8,057	11,484
52.00	14,586	11,773	23,257

Device	Routing	Invert	Outlet Devices
#1	Primary	49.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	50.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	50.75'	**120.0 deg x 60.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Primary OutFlow Max=4.02 cfs @ 12.14 hrs HW=50.68' TW=49.43' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.37 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 3.56 cfs @ 2.13 fps)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 3P: Pond 10A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.50	0.00	50.54	2.51	51.58	162.72
49.52	0.25	50.56	2.72	51.60	168.41
49.54	0.26	50.58	2.94	51.62	174.16
49.56	0.26	50.60	3.16	51.64	179.99
49.58	0.27	50.62	3.40	51.66	185.88
49.60	0.28	50.64	3.63	51.68	191.83
49.62	0.28	50.66	3.88	51.70	197.86
49.64	0.29	50.68	4.13	51.72	203.94
49.66	0.30	50.70	4.38	51.74	210.10
49.68	0.30	50.72	4.64	51.76	216.32
49.70	0.31	50.74	4.90	51.78	222.60
49.72	0.31	50.76	5.36	51.80	228.94
49.74	0.32	50.78	6.41	51.82	235.35
49.76	0.32	50.80	7.81	51.84	241.82
49.78	0.33	50.82	9.46	51.86	248.35
49.80	0.33	50.84	11.33	51.88	254.95
49.82	0.34	50.86	13.39	51.90	261.60
49.84	0.34	50.88	15.63	51.92	268.32
49.86	0.35	50.90	18.03	51.94	275.10
49.88	0.35	50.92	20.58	51.96	281.93
49.90	0.36	50.94	23.27	51.98	288.83
49.92	0.36	50.96	26.10	52.00	**295.79**
49.94	0.37	50.98	29.05		
49.96	0.37	51.00	32.13		
49.98	0.38	51.02	35.33		
50.00	0.38	51.04	38.64		
50.02	0.39	51.06	42.06		
50.04	0.39	51.08	45.59		
50.06	0.40	51.10	49.22		
50.08	0.40	51.12	52.96		
50.10	0.41	51.14	56.79		
50.12	0.41	51.16	60.72		
50.14	0.41	51.18	64.75		
50.16	0.42	51.20	68.87		
50.18	0.42	51.22	73.07		
50.20	0.43	51.24	77.37		
50.22	0.43	51.26	81.76		
50.24	0.44	51.28	86.23		
50.26	0.45	51.30	90.78		
50.28	0.51	51.32	95.42		
50.30	0.59	51.34	100.13		
50.32	0.69	51.36	104.93		
50.34	0.81	51.38	109.81		
50.36	0.93	51.40	114.77		
50.38	1.07	51.42	119.80		
50.40	1.22	51.44	124.91		
50.42	1.38	51.46	130.09		
50.44	1.55	51.48	135.35		
50.46	1.72	51.50	140.68		
50.48	1.91	51.52	146.09		
50.50	2.10	51.54	151.56		
50.52	2.30	51.56	157.11		

Summary for Pond 4 ditch: POND 4A

Inflow Area = 22.521 ac, 2.76% Impervious, Inflow Depth = 1.43" for 2yr Talbot event
Inflow = 21.15 cfs @ 12.07 hrs, Volume= 2.692 af
Outflow = 5.44 cfs @ 18.65 hrs, Volume= 2.692 af, Atten= 74%, Lag= 394.3 min
Primary = 5.44 cfs @ 18.65 hrs, Volume= 2.692 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 45.96' @ 15.64 hrs Surf.Area= 101,908 sf Storage= 86,194 cf

Plug-Flow detention time= 511.7 min calculated for 2.691 af (100% of inflow)
Center-of-Mass det. time= 511.7 min (1,381.3 - 869.6)

Volume	Invert	Avail.Storage	Storage Description
#1	44.75'	461,460 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.75	2,750	0	0
45.00	60,622	7,922	7,922
46.00	103,486	82,054	89,976
47.00	136,633	120,060	210,035
48.00	144,447	140,540	350,575
48.75	151,245	110,885	461,460

Device	Routing	Invert	Outlet Devices
#1	Primary	44.50'	**36.0" Round Culvert X 2.00** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.50' / 44.25' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	44.75'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	45.90'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	45.90'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Primary	47.90'	**200.0' 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=2.13 cfs @ 18.65 hrs HW=45.85' TW=45.77' (Dynamic Tailwater)
- **1=Culvert** (Passes 2.13 cfs of 6.80 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 2.13 cfs @ 1.36 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  - **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 4 ditch: POND 4A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
44.75	0.00	45.79	7.71	46.83	45.89	47.87	80.85
44.77	0.06	45.81	7.79	46.85	47.05	47.89	81.45
44.79	0.16	45.83	7.86	46.87	48.23	47.91	82.53
44.81	0.30	45.85	7.93	46.89	48.94	47.93	85.21
44.83	0.46	45.87	8.00	46.91	49.60	47.95	88.76
44.85	0.65	45.89	8.08	46.93	50.25	47.97	92.99
44.87	0.85	45.91	8.19	46.95	50.91	47.99	97.78
44.89	1.08	45.93	8.42	46.97	51.57	48.01	103.06
44.91	1.31	45.95	8.73	46.99	52.23	48.03	108.79
44.93	1.57	45.97	9.10	47.01	52.90	48.05	114.92
44.95	1.84	45.99	9.50	47.03	53.56	48.07	121.43
44.97	2.12	46.01	9.95	47.05	54.22	48.09	128.30
44.99	2.42	46.03	10.43	47.07	54.89	48.11	135.57
45.01	2.72	46.05	10.95	47.09	55.55	48.13	143.25
45.03	3.04	46.07	11.49	47.11	56.22	48.15	151.27
45.05	3.38	46.09	12.07	47.13	56.89	48.17	159.63
45.07	3.72	46.11	12.66	47.15	57.55	48.19	168.31
45.09	4.01	46.13	13.29	47.17	58.22	48.21	177.31
45.11	4.27	46.15	13.94	47.19	58.89	48.23	186.62
45.13	4.54	46.17	14.61	47.21	59.56	48.25	196.22
45.15	4.78	46.19	15.30	47.23	60.22	48.27	206.12
45.17	4.90	46.21	16.01	47.25	60.89	48.29	216.31
45.19	5.02	46.23	16.74	47.27	61.56	48.31	226.96
45.21	5.13	46.25	17.50	47.29	62.22	48.33	238.11
45.23	5.24	46.27	18.27	47.31	62.89	48.35	249.60
45.25	5.35	46.29	19.06	47.33	63.56	48.37	261.40
45.27	5.45	46.31	19.86	47.35	64.22	48.39	273.52
45.29	5.56	46.33	20.69	47.37	64.89	48.41	285.96
45.31	5.66	46.35	21.53	47.39	65.55	48.43	298.71
45.33	5.76	46.37	22.39	47.41	66.21	48.45	311.75
45.35	5.86	46.39	23.26	47.43	66.87	48.47	325.07
45.37	5.96	46.41	24.15	47.45	67.53	48.49	338.61
45.39	6.05	46.43	25.05	47.47	68.19	48.51	351.90
45.41	6.14	46.45	25.97	47.49	68.85	48.53	365.30
45.43	6.24	46.47	26.91	47.51	69.50	48.55	378.89
45.45	6.33	46.49	27.85	47.53	70.16	48.57	392.67
45.47	6.42	46.51	28.82	47.55	70.81	48.59	406.62
45.49	6.51	46.53	29.79	47.57	71.46	48.61	420.76
45.51	6.59	46.55	30.78	47.59	72.11	48.63	435.08
45.53	6.68	46.57	31.78	47.61	72.75	48.65	449.56
45.55	6.76	46.59	32.80	47.63	73.40	48.67	464.22
45.57	6.85	46.61	33.82	47.65	74.04	48.69	479.05
45.59	6.93	46.63	34.86	47.67	74.67	48.71	494.04
45.61	7.01	46.65	35.91	47.69	75.31	48.73	509.20
45.63	7.10	46.67	36.98	47.71	75.94	48.75	**524.52**
45.65	7.18	46.69	38.05	47.73	76.57		
45.67	7.25	46.71	39.14	47.75	77.19		
45.69	7.33	46.73	40.24	47.77	77.81		
45.71	7.41	46.75	41.34	47.79	78.43		
45.73	7.49	46.77	42.46	47.81	79.04		
45.75	7.56	46.79	43.60	47.83	79.65		
45.77	7.64	46.81	44.74	47.85	80.25		

Summary for Pond 4P pr: EX 24 CMP sp4

Inflow Area = 82.285 ac, 7.77% Impervious, Inflow Depth > 1.54" for 2yr Talbot event
Inflow = 17.31 cfs @ 12.36 hrs, Volume= 10.541 af
Outflow = 17.31 cfs @ 12.37 hrs, Volume= 10.541 af, Atten= 0%, Lag= 0.6 min
Primary = 17.31 cfs @ 12.37 hrs, Volume= 10.541 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 47.70' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Hiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=17.31 cfs @ 12.37 hrs HW=47.70' TW=45.82' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 17.31 cfs @ 5.51 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=44.45' TW=44.00' (Dynamic Tailwater)
└**2=CL Hiners Lane as Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 4P pr: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Pond 6P: Connection of 6B and 6C

Inflow Area = 33.300 ac, 0.00% Impervious, Inflow Depth = 1.21" for 2yr Talbot event
Inflow = 8.39 cfs @ 12.55 hrs, Volume= 3.369 af
Outflow = 8.39 cfs @ 12.56 hrs, Volume= 3.369 af, Atten= 0%, Lag= 0.6 min
Primary = 8.39 cfs @ 12.56 hrs, Volume= 3.369 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.88' @ 12.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.25'	**42.0" Round Culvert** L= 182.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.25' / 50.10' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.25'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=8.40 cfs @ 12.56 hrs HW=51.88' TW=51.55' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 8.40 cfs @ 2.81 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 8.40 cfs of 12.19 cfs potential flow)

Stage-Discharge for Pond 6P: Connection of 6B and 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.25	0.00	52.85	26.74
50.30	0.01	52.90	27.68
50.35	0.02	52.95	28.62
50.40	0.06	53.00	29.56
50.45	0.11	53.05	30.52
50.50	0.18	53.10	31.47
50.55	0.28	53.15	32.44
50.60	0.39	53.20	33.40
50.65	0.52	53.25	34.37
50.70	0.68	53.30	35.35
50.75	0.86	53.35	36.32
50.80	1.06	53.40	37.29
50.85	1.29	53.45	38.27
50.90	1.54	53.50	39.24
50.95	1.81	53.55	40.21
51.00	2.11	53.60	41.18
51.05	2.42	53.65	42.14
51.10	2.77	53.70	43.10
51.15	3.13	53.75	44.06
51.20	3.52	53.80	45.00
51.25	3.93	53.85	45.94
51.30	4.36	53.90	46.87
51.35	4.81	53.95	47.79
51.40	5.28	54.00	48.69
51.45	5.78	54.05	49.59
51.50	6.30	54.10	50.46
51.55	6.84	54.15	51.32
51.60	7.39	54.20	52.16
51.65	7.97	54.25	52.98
51.70	8.57	54.30	53.77
51.75	9.19	54.35	54.54
51.80	9.82	54.40	55.28
51.85	10.48	54.45	55.98
51.90	11.15	54.50	**56.65**
51.95	11.84		
52.00	12.55		
52.05	13.27		
52.10	14.01		
52.15	14.77		
52.20	15.54		
52.25	16.33		
52.30	17.13		
52.35	17.94		
52.40	18.77		
52.45	19.61		
52.50	20.47		
52.55	21.33		
52.60	22.21		
52.65	23.10		
52.70	23.99		
52.75	24.90		
52.80	25.82		

Summary for Pond 8P: POND 6B

Inflow Area = 21.410 ac, 0.00% Impervious, Inflow Depth = 0.96" for 2yr Talbot event
Inflow = 4.40 cfs @ 12.01 hrs, Volume= 1.704 af
Outflow = 2.83 cfs @ 13.38 hrs, Volume= 1.756 af, Atten= 36%, Lag= 82.2 min
Primary = 2.83 cfs @ 13.38 hrs, Volume= 1.756 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 54.32' @ 13.38 hrs Surf.Area= 14,286 sf Storage= 9,472 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 64.4 min (1,124.4 - 1,060.1)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	61,963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	38	0	0
53.30	1,415	218	218
53.50	4,629	604	822
53.80	8,567	1,979	2,802
54.00	13,635	2,220	5,022
55.00	15,678	14,657	19,678
56.00	17,821	16,750	36,428
57.00	33,250	25,536	61,963

Device	Routing	Invert	Outlet Devices
#1	Primary	50.75'	**30.0" Round Culvert** L= 336.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.75' / 50.35' S= 0.0012 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	52.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	54.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.83 cfs @ 13.38 hrs HW=54.32' TW=51.74' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.83 cfs of 24.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.18 cfs @ 6.03 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.64 cfs @ 1.13 fps)

Stage-Discharge for Pond 8P: POND 6B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	54.04	1.07	55.08	29.98	56.12	36.30
53.02	0.49	54.06	1.08	55.10	30.11	56.14	36.41
53.04	0.51	54.08	1.09	55.12	30.25	56.16	36.53
53.06	0.53	54.10	1.10	55.14	30.38	56.18	36.64
53.08	0.54	54.12	1.11	55.16	30.51	56.20	36.75
53.10	0.56	54.14	1.11	55.18	30.64	56.22	36.85
53.12	0.58	54.16	1.12	55.20	30.78	56.24	36.96
53.14	0.59	54.18	1.13	55.22	30.91	56.26	37.07
53.16	0.61	54.20	1.14	55.24	31.04	56.28	37.18
53.18	0.62	54.22	1.26	55.26	31.17	56.30	37.29
53.20	0.63	54.24	1.48	55.28	31.30	56.32	37.40
53.22	0.65	54.26	1.75	55.30	31.42	56.34	37.51
53.24	0.66	54.28	2.08	55.32	31.55	56.36	37.61
53.26	0.68	54.30	2.45	55.34	31.68	56.38	37.72
53.28	0.69	54.32	2.85	55.36	31.81	56.40	37.83
53.30	0.70	54.34	3.29	55.38	31.93	56.42	37.93
53.32	0.71	54.36	3.77	55.40	32.06	56.44	38.04
53.34	0.73	54.38	4.27	55.42	32.18	56.46	38.14
53.36	0.74	54.40	4.80	55.44	32.31	56.48	38.25
53.38	0.75	54.42	5.36	55.46	32.43	56.50	38.36
53.40	0.76	54.44	5.94	55.48	32.56	56.52	38.46
53.42	0.77	54.46	6.55	55.50	32.68	56.54	38.56
53.44	0.79	54.48	7.18	55.52	32.80	56.56	38.67
53.46	0.80	54.50	7.83	55.54	32.93	56.58	38.77
53.48	0.81	54.52	8.50	55.56	33.05	56.60	38.88
53.50	0.82	54.54	9.19	55.58	33.17	56.62	38.98
53.52	0.83	54.56	9.91	55.60	33.29	56.64	39.08
53.54	0.84	54.58	10.64	55.62	33.41	56.66	39.19
53.56	0.85	54.60	11.39	55.64	33.53	56.68	39.29
53.58	0.86	54.62	12.17	55.66	33.65	56.70	39.39
53.60	0.87	54.64	12.95	55.68	33.77	56.72	39.49
53.62	0.88	54.66	13.76	55.70	33.89	56.74	39.60
53.64	0.89	54.68	14.58	55.72	34.01	56.76	39.70
53.66	0.90	54.70	15.42	55.74	34.13	56.78	39.80
53.68	0.91	54.72	16.28	55.76	34.25	56.80	39.90
53.70	0.92	54.74	17.15	55.78	34.36	56.82	40.00
53.72	0.93	54.76	18.04	55.80	34.48	56.84	40.10
53.74	0.94	54.78	18.95	55.82	34.60	56.86	40.20
53.76	0.95	54.80	19.86	55.84	34.71	56.88	40.30
53.78	0.96	54.82	20.80	55.86	34.83	56.90	40.40
53.80	0.97	54.84	21.75	55.88	34.95	56.92	40.50
53.82	0.98	54.86	22.71	55.90	35.06	56.94	40.60
53.84	0.99	54.88	23.68	55.92	35.18	56.96	40.70
53.86	1.00	54.90	24.67	55.94	35.29	56.98	40.80
53.88	1.00	54.92	25.68	55.96	35.40	57.00	**40.90**
53.90	1.01	54.94	26.69	55.98	35.52		
53.92	1.02	54.96	27.72	56.00	35.63		
53.94	1.03	54.98	28.77	56.02	35.74		
53.96	1.04	55.00	29.44	56.04	35.86		
53.98	1.05	55.02	29.57	56.06	35.97		
54.00	1.06	55.04	29.71	56.08	36.08		
54.02	1.07	55.06	29.85	56.10	36.19		

Summary for Pond 9P: POND 6A

Inflow Area = 19.820 ac, 0.00% Impervious, Inflow Depth = 0.89" for 2yr Talbot event
Inflow = 15.68 cfs @ 12.07 hrs, Volume= 1.478 af
Outflow = 3.19 cfs @ 12.84 hrs, Volume= 1.479 af, Atten= 80%, Lag= 46.3 min
Primary = 3.19 cfs @ 12.84 hrs, Volume= 1.479 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 55.34' @ 12.87 hrs Surf.Area= 35,883 sf Storage= 23,920 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 209.8 min (1,094.3 - 884.5)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	142,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	0	0	0
54.25	5,534	692	692
54.50	11,263	2,100	2,791
54.75	19,530	3,849	6,641
55.00	29,317	6,106	12,746
56.00	48,475	38,896	51,642
57.00	52,149	50,312	101,954
57.75	54,976	40,172	142,126

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	**36.0" Round Culvert** L= 185.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.75' / 53.65' S= 0.0005 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	53.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	55.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.18 cfs @ 12.84 hrs HW=55.34' TW=54.17' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.18 cfs of 8.36 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.02 cfs @ 5.21 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.16 cfs @ 1.23 fps)

Stage-Discharge for Pond 9P: POND 6A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
54.00	0.00	55.04	1.07	56.08	17.27	57.12	31.09
54.02	0.17	55.06	1.08	56.10	17.53	57.14	31.32
54.04	0.20	55.08	1.09	56.12	17.80	57.16	31.56
54.06	0.24	55.10	1.10	56.14	18.07	57.18	31.79
54.08	0.27	55.12	1.11	56.16	18.34	57.20	32.01
54.10	0.31	55.14	1.11	56.18	18.61	57.22	32.23
54.12	0.35	55.16	1.12	56.20	18.88	57.24	32.45
54.14	0.40	55.18	1.13	56.22	19.15	57.26	32.67
54.16	0.44	55.20	1.14	56.24	19.42	57.28	32.88
54.18	0.50	55.22	1.26	56.26	19.69	57.30	33.09
54.20	0.55	55.24	1.48	56.28	19.96	57.32	33.29
54.22	0.60	55.26	1.75	56.30	20.23	57.34	33.49
54.24	0.66	55.28	2.08	56.32	20.51	57.36	33.69
54.26	0.68	55.30	2.45	56.34	20.78	57.38	33.88
54.28	0.69	55.32	2.85	56.36	21.05	57.40	34.06
54.30	0.70	55.34	3.29	56.38	21.33	57.42	34.24
54.32	0.71	55.36	3.77	56.40	21.60	57.44	34.41
54.34	0.73	55.38	4.27	56.42	21.88	57.46	34.58
54.36	0.74	55.40	4.80	56.44	22.15	57.48	34.74
54.38	0.75	55.42	5.36	56.46	22.42	57.50	34.89
54.40	0.76	55.44	5.94	56.48	22.70	57.52	35.04
54.42	0.77	55.46	6.55	56.50	22.97	57.54	35.17
54.44	0.79	55.48	7.18	56.52	23.25	57.56	35.30
54.46	0.80	55.50	7.83	56.54	23.52	57.58	35.42
54.48	0.81	55.52	8.50	56.56	23.79	57.60	35.52
54.50	0.82	55.54	9.19	56.58	24.07	57.62	35.61
54.52	0.83	55.56	9.91	56.60	24.34	57.64	35.69
54.54	0.84	55.58	10.64	56.62	24.61	57.66	35.74
54.56	0.85	55.60	11.23	56.64	24.89	57.68	**35.78**
54.58	0.86	55.62	11.46	56.66	25.16	57.70	**35.78**
54.60	0.87	55.64	11.70	56.68	25.43	57.72	35.73
54.62	0.88	55.66	11.94	56.70	25.70	57.74	35.59
54.64	0.89	55.68	12.18	56.72	25.97		
54.66	0.90	55.70	12.42	56.74	26.24		
54.68	0.91	55.72	12.66	56.76	26.51		
54.70	0.92	55.74	12.91	56.78	26.77		
54.72	0.93	55.76	13.15	56.80	27.04		
54.74	0.94	55.78	13.40	56.82	27.30		
54.76	0.95	55.80	13.65	56.84	27.57		
54.78	0.96	55.82	13.90	56.86	27.83		
54.80	0.97	55.84	14.15	56.88	28.09		
54.82	0.98	55.86	14.41	56.90	28.35		
54.84	0.99	55.88	14.66	56.92	28.61		
54.86	1.00	55.90	14.92	56.94	28.87		
54.88	1.00	55.92	15.17	56.96	29.12		
54.90	1.01	55.94	15.43	56.98	29.37		
54.92	1.02	55.96	15.69	57.00	29.63		
54.94	1.03	55.98	15.95	57.02	29.87		
54.96	1.04	56.00	16.21	57.04	30.12		
54.98	1.05	56.02	16.47	57.06	30.37		
55.00	1.06	56.04	16.74	57.08	30.61		
55.02	1.07	56.06	17.00	57.10	30.85		

Summary for Pond 11P: TCCC main entrance culvert

Inflow Area = 4.294 ac, 53.80% Impervious, Inflow Depth = 2.19" for 2yr Talbot event
Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.783 af
Outflow = 5.34 cfs @ 12.16 hrs, Volume= 0.781 af, Atten= 5%, Lag= 1.3 min
Primary = 5.34 cfs @ 12.16 hrs, Volume= 0.781 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.54' @ 12.86 hrs Surf.Area= 1,088 sf Storage= 768 cf

Plug-Flow detention time= 11.3 min calculated for 0.781 af (100% of inflow)
Center-of-Mass det. time= 9.9 min (889.8 - 879.9)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	7,360 cf	**4.00'W x 100.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	48.47'	**36.0" Round Culvert w/ 12.0" inside fill** L= 49.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.47' / 47.25' S= 0.0045 '/' Cc= 0.900 n= 0.013, Flow Area= 5.01 sf
#2	Primary	52.11'	**TCCC entrance road crown, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.90 1.50 Width (feet) 0.00 50.00 160.00 275.00

Primary OutFlow Max=5.14 cfs @ 12.16 hrs HW=49.45' TW=49.27' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 5.14 cfs @ 2.36 fps)
└─**2=TCCC entrance road crown** (Controls 0.00 cfs)

Stage-Discharge for Pond 11P: TCCC main entrance culvert

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.50	0.00	50.58	22.27	52.66	126.14
48.54	0.00	50.62	22.73	52.70	139.29
48.58	0.00	50.66	23.18	52.74	153.47
48.62	0.14	50.70	23.62	52.78	168.69
48.66	0.35	50.74	24.05	52.82	184.97
48.70	0.60	50.78	24.46	52.86	202.34
48.74	0.89	50.82	24.86	52.90	220.81
48.78	1.22	50.86	25.23	52.94	240.41
48.82	1.59	50.90	25.59	52.98	261.15
48.86	1.99	50.94	25.92	53.02	283.06
48.90	2.43	50.98	26.23	53.06	306.19
48.94	2.89	51.02	26.50	53.10	330.61
48.98	3.25	51.06	26.72	53.14	356.39
49.02	3.62	51.10	26.87	53.18	383.55
49.06	4.01	51.14	26.83	53.22	412.15
49.10	4.40	51.18	27.42	53.26	442.22
49.14	4.80	51.22	28.01	53.30	473.79
49.18	5.21	51.26	28.58	53.34	506.91
49.22	5.63	51.30	29.14	53.38	541.60
49.26	6.06	51.34	29.69	53.42	577.89
49.30	6.50	51.38	30.23	53.46	615.82
49.34	6.94	51.42	30.76	53.50	655.41
49.38	7.39	51.46	31.28	53.54	696.70
49.42	7.85	51.50	31.79	53.58	**739.71**
49.46	8.31	51.54	32.30		
49.50	8.78	51.58	32.80		
49.54	9.26	51.62	33.29		
49.58	9.74	51.66	33.77		
49.62	10.23	51.70	34.24		
49.66	10.72	51.74	34.71		
49.70	11.21	51.78	35.18		
49.74	11.71	51.82	35.63		
49.78	12.21	51.86	36.08		
49.82	12.72	51.90	36.53		
49.86	13.22	51.94	36.97		
49.90	13.73	51.98	37.40		
49.94	14.25	52.02	37.83		
49.98	14.76	52.06	38.26		
50.02	15.27	52.10	38.68		
50.06	15.79	52.14	39.20		
50.10	16.30	52.18	40.36		
50.14	16.81	52.22	42.54		
50.18	17.33	52.26	45.76		
50.22	17.84	52.30	49.87		
50.26	18.35	52.34	54.84		
50.30	18.85	52.38	60.66		
50.34	19.36	52.42	67.34		
50.38	19.86	52.46	74.91		
50.42	20.35	52.50	83.33		
50.46	20.84	52.54	92.60		
50.50	21.33	52.58	102.81		
50.54	21.80	52.62	113.99		

Summary for Pond pnd 10B1: pnd 10B Cell 1

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 1.29" for 2yr Talbot event
Inflow = 3.30 cfs @ 12.12 hrs, Volume= 0.666 af
Outflow = 1.83 cfs @ 12.76 hrs, Volume= 1.224 af, Atten= 45%, Lag= 38.3 min
Primary = 1.83 cfs @ 12.76 hrs, Volume= 1.224 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.46' @ 12.83 hrs Surf.Area= 2,749 sf Storage= 2,764 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,295.9 min (2,194.1 - 898.2)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	7,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	1,181	0	0
50.00	2,121	1,651	1,651
51.00	3,494	2,808	4,459
51.75	4,950	3,167	7,625

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0012 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.50'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.83 cfs @ 12.76 hrs HW=50.45' TW=49.52' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.83 cfs of 8.43 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.83 cfs @ 4.65 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond pnd 10B1: pnd 10B Cell 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	2.15	51.08	13.45
49.02	0.21	50.06	2.16	51.10	13.59
49.04	0.25	50.08	2.18	51.12	13.73
49.06	0.29	50.10	2.20	51.14	13.86
49.08	0.33	50.12	2.21	51.16	13.99
49.10	0.37	50.14	2.23	51.18	14.12
49.12	0.42	50.16	2.25	51.20	14.24
49.14	0.47	50.18	2.26	51.22	14.36
49.16	0.52	50.20	2.28	51.24	14.47
49.18	0.58	50.22	2.29	51.26	14.58
49.20	0.63	50.24	2.31	51.28	14.68
49.22	0.69	50.26	2.32	51.30	14.77
49.24	0.76	50.28	2.34	51.32	14.86
49.26	0.82	50.30	2.35	51.34	14.94
49.28	0.89	50.32	2.37	51.36	15.00
49.30	0.96	50.34	2.38	51.38	15.05
49.32	1.04	50.36	2.40	51.40	15.08
49.34	1.12	50.38	2.41	51.42	15.04
49.36	1.19	50.40	2.43	51.44	15.25
49.38	1.28	50.42	2.44	51.46	15.45
49.40	1.36	50.44	2.46	51.48	15.65
49.42	1.45	50.46	2.47	51.50	15.85
49.44	1.54	50.48	2.49	51.52	16.05
49.46	1.59	50.50	2.50	51.54	16.24
49.48	1.62	50.52	2.63	51.56	16.44
49.50	1.64	50.54	2.85	51.58	16.63
49.52	1.66	50.56	3.13	51.60	16.81
49.54	1.68	50.58	3.47	51.62	17.00
49.56	1.70	50.60	3.84	51.64	17.18
49.58	1.72	50.62	4.25	51.66	17.37
49.60	1.74	50.64	4.70	51.68	17.55
49.62	1.76	50.66	5.18	51.70	17.72
49.64	1.78	50.68	5.69	51.72	17.90
49.66	1.80	50.70	6.23	51.74	**18.07**
49.68	1.82	50.72	6.79		
49.70	1.84	50.74	7.38		
49.72	1.86	50.76	7.99		
49.74	1.88	50.78	8.63		
49.76	1.90	50.80	9.28		
49.78	1.92	50.82	9.96		
49.80	1.94	50.84	10.66		
49.82	1.96	50.86	11.38		
49.84	1.97	50.88	11.94		
49.86	1.99	50.90	12.10		
49.88	2.01	50.92	12.26		
49.90	2.03	50.94	12.42		
49.92	2.05	50.96	12.57		
49.94	2.06	50.98	12.72		
49.96	2.08	51.00	12.87		
49.98	2.10	51.02	13.02		
50.00	2.11	51.04	13.17		
50.02	2.13	51.06	13.31		

Summary for Pond pnd 10B2: Pond 10B Cell 2

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 1.29" for 2yr Talbot event
Inflow = 6.67 cfs @ 12.10 hrs, Volume= 0.666 af
Outflow = 3.30 cfs @ 12.12 hrs, Volume= 0.666 af, Atten= 51%, Lag= 1.6 min
Primary = 3.30 cfs @ 12.12 hrs, Volume= 0.666 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.48' @ 12.82 hrs Surf.Area= 7,541 sf Storage= 6,155 cf

Plug-Flow detention time= 31.8 min calculated for 0.666 af (100% of inflow)
Center-of-Mass det. time= 31.8 min (898.2 - 866.4)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	31,513 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	793	0	0
50.00	5,314	3,054	3,054
51.00	9,929	7,622	10,675
52.00	15,165	12,547	23,222
52.50	18,000	8,291	31,513

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 78.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0006 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	49.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.75'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	49.00'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.02 cfs @ 12.12 hrs HW=49.95' TW=49.76' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.02 cfs @ 2.20 fps)
  ├─**2=Orifice/Grate** (Passes < 0.83 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 12.42 cfs potential flow)

Stage-Discharge for Pond pnd 10B2: Pond 10B Cell 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	4.66	51.08	12.37	52.12	19.11
49.02	0.07	50.06	4.80	51.10	12.49	52.14	19.24
49.04	0.11	50.08	4.94	51.12	12.61	52.16	19.37
49.06	0.16	50.10	5.08	51.14	12.73	52.18	19.51
49.08	0.20	50.12	5.22	51.16	12.85	52.20	19.64
49.10	0.26	50.14	5.36	51.18	12.96	52.22	19.77
49.12	0.31	50.16	5.51	51.20	13.07	52.24	19.90
49.14	0.37	50.18	5.65	51.22	13.17	52.26	20.03
49.16	0.43	50.20	5.80	51.24	13.26	52.28	20.16
49.18	0.48	50.22	5.94	51.26	13.36	52.30	20.28
49.20	0.53	50.24	6.09	51.28	13.44	52.32	20.41
49.22	0.58	50.26	6.24	51.30	13.52	52.34	20.53
49.24	0.63	50.28	6.39	51.32	13.58	52.36	20.66
49.26	0.69	50.30	6.54	51.34	13.64	52.38	20.78
49.28	0.75	50.32	6.69	51.36	13.69	52.40	20.91
49.30	0.81	50.34	6.84	51.38	13.71	52.42	21.03
49.32	0.88	50.36	6.99	51.40	13.70	52.44	21.15
49.34	0.95	50.38	7.15	51.42	13.61	52.46	21.27
49.36	1.02	50.40	7.30	51.44	13.79	52.48	21.39
49.38	1.09	50.42	7.45	51.46	13.98	52.50	**21.51**
49.40	1.17	50.44	7.61	51.48	14.16		
49.42	1.24	50.46	7.76	51.50	14.34		
49.44	1.32	50.48	7.92	51.52	14.52		
49.46	1.40	50.50	8.07	51.54	14.70		
49.48	1.49	50.52	8.23	51.56	14.87		
49.50	1.58	50.54	8.39	51.58	15.04		
49.52	1.66	50.56	8.54	51.60	15.21		
49.54	1.76	50.58	8.70	51.62	15.38		
49.56	1.85	50.60	8.85	51.64	15.55		
49.58	1.94	50.62	9.01	51.66	15.71		
49.60	2.04	50.64	9.16	51.68	15.87		
49.62	2.14	50.66	9.32	51.70	16.03		
49.64	2.24	50.68	9.47	51.72	16.19		
49.66	2.35	50.70	9.63	51.74	16.35		
49.68	2.45	50.72	9.78	51.76	16.51		
49.70	2.56	50.74	9.94	51.78	16.66		
49.72	2.67	50.76	10.09	51.80	16.82		
49.74	2.78	50.78	10.24	51.82	16.97		
49.76	2.90	50.80	10.39	51.84	17.12		
49.78	3.01	50.82	10.54	51.86	17.27		
49.80	3.13	50.84	10.69	51.88	17.42		
49.82	3.25	50.86	10.84	51.90	17.57		
49.84	3.37	50.88	10.99	51.92	17.71		
49.86	3.49	50.90	11.13	51.94	17.86		
49.88	3.62	50.92	11.28	51.96	18.00		
49.90	3.74	50.94	11.42	51.98	18.14		
49.92	3.87	50.96	11.56	52.00	18.28		
49.94	4.00	50.98	11.70	52.02	18.42		
49.96	4.13	51.00	11.84	52.04	18.56		
49.98	4.26	51.02	11.98	52.06	18.70		
50.00	4.39	51.04	12.11	52.08	18.84		
50.02	4.53	51.06	12.24	52.10	18.97		

Summary for Pond POND 4B: POND 4B

Inflow Area = 39.678 ac, 3.29% Impervious, Inflow Depth = 1.30" for 2yr Talbot event
Inflow = 14.14 cfs @ 12.17 hrs, Volume= 4.313 af
Outflow = 9.47 cfs @ 13.14 hrs, Volume= 4.765 af, Atten= 33%, Lag= 58.0 min
Primary = 9.47 cfs @ 13.14 hrs, Volume= 4.765 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.96' @ 13.11 hrs Surf.Area= 36,654 sf Storage= 28,429 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 332.4 min (1,312.0 - 979.6)

Volume	Invert	Avail.Storage	Storage Description
#1	48.90'	106,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.90	2,378	0	0
49.00	12,688	753	753
49.25	24,390	4,635	5,388
49.50	32,399	7,099	12,487
49.75	34,894	8,412	20,898
50.00	36,984	8,985	29,883
51.00	40,925	38,955	68,838
51.75	58,241	37,187	106,025

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**30.0" Round Culvert X 2.00** L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0016 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	48.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	49.40'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	50.60'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Primary	50.60'	**160.0 deg x 30.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)

Primary OutFlow Max=9.48 cfs @ 13.14 hrs HW=49.96' TW=49.52' (Dynamic Tailwater)
- **1=Culvert** (Passes 9.48 cfs of 11.30 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.62 cfs @ 3.18 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.11 cfs @ 3.18 fps)
  - **4=Sharp-Crested Rectangular Weir** (Weir Controls 7.74 cfs @ 2.35 fps)
  - **5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **6=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond POND 4B: POND 4B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.90	0.00	49.94	10.51	50.98	56.37
48.92	0.20	49.96	10.96	51.00	58.77
48.94	0.26	49.98	11.41	51.02	61.21
48.96	0.32	50.00	11.87	51.04	63.72
48.98	0.39	50.02	12.34	51.06	66.28
49.00	0.46	50.04	12.74	51.08	68.90
49.02	0.55	50.06	13.11	51.10	71.57
49.04	0.64	50.08	13.48	51.12	74.30
49.06	0.73	50.10	13.86	51.14	77.07
49.08	0.84	50.12	14.24	51.16	79.91
49.10	0.95	50.14	14.63	51.18	82.79
49.12	1.06	50.16	15.02	51.20	85.73
49.14	1.19	50.18	15.41	51.22	88.72
49.16	1.32	50.20	15.81	51.24	91.75
49.18	1.45	50.22	16.21	51.26	94.84
49.20	1.60	50.24	16.61	51.28	97.98
49.22	1.75	50.26	17.02	51.30	101.17
49.24	1.84	50.28	17.43	51.32	104.41
49.26	1.88	50.30	17.85	51.34	107.70
49.28	1.91	50.32	18.26	51.36	111.03
49.30	1.95	50.34	18.69	51.38	114.42
49.32	1.98	50.36	19.11	51.40	117.85
49.34	2.02	50.38	19.54	51.42	121.33
49.36	2.05	50.40	19.97	51.44	124.86
49.38	2.08	50.42	20.40	51.46	128.43
49.40	2.12	50.44	20.84	51.48	132.05
49.42	2.21	50.46	21.28	51.50	135.72
49.44	2.34	50.48	21.72	51.52	139.43
49.46	2.50	50.50	22.16	51.54	143.19
49.48	2.69	50.52	22.61	51.56	146.99
49.50	2.89	50.54	23.06	51.58	150.84
49.52	3.12	50.56	23.51	51.60	154.74
49.54	3.36	50.58	23.97	51.62	158.68
49.56	3.61	50.60	24.42	51.64	162.66
49.58	3.88	50.62	25.14	51.66	166.69
49.60	4.16	50.64	26.09	51.68	170.75
49.62	4.46	50.66	27.18	51.70	174.87
49.64	4.77	50.68	28.39	51.72	179.02
49.66	5.08	50.70	29.71	51.74	**183.22**
49.68	5.41	50.72	31.13		
49.70	5.75	50.74	32.63		
49.72	6.10	50.76	34.22		
49.74	6.46	50.78	35.89		
49.76	6.83	50.80	37.64		
49.78	7.20	50.82	39.45		
49.80	7.59	50.84	41.34		
49.82	7.98	50.86	43.30		
49.84	8.38	50.88	45.32		
49.86	8.79	50.90	47.41		
49.88	9.21	50.92	49.56		
49.90	9.64	50.94	51.77		
49.92	10.07	50.96	54.04		

Summary for Link sp4 PR: Prop Design Point 4

Inflow Area = 82.285 ac, 7.77% Impervious, Inflow Depth > 1.54" for 2yr Talbot event
Inflow = 17.31 cfs @ 12.37 hrs, Volume= 10.541 af
Primary = 17.31 cfs @ 12.38 hrs, Volume= 10.541 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: AREA 4B.1 Runoff Area=11.890 ac 0.00% Impervious Runoff Depth=3.25"
Tc=14.4 min CN=81 Runoff=34.75 cfs 3.222 af

Subcatchment 3S: AREA 4B.2 Runoff Area=2.860 ac 0.00% Impervious Runoff Depth=3.06"
Tc=6.0 min CN=79 Runoff=12.32 cfs 0.730 af

Subcatchment 4S: offsite 4.3 Runoff Area=418,500 sf 12.64% Impervious Runoff Depth=2.88"
Flow Length=1,238' Tc=19.5 min CN=77 Runoff=20.38 cfs 2.302 af

Subcatchment 7S: AREA 6A Runoff Area=19.820 ac 0.00% Impervious Runoff Depth=2.18"
Tc=12.0 min CN=69 Runoff=42.34 cfs 3.598 af

Subcatchment 8S: AREA 6B Runoff Area=1.590 ac 0.00% Impervious Runoff Depth=3.35"
Tc=7.2 min CN=82 Runoff=6.92 cfs 0.444 af

Subcatchment 9S: AREA 4A- Ph1 Runoff Area=695,700 sf 3.90% Impervious Runoff Depth=2.88"
Flow Length=900' Tc=27.1 min CN=77 Runoff=26.94 cfs 3.828 af

Subcatchment 11S: AREA 4.A1 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=3.16"
Tc=6.0 min CN=80 Runoff=20.21 cfs 1.199 af

Subcatchment 12S: AREA 4B Runoff Area=153,250 sf 37.10% Impervious Runoff Depth=3.75"
Flow Length=900' Tc=19.9 min CN=86 Runoff=9.56 cfs 1.099 af

Subcatchment 27S: AREA 4.A2 Runoff Area=1.990 ac 0.00% Impervious Runoff Depth=3.45"
Tc=6.0 min CN=83 Runoff=9.56 cfs 0.572 af

Subcatchment DA p10a: DA pond 10A Runoff Area=132,672 sf 67.46% Impervious Runoff Depth>4.06"
Flow Length=380' Tc=5.0 min CN=89 Runoff=17.79 cfs 1.029 af

Subcatchment DA p10b: DA Pond 10B Runoff Area=269,381 sf 15.20% Impervious Runoff Depth=2.78"
Flow Length=515' Tc=15.1 min CN=76 Runoff=15.00 cfs 1.435 af

Subcatchment um DA p10a: unmanaged Runoff Area=54,385 sf 20.47% Impervious Runoff Depth=3.35"
Flow Length=240' Tc=18.3 min CN=82 Runoff=3.24 cfs 0.348 af

Reach 1R: Reach 4.2 Avg. Flow Depth=1.52' Max Vel=3.09 fps Inflow=35.69 cfs 12.969 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=35.49 cfs 12.963 af

Reach 3R: (new Reach) Avg. Flow Depth=1.33' Max Vel=3.51 fps Inflow=29.77 cfs 1.771 af
n=0.030 L=700.0' S=0.0071 '/' Capacity=378.49 cfs Outflow=28.04 cfs 1.771 af

Pond 1P: Pond 6C Peak Elev=53.53' Storage=52,702 cf Inflow=34.75 cfs 3.222 af
Outflow=9.13 cfs 3.222 af

Pond 2P: CB at Longw0od Rd NO SURFACE VOL Peak Elev=52.58' Inflow=25.16 cfs 8.062 af
Outflow=25.16 cfs 8.062 af

Pond 3P: Pond 10A Peak Elev=50.90' Storage=10,555 cf Inflow=17.79 cfs 1.029 af
Outflow=17.26 cfs 1.041 af

Pond 4 ditch: POND 4A Peak Elev=46.84' Storage=189,230 cf Inflow=44.99 cfs 5.599 af
Outflow=29.51 cfs 5.599 af

Pond 4P pr: EX 24 CMP sp4 Peak Elev=48.86' Inflow=43.66 cfs 20.864 af
Primary=22.60 cfs 17.719 af Secondary=21.06 cfs 3.145 af Outflow=43.66 cfs 20.864 af

Pond 6P: Connection of 6B and 6C Peak Elev=53.08' Inflow=23.97 cfs 7.332 af
Outflow=23.97 cfs 7.332 af

Pond 8P: POND 6B Peak Elev=54.72' Storage=15,335 cf Inflow=16.47 cfs 4.043 af
Outflow=16.07 cfs 4.110 af

Pond 9P: POND 6A Peak Elev=55.93' Storage=48,093 cf Inflow=42.34 cfs 3.598 af
Outflow=15.25 cfs 3.600 af

Pond 11P: TCCC main entrance culvert Peak Elev=50.33' Storage=1,853 cf Inflow=19.62 cfs 1.389 af
Outflow=18.03 cfs 1.387 af

Pond pnd 10B1: pnd 10B Cell 1 Peak Elev=50.80' Storage=3,797 cf Inflow=8.41 cfs 1.435 af
Outflow=8.38 cfs 1.989 af

Pond pnd 10B2: Pond 10B Cell 2 Peak Elev=51.11' Storage=11,810 cf Inflow=15.00 cfs 1.435 af
Outflow=8.41 cfs 1.435 af

Pond POND 4B: POND 4B Peak Elev=50.69' Storage=56,283 cf Inflow=30.80 cfs 9.160 af
Outflow=27.38 cfs 9.593 af

Link sp4 PR: Prop Design Point 4 Inflow=43.66 cfs 20.864 af
Primary=43.66 cfs 20.864 af

Total Runoff Area = 82.285 ac Runoff Volume = 19.806 af Average Runoff Depth = 2.89"
92.23% Pervious = 75.893 ac 7.77% Impervious = 6.392 ac

Summary for Subcatchment 2S: AREA 4B.1

Runoff = 34.75 cfs @ 12.07 hrs, Volume= 3.222 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	11.890	81	From TR-55
	11.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, From TR-55**

Summary for Subcatchment 3S: AREA 4B.2

Runoff = 12.32 cfs @ 11.99 hrs, Volume= 0.730 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	2.860	79	
	2.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4S: offsite 4.3

Runoff = 20.38 cfs @ 12.14 hrs, Volume= 2.302 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

Area (sf)	CN	Description
81,840	61	>75% Grass cover, Good, HSG B
139,500	74	>75% Grass cover, Good, HSG C
52,900	98	Paved parking, HSG D
144,260	80	>75% Grass cover, Good, HSG D
418,500	77	Weighted Average
365,600		87.36% Pervious Area
52,900		12.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0350	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
6.5	594	0.0089	1.52		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	544	0.0050	4.87	175.23	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 3.0 '/' Top.W=21.00' n= 0.030
19.5	1,238	Total			

Summary for Subcatchment 7S: AREA 6A

Runoff = 42.34 cfs @ 12.06 hrs, Volume= 3.598 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	19.820	69	
	19.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, From TR-55**

Summary for Subcatchment 8S: AREA 6B

Runoff = 6.92 cfs @ 12.00 hrs, Volume= 0.444 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	1.590	82	From TR-55
	1.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, From TR-55**

Summary for Subcatchment 9S: AREA 4A- Ph1

Runoff = 26.94 cfs @ 12.23 hrs, Volume= 3.828 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (sf)	CN	Description
	132,700	61	>75% Grass cover, Good, HSG B
	535,900	80	>75% Grass cover, Good, HSG D
*	27,100	98	Paved parking,
	695,700	77	Weighted Average
	668,600		96.10% Pervious Area
	27,100		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
8.8	800	0.0088	1.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
27.1	900	Total			

Summary for Subcatchment 11S: AREA 4.A1

Runoff = 20.21 cfs @ 11.99 hrs, Volume= 1.199 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	4.560	80	
	4.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment 12S: AREA 4B

Runoff = 9.56 cfs @ 12.15 hrs, Volume= 1.099 af, Depth= 3.75"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (sf)	CN	Description
	8,600	61	>75% Grass cover, Good, HSG B
	87,800	80	>75% Grass cover, Good, HSG D
*	56,850	98	Paved parking,
	153,250	86	Weighted Average
	96,400		62.90% Pervious Area
	56,850		37.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.9	800	0.0097	4.65	64.47	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 4.0 & 3.0 '/' Top.W=14.50' n= 0.030 Earth, grassed & winding
19.9	900	Total			

Summary for Subcatchment 27S: AREA 4.A2

Runoff = 9.56 cfs @ 11.99 hrs, Volume= 0.572 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

	Area (ac)	CN	Description
*	1.990	83	
	1.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment DA p10a: DA pond 10A

Runoff = 17.79 cfs @ 11.97 hrs, Volume= 1.029 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

Area (sf)	CN	Description
79,300	98	Paved parking, HSG B
10,200	98	Paved parking, HSG D
18,643	80	>75% Grass cover, Good, HSG D
24,529	61	>75% Grass cover, Good, HSG B
132,672	89	Weighted Average
43,172		32.54% Pervious Area
89,500		67.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0080	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
1.7	210	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	70	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.9	380	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment DA p10b: DA Pond 10B

Runoff = 15.00 cfs @ 12.08 hrs, Volume= 1.435 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

Area (sf)	CN	Description
89,750	61	>75% Grass cover, Good, HSG B
6,250	98	Paved parking, HSG B
4,240	74	>75% Grass cover, Good, HSG C
4,260	98	Paved parking, HSG C
134,451	80	>75% Grass cover, Good, HSG D
30,430	98	Paved parking, HSG D
269,381	76	Weighted Average
228,441		84.80% Pervious Area
40,940		15.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0280	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
3.0	415	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.1	515	Total			

Summary for Subcatchment um DA p10a: unmanaged area 10C

Runoff = 3.24 cfs @ 12.12 hrs, Volume= 0.348 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Talbot Rainfall=5.30"

Area (sf)	CN	Description
16,850	74	>75% Grass cover, Good, HSG C
26,401	80	>75% Grass cover, Good, HSG D
3,330	98	Paved parking, HSG C
7,804	98	Paved parking, HSG D
54,385	82	Weighted Average
43,251		79.53% Pervious Area
11,134		20.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0140	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.3	140	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	240	Total			

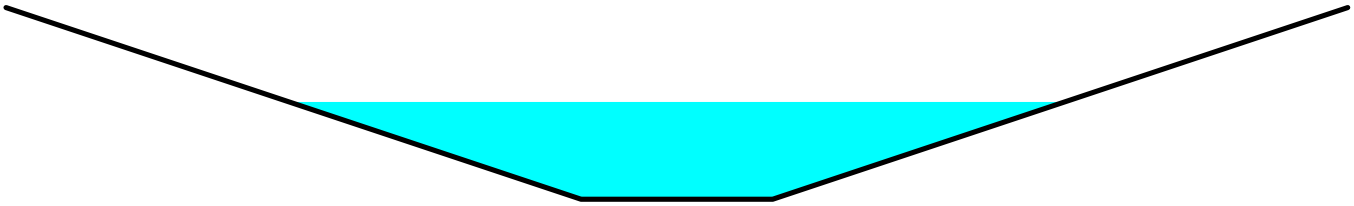
Summary for Reach 1R: Reach 4.2

Inflow Area = 50.157 ac, 9.08% Impervious, Inflow Depth > 3.10" for 10yr Talbot event
Inflow = 35.69 cfs @ 12.77 hrs, Volume= 12.969 af
Outflow = 35.49 cfs @ 12.84 hrs, Volume= 12.963 af, Atten= 1%, Lag= 4.2 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.09 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 19.1 min

Peak Storage= 11,492 cf @ 12.84 hrs
Average Depth at Peak Storage= 1.52'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'



Stage-Discharge for Reach 1R: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

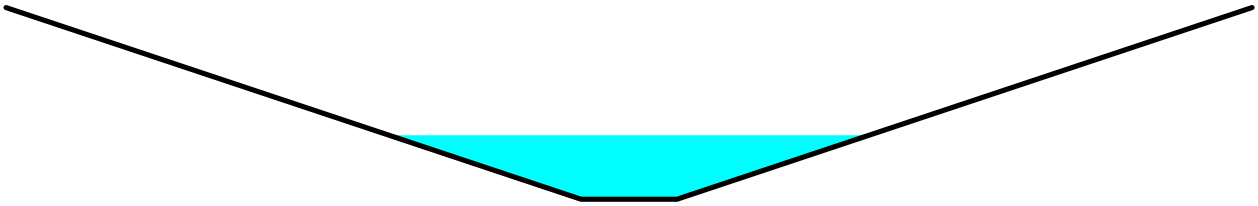
Summary for Reach 3R: (new Reach)

Inflow Area = 6.550 ac, 0.00% Impervious, Inflow Depth = 3.24" for 10yr Talbot event
Inflow = 29.77 cfs @ 11.99 hrs, Volume= 1.771 af
Outflow = 28.04 cfs @ 12.02 hrs, Volume= 1.771 af, Atten= 6%, Lag= 2.3 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.51 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 37.1 min

Peak Storage= 5,598 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 4.00' Flow Area= 56.0 sf, Capacity= 378.49 cfs

2.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 26.00'
Length= 700.0' Slope= 0.0071 '/'
Inlet Invert= 52.00', Outlet Invert= 47.00'



Stage-Discharge for Reach 3R: (new Reach)

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
52.00	0.00	0.00
52.05	0.53	0.06
52.10	0.82	0.19
52.15	1.04	0.39
52.20	1.23	0.64
52.25	1.39	0.96
52.30	1.54	1.35
52.35	1.68	1.79
52.40	1.80	2.31
52.45	1.92	2.90
52.50	2.03	3.57
52.55	2.14	4.31
52.60	2.25	5.13
52.65	2.35	6.03
52.70	2.45	7.03
52.75	2.54	8.10
52.80	2.63	9.27
52.85	2.72	10.53
52.90	2.81	11.89
52.95	2.90	13.35
53.00	2.98	14.90
53.05	3.06	16.57
53.10	3.14	18.34
53.15	3.22	20.21
53.20	3.30	22.19
53.25	3.38	24.30
53.30	3.46	26.52
53.35	3.53	28.86
53.40	3.61	31.31
53.45	3.68	33.89
53.50	3.75	36.60
53.55	3.82	39.43
53.60	3.90	42.39
53.65	3.97	45.49
53.70	4.04	48.72
53.75	4.10	52.09
53.80	4.17	55.58
53.85	4.24	59.24
53.90	4.31	63.03
53.95	4.37	66.96
54.00	4.44	71.04
54.05	4.51	75.28
54.10	4.57	79.67
54.15	4.63	84.20
54.20	4.70	88.89
54.25	4.76	93.75
54.30	4.82	98.77
54.35	4.89	103.94
54.40	4.95	109.27
54.45	5.01	114.79
54.50	5.07	120.46
54.55	5.13	126.31
54.60	5.19	132.31
54.65	5.25	138.51
54.70	5.31	144.88
54.75	5.37	151.43
54.80	5.43	158.14
54.85	5.49	165.06
54.90	5.55	172.16
54.95	5.61	179.43
55.00	5.66	186.88
55.05	5.72	194.55
55.10	5.78	202.40
55.15	5.83	210.44
55.20	5.89	218.66
55.25	5.95	227.11
55.30	6.00	235.74
55.35	6.06	244.57
55.40	6.11	253.60
55.45	6.17	262.85
55.50	6.22	272.30
55.55	6.28	281.95
55.60	6.33	291.80
55.65	6.39	301.89
55.70	6.44	312.19
55.75	6.49	322.69
55.80	6.55	333.40
55.85	6.60	344.35
55.90	6.65	355.52
55.95	6.71	366.90
56.00	**6.76**	**378.49**

Summary for Pond 1P: Pond 6C

Inflow Area = 11.890 ac, 0.00% Impervious, Inflow Depth = 3.25" for 10yr Talbot event
Inflow = 34.75 cfs @ 12.07 hrs, Volume= 3.222 af
Outflow = 9.13 cfs @ 13.56 hrs, Volume= 3.222 af, Atten= 74%, Lag= 89.6 min
Primary = 9.13 cfs @ 13.56 hrs, Volume= 3.222 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.53' @ 12.78 hrs Surf.Area= 35,289 sf Storage= 52,702 cf

Plug-Flow detention time= 67.8 min calculated for 3.222 af (100% of inflow)
Center-of-Mass det. time= 67.6 min (897.8 - 830.1)

Volume	Invert	Avail.Storage	Storage Description
#1	51.10'	196,107 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.10	9,830	540.0	0	0	9,830
52.00	19,068	765.0	12,777	12,777	33,203
53.00	27,550	1,028.0	23,179	35,956	70,739
54.00	42,813	1,255.0	34,902	70,858	111,996
55.00	61,819	1,649.0	52,026	122,884	203,058
56.00	85,254	2,232.0	73,223	196,107	383,122

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**24.0" Round Culvert** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 50.50' / 50.35' S= 0.0033 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	51.10'	**28.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	52.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	55.50'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.19 cfs @ 13.56 hrs HW=53.20' TW=52.62' (Dynamic Tailwater)
└─**1=Culvert** (Passes 9.19 cfs of 11.51 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 8.55 cfs @ 3.67 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.63 cfs @ 3.23 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Discharge for Pond 1P: Pond 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
51.10	0.00	53.70	17.16
51.15	0.08	53.75	17.38
51.20	0.24	53.80	17.60
51.25	0.44	53.85	17.81
51.30	0.67	53.90	18.02
51.35	0.94	53.95	18.23
51.40	1.23	54.00	18.43
51.45	1.55	54.05	18.63
51.50	1.89	54.10	18.83
51.55	2.26	54.15	19.03
51.60	2.65	54.20	19.23
51.65	3.06	54.25	19.42
51.70	3.48	54.30	19.61
51.75	3.93	54.35	19.80
51.80	4.39	54.40	19.99
51.85	4.86	54.45	20.17
51.90	5.36	54.50	20.36
51.95	5.87	54.55	20.54
52.00	6.40	54.60	20.72
52.05	6.94	54.65	20.90
52.10	7.49	54.70	21.08
52.15	7.97	54.75	21.26
52.20	8.40	54.80	21.43
52.25	8.80	54.85	21.60
52.30	9.18	54.90	21.78
52.35	9.53	54.95	21.95
52.40	9.87	55.00	22.12
52.45	10.20	55.05	22.28
52.50	10.51	55.10	22.45
52.55	10.82	55.15	22.62
52.60	11.14	55.20	22.78
52.65	11.46	55.25	22.94
52.70	11.79	55.30	23.10
52.75	12.12	55.35	23.26
52.80	12.44	55.40	23.42
52.85	12.77	55.45	23.58
52.90	13.09	55.50	23.74
52.95	13.40	55.55	24.33
53.00	13.69	55.60	25.29
53.05	13.98	55.65	26.49
53.10	14.25	55.70	27.87
53.15	14.52	55.75	29.42
53.20	14.79	55.80	31.11
53.25	15.04	55.85	31.55
53.30	15.30	55.90	31.73
53.35	15.54	55.95	31.91
53.40	15.79	56.00	**32.09**
53.45	16.03		
53.50	16.26		
53.55	16.49		
53.60	16.72		
53.65	16.94		

Summary for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Inflow Area = 36.160 ac, 0.00% Impervious, Inflow Depth = 2.68" for 10yr Talbot event
Inflow = 25.16 cfs @ 12.60 hrs, Volume= 8.062 af
Outflow = 25.16 cfs @ 12.61 hrs, Volume= 8.062 af, Atten= 0%, Lag= 0.6 min
Primary = 25.16 cfs @ 12.61 hrs, Volume= 8.062 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 52.58' @ 12.61 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.05'	**42.0" Round Culvert** L= 214.9' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.05' / 49.85' S= 0.0009 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.10'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=25.16 cfs @ 12.61 hrs HW=52.58' TW=50.62' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 25.16 cfs @ 4.73 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 25.16 cfs of 38.99 cfs potential flow)

Stage-Discharge for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.05	0.00	52.65	26.51
50.10	0.00	52.70	27.43
50.15	0.02	52.75	28.35
50.20	0.06	52.80	29.29
50.25	0.12	52.85	30.23
50.30	0.19	52.90	31.17
50.35	0.28	52.95	32.12
50.40	0.40	53.00	33.07
50.45	0.53	53.05	34.03
50.50	0.69	53.10	34.98
50.55	0.87	53.15	35.94
50.60	1.08	53.20	36.90
50.65	1.30	53.25	37.85
50.70	1.55	53.30	38.81
50.75	1.82	53.35	39.76
50.80	2.12	53.40	40.71
50.85	2.43	53.45	41.66
50.90	2.77	53.50	42.60
50.95	3.14	53.55	43.53
51.00	3.52	53.60	44.46
51.05	3.93	53.65	45.37
51.10	4.36	53.70	46.28
51.15	4.81	53.75	47.18
51.20	5.28	53.80	48.06
51.25	5.77	53.85	48.93
51.30	6.28	53.90	49.78
51.35	6.82	53.95	50.61
51.40	7.37	54.00	51.43
51.45	7.94	54.05	52.22
51.50	8.54	54.10	52.98
51.55	9.15	54.15	53.72
51.60	9.78	54.20	54.43
51.65	10.43	54.25	55.11
51.70	11.09	54.30	55.74
51.75	11.77	54.35	56.34
51.80	12.48	54.40	56.88
51.85	13.19	54.45	57.37
51.90	13.92	54.50	**57.78**
51.95	14.67		
52.00	15.44		
52.05	16.21		
52.10	17.01		
52.15	17.81		
52.20	18.63		
52.25	19.46		
52.30	20.31		
52.35	21.16		
52.40	22.03		
52.45	22.91		
52.50	23.79		
52.55	24.69		
52.60	25.59		

Summary for Pond 3P: Pond 10A

Inflow Area = 3.046 ac, 67.46% Impervious, Inflow Depth > 4.06" for 10yr Talbot event
Inflow = 17.79 cfs @ 11.97 hrs, Volume= 1.029 af
Outflow = 17.26 cfs @ 12.00 hrs, Volume= 1.041 af, Atten= 3%, Lag= 1.6 min
Primary = 17.26 cfs @ 12.00 hrs, Volume= 1.041 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.90' @ 12.00 hrs Surf.Area= 8,771 sf Storage= 10,555 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 74.8 min (866.6 - 791.8)

Volume	Invert	Avail.Storage	Storage Description
#1	49.50'	23,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.50	6,556	0	0
50.00	7,153	3,427	3,427
51.00	8,960	8,057	11,484
52.00	14,586	11,773	23,257

Device	Routing	Invert	Outlet Devices
#1	Primary	49.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	50.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	50.75'	**120.0 deg x 60.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Primary OutFlow Max=17.22 cfs @ 12.00 hrs HW=50.90' TW=50.17' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.09 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 6.56 cfs @ 2.63 fps)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 10.31 cfs @ 1.18 fps)

Stage-Discharge for Pond 3P: Pond 10A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.50	0.00	50.54	2.51	51.58	162.72
49.52	0.25	50.56	2.72	51.60	168.41
49.54	0.26	50.58	2.94	51.62	174.16
49.56	0.26	50.60	3.16	51.64	179.99
49.58	0.27	50.62	3.40	51.66	185.88
49.60	0.28	50.64	3.63	51.68	191.83
49.62	0.28	50.66	3.88	51.70	197.86
49.64	0.29	50.68	4.13	51.72	203.94
49.66	0.30	50.70	4.38	51.74	210.10
49.68	0.30	50.72	4.64	51.76	216.32
49.70	0.31	50.74	4.90	51.78	222.60
49.72	0.31	50.76	5.36	51.80	228.94
49.74	0.32	50.78	6.41	51.82	235.35
49.76	0.32	50.80	7.81	51.84	241.82
49.78	0.33	50.82	9.46	51.86	248.35
49.80	0.33	50.84	11.33	51.88	254.95
49.82	0.34	50.86	13.39	51.90	261.60
49.84	0.34	50.88	15.63	51.92	268.32
49.86	0.35	50.90	18.03	51.94	275.10
49.88	0.35	50.92	20.58	51.96	281.93
49.90	0.36	50.94	23.27	51.98	288.83
49.92	0.36	50.96	26.10	52.00	**295.79**
49.94	0.37	50.98	29.05		
49.96	0.37	51.00	32.13		
49.98	0.38	51.02	35.33		
50.00	0.38	51.04	38.64		
50.02	0.39	51.06	42.06		
50.04	0.39	51.08	45.59		
50.06	0.40	51.10	49.22		
50.08	0.40	51.12	52.96		
50.10	0.41	51.14	56.79		
50.12	0.41	51.16	60.72		
50.14	0.41	51.18	64.75		
50.16	0.42	51.20	68.87		
50.18	0.42	51.22	73.07		
50.20	0.43	51.24	77.37		
50.22	0.43	51.26	81.76		
50.24	0.44	51.28	86.23		
50.26	0.45	51.30	90.78		
50.28	0.51	51.32	95.42		
50.30	0.59	51.34	100.13		
50.32	0.69	51.36	104.93		
50.34	0.81	51.38	109.81		
50.36	0.93	51.40	114.77		
50.38	1.07	51.42	119.80		
50.40	1.22	51.44	124.91		
50.42	1.38	51.46	130.09		
50.44	1.55	51.48	135.35		
50.46	1.72	51.50	140.68		
50.48	1.91	51.52	146.09		
50.50	2.10	51.54	151.56		
50.52	2.30	51.56	157.11		

Summary for Pond 4 ditch: POND 4A

Inflow Area = 22.521 ac, 2.76% Impervious, Inflow Depth = 2.98" for 10yr Talbot event
Inflow = 44.99 cfs @ 12.06 hrs, Volume= 5.599 af
Outflow = 29.51 cfs @ 16.11 hrs, Volume= 5.599 af, Atten= 34%, Lag= 243.3 min
Primary = 29.51 cfs @ 16.11 hrs, Volume= 5.599 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 46.84' @ 15.55 hrs Surf.Area= 131,489 sf Storage= 189,230 cf

Plug-Flow detention time= 449.8 min calculated for 5.599 af (100% of inflow)
Center-of-Mass det. time= 449.8 min (1,298.3 - 848.5)

Volume	Invert	Avail.Storage	Storage Description
#1	44.75'	461,460 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.75	2,750	0	0
45.00	60,622	7,922	7,922
46.00	103,486	82,054	89,976
47.00	136,633	120,060	210,035
48.00	144,447	140,540	350,575
48.75	151,245	110,885	461,460

Device	Routing	Invert	Outlet Devices
#1	Primary	44.50'	**36.0" Round Culvert X 2.00** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.50' / 44.25' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	44.75'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	45.90'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	45.90'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Primary	47.90'	**200.0' 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=0.00 cfs @ 16.11 hrs HW=46.72' TW=47.58' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.00 cfs)
  - **2=Orifice/Grate** (Controls 0.00 cfs)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  - **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 4 ditch: POND 4A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
44.75	0.00	45.79	7.71	46.83	45.89	47.87	80.85
44.77	0.06	45.81	7.79	46.85	47.05	47.89	81.45
44.79	0.16	45.83	7.86	46.87	48.23	47.91	82.53
44.81	0.30	45.85	7.93	46.89	48.94	47.93	85.21
44.83	0.46	45.87	8.00	46.91	49.60	47.95	88.76
44.85	0.65	45.89	8.08	46.93	50.25	47.97	92.99
44.87	0.85	45.91	8.19	46.95	50.91	47.99	97.78
44.89	1.08	45.93	8.42	46.97	51.57	48.01	103.06
44.91	1.31	45.95	8.73	46.99	52.23	48.03	108.79
44.93	1.57	45.97	9.10	47.01	52.90	48.05	114.92
44.95	1.84	45.99	9.50	47.03	53.56	48.07	121.43
44.97	2.12	46.01	9.95	47.05	54.22	48.09	128.30
44.99	2.42	46.03	10.43	47.07	54.89	48.11	135.57
45.01	2.72	46.05	10.95	47.09	55.55	48.13	143.25
45.03	3.04	46.07	11.49	47.11	56.22	48.15	151.27
45.05	3.38	46.09	12.07	47.13	56.89	48.17	159.63
45.07	3.72	46.11	12.66	47.15	57.55	48.19	168.31
45.09	4.01	46.13	13.29	47.17	58.22	48.21	177.31
45.11	4.27	46.15	13.94	47.19	58.89	48.23	186.62
45.13	4.54	46.17	14.61	47.21	59.56	48.25	196.22
45.15	4.78	46.19	15.30	47.23	60.22	48.27	206.12
45.17	4.90	46.21	16.01	47.25	60.89	48.29	216.31
45.19	5.02	46.23	16.74	47.27	61.56	48.31	226.96
45.21	5.13	46.25	17.50	47.29	62.22	48.33	238.11
45.23	5.24	46.27	18.27	47.31	62.89	48.35	249.60
45.25	5.35	46.29	19.06	47.33	63.56	48.37	261.40
45.27	5.45	46.31	19.86	47.35	64.22	48.39	273.52
45.29	5.56	46.33	20.69	47.37	64.89	48.41	285.96
45.31	5.66	46.35	21.53	47.39	65.55	48.43	298.71
45.33	5.76	46.37	22.39	47.41	66.21	48.45	311.75
45.35	5.86	46.39	23.26	47.43	66.87	48.47	325.07
45.37	5.96	46.41	24.15	47.45	67.53	48.49	338.61
45.39	6.05	46.43	25.05	47.47	68.19	48.51	351.90
45.41	6.14	46.45	25.97	47.49	68.85	48.53	365.30
45.43	6.24	46.47	26.91	47.51	69.50	48.55	378.89
45.45	6.33	46.49	27.85	47.53	70.16	48.57	392.67
45.47	6.42	46.51	28.82	47.55	70.81	48.59	406.62
45.49	6.51	46.53	29.79	47.57	71.46	48.61	420.76
45.51	6.59	46.55	30.78	47.59	72.11	48.63	435.08
45.53	6.68	46.57	31.78	47.61	72.75	48.65	449.56
45.55	6.76	46.59	32.80	47.63	73.40	48.67	464.22
45.57	6.85	46.61	33.82	47.65	74.04	48.69	479.05
45.59	6.93	46.63	34.86	47.67	74.67	48.71	494.04
45.61	7.01	46.65	35.91	47.69	75.31	48.73	509.20
45.63	7.10	46.67	36.98	47.71	75.94	48.75	**524.52**
45.65	7.18	46.69	38.05	47.73	76.57		
45.67	7.25	46.71	39.14	47.75	77.19		
45.69	7.33	46.73	40.24	47.77	77.81		
45.71	7.41	46.75	41.34	47.79	78.43		
45.73	7.49	46.77	42.46	47.81	79.04		
45.75	7.56	46.79	43.60	47.83	79.65		
45.77	7.64	46.81	44.74	47.85	80.25		

Summary for Pond 4P pr: EX 24 CMP sp4

Inflow Area = 82.285 ac, 7.77% Impervious, Inflow Depth > 3.04" for 10yr Talbot event
Inflow = 43.66 cfs @ 12.50 hrs, Volume= 20.864 af
Outflow = 43.66 cfs @ 12.51 hrs, Volume= 20.864 af, Atten= 0%, Lag= 0.6 min
Primary = 22.60 cfs @ 12.51 hrs, Volume= 17.719 af
Secondary = 21.06 cfs @ 12.51 hrs, Volume= 3.145 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 48.86' @ 12.51 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Hiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=22.60 cfs @ 12.51 hrs HW=48.86' TW=45.88' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 22.60 cfs @ 7.19 fps)

Secondary OutFlow Max=21.06 cfs @ 12.51 hrs HW=48.86' TW=45.88' (Dynamic Tailwater)
└─**2=CL Hiners Lane as Weir** (Weir Controls 21.06 cfs @ 1.33 fps)

Stage-Discharge for Pond 4P pr: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Pond 6P: Connection of 6B and 6C

Inflow Area = 33.300 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10yr Talbot event
Inflow = 23.97 cfs @ 12.65 hrs, Volume= 7.332 af
Outflow = 23.97 cfs @ 12.66 hrs, Volume= 7.332 af, Atten= 0%, Lag= 0.6 min
Primary = 23.97 cfs @ 12.66 hrs, Volume= 7.332 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.08' @ 12.64 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.25'	**42.0" Round Culvert** L= 182.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.25' / 50.10' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.25'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=23.98 cfs @ 12.66 hrs HW=53.08' TW=52.57' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 23.98 cfs @ 3.92 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 23.98 cfs of 28.65 cfs potential flow)

Stage-Discharge for Pond 6P: Connection of 6B and 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.25	0.00	52.85	26.74
50.30	0.01	52.90	27.68
50.35	0.02	52.95	28.62
50.40	0.06	53.00	29.56
50.45	0.11	53.05	30.52
50.50	0.18	53.10	31.47
50.55	0.28	53.15	32.44
50.60	0.39	53.20	33.40
50.65	0.52	53.25	34.37
50.70	0.68	53.30	35.35
50.75	0.86	53.35	36.32
50.80	1.06	53.40	37.29
50.85	1.29	53.45	38.27
50.90	1.54	53.50	39.24
50.95	1.81	53.55	40.21
51.00	2.11	53.60	41.18
51.05	2.42	53.65	42.14
51.10	2.77	53.70	43.10
51.15	3.13	53.75	44.06
51.20	3.52	53.80	45.00
51.25	3.93	53.85	45.94
51.30	4.36	53.90	46.87
51.35	4.81	53.95	47.79
51.40	5.28	54.00	48.69
51.45	5.78	54.05	49.59
51.50	6.30	54.10	50.46
51.55	6.84	54.15	51.32
51.60	7.39	54.20	52.16
51.65	7.97	54.25	52.98
51.70	8.57	54.30	53.77
51.75	9.19	54.35	54.54
51.80	9.82	54.40	55.28
51.85	10.48	54.45	55.98
51.90	11.15	54.50	**56.65**
51.95	11.84		
52.00	12.55		
52.05	13.27		
52.10	14.01		
52.15	14.77		
52.20	15.54		
52.25	16.33		
52.30	17.13		
52.35	17.94		
52.40	18.77		
52.45	19.61		
52.50	20.47		
52.55	21.33		
52.60	22.21		
52.65	23.10		
52.70	23.99		
52.75	24.90		
52.80	25.82		

Summary for Pond 8P: POND 6B

Inflow Area = 21.410 ac, 0.00% Impervious, Inflow Depth = 2.27" for 10yr Talbot event
Inflow = 16.47 cfs @ 12.38 hrs, Volume= 4.043 af
Outflow = 16.07 cfs @ 12.57 hrs, Volume= 4.110 af, Atten= 2%, Lag= 11.6 min
Primary = 16.07 cfs @ 12.57 hrs, Volume= 4.110 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 54.72' @ 12.57 hrs Surf.Area= 15,101 sf Storage= 15,335 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 41.6 min (1,011.4 - 969.8)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	61,963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	38	0	0
53.30	1,415	218	218
53.50	4,629	604	822
53.80	8,567	1,979	2,802
54.00	13,635	2,220	5,022
55.00	15,678	14,657	19,678
56.00	17,821	16,750	36,428
57.00	33,250	25,536	61,963

Device	Routing	Invert	Outlet Devices
#1	Primary	50.75'	**30.0" Round Culvert** L= 336.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.75' / 50.35' S= 0.0012 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	52.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	54.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=16.07 cfs @ 12.57 hrs HW=54.72' TW=53.08' (Dynamic Tailwater)
└─**1=Culvert** (Passes 16.07 cfs of 25.71 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.21 cfs @ 6.17 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 14.86 cfs @ 2.35 fps)

Stage-Discharge for Pond 8P: POND 6B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	54.04	1.07	55.08	29.98	56.12	36.30
53.02	0.49	54.06	1.08	55.10	30.11	56.14	36.41
53.04	0.51	54.08	1.09	55.12	30.25	56.16	36.53
53.06	0.53	54.10	1.10	55.14	30.38	56.18	36.64
53.08	0.54	54.12	1.11	55.16	30.51	56.20	36.75
53.10	0.56	54.14	1.11	55.18	30.64	56.22	36.85
53.12	0.58	54.16	1.12	55.20	30.78	56.24	36.96
53.14	0.59	54.18	1.13	55.22	30.91	56.26	37.07
53.16	0.61	54.20	1.14	55.24	31.04	56.28	37.18
53.18	0.62	54.22	1.26	55.26	31.17	56.30	37.29
53.20	0.63	54.24	1.48	55.28	31.30	56.32	37.40
53.22	0.65	54.26	1.75	55.30	31.42	56.34	37.51
53.24	0.66	54.28	2.08	55.32	31.55	56.36	37.61
53.26	0.68	54.30	2.45	55.34	31.68	56.38	37.72
53.28	0.69	54.32	2.85	55.36	31.81	56.40	37.83
53.30	0.70	54.34	3.29	55.38	31.93	56.42	37.93
53.32	0.71	54.36	3.77	55.40	32.06	56.44	38.04
53.34	0.73	54.38	4.27	55.42	32.18	56.46	38.14
53.36	0.74	54.40	4.80	55.44	32.31	56.48	38.25
53.38	0.75	54.42	5.36	55.46	32.43	56.50	38.36
53.40	0.76	54.44	5.94	55.48	32.56	56.52	38.46
53.42	0.77	54.46	6.55	55.50	32.68	56.54	38.56
53.44	0.79	54.48	7.18	55.52	32.80	56.56	38.67
53.46	0.80	54.50	7.83	55.54	32.93	56.58	38.77
53.48	0.81	54.52	8.50	55.56	33.05	56.60	38.88
53.50	0.82	54.54	9.19	55.58	33.17	56.62	38.98
53.52	0.83	54.56	9.91	55.60	33.29	56.64	39.08
53.54	0.84	54.58	10.64	55.62	33.41	56.66	39.19
53.56	0.85	54.60	11.39	55.64	33.53	56.68	39.29
53.58	0.86	54.62	12.17	55.66	33.65	56.70	39.39
53.60	0.87	54.64	12.95	55.68	33.77	56.72	39.49
53.62	0.88	54.66	13.76	55.70	33.89	56.74	39.60
53.64	0.89	54.68	14.58	55.72	34.01	56.76	39.70
53.66	0.90	54.70	15.42	55.74	34.13	56.78	39.80
53.68	0.91	54.72	16.28	55.76	34.25	56.80	39.90
53.70	0.92	54.74	17.15	55.78	34.36	56.82	40.00
53.72	0.93	54.76	18.04	55.80	34.48	56.84	40.10
53.74	0.94	54.78	18.95	55.82	34.60	56.86	40.20
53.76	0.95	54.80	19.86	55.84	34.71	56.88	40.30
53.78	0.96	54.82	20.80	55.86	34.83	56.90	40.40
53.80	0.97	54.84	21.75	55.88	34.95	56.92	40.50
53.82	0.98	54.86	22.71	55.90	35.06	56.94	40.60
53.84	0.99	54.88	23.68	55.92	35.18	56.96	40.70
53.86	1.00	54.90	24.67	55.94	35.29	56.98	40.80
53.88	1.00	54.92	25.68	55.96	35.40	57.00	**40.90**
53.90	1.01	54.94	26.69	55.98	35.52		
53.92	1.02	54.96	27.72	56.00	35.63		
53.94	1.03	54.98	28.77	56.02	35.74		
53.96	1.04	55.00	29.44	56.04	35.86		
53.98	1.05	55.02	29.57	56.06	35.97		
54.00	1.06	55.04	29.71	56.08	36.08		
54.02	1.07	55.06	29.85	56.10	36.19		

Summary for Pond 9P: POND 6A

Inflow Area = 19.820 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10yr Talbot event
Inflow = 42.34 cfs @ 12.06 hrs, Volume= 3.598 af
Outflow = 15.25 cfs @ 12.50 hrs, Volume= 3.600 af, Atten= 64%, Lag= 26.8 min
Primary = 15.25 cfs @ 12.50 hrs, Volume= 3.600 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 55.93' @ 12.50 hrs Surf.Area= 47,052 sf Storage= 48,093 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 132.1 min (988.8 - 856.6)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	142,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	0	0	0
54.25	5,534	692	692
54.50	11,263	2,100	2,791
54.75	19,530	3,849	6,641
55.00	29,317	6,106	12,746
56.00	48,475	38,896	51,642
57.00	52,149	50,312	101,954
57.75	54,976	40,172	142,126

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	**36.0" Round Culvert** L= 185.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.75' / 53.65' S= 0.0005 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	53.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	55.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=15.25 cfs @ 12.50 hrs HW=55.93' TW=54.72' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 15.25 cfs @ 3.88 fps)
  ├─**2=Orifice/Grate** (Passes < 1.04 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 24.57 cfs potential flow)

Stage-Discharge for Pond 9P: POND 6A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
54.00	0.00	55.04	1.07	56.08	17.27	57.12	31.09
54.02	0.17	55.06	1.08	56.10	17.53	57.14	31.32
54.04	0.20	55.08	1.09	56.12	17.80	57.16	31.56
54.06	0.24	55.10	1.10	56.14	18.07	57.18	31.79
54.08	0.27	55.12	1.11	56.16	18.34	57.20	32.01
54.10	0.31	55.14	1.11	56.18	18.61	57.22	32.23
54.12	0.35	55.16	1.12	56.20	18.88	57.24	32.45
54.14	0.40	55.18	1.13	56.22	19.15	57.26	32.67
54.16	0.44	55.20	1.14	56.24	19.42	57.28	32.88
54.18	0.50	55.22	1.26	56.26	19.69	57.30	33.09
54.20	0.55	55.24	1.48	56.28	19.96	57.32	33.29
54.22	0.60	55.26	1.75	56.30	20.23	57.34	33.49
54.24	0.66	55.28	2.08	56.32	20.51	57.36	33.69
54.26	0.68	55.30	2.45	56.34	20.78	57.38	33.88
54.28	0.69	55.32	2.85	56.36	21.05	57.40	34.06
54.30	0.70	55.34	3.29	56.38	21.33	57.42	34.24
54.32	0.71	55.36	3.77	56.40	21.60	57.44	34.41
54.34	0.73	55.38	4.27	56.42	21.88	57.46	34.58
54.36	0.74	55.40	4.80	56.44	22.15	57.48	34.74
54.38	0.75	55.42	5.36	56.46	22.42	57.50	34.89
54.40	0.76	55.44	5.94	56.48	22.70	57.52	35.04
54.42	0.77	55.46	6.55	56.50	22.97	57.54	35.17
54.44	0.79	55.48	7.18	56.52	23.25	57.56	35.30
54.46	0.80	55.50	7.83	56.54	23.52	57.58	35.42
54.48	0.81	55.52	8.50	56.56	23.79	57.60	35.52
54.50	0.82	55.54	9.19	56.58	24.07	57.62	35.61
54.52	0.83	55.56	9.91	56.60	24.34	57.64	35.69
54.54	0.84	55.58	10.64	56.62	24.61	57.66	35.74
54.56	0.85	55.60	11.23	56.64	24.89	57.68	**35.78**
54.58	0.86	55.62	11.46	56.66	25.16	57.70	**35.78**
54.60	0.87	55.64	11.70	56.68	25.43	57.72	35.73
54.62	0.88	55.66	11.94	56.70	25.70	57.74	35.59
54.64	0.89	55.68	12.18	56.72	25.97		
54.66	0.90	55.70	12.42	56.74	26.24		
54.68	0.91	55.72	12.66	56.76	26.51		
54.70	0.92	55.74	12.91	56.78	26.77		
54.72	0.93	55.76	13.15	56.80	27.04		
54.74	0.94	55.78	13.40	56.82	27.30		
54.76	0.95	55.80	13.65	56.84	27.57		
54.78	0.96	55.82	13.90	56.86	27.83		
54.80	0.97	55.84	14.15	56.88	28.09		
54.82	0.98	55.86	14.41	56.90	28.35		
54.84	0.99	55.88	14.66	56.92	28.61		
54.86	1.00	55.90	14.92	56.94	28.87		
54.88	1.00	55.92	15.17	56.96	29.12		
54.90	1.01	55.94	15.43	56.98	29.37		
54.92	1.02	55.96	15.69	57.00	29.63		
54.94	1.03	55.98	15.95	57.02	29.87		
54.96	1.04	56.00	16.21	57.04	30.12		
54.98	1.05	56.02	16.47	57.06	30.37		
55.00	1.06	56.04	16.74	57.08	30.61		
55.02	1.07	56.06	17.00	57.10	30.85		

Summary for Pond 11P: TCCC main entrance culvert

Inflow Area = 4.294 ac, 53.80% Impervious, Inflow Depth > 3.88" for 10yr Talbot event
Inflow = 19.62 cfs @ 12.00 hrs, Volume= 1.389 af
Outflow = 18.03 cfs @ 12.03 hrs, Volume= 1.387 af, Atten= 8%, Lag= 1.6 min
Primary = 18.03 cfs @ 12.03 hrs, Volume= 1.387 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.33' @ 12.05 hrs Surf.Area= 1,664 sf Storage= 1,853 cf

Plug-Flow detention time= 10.0 min calculated for 1.387 af (100% of inflow)
Center-of-Mass det. time= 9.2 min (867.4 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	7,360 cf	**4.00'W x 100.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	48.47'	**36.0" Round Culvert w/ 12.0" inside fill** L= 49.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.47' / 47.25' S= 0.0045 '/' Cc= 0.900 n= 0.013, Flow Area= 5.01 sf
#2	Primary	52.11'	**TCCC entrance road crown, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.90 1.50 Width (feet) 0.00 50.00 160.00 275.00

Primary OutFlow Max=17.65 cfs @ 12.03 hrs HW=50.31' TW=49.63' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.65 cfs @ 3.63 fps)
└─**2=TCCC entrance road crown** (Controls 0.00 cfs)

Stage-Discharge for Pond 11P: TCCC main entrance culvert

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.50	0.00	50.58	22.27	52.66	126.14
48.54	0.00	50.62	22.73	52.70	139.29
48.58	0.00	50.66	23.18	52.74	153.47
48.62	0.14	50.70	23.62	52.78	168.69
48.66	0.35	50.74	24.05	52.82	184.97
48.70	0.60	50.78	24.46	52.86	202.34
48.74	0.89	50.82	24.86	52.90	220.81
48.78	1.22	50.86	25.23	52.94	240.41
48.82	1.59	50.90	25.59	52.98	261.15
48.86	1.99	50.94	25.92	53.02	283.06
48.90	2.43	50.98	26.23	53.06	306.19
48.94	2.89	51.02	26.50	53.10	330.61
48.98	3.25	51.06	26.72	53.14	356.39
49.02	3.62	51.10	26.87	53.18	383.55
49.06	4.01	51.14	26.83	53.22	412.15
49.10	4.40	51.18	27.42	53.26	442.22
49.14	4.80	51.22	28.01	53.30	473.79
49.18	5.21	51.26	28.58	53.34	506.91
49.22	5.63	51.30	29.14	53.38	541.60
49.26	6.06	51.34	29.69	53.42	577.89
49.30	6.50	51.38	30.23	53.46	615.82
49.34	6.94	51.42	30.76	53.50	655.41
49.38	7.39	51.46	31.28	53.54	696.70
49.42	7.85	51.50	31.79	53.58	**739.71**
49.46	8.31	51.54	32.30		
49.50	8.78	51.58	32.80		
49.54	9.26	51.62	33.29		
49.58	9.74	51.66	33.77		
49.62	10.23	51.70	34.24		
49.66	10.72	51.74	34.71		
49.70	11.21	51.78	35.18		
49.74	11.71	51.82	35.63		
49.78	12.21	51.86	36.08		
49.82	12.72	51.90	36.53		
49.86	13.22	51.94	36.97		
49.90	13.73	51.98	37.40		
49.94	14.25	52.02	37.83		
49.98	14.76	52.06	38.26		
50.02	15.27	52.10	38.68		
50.06	15.79	52.14	39.20		
50.10	16.30	52.18	40.36		
50.14	16.81	52.22	42.54		
50.18	17.33	52.26	45.76		
50.22	17.84	52.30	49.87		
50.26	18.35	52.34	54.84		
50.30	18.85	52.38	60.66		
50.34	19.36	52.42	67.34		
50.38	19.86	52.46	74.91		
50.42	20.35	52.50	83.33		
50.46	20.84	52.54	92.60		
50.50	21.33	52.58	102.81		
50.54	21.80	52.62	113.99		

Summary for Pond pnd 10B1: pnd 10B Cell 1

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 2.78" for 10yr Talbot event
Inflow = 8.41 cfs @ 12.38 hrs, Volume= 1.435 af
Outflow = 8.38 cfs @ 12.41 hrs, Volume= 1.989 af, Atten= 0%, Lag= 1.7 min
Primary = 8.38 cfs @ 12.41 hrs, Volume= 1.989 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.80' @ 12.42 hrs Surf.Area= 3,224 sf Storage= 3,797 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 806.0 min (1,681.8 - 875.8)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	7,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	1,181	0	0
50.00	2,121	1,651	1,651
51.00	3,494	2,808	4,459
51.75	4,950	3,167	7,625

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0012 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.50'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=8.38 cfs @ 12.41 hrs HW=50.80' TW=50.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.38 cfs of 11.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.70 cfs @ 4.33 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 6.68 cfs @ 1.80 fps)

Stage-Discharge for Pond pnd 10B1: pnd 10B Cell 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	2.15	51.08	13.45
49.02	0.21	50.06	2.16	51.10	13.59
49.04	0.25	50.08	2.18	51.12	13.73
49.06	0.29	50.10	2.20	51.14	13.86
49.08	0.33	50.12	2.21	51.16	13.99
49.10	0.37	50.14	2.23	51.18	14.12
49.12	0.42	50.16	2.25	51.20	14.24
49.14	0.47	50.18	2.26	51.22	14.36
49.16	0.52	50.20	2.28	51.24	14.47
49.18	0.58	50.22	2.29	51.26	14.58
49.20	0.63	50.24	2.31	51.28	14.68
49.22	0.69	50.26	2.32	51.30	14.77
49.24	0.76	50.28	2.34	51.32	14.86
49.26	0.82	50.30	2.35	51.34	14.94
49.28	0.89	50.32	2.37	51.36	15.00
49.30	0.96	50.34	2.38	51.38	15.05
49.32	1.04	50.36	2.40	51.40	15.08
49.34	1.12	50.38	2.41	51.42	15.04
49.36	1.19	50.40	2.43	51.44	15.25
49.38	1.28	50.42	2.44	51.46	15.45
49.40	1.36	50.44	2.46	51.48	15.65
49.42	1.45	50.46	2.47	51.50	15.85
49.44	1.54	50.48	2.49	51.52	16.05
49.46	1.59	50.50	2.50	51.54	16.24
49.48	1.62	50.52	2.63	51.56	16.44
49.50	1.64	50.54	2.85	51.58	16.63
49.52	1.66	50.56	3.13	51.60	16.81
49.54	1.68	50.58	3.47	51.62	17.00
49.56	1.70	50.60	3.84	51.64	17.18
49.58	1.72	50.62	4.25	51.66	17.37
49.60	1.74	50.64	4.70	51.68	17.55
49.62	1.76	50.66	5.18	51.70	17.72
49.64	1.78	50.68	5.69	51.72	17.90
49.66	1.80	50.70	6.23	51.74	**18.07**
49.68	1.82	50.72	6.79		
49.70	1.84	50.74	7.38		
49.72	1.86	50.76	7.99		
49.74	1.88	50.78	8.63		
49.76	1.90	50.80	9.28		
49.78	1.92	50.82	9.96		
49.80	1.94	50.84	10.66		
49.82	1.96	50.86	11.38		
49.84	1.97	50.88	11.94		
49.86	1.99	50.90	12.10		
49.88	2.01	50.92	12.26		
49.90	2.03	50.94	12.42		
49.92	2.05	50.96	12.57		
49.94	2.06	50.98	12.72		
49.96	2.08	51.00	12.87		
49.98	2.10	51.02	13.02		
50.00	2.11	51.04	13.17		
50.02	2.13	51.06	13.31		

Summary for Pond pnd 10B2: Pond 10B Cell 2

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 2.78" for 10yr Talbot event
Inflow = 15.00 cfs @ 12.08 hrs, Volume= 1.435 af
Outflow = 8.41 cfs @ 12.38 hrs, Volume= 1.435 af, Atten= 44%, Lag= 17.9 min
Primary = 8.41 cfs @ 12.38 hrs, Volume= 1.435 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.11' @ 12.40 hrs Surf.Area= 10,511 sf Storage= 11,810 cf

Plug-Flow detention time= 32.0 min calculated for 1.435 af (100% of inflow)
Center-of-Mass det. time= 31.7 min (875.8 - 844.1)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	31,513 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	793	0	0
50.00	5,314	3,054	3,054
51.00	9,929	7,622	10,675
52.00	15,165	12,547	23,222
52.50	18,000	8,291	31,513

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 78.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0006 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	49.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.75'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	49.00'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=8.40 cfs @ 12.38 hrs HW=51.11' TW=50.80' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.40 cfs @ 2.67 fps)
  ├─**2=Orifice/Grate** (Passes < 1.05 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 3.76 cfs potential flow)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 35.13 cfs potential flow)

Stage-Discharge for Pond pnd 10B2: Pond 10B Cell 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	4.66	51.08	12.37	52.12	19.11
49.02	0.07	50.06	4.80	51.10	12.49	52.14	19.24
49.04	0.11	50.08	4.94	51.12	12.61	52.16	19.37
49.06	0.16	50.10	5.08	51.14	12.73	52.18	19.51
49.08	0.20	50.12	5.22	51.16	12.85	52.20	19.64
49.10	0.26	50.14	5.36	51.18	12.96	52.22	19.77
49.12	0.31	50.16	5.51	51.20	13.07	52.24	19.90
49.14	0.37	50.18	5.65	51.22	13.17	52.26	20.03
49.16	0.43	50.20	5.80	51.24	13.26	52.28	20.16
49.18	0.48	50.22	5.94	51.26	13.36	52.30	20.28
49.20	0.53	50.24	6.09	51.28	13.44	52.32	20.41
49.22	0.58	50.26	6.24	51.30	13.52	52.34	20.53
49.24	0.63	50.28	6.39	51.32	13.58	52.36	20.66
49.26	0.69	50.30	6.54	51.34	13.64	52.38	20.78
49.28	0.75	50.32	6.69	51.36	13.69	52.40	20.91
49.30	0.81	50.34	6.84	51.38	13.71	52.42	21.03
49.32	0.88	50.36	6.99	51.40	13.70	52.44	21.15
49.34	0.95	50.38	7.15	51.42	13.61	52.46	21.27
49.36	1.02	50.40	7.30	51.44	13.79	52.48	21.39
49.38	1.09	50.42	7.45	51.46	13.98	52.50	**21.51**
49.40	1.17	50.44	7.61	51.48	14.16		
49.42	1.24	50.46	7.76	51.50	14.34		
49.44	1.32	50.48	7.92	51.52	14.52		
49.46	1.40	50.50	8.07	51.54	14.70		
49.48	1.49	50.52	8.23	51.56	14.87		
49.50	1.58	50.54	8.39	51.58	15.04		
49.52	1.66	50.56	8.54	51.60	15.21		
49.54	1.76	50.58	8.70	51.62	15.38		
49.56	1.85	50.60	8.85	51.64	15.55		
49.58	1.94	50.62	9.01	51.66	15.71		
49.60	2.04	50.64	9.16	51.68	15.87		
49.62	2.14	50.66	9.32	51.70	16.03		
49.64	2.24	50.68	9.47	51.72	16.19		
49.66	2.35	50.70	9.63	51.74	16.35		
49.68	2.45	50.72	9.78	51.76	16.51		
49.70	2.56	50.74	9.94	51.78	16.66		
49.72	2.67	50.76	10.09	51.80	16.82		
49.74	2.78	50.78	10.24	51.82	16.97		
49.76	2.90	50.80	10.39	51.84	17.12		
49.78	3.01	50.82	10.54	51.86	17.27		
49.80	3.13	50.84	10.69	51.88	17.42		
49.82	3.25	50.86	10.84	51.90	17.57		
49.84	3.37	50.88	10.99	51.92	17.71		
49.86	3.49	50.90	11.13	51.94	17.86		
49.88	3.62	50.92	11.28	51.96	18.00		
49.90	3.74	50.94	11.42	51.98	18.14		
49.92	3.87	50.96	11.56	52.00	18.28		
49.94	4.00	50.98	11.70	52.02	18.42		
49.96	4.13	51.00	11.84	52.04	18.56		
49.98	4.26	51.02	11.98	52.06	18.70		
50.00	4.39	51.04	12.11	52.08	18.84		
50.02	4.53	51.06	12.24	52.10	18.97		

Summary for Pond POND 4B: POND 4B

Inflow Area = 39.678 ac, 3.29% Impervious, Inflow Depth = 2.77" for 10yr Talbot event
Inflow = 30.80 cfs @ 12.42 hrs, Volume= 9.160 af
Outflow = 27.38 cfs @ 12.91 hrs, Volume= 9.593 af, Atten= 11%, Lag= 29.7 min
Primary = 27.38 cfs @ 12.91 hrs, Volume= 9.593 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.69' @ 12.89 hrs Surf.Area= 39,698 sf Storage= 56,283 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 185.0 min (1,119.9 - 934.9)

Volume	Invert	Avail.Storage	Storage Description
#1	48.90'	106,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.90	2,378	0	0
49.00	12,688	753	753
49.25	24,390	4,635	5,388
49.50	32,399	7,099	12,487
49.75	34,894	8,412	20,898
50.00	36,984	8,985	29,883
51.00	40,925	38,955	68,838
51.75	58,241	37,187	106,025

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**30.0" Round Culvert X 2.00** L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0016 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	48.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	49.40'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	50.60'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Primary	50.60'	**160.0 deg x 30.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)

Primary OutFlow Max=27.39 cfs @ 12.91 hrs HW=50.69' TW=50.12' (Dynamic Tailwater)
- **1=Culvert** (Passes 24.93 cfs of 26.47 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.72 cfs @ 3.65 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 3.65 fps)
  - **4=Sharp-Crested Rectangular Weir** (Weir Controls 22.36 cfs @ 3.02 fps)
  - **5=Sharp-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 0.97 fps)
- **6=Sharp-Crested Vee/Trap Weir** (Weir Controls 2.47 cfs @ 0.91 fps)

Stage-Discharge for Pond POND 4B: POND 4B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.90	0.00	49.94	10.51	50.98	56.37
48.92	0.20	49.96	10.96	51.00	58.77
48.94	0.26	49.98	11.41	51.02	61.21
48.96	0.32	50.00	11.87	51.04	63.72
48.98	0.39	50.02	12.34	51.06	66.28
49.00	0.46	50.04	12.74	51.08	68.90
49.02	0.55	50.06	13.11	51.10	71.57
49.04	0.64	50.08	13.48	51.12	74.30
49.06	0.73	50.10	13.86	51.14	77.07
49.08	0.84	50.12	14.24	51.16	79.91
49.10	0.95	50.14	14.63	51.18	82.79
49.12	1.06	50.16	15.02	51.20	85.73
49.14	1.19	50.18	15.41	51.22	88.72
49.16	1.32	50.20	15.81	51.24	91.75
49.18	1.45	50.22	16.21	51.26	94.84
49.20	1.60	50.24	16.61	51.28	97.98
49.22	1.75	50.26	17.02	51.30	101.17
49.24	1.84	50.28	17.43	51.32	104.41
49.26	1.88	50.30	17.85	51.34	107.70
49.28	1.91	50.32	18.26	51.36	111.03
49.30	1.95	50.34	18.69	51.38	114.42
49.32	1.98	50.36	19.11	51.40	117.85
49.34	2.02	50.38	19.54	51.42	121.33
49.36	2.05	50.40	19.97	51.44	124.86
49.38	2.08	50.42	20.40	51.46	128.43
49.40	2.12	50.44	20.84	51.48	132.05
49.42	2.21	50.46	21.28	51.50	135.72
49.44	2.34	50.48	21.72	51.52	139.43
49.46	2.50	50.50	22.16	51.54	143.19
49.48	2.69	50.52	22.61	51.56	146.99
49.50	2.89	50.54	23.06	51.58	150.84
49.52	3.12	50.56	23.51	51.60	154.74
49.54	3.36	50.58	23.97	51.62	158.68
49.56	3.61	50.60	24.42	51.64	162.66
49.58	3.88	50.62	25.14	51.66	166.69
49.60	4.16	50.64	26.09	51.68	170.75
49.62	4.46	50.66	27.18	51.70	174.87
49.64	4.77	50.68	28.39	51.72	179.02
49.66	5.08	50.70	29.71	51.74	**183.22**
49.68	5.41	50.72	31.13		
49.70	5.75	50.74	32.63		
49.72	6.10	50.76	34.22		
49.74	6.46	50.78	35.89		
49.76	6.83	50.80	37.64		
49.78	7.20	50.82	39.45		
49.80	7.59	50.84	41.34		
49.82	7.98	50.86	43.30		
49.84	8.38	50.88	45.32		
49.86	8.79	50.90	47.41		
49.88	9.21	50.92	49.56		
49.90	9.64	50.94	51.77		
49.92	10.07	50.96	54.04		

Summary for Link sp4 PR: Prop Design Point 4

Inflow Area = 82.285 ac, 7.77% Impervious, Inflow Depth > 3.04" for 10yr Talbot event
Inflow = 43.66 cfs @ 12.51 hrs, Volume= 20.864 af
Primary = 43.66 cfs @ 12.52 hrs, Volume= 20.864 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

Time span=5.00-100.00 hrs, dt=0.01 hrs, 9501 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 2S: AREA 4B.1 Runoff Area=11.890 ac 0.00% Impervious Runoff Depth=5.37"
Tc=14.4 min CN=81 Runoff=56.97 cfs 5.317 af

Subcatchment 3S: AREA 4B.2 Runoff Area=2.860 ac 0.00% Impervious Runoff Depth=5.14"
Tc=6.0 min CN=79 Runoff=20.36 cfs 1.224 af

Subcatchment 4S: offsite 4.3 Runoff Area=418,500 sf 12.64% Impervious Runoff Depth=4.91"
Flow Length=1,238' Tc=19.5 min CN=77 Runoff=34.98 cfs 3.930 af

Subcatchment 7S: AREA 6A Runoff Area=19.820 ac 0.00% Impervious Runoff Depth=4.01"
Tc=12.0 min CN=69 Runoff=79.83 cfs 6.626 af

Subcatchment 8S: AREA 6B Runoff Area=1.590 ac 0.00% Impervious Runoff Depth>5.48"
Tc=7.2 min CN=82 Runoff=11.12 cfs 0.726 af

Subcatchment 9S: AREA 4A- Ph1 Runoff Area=695,700 sf 3.90% Impervious Runoff Depth=4.91"
Flow Length=900' Tc=27.1 min CN=77 Runoff=46.39 cfs 6.533 af

Subcatchment 11S: AREA 4.A1 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=80 Runoff=33.08 cfs 1.995 af

Subcatchment 12S: AREA 4B Runoff Area=153,250 sf 37.10% Impervious Runoff Depth>5.94"
Flow Length=900' Tc=19.9 min CN=86 Runoff=14.96 cfs 1.741 af

Subcatchment 27S: AREA 4.A2 Runoff Area=1.990 ac 0.00% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=83 Runoff=15.20 cfs 0.928 af

Subcatchment DA p10a: DA pond 10A Runoff Area=132,672 sf 67.46% Impervious Runoff Depth>6.26"
Flow Length=380' Tc=5.0 min CN=89 Runoff=26.87 cfs 1.590 af

Subcatchment DA p10b: DA Pond 10B Runoff Area=269,381 sf 15.20% Impervious Runoff Depth=4.80"
Flow Length=515' Tc=15.1 min CN=76 Runoff=25.96 cfs 2.471 af

Subcatchment um DA p10a: unmanaged Runoff Area=54,385 sf 20.47% Impervious Runoff Depth>5.48"
Flow Length=240' Tc=18.3 min CN=82 Runoff=5.26 cfs 0.570 af

Reach 1R: Reach 4.2 Avg. Flow Depth=1.97' Max Vel=3.58 fps Inflow=63.29 cfs 21.293 af
n=0.030 L=1,000.0' S=0.0044 '/' Capacity=164.38 cfs Outflow=63.10 cfs 21.287 af

Reach 3R: (new Reach) Avg. Flow Depth=1.66' Max Vel=3.98 fps Inflow=48.27 cfs 2.923 af
n=0.030 L=700.0' S=0.0071 '/' Capacity=378.49 cfs Outflow=46.13 cfs 2.923 af

Pond 1P: Pond 6C Peak Elev=54.62' Storage=100,652 cf Inflow=56.97 cfs 5.317 af
Outflow=12.06 cfs 5.317 af

Pond 2P: CB at Longw0od Rd NO SURFACE VOL Peak Elev=53.24' Inflow=37.66 cfs 13.951 af
Outflow=37.66 cfs 13.951 af

Pond 3P: Pond 10A Peak Elev=51.17' Storage=13,099 cf Inflow=26.87 cfs 1.590 af
Outflow=59.67 cfs 1.592 af

Pond 4 ditch: POND 4A Peak Elev=47.92' Storage=339,257 cf Inflow=75.72 cfs 9.456 af
Outflow=65.10 cfs 9.456 af

Pond 4P pr: EX 24 CMP sp4 Peak Elev=49.00' Inflow=85.78 cfs 34.673 af
Primary=23.16 cfs 22.667 af Secondary=62.62 cfs 12.006 af Outflow=85.78 cfs 34.673 af

Pond 6P: Connection of 6B and 6C Peak Elev=53.88' Inflow=36.17 cfs 12.727 af
Outflow=36.17 cfs 12.727 af

Pond 8P: POND 6B Peak Elev=55.52' Storage=28,126 cf Inflow=29.72 cfs 7.355 af
Outflow=25.72 cfs 7.410 af

Pond 9P: POND 6A Peak Elev=56.86' Storage=94,579 cf Inflow=79.83 cfs 6.626 af
Outflow=27.80 cfs 6.629 af

Pond 11P: TCCC main entrance culvert Peak Elev=51.52' Storage=4,387 cf Inflow=64.44 cfs 2.162 af
Outflow=28.65 cfs 2.160 af

Pond pnd 10B1: pnd 10B Cell 1 Peak Elev=51.24' Storage=5,361 cf Inflow=13.34 cfs 2.471 af
Outflow=12.36 cfs 3.019 af

Pond pnd 10B2: Pond 10B Cell 2 Peak Elev=51.93' Storage=22,116 cf Inflow=25.96 cfs 2.471 af
Outflow=13.34 cfs 2.471 af

Pond POND 4B: POND 4B Peak Elev=50.94' Storage=66,512 cf Inflow=50.83 cfs 15.692 af
Outflow=45.10 cfs 16.114 af

Link sp4 PR: Prop Design Point 4 Inflow=85.78 cfs 34.673 af
Primary=85.78 cfs 34.673 af

Total Runoff Area = 82.285 ac Runoff Volume = 33.652 af Average Runoff Depth = 4.91"
92.23% Pervious = 75.893 ac 7.77% Impervious = 6.392 ac

Summary for Subcatchment 2S: AREA 4B.1

Runoff = 56.97 cfs @ 12.07 hrs, Volume= 5.317 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	11.890	81	From TR-55
	11.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, From TR-55**

Summary for Subcatchment 3S: AREA 4B.2

Runoff = 20.36 cfs @ 11.99 hrs, Volume= 1.224 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	2.860	79	
	2.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4S: offsite 4.3

Runoff = 34.98 cfs @ 12.13 hrs, Volume= 3.930 af, Depth= 4.91"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

Area (sf)	CN	Description
81,840	61	>75% Grass cover, Good, HSG B
139,500	74	>75% Grass cover, Good, HSG C
52,900	98	Paved parking, HSG D
144,260	80	>75% Grass cover, Good, HSG D
418,500	77	Weighted Average
365,600		87.36% Pervious Area
52,900		12.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0350	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
6.5	594	0.0089	1.52		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	544	0.0050	4.87	175.23	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 3.0 '/' Top.W=21.00' n= 0.030
19.5	1,238	Total			

Summary for Subcatchment 7S: AREA 6A

Runoff = 79.83 cfs @ 12.05 hrs, Volume= 6.626 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	19.820	69	
	19.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, From TR-55**

Summary for Subcatchment 8S: AREA 6B

Runoff = 11.12 cfs @ 12.00 hrs, Volume= 0.726 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	1.590	82	From TR-55
	1.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, From TR-55**

Summary for Subcatchment 9S: AREA 4A- Ph1

Runoff = 46.39 cfs @ 12.23 hrs, Volume= 6.533 af, Depth= 4.91"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (sf)	CN	Description
	132,700	61	>75% Grass cover, Good, HSG B
	535,900	80	>75% Grass cover, Good, HSG D
*	27,100	98	Paved parking,
	695,700	77	Weighted Average
	668,600		96.10% Pervious Area
	27,100		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
8.8	800	0.0088	1.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
27.1	900	Total			

Summary for Subcatchment 11S: AREA 4.A1

Runoff = 33.08 cfs @ 11.99 hrs, Volume= 1.995 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	4.560	80	
	4.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment 12S: AREA 4B

Runoff = 14.96 cfs @ 12.12 hrs, Volume= 1.741 af, Depth> 5.94"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (sf)	CN	Description
	8,600	61	>75% Grass cover, Good, HSG B
	87,800	80	>75% Grass cover, Good, HSG D
*	56,850	98	Paved parking,
	153,250	86	Weighted Average
	96,400		62.90% Pervious Area
	56,850		37.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.9	800	0.0097	4.65	64.47	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 4.0 & 3.0 '/' Top.W=14.50' n= 0.030 Earth, grassed & winding
19.9	900	Total			

Summary for Subcatchment 27S: AREA 4.A2

Runoff = 15.20 cfs @ 11.98 hrs, Volume= 0.928 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

	Area (ac)	CN	Description
*	1.990	83	
	1.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, From TR-55**

Summary for Subcatchment DA p10a: DA pond 10A

Runoff = 26.87 cfs @ 11.97 hrs, Volume= 1.590 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

Area (sf)	CN	Description
79,300	98	Paved parking, HSG B
10,200	98	Paved parking, HSG D
18,643	80	>75% Grass cover, Good, HSG D
24,529	61	>75% Grass cover, Good, HSG B
132,672	89	Weighted Average
43,172		32.54% Pervious Area
89,500		67.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0080	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
1.7	210	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	70	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.9	380	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment DA p10b: DA Pond 10B

Runoff = 25.96 cfs @ 12.08 hrs, Volume= 2.471 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

Area (sf)	CN	Description
89,750	61	>75% Grass cover, Good, HSG B
6,250	98	Paved parking, HSG B
4,240	74	>75% Grass cover, Good, HSG C
4,260	98	Paved parking, HSG C
134,451	80	>75% Grass cover, Good, HSG D
30,430	98	Paved parking, HSG D
269,381	76	Weighted Average
228,441		84.80% Pervious Area
40,940		15.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0280	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
3.0	415	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.1	515	Total			

Summary for Subcatchment um DA p10a: unmanaged area 10C

Runoff = 5.26 cfs @ 12.12 hrs, Volume= 0.570 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Talbot Rainfall=7.60"

Area (sf)	CN	Description
16,850	74	>75% Grass cover, Good, HSG C
26,401	80	>75% Grass cover, Good, HSG D
3,330	98	Paved parking, HSG C
7,804	98	Paved parking, HSG D
54,385	82	Weighted Average
43,251		79.53% Pervious Area
11,134		20.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0140	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
2.3	140	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	240	Total			

Summary for Reach 1R: Reach 4.2

Inflow Area = 50.157 ac, 9.08% Impervious, Inflow Depth > 5.09" for 100yr Talbot event
Inflow = 63.29 cfs @ 12.47 hrs, Volume= 21.293 af
Outflow = 63.10 cfs @ 12.55 hrs, Volume= 21.287 af, Atten= 0%, Lag= 4.5 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.58 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 17.7 min

Peak Storage= 17,623 cf @ 12.55 hrs
Average Depth at Peak Storage= 1.97'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 164.38 cfs

3.00' x 3.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 1,000.0' Slope= 0.0044 '/'
Inlet Invert= 48.60', Outlet Invert= 44.20'

Stage-Discharge for Reach 1R: Reach 4.2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
48.60	0.00	0.00
48.62	0.21	0.02
48.64	0.37	0.05
48.66	0.48	0.09
48.68	0.58	0.15
48.70	0.66	0.22
48.72	0.74	0.30
48.74	0.81	0.39
48.76	0.88	0.49
48.78	0.94	0.60
48.80	1.00	0.73
48.82	1.06	0.86
48.84	1.11	1.00
48.86	1.17	1.15
48.88	1.22	1.31
48.90	1.27	1.48
48.92	1.31	1.66
48.94	1.36	1.86
48.96	1.40	2.06
48.98	1.44	2.27
49.00	1.48	2.50
49.02	1.53	2.73
49.04	1.56	2.98
49.06	1.60	3.23
49.08	1.64	3.50
49.10	1.68	3.78
49.12	1.71	4.07
49.14	1.75	4.37
49.16	1.79	4.68
49.18	1.82	5.01
49.20	1.85	5.34
49.22	1.89	5.69
49.24	1.92	6.05
49.26	1.95	6.42
49.28	1.98	6.80
49.30	2.02	7.20
49.32	2.05	7.61
49.34	2.08	8.03
49.36	2.11	8.46
49.38	2.14	8.91
49.40	2.17	9.37
49.42	2.20	9.84
49.44	2.23	10.32
49.46	2.26	10.83
49.48	2.28	11.34
49.50	2.31	11.86
49.52	2.34	12.40
49.54	2.37	12.95
49.56	2.39	13.52
49.58	2.42	14.10
49.60	2.45	14.70
49.62	2.48	15.30
49.64	2.50	15.93
49.66	2.53	16.57
49.68	2.55	17.22
49.70	2.58	17.89
49.72	2.61	18.57
49.74	2.63	19.26
49.76	2.66	19.98
49.78	2.68	20.70
49.80	2.71	21.44
49.82	2.73	22.20
49.84	2.76	22.98
49.86	2.78	23.76
49.88	2.81	24.57
49.90	2.83	25.39
49.92	2.85	26.22
49.94	2.88	27.08
49.96	2.90	27.94
49.98	2.93	28.83
50.00	2.95	29.73
50.02	2.97	30.65
50.04	3.00	31.58
50.06	3.02	32.53
50.08	3.04	33.50
50.10	3.06	34.48
50.12	3.09	35.49
50.14	3.11	36.51
50.16	3.13	37.54
50.18	3.16	38.60
50.20	3.18	39.67
50.22	3.20	40.75
50.24	3.22	41.86
50.26	3.24	42.99
50.28	3.27	44.12
50.30	3.29	45.29
50.32	3.31	46.47
50.34	3.33	47.66
50.36	3.35	48.88
50.38	3.38	50.11
50.40	3.40	51.36
50.42	3.42	52.63
50.44	3.44	53.92
50.46	3.46	55.23
50.48	3.48	56.56
50.50	3.50	57.91
50.52	3.52	59.27
50.54	3.54	60.66
50.56	3.57	62.06
50.58	3.59	63.48
50.60	3.61	64.93
50.62	3.63	66.39
50.64	3.65	67.87
50.66	3.67	69.38
50.68	3.69	70.90
50.70	3.71	72.44
50.72	3.73	74.01
50.74	3.75	75.60
50.76	3.77	77.20
50.78	3.79	78.83
50.80	3.81	80.47
50.82	3.83	82.13
50.84	3.85	83.83
50.86	3.87	85.53
50.88	3.89	87.26
50.90	3.91	89.01
50.92	3.93	90.79
50.94	3.95	92.57
50.96	3.97	94.39
50.98	3.99	96.23
51.00	4.01	98.08
51.02	4.03	99.97
51.04	4.05	101.87
51.06	4.06	103.79
51.08	4.08	105.74
51.10	4.10	107.71
51.12	4.12	109.69
51.14	4.14	111.71
51.16	4.16	113.75
51.18	4.18	115.80
51.20	4.20	117.88
51.22	4.22	119.99
51.24	4.24	122.11
51.26	4.25	124.26
51.28	4.27	126.43
51.30	4.29	128.62
51.32	4.31	130.85
51.34	4.33	133.09
51.36	4.35	135.35
51.38	4.37	137.64
51.40	4.38	139.95
51.42	4.40	142.28
51.44	4.42	144.65
51.46	4.44	147.03
51.48	4.46	149.43
51.50	4.48	151.87
51.52	4.49	154.32
51.54	4.51	156.80
51.56	4.53	159.31
51.58	4.55	161.84
51.60	**4.57**	**164.38**

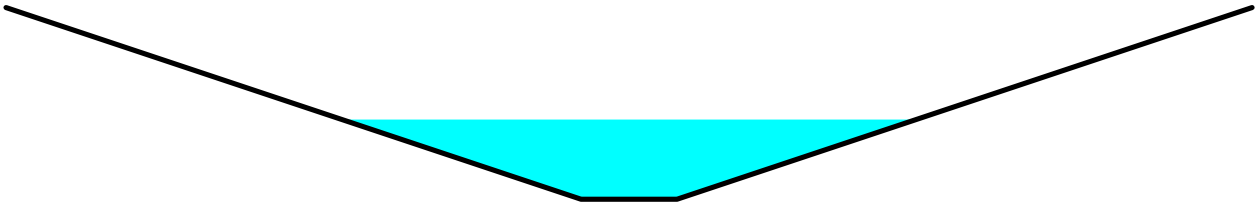
Summary for Reach 3R: (new Reach)

Inflow Area = 6.550 ac, 0.00% Impervious, Inflow Depth > 5.36" for 100yr Talbot event
Inflow = 48.27 cfs @ 11.98 hrs, Volume= 2.923 af
Outflow = 46.13 cfs @ 12.02 hrs, Volume= 2.923 af, Atten= 4%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.98 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 31.0 min

Peak Storage= 8,113 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.66'
Bank-Full Depth= 4.00' Flow Area= 56.0 sf, Capacity= 378.49 cfs

2.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 26.00'
Length= 700.0' Slope= 0.0071 '/'
Inlet Invert= 52.00', Outlet Invert= 47.00'



Stage-Discharge for Reach 3R: (new Reach)

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
52.00	0.00	0.00
52.05	0.53	0.06
52.10	0.82	0.19
52.15	1.04	0.39
52.20	1.23	0.64
52.25	1.39	0.96
52.30	1.54	1.35
52.35	1.68	1.79
52.40	1.80	2.31
52.45	1.92	2.90
52.50	2.03	3.57
52.55	2.14	4.31
52.60	2.25	5.13
52.65	2.35	6.03
52.70	2.45	7.03
52.75	2.54	8.10
52.80	2.63	9.27
52.85	2.72	10.53
52.90	2.81	11.89
52.95	2.90	13.35
53.00	2.98	14.90
53.05	3.06	16.57
53.10	3.14	18.34
53.15	3.22	20.21
53.20	3.30	22.19
53.25	3.38	24.30
53.30	3.46	26.52
53.35	3.53	28.86
53.40	3.61	31.31
53.45	3.68	33.89
53.50	3.75	36.60
53.55	3.82	39.43
53.60	3.90	42.39
53.65	3.97	45.49
53.70	4.04	48.72
53.75	4.10	52.09
53.80	4.17	55.58
53.85	4.24	59.24
53.90	4.31	63.03
53.95	4.37	66.96
54.00	4.44	71.04
54.05	4.51	75.28
54.10	4.57	79.67
54.15	4.63	84.20
54.20	4.70	88.89
54.25	4.76	93.75
54.30	4.82	98.77
54.35	4.89	103.94
54.40	4.95	109.27
54.45	5.01	114.79
54.50	5.07	120.46
54.55	5.13	126.31
54.60	5.19	132.31
54.65	5.25	138.51
54.70	5.31	144.88
54.75	5.37	151.43
54.80	5.43	158.14
54.85	5.49	165.06
54.90	5.55	172.16
54.95	5.61	179.43
55.00	5.66	186.88
55.05	5.72	194.55
55.10	5.78	202.40
55.15	5.83	210.44
55.20	5.89	218.66
55.25	5.95	227.11
55.30	6.00	235.74
55.35	6.06	244.57
55.40	6.11	253.60
55.45	6.17	262.85
55.50	6.22	272.30
55.55	6.28	281.95
55.60	6.33	291.80
55.65	6.39	301.89
55.70	6.44	312.19
55.75	6.49	322.69
55.80	6.55	333.40
55.85	6.60	344.35
55.90	6.65	355.52
55.95	6.71	366.90
56.00	**6.76**	**378.49**

Summary for Pond 1P: Pond 6C

Inflow Area = 11.890 ac, 0.00% Impervious, Inflow Depth = 5.37" for 100yr Talbot event
Inflow = 56.97 cfs @ 12.07 hrs, Volume= 5.317 af
Outflow = 12.06 cfs @ 14.49 hrs, Volume= 5.317 af, Atten= 79%, Lag= 145.1 min
Primary = 12.06 cfs @ 14.49 hrs, Volume= 5.317 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 54.62' @ 12.89 hrs Surf.Area= 54,112 sf Storage= 100,652 cf

Plug-Flow detention time= 91.0 min calculated for 5.317 af (100% of inflow)
Center-of-Mass det. time= 90.9 min (906.8 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	51.10'	196,107 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.10	9,830	540.0	0	0	9,830
52.00	19,068	765.0	12,777	12,777	33,203
53.00	27,550	1,028.0	23,179	35,956	70,739
54.00	42,813	1,255.0	34,902	70,858	111,996
55.00	61,819	1,649.0	52,026	122,884	203,058
56.00	85,254	2,232.0	73,223	196,107	383,122

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**24.0" Round Culvert** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 50.50' / 50.35' S= 0.0033 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	51.10'	**28.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	52.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	55.50'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.11 cfs @ 14.49 hrs HW=53.87' TW=52.88' (Dynamic Tailwater)
└─**1=Culvert** (Passes 12.11 cfs of 15.04 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 11.17 cfs @ 4.79 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.94 cfs @ 4.79 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Discharge for Pond 1P: Pond 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
51.10	0.00	53.70	17.16
51.15	0.08	53.75	17.38
51.20	0.24	53.80	17.60
51.25	0.44	53.85	17.81
51.30	0.67	53.90	18.02
51.35	0.94	53.95	18.23
51.40	1.23	54.00	18.43
51.45	1.55	54.05	18.63
51.50	1.89	54.10	18.83
51.55	2.26	54.15	19.03
51.60	2.65	54.20	19.23
51.65	3.06	54.25	19.42
51.70	3.48	54.30	19.61
51.75	3.93	54.35	19.80
51.80	4.39	54.40	19.99
51.85	4.86	54.45	20.17
51.90	5.36	54.50	20.36
51.95	5.87	54.55	20.54
52.00	6.40	54.60	20.72
52.05	6.94	54.65	20.90
52.10	7.49	54.70	21.08
52.15	7.97	54.75	21.26
52.20	8.40	54.80	21.43
52.25	8.80	54.85	21.60
52.30	9.18	54.90	21.78
52.35	9.53	54.95	21.95
52.40	9.87	55.00	22.12
52.45	10.20	55.05	22.28
52.50	10.51	55.10	22.45
52.55	10.82	55.15	22.62
52.60	11.14	55.20	22.78
52.65	11.46	55.25	22.94
52.70	11.79	55.30	23.10
52.75	12.12	55.35	23.26
52.80	12.44	55.40	23.42
52.85	12.77	55.45	23.58
52.90	13.09	55.50	23.74
52.95	13.40	55.55	24.33
53.00	13.69	55.60	25.29
53.05	13.98	55.65	26.49
53.10	14.25	55.70	27.87
53.15	14.52	55.75	29.42
53.20	14.79	55.80	31.11
53.25	15.04	55.85	31.55
53.30	15.30	55.90	31.73
53.35	15.54	55.95	31.91
53.40	15.79	56.00	**32.09**
53.45	16.03		
53.50	16.26		
53.55	16.49		
53.60	16.72		
53.65	16.94		

Summary for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Inflow Area = 36.160 ac, 0.00% Impervious, Inflow Depth > 4.63" for 100yr Talbot event
Inflow = 37.66 cfs @ 12.83 hrs, Volume= 13.951 af
Outflow = 37.66 cfs @ 12.84 hrs, Volume= 13.951 af, Atten= 0%, Lag= 0.6 min
Primary = 37.66 cfs @ 12.84 hrs, Volume= 13.951 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.24' @ 12.84 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.05'	**42.0" Round Culvert** L= 214.9' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.05' / 49.85' S= 0.0009 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.10'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=37.66 cfs @ 12.84 hrs HW=53.24' TW=50.92' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 37.66 cfs @ 5.37 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 37.66 cfs of 54.89 cfs potential flow)

Stage-Discharge for Pond 2P: CB at Longw0od Rd NO SURFACE VOL

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.05	0.00	52.65	26.51
50.10	0.00	52.70	27.43
50.15	0.02	52.75	28.35
50.20	0.06	52.80	29.29
50.25	0.12	52.85	30.23
50.30	0.19	52.90	31.17
50.35	0.28	52.95	32.12
50.40	0.40	53.00	33.07
50.45	0.53	53.05	34.03
50.50	0.69	53.10	34.98
50.55	0.87	53.15	35.94
50.60	1.08	53.20	36.90
50.65	1.30	53.25	37.85
50.70	1.55	53.30	38.81
50.75	1.82	53.35	39.76
50.80	2.12	53.40	40.71
50.85	2.43	53.45	41.66
50.90	2.77	53.50	42.60
50.95	3.14	53.55	43.53
51.00	3.52	53.60	44.46
51.05	3.93	53.65	45.37
51.10	4.36	53.70	46.28
51.15	4.81	53.75	47.18
51.20	5.28	53.80	48.06
51.25	5.77	53.85	48.93
51.30	6.28	53.90	49.78
51.35	6.82	53.95	50.61
51.40	7.37	54.00	51.43
51.45	7.94	54.05	52.22
51.50	8.54	54.10	52.98
51.55	9.15	54.15	53.72
51.60	9.78	54.20	54.43
51.65	10.43	54.25	55.11
51.70	11.09	54.30	55.74
51.75	11.77	54.35	56.34
51.80	12.48	54.40	56.88
51.85	13.19	54.45	57.37
51.90	13.92	54.50	**57.78**
51.95	14.67		
52.00	15.44		
52.05	16.21		
52.10	17.01		
52.15	17.81		
52.20	18.63		
52.25	19.46		
52.30	20.31		
52.35	21.16		
52.40	22.03		
52.45	22.91		
52.50	23.79		
52.55	24.69		
52.60	25.59		

Summary for Pond 3P: Pond 10A

Inflow Area = 3.046 ac, 67.46% Impervious, Inflow Depth > 6.26" for 100yr Talbot event
Inflow = 26.87 cfs @ 11.97 hrs, Volume= 1.590 af
Outflow = 59.67 cfs @ 12.05 hrs, Volume= 1.592 af, Atten= 0%, Lag= 4.9 min
Primary = 59.67 cfs @ 12.05 hrs, Volume= 1.592 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.17' @ 12.05 hrs Surf.Area= 9,923 sf Storage= 13,099 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 70.4 min (852.4 - 782.0)

Volume	Invert	Avail.Storage	Storage Description
#1	49.50'	23,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.50	6,556	0	0
50.00	7,153	3,427	3,427
51.00	8,960	8,057	11,484
52.00	14,586	11,773	23,257

Device	Routing	Invert	Outlet Devices
#1	Primary	49.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	50.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	50.75'	**120.0 deg x 60.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Primary OutFlow Max=54.10 cfs @ 12.05 hrs HW=51.14' TW=50.73' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.27 cfs @ 3.08 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 8.60 cfs @ 2.54 fps)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 45.23 cfs @ 1.92 fps)

Stage-Discharge for Pond 3P: Pond 10A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.50	0.00	50.54	2.51	51.58	162.72
49.52	0.25	50.56	2.72	51.60	168.41
49.54	0.26	50.58	2.94	51.62	174.16
49.56	0.26	50.60	3.16	51.64	179.99
49.58	0.27	50.62	3.40	51.66	185.88
49.60	0.28	50.64	3.63	51.68	191.83
49.62	0.28	50.66	3.88	51.70	197.86
49.64	0.29	50.68	4.13	51.72	203.94
49.66	0.30	50.70	4.38	51.74	210.10
49.68	0.30	50.72	4.64	51.76	216.32
49.70	0.31	50.74	4.90	51.78	222.60
49.72	0.31	50.76	5.36	51.80	228.94
49.74	0.32	50.78	6.41	51.82	235.35
49.76	0.32	50.80	7.81	51.84	241.82
49.78	0.33	50.82	9.46	51.86	248.35
49.80	0.33	50.84	11.33	51.88	254.95
49.82	0.34	50.86	13.39	51.90	261.60
49.84	0.34	50.88	15.63	51.92	268.32
49.86	0.35	50.90	18.03	51.94	275.10
49.88	0.35	50.92	20.58	51.96	281.93
49.90	0.36	50.94	23.27	51.98	288.83
49.92	0.36	50.96	26.10	52.00	**295.79**
49.94	0.37	50.98	29.05		
49.96	0.37	51.00	32.13		
49.98	0.38	51.02	35.33		
50.00	0.38	51.04	38.64		
50.02	0.39	51.06	42.06		
50.04	0.39	51.08	45.59		
50.06	0.40	51.10	49.22		
50.08	0.40	51.12	52.96		
50.10	0.41	51.14	56.79		
50.12	0.41	51.16	60.72		
50.14	0.41	51.18	64.75		
50.16	0.42	51.20	68.87		
50.18	0.42	51.22	73.07		
50.20	0.43	51.24	77.37		
50.22	0.43	51.26	81.76		
50.24	0.44	51.28	86.23		
50.26	0.45	51.30	90.78		
50.28	0.51	51.32	95.42		
50.30	0.59	51.34	100.13		
50.32	0.69	51.36	104.93		
50.34	0.81	51.38	109.81		
50.36	0.93	51.40	114.77		
50.38	1.07	51.42	119.80		
50.40	1.22	51.44	124.91		
50.42	1.38	51.46	130.09		
50.44	1.55	51.48	135.35		
50.46	1.72	51.50	140.68		
50.48	1.91	51.52	146.09		
50.50	2.10	51.54	151.56		
50.52	2.30	51.56	157.11		

Summary for Pond 4 ditch: POND 4A

Inflow Area = 22.521 ac, 2.76% Impervious, Inflow Depth = 5.04" for 100yr Talbot event
Inflow = 75.72 cfs @ 12.05 hrs, Volume= 9.456 af
Outflow = 65.10 cfs @ 17.25 hrs, Volume= 9.456 af, Atten= 14%, Lag= 311.5 min
Primary = 65.10 cfs @ 17.25 hrs, Volume= 9.456 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 47.92' @ 16.25 hrs Surf.Area= 143,833 sf Storage= 339,257 cf

Plug-Flow detention time= 432.0 min calculated for 9.455 af (100% of inflow)
Center-of-Mass det. time= 432.1 min (1,265.7 - 833.7)

Volume	Invert	Avail.Storage	Storage Description
#1	44.75'	461,460 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.75	2,750	0	0
45.00	60,622	7,922	7,922
46.00	103,486	82,054	89,976
47.00	136,633	120,060	210,035
48.00	144,447	140,540	350,575
48.75	151,245	110,885	461,460

Device	Routing	Invert	Outlet Devices
#1	Primary	44.50'	**36.0" Round Culvert X 2.00** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.50' / 44.25' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	44.75'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	45.90'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	45.90'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Primary	47.90'	**200.0' 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=0.00 cfs @ 17.25 hrs HW=47.52' TW=47.89' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.00 cfs)
  - **2=Orifice/Grate** (Controls 0.00 cfs)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  - **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 4 ditch: POND 4A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
44.75	0.00	45.79	7.71	46.83	45.89	47.87	80.85
44.77	0.06	45.81	7.79	46.85	47.05	47.89	81.45
44.79	0.16	45.83	7.86	46.87	48.23	47.91	82.53
44.81	0.30	45.85	7.93	46.89	48.94	47.93	85.21
44.83	0.46	45.87	8.00	46.91	49.60	47.95	88.76
44.85	0.65	45.89	8.08	46.93	50.25	47.97	92.99
44.87	0.85	45.91	8.19	46.95	50.91	47.99	97.78
44.89	1.08	45.93	8.42	46.97	51.57	48.01	103.06
44.91	1.31	45.95	8.73	46.99	52.23	48.03	108.79
44.93	1.57	45.97	9.10	47.01	52.90	48.05	114.92
44.95	1.84	45.99	9.50	47.03	53.56	48.07	121.43
44.97	2.12	46.01	9.95	47.05	54.22	48.09	128.30
44.99	2.42	46.03	10.43	47.07	54.89	48.11	135.57
45.01	2.72	46.05	10.95	47.09	55.55	48.13	143.25
45.03	3.04	46.07	11.49	47.11	56.22	48.15	151.27
45.05	3.38	46.09	12.07	47.13	56.89	48.17	159.63
45.07	3.72	46.11	12.66	47.15	57.55	48.19	168.31
45.09	4.01	46.13	13.29	47.17	58.22	48.21	177.31
45.11	4.27	46.15	13.94	47.19	58.89	48.23	186.62
45.13	4.54	46.17	14.61	47.21	59.56	48.25	196.22
45.15	4.78	46.19	15.30	47.23	60.22	48.27	206.12
45.17	4.90	46.21	16.01	47.25	60.89	48.29	216.31
45.19	5.02	46.23	16.74	47.27	61.56	48.31	226.96
45.21	5.13	46.25	17.50	47.29	62.22	48.33	238.11
45.23	5.24	46.27	18.27	47.31	62.89	48.35	249.60
45.25	5.35	46.29	19.06	47.33	63.56	48.37	261.40
45.27	5.45	46.31	19.86	47.35	64.22	48.39	273.52
45.29	5.56	46.33	20.69	47.37	64.89	48.41	285.96
45.31	5.66	46.35	21.53	47.39	65.55	48.43	298.71
45.33	5.76	46.37	22.39	47.41	66.21	48.45	311.75
45.35	5.86	46.39	23.26	47.43	66.87	48.47	325.07
45.37	5.96	46.41	24.15	47.45	67.53	48.49	338.61
45.39	6.05	46.43	25.05	47.47	68.19	48.51	351.90
45.41	6.14	46.45	25.97	47.49	68.85	48.53	365.30
45.43	6.24	46.47	26.91	47.51	69.50	48.55	378.89
45.45	6.33	46.49	27.85	47.53	70.16	48.57	392.67
45.47	6.42	46.51	28.82	47.55	70.81	48.59	406.62
45.49	6.51	46.53	29.79	47.57	71.46	48.61	420.76
45.51	6.59	46.55	30.78	47.59	72.11	48.63	435.08
45.53	6.68	46.57	31.78	47.61	72.75	48.65	449.56
45.55	6.76	46.59	32.80	47.63	73.40	48.67	464.22
45.57	6.85	46.61	33.82	47.65	74.04	48.69	479.05
45.59	6.93	46.63	34.86	47.67	74.67	48.71	494.04
45.61	7.01	46.65	35.91	47.69	75.31	48.73	509.20
45.63	7.10	46.67	36.98	47.71	75.94	48.75	**524.52**
45.65	7.18	46.69	38.05	47.73	76.57		
45.67	7.25	46.71	39.14	47.75	77.19		
45.69	7.33	46.73	40.24	47.77	77.81		
45.71	7.41	46.75	41.34	47.79	78.43		
45.73	7.49	46.77	42.46	47.81	79.04		
45.75	7.56	46.79	43.60	47.83	79.65		
45.77	7.64	46.81	44.74	47.85	80.25		

Summary for Pond 4P pr: EX 24 CMP sp4

Inflow Area =	82.285 ac,	7.77% Impervious,	Inflow Depth >	5.06"	for 100yr Talbot event
Inflow =	85.78 cfs @	12.34 hrs,	Volume=	34.673 af	
Outflow =	85.78 cfs @	12.35 hrs,	Volume=	34.673 af,	Atten= 0%, Lag= 0.6 min
Primary =	23.16 cfs @	12.35 hrs,	Volume=	22.667 af	
Secondary =	62.62 cfs @	12.35 hrs,	Volume=	12.006 af	

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 49.00' @ 12.35 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.45'	**24.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.45' / 44.05' S= 0.0100 '/' Cc= 0.900 n= 0.026, Flow Area= 3.14 sf
#2	Secondary	48.60'	**CL Hiners Lane as Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 1.40 2.40 2.90 Width (feet) 0.00 190.00 335.00 583.00 665.00

Primary OutFlow Max=23.16 cfs @ 12.35 hrs HW=49.00' TW=45.81' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 23.16 cfs @ 7.37 fps)

Secondary OutFlow Max=62.61 cfs @ 12.35 hrs HW=49.00' TW=45.81' (Dynamic Tailwater)
└─**2=CL Hiners Lane as Weir** (Weir Controls 62.61 cfs @ 1.66 fps)

Stage-Discharge for Pond 4P pr: EX 24 CMP sp4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
44.45	0.00	0.00	0.00
44.55	0.03	0.03	0.00
44.65	0.13	0.13	0.00
44.75	0.31	0.31	0.00
44.85	0.56	0.56	0.00
44.95	0.88	0.88	0.00
45.05	1.28	1.28	0.00
45.15	1.73	1.73	0.00
45.25	2.25	2.25	0.00
45.35	2.82	2.82	0.00
45.45	3.43	3.43	0.00
45.55	4.09	4.09	0.00
45.65	4.79	4.79	0.00
45.75	5.52	5.52	0.00
45.85	6.28	6.28	0.00
45.95	7.06	7.06	0.00
46.05	7.86	7.86	0.00
46.15	8.66	8.66	0.00
46.25	9.45	9.45	0.00
46.35	10.24	10.24	0.00
46.45	11.01	11.01	0.00
46.55	11.75	11.75	0.00
46.65	12.45	12.45	0.00
46.75	13.08	13.08	0.00
46.85	13.62	13.62	0.00
46.95	14.04	14.04	0.00
47.05	14.24	14.24	0.00
47.15	14.15	14.15	0.00
47.25	14.77	14.77	0.00
47.35	15.38	15.38	0.00
47.45	15.96	15.96	0.00
47.55	16.52	16.52	0.00
47.65	17.06	17.06	0.00
47.75	17.59	17.59	0.00
47.85	18.10	18.10	0.00
47.95	18.59	18.59	0.00
48.05	19.07	19.07	0.00
48.15	19.55	19.55	0.00
48.25	20.00	20.00	0.00
48.35	20.45	20.45	0.00
48.45	20.89	20.89	0.00
48.55	21.33	21.33	0.00
48.65	22.10	21.75	0.35
48.75	27.58	22.16	5.42
48.85	42.01	22.57	19.45
48.95	68.06	22.97	45.10
49.05	107.65	23.36	84.29
49.15	159.58	23.75	135.83
49.25	222.57	24.13	198.45
49.35	296.29	24.50	271.79
49.45	380.63	24.87	355.76
49.55	475.61	25.23	450.38
49.65	581.31	25.59	555.72
49.75	697.84	25.94	671.90
49.85	825.36	26.29	799.07
49.95	964.01	26.64	937.38
50.05	1,114.05	26.97	1,087.07
50.15	1,276.59	27.31	1,249.28
50.25	1,452.74	27.64	1,425.10
50.35	1,643.25	27.97	1,615.29
50.45	1,848.78	28.29	1,820.49
50.55	2,069.92	28.61	2,041.31
50.65	2,307.20	28.93	2,278.28
50.75	2,561.15	29.24	2,531.91
50.85	2,832.24	29.55	2,802.69
50.95	3,120.94	29.86	3,091.08
51.05	3,427.64	30.16	3,397.48
51.15	3,752.00	30.46	3,721.54
51.25	4,093.69	30.76	4,062.93
51.35	4,452.65	31.05	4,421.60
51.45	**4,828.89**	**31.34**	**4,797.54**

Summary for Pond 6P: Connection of 6B and 6C

Inflow Area = 33.300 ac, 0.00% Impervious, Inflow Depth > 4.59" for 100yr Talbot event
Inflow = 36.17 cfs @ 12.89 hrs, Volume= 12.727 af
Outflow = 36.17 cfs @ 12.90 hrs, Volume= 12.727 af, Atten= 0%, Lag= 0.6 min
Primary = 36.17 cfs @ 12.90 hrs, Volume= 12.727 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.88' @ 12.87 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	50.25'	**42.0" Round Culvert** L= 182.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.25' / 50.10' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	54.50'	**36.0" x 42.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.25'	**42.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=36.18 cfs @ 12.90 hrs HW=53.88' TW=53.24' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 36.18 cfs @ 4.51 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Passes 36.18 cfs of 37.08 cfs potential flow)

Stage-Discharge for Pond 6P: Connection of 6B and 6C

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.25	0.00	52.85	26.74
50.30	0.01	52.90	27.68
50.35	0.02	52.95	28.62
50.40	0.06	53.00	29.56
50.45	0.11	53.05	30.52
50.50	0.18	53.10	31.47
50.55	0.28	53.15	32.44
50.60	0.39	53.20	33.40
50.65	0.52	53.25	34.37
50.70	0.68	53.30	35.35
50.75	0.86	53.35	36.32
50.80	1.06	53.40	37.29
50.85	1.29	53.45	38.27
50.90	1.54	53.50	39.24
50.95	1.81	53.55	40.21
51.00	2.11	53.60	41.18
51.05	2.42	53.65	42.14
51.10	2.77	53.70	43.10
51.15	3.13	53.75	44.06
51.20	3.52	53.80	45.00
51.25	3.93	53.85	45.94
51.30	4.36	53.90	46.87
51.35	4.81	53.95	47.79
51.40	5.28	54.00	48.69
51.45	5.78	54.05	49.59
51.50	6.30	54.10	50.46
51.55	6.84	54.15	51.32
51.60	7.39	54.20	52.16
51.65	7.97	54.25	52.98
51.70	8.57	54.30	53.77
51.75	9.19	54.35	54.54
51.80	9.82	54.40	55.28
51.85	10.48	54.45	55.98
51.90	11.15	54.50	**56.65**
51.95	11.84		
52.00	12.55		
52.05	13.27		
52.10	14.01		
52.15	14.77		
52.20	15.54		
52.25	16.33		
52.30	17.13		
52.35	17.94		
52.40	18.77		
52.45	19.61		
52.50	20.47		
52.55	21.33		
52.60	22.21		
52.65	23.10		
52.70	23.99		
52.75	24.90		
52.80	25.82		

Summary for Pond 8P: POND 6B

Inflow Area = 21.410 ac, 0.00% Impervious, Inflow Depth > 4.12" for 100yr Talbot event
Inflow = 29.72 cfs @ 12.38 hrs, Volume= 7.355 af
Outflow = 25.72 cfs @ 12.88 hrs, Volume= 7.410 af, Atten= 13%, Lag= 29.9 min
Primary = 25.72 cfs @ 12.88 hrs, Volume= 7.410 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 55.52' @ 12.88 hrs Surf.Area= 16,793 sf Storage= 28,126 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 30.6 min (951.6 - 921.0)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	61,963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	38	0	0
53.30	1,415	218	218
53.50	4,629	604	822
53.80	8,567	1,979	2,802
54.00	13,635	2,220	5,022
55.00	15,678	14,657	19,678
56.00	17,821	16,750	36,428
57.00	33,250	25,536	61,963

Device	Routing	Invert	Outlet Devices
#1	Primary	50.75'	**30.0" Round Culvert** L= 336.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 50.75' / 50.35' S= 0.0012 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	52.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	54.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=25.72 cfs @ 12.88 hrs HW=55.52' TW=53.88' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 25.72 cfs @ 5.24 fps)
  ├─**2=Orifice/Grate** (Passes < 1.21 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 59.71 cfs potential flow)

Stage-Discharge for Pond 8P: POND 6B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	54.04	1.07	55.08	29.98	56.12	36.30
53.02	0.49	54.06	1.08	55.10	30.11	56.14	36.41
53.04	0.51	54.08	1.09	55.12	30.25	56.16	36.53
53.06	0.53	54.10	1.10	55.14	30.38	56.18	36.64
53.08	0.54	54.12	1.11	55.16	30.51	56.20	36.75
53.10	0.56	54.14	1.11	55.18	30.64	56.22	36.85
53.12	0.58	54.16	1.12	55.20	30.78	56.24	36.96
53.14	0.59	54.18	1.13	55.22	30.91	56.26	37.07
53.16	0.61	54.20	1.14	55.24	31.04	56.28	37.18
53.18	0.62	54.22	1.26	55.26	31.17	56.30	37.29
53.20	0.63	54.24	1.48	55.28	31.30	56.32	37.40
53.22	0.65	54.26	1.75	55.30	31.42	56.34	37.51
53.24	0.66	54.28	2.08	55.32	31.55	56.36	37.61
53.26	0.68	54.30	2.45	55.34	31.68	56.38	37.72
53.28	0.69	54.32	2.85	55.36	31.81	56.40	37.83
53.30	0.70	54.34	3.29	55.38	31.93	56.42	37.93
53.32	0.71	54.36	3.77	55.40	32.06	56.44	38.04
53.34	0.73	54.38	4.27	55.42	32.18	56.46	38.14
53.36	0.74	54.40	4.80	55.44	32.31	56.48	38.25
53.38	0.75	54.42	5.36	55.46	32.43	56.50	38.36
53.40	0.76	54.44	5.94	55.48	32.56	56.52	38.46
53.42	0.77	54.46	6.55	55.50	32.68	56.54	38.56
53.44	0.79	54.48	7.18	55.52	32.80	56.56	38.67
53.46	0.80	54.50	7.83	55.54	32.93	56.58	38.77
53.48	0.81	54.52	8.50	55.56	33.05	56.60	38.88
53.50	0.82	54.54	9.19	55.58	33.17	56.62	38.98
53.52	0.83	54.56	9.91	55.60	33.29	56.64	39.08
53.54	0.84	54.58	10.64	55.62	33.41	56.66	39.19
53.56	0.85	54.60	11.39	55.64	33.53	56.68	39.29
53.58	0.86	54.62	12.17	55.66	33.65	56.70	39.39
53.60	0.87	54.64	12.95	55.68	33.77	56.72	39.49
53.62	0.88	54.66	13.76	55.70	33.89	56.74	39.60
53.64	0.89	54.68	14.58	55.72	34.01	56.76	39.70
53.66	0.90	54.70	15.42	55.74	34.13	56.78	39.80
53.68	0.91	54.72	16.28	55.76	34.25	56.80	39.90
53.70	0.92	54.74	17.15	55.78	34.36	56.82	40.00
53.72	0.93	54.76	18.04	55.80	34.48	56.84	40.10
53.74	0.94	54.78	18.95	55.82	34.60	56.86	40.20
53.76	0.95	54.80	19.86	55.84	34.71	56.88	40.30
53.78	0.96	54.82	20.80	55.86	34.83	56.90	40.40
53.80	0.97	54.84	21.75	55.88	34.95	56.92	40.50
53.82	0.98	54.86	22.71	55.90	35.06	56.94	40.60
53.84	0.99	54.88	23.68	55.92	35.18	56.96	40.70
53.86	1.00	54.90	24.67	55.94	35.29	56.98	40.80
53.88	1.00	54.92	25.68	55.96	35.40	57.00	**40.90**
53.90	1.01	54.94	26.69	55.98	35.52		
53.92	1.02	54.96	27.72	56.00	35.63		
53.94	1.03	54.98	28.77	56.02	35.74		
53.96	1.04	55.00	29.44	56.04	35.86		
53.98	1.05	55.02	29.57	56.06	35.97		
54.00	1.06	55.04	29.71	56.08	36.08		
54.02	1.07	55.06	29.85	56.10	36.19		

Summary for Pond 9P: POND 6A

Inflow Area = 19.820 ac, 0.00% Impervious, Inflow Depth = 4.01" for 100yr Talbot event
Inflow = 79.83 cfs @ 12.05 hrs, Volume= 6.626 af
Outflow = 27.80 cfs @ 12.50 hrs, Volume= 6.629 af, Atten= 65%, Lag= 26.5 min
Primary = 27.80 cfs @ 12.50 hrs, Volume= 6.629 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 56.86' @ 12.50 hrs Surf.Area= 51,627 sf Storage= 94,579 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 95.0 min (934.0 - 839.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	142,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	0	0	0
54.25	5,534	692	692
54.50	11,263	2,100	2,791
54.75	19,530	3,849	6,641
55.00	29,317	6,106	12,746
56.00	48,475	38,896	51,642
57.00	52,149	50,312	101,954
57.75	54,976	40,172	142,126

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	**36.0" Round Culvert** L= 185.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.75' / 53.65' S= 0.0005 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	53.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	55.20'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=27.80 cfs @ 12.50 hrs HW=56.86' TW=55.31' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 27.80 cfs @ 4.72 fps)
  ├─**2=Orifice/Grate** (Passes < 1.18 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 82.99 cfs potential flow)

Stage-Discharge for Pond 9P: POND 6A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
54.00	0.00	55.04	1.07	56.08	17.27	57.12	31.09
54.02	0.17	55.06	1.08	56.10	17.53	57.14	31.32
54.04	0.20	55.08	1.09	56.12	17.80	57.16	31.56
54.06	0.24	55.10	1.10	56.14	18.07	57.18	31.79
54.08	0.27	55.12	1.11	56.16	18.34	57.20	32.01
54.10	0.31	55.14	1.11	56.18	18.61	57.22	32.23
54.12	0.35	55.16	1.12	56.20	18.88	57.24	32.45
54.14	0.40	55.18	1.13	56.22	19.15	57.26	32.67
54.16	0.44	55.20	1.14	56.24	19.42	57.28	32.88
54.18	0.50	55.22	1.26	56.26	19.69	57.30	33.09
54.20	0.55	55.24	1.48	56.28	19.96	57.32	33.29
54.22	0.60	55.26	1.75	56.30	20.23	57.34	33.49
54.24	0.66	55.28	2.08	56.32	20.51	57.36	33.69
54.26	0.68	55.30	2.45	56.34	20.78	57.38	33.88
54.28	0.69	55.32	2.85	56.36	21.05	57.40	34.06
54.30	0.70	55.34	3.29	56.38	21.33	57.42	34.24
54.32	0.71	55.36	3.77	56.40	21.60	57.44	34.41
54.34	0.73	55.38	4.27	56.42	21.88	57.46	34.58
54.36	0.74	55.40	4.80	56.44	22.15	57.48	34.74
54.38	0.75	55.42	5.36	56.46	22.42	57.50	34.89
54.40	0.76	55.44	5.94	56.48	22.70	57.52	35.04
54.42	0.77	55.46	6.55	56.50	22.97	57.54	35.17
54.44	0.79	55.48	7.18	56.52	23.25	57.56	35.30
54.46	0.80	55.50	7.83	56.54	23.52	57.58	35.42
54.48	0.81	55.52	8.50	56.56	23.79	57.60	35.52
54.50	0.82	55.54	9.19	56.58	24.07	57.62	35.61
54.52	0.83	55.56	9.91	56.60	24.34	57.64	35.69
54.54	0.84	55.58	10.64	56.62	24.61	57.66	35.74
54.56	0.85	55.60	11.23	56.64	24.89	57.68	**35.78**
54.58	0.86	55.62	11.46	56.66	25.16	57.70	**35.78**
54.60	0.87	55.64	11.70	56.68	25.43	57.72	35.73
54.62	0.88	55.66	11.94	56.70	25.70	57.74	35.59
54.64	0.89	55.68	12.18	56.72	25.97		
54.66	0.90	55.70	12.42	56.74	26.24		
54.68	0.91	55.72	12.66	56.76	26.51		
54.70	0.92	55.74	12.91	56.78	26.77		
54.72	0.93	55.76	13.15	56.80	27.04		
54.74	0.94	55.78	13.40	56.82	27.30		
54.76	0.95	55.80	13.65	56.84	27.57		
54.78	0.96	55.82	13.90	56.86	27.83		
54.80	0.97	55.84	14.15	56.88	28.09		
54.82	0.98	55.86	14.41	56.90	28.35		
54.84	0.99	55.88	14.66	56.92	28.61		
54.86	1.00	55.90	14.92	56.94	28.87		
54.88	1.00	55.92	15.17	56.96	29.12		
54.90	1.01	55.94	15.43	56.98	29.37		
54.92	1.02	55.96	15.69	57.00	29.63		
54.94	1.03	55.98	15.95	57.02	29.87		
54.96	1.04	56.00	16.21	57.04	30.12		
54.98	1.05	56.02	16.47	57.06	30.37		
55.00	1.06	56.04	16.74	57.08	30.61		
55.02	1.07	56.06	17.00	57.10	30.85		

Summary for Pond 11P: TCCC main entrance culvert

Inflow Area = 4.294 ac, 53.80% Impervious, Inflow Depth > 6.04" for 100yr Talbot event
Inflow = 64.44 cfs @ 12.05 hrs, Volume= 2.162 af
Outflow = 28.65 cfs @ 12.07 hrs, Volume= 2.160 af, Atten= 56%, Lag= 1.0 min
Primary = 28.65 cfs @ 12.07 hrs, Volume= 2.160 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.52' @ 12.07 hrs Surf.Area= 2,614 sf Storage= 4,387 cf

Plug-Flow detention time= 9.3 min calculated for 2.160 af (100% of inflow)
Center-of-Mass det. time= 8.6 min (852.3 - 843.7)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	7,360 cf	**4.00'W x 100.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	48.47'	**36.0" Round Culvert w/ 12.0" inside fill** L= 49.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.47' / 47.25' S= 0.0045 '/' Cc= 0.900 n= 0.013, Flow Area= 5.01 sf
#2	Primary	52.11'	**TCCC entrance road crown, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.90 1.50 Width (feet) 0.00 50.00 160.00 275.00

Primary OutFlow Max=27.92 cfs @ 12.07 hrs HW=51.48' TW=50.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 27.92 cfs @ 5.58 fps)
└─**2=TCCC entrance road crown** (Controls 0.00 cfs)

Stage-Discharge for Pond 11P: TCCC main entrance culvert

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.50	0.00	50.58	22.27	52.66	126.14
48.54	0.00	50.62	22.73	52.70	139.29
48.58	0.00	50.66	23.18	52.74	153.47
48.62	0.14	50.70	23.62	52.78	168.69
48.66	0.35	50.74	24.05	52.82	184.97
48.70	0.60	50.78	24.46	52.86	202.34
48.74	0.89	50.82	24.86	52.90	220.81
48.78	1.22	50.86	25.23	52.94	240.41
48.82	1.59	50.90	25.59	52.98	261.15
48.86	1.99	50.94	25.92	53.02	283.06
48.90	2.43	50.98	26.23	53.06	306.19
48.94	2.89	51.02	26.50	53.10	330.61
48.98	3.25	51.06	26.72	53.14	356.39
49.02	3.62	51.10	26.87	53.18	383.55
49.06	4.01	51.14	26.83	53.22	412.15
49.10	4.40	51.18	27.42	53.26	442.22
49.14	4.80	51.22	28.01	53.30	473.79
49.18	5.21	51.26	28.58	53.34	506.91
49.22	5.63	51.30	29.14	53.38	541.60
49.26	6.06	51.34	29.69	53.42	577.89
49.30	6.50	51.38	30.23	53.46	615.82
49.34	6.94	51.42	30.76	53.50	655.41
49.38	7.39	51.46	31.28	53.54	696.70
49.42	7.85	51.50	31.79	53.58	**739.71**
49.46	8.31	51.54	32.30		
49.50	8.78	51.58	32.80		
49.54	9.26	51.62	33.29		
49.58	9.74	51.66	33.77		
49.62	10.23	51.70	34.24		
49.66	10.72	51.74	34.71		
49.70	11.21	51.78	35.18		
49.74	11.71	51.82	35.63		
49.78	12.21	51.86	36.08		
49.82	12.72	51.90	36.53		
49.86	13.22	51.94	36.97		
49.90	13.73	51.98	37.40		
49.94	14.25	52.02	37.83		
49.98	14.76	52.06	38.26		
50.02	15.27	52.10	38.68		
50.06	15.79	52.14	39.20		
50.10	16.30	52.18	40.36		
50.14	16.81	52.22	42.54		
50.18	17.33	52.26	45.76		
50.22	17.84	52.30	49.87		
50.26	18.35	52.34	54.84		
50.30	18.85	52.38	60.66		
50.34	19.36	52.42	67.34		
50.38	19.86	52.46	74.91		
50.42	20.35	52.50	83.33		
50.46	20.84	52.54	92.60		
50.50	21.33	52.58	102.81		
50.54	21.80	52.62	113.99		

Summary for Pond pnd 10B1: pnd 10B Cell 1

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 4.80" for 100yr Talbot event
Inflow = 13.34 cfs @ 12.24 hrs, Volume= 2.471 af
Outflow = 12.36 cfs @ 12.53 hrs, Volume= 3.019 af, Atten= 7%, Lag= 17.1 min
Primary = 12.36 cfs @ 12.53 hrs, Volume= 3.019 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.24' @ 12.54 hrs Surf.Area= 3,964 sf Storage= 5,361 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 535.6 min (1,396.5 - 860.9)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	7,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	1,181	0	0
50.00	2,121	1,651	1,651
51.00	3,494	2,808	4,459
51.75	4,950	3,167	7,625

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0012 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.50'	**12.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=12.36 cfs @ 12.53 hrs HW=51.24' TW=50.57' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.36 cfs @ 3.93 fps)
  ├─**2=Orifice/Grate** (Passes < 1.54 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 25.07 cfs potential flow)

Stage-Discharge for Pond pnd 10B1: pnd 10B Cell 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	2.15	51.08	13.45
49.02	0.21	50.06	2.16	51.10	13.59
49.04	0.25	50.08	2.18	51.12	13.73
49.06	0.29	50.10	2.20	51.14	13.86
49.08	0.33	50.12	2.21	51.16	13.99
49.10	0.37	50.14	2.23	51.18	14.12
49.12	0.42	50.16	2.25	51.20	14.24
49.14	0.47	50.18	2.26	51.22	14.36
49.16	0.52	50.20	2.28	51.24	14.47
49.18	0.58	50.22	2.29	51.26	14.58
49.20	0.63	50.24	2.31	51.28	14.68
49.22	0.69	50.26	2.32	51.30	14.77
49.24	0.76	50.28	2.34	51.32	14.86
49.26	0.82	50.30	2.35	51.34	14.94
49.28	0.89	50.32	2.37	51.36	15.00
49.30	0.96	50.34	2.38	51.38	15.05
49.32	1.04	50.36	2.40	51.40	15.08
49.34	1.12	50.38	2.41	51.42	15.04
49.36	1.19	50.40	2.43	51.44	15.25
49.38	1.28	50.42	2.44	51.46	15.45
49.40	1.36	50.44	2.46	51.48	15.65
49.42	1.45	50.46	2.47	51.50	15.85
49.44	1.54	50.48	2.49	51.52	16.05
49.46	1.59	50.50	2.50	51.54	16.24
49.48	1.62	50.52	2.63	51.56	16.44
49.50	1.64	50.54	2.85	51.58	16.63
49.52	1.66	50.56	3.13	51.60	16.81
49.54	1.68	50.58	3.47	51.62	17.00
49.56	1.70	50.60	3.84	51.64	17.18
49.58	1.72	50.62	4.25	51.66	17.37
49.60	1.74	50.64	4.70	51.68	17.55
49.62	1.76	50.66	5.18	51.70	17.72
49.64	1.78	50.68	5.69	51.72	17.90
49.66	1.80	50.70	6.23	51.74	**18.07**
49.68	1.82	50.72	6.79		
49.70	1.84	50.74	7.38		
49.72	1.86	50.76	7.99		
49.74	1.88	50.78	8.63		
49.76	1.90	50.80	9.28		
49.78	1.92	50.82	9.96		
49.80	1.94	50.84	10.66		
49.82	1.96	50.86	11.38		
49.84	1.97	50.88	11.94		
49.86	1.99	50.90	12.10		
49.88	2.01	50.92	12.26		
49.90	2.03	50.94	12.42		
49.92	2.05	50.96	12.57		
49.94	2.06	50.98	12.72		
49.96	2.08	51.00	12.87		
49.98	2.10	51.02	13.02		
50.00	2.11	51.04	13.17		
50.02	2.13	51.06	13.31		

Summary for Pond pnd 10B2: Pond 10B Cell 2

Inflow Area = 6.184 ac, 15.20% Impervious, Inflow Depth = 4.80" for 100yr Talbot event
Inflow = 25.96 cfs @ 12.08 hrs, Volume= 2.471 af
Outflow = 13.34 cfs @ 12.24 hrs, Volume= 2.471 af, Atten= 49%, Lag= 9.7 min
Primary = 13.34 cfs @ 12.24 hrs, Volume= 2.471 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 51.93' @ 12.45 hrs Surf.Area= 14,778 sf Storage= 22,116 cf

Plug-Flow detention time= 32.3 min calculated for 2.471 af (100% of inflow)
Center-of-Mass det. time= 32.3 min (860.9 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	49.00'	31,513 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.00	793	0	0
50.00	5,314	3,054	3,054
51.00	9,929	7,622	10,675
52.00	15,165	12,547	23,222
52.50	18,000	8,291	31,513

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**24.0" Round Culvert** L= 78.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0006 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	49.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.75'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	49.00'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=13.20 cfs @ 12.24 hrs HW=51.78' TW=51.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.20 cfs @ 4.20 fps)
  ├─**2=Orifice/Grate** (Passes < 1.65 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 17.05 cfs potential flow)
  └─**4=Sharp-Crested Rectangular Weir** (Passes < 65.18 cfs potential flow)

Stage-Discharge for Pond pnd 10B2: Pond 10B Cell 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
49.00	0.00	50.04	4.66	51.08	12.37	52.12	19.11
49.02	0.07	50.06	4.80	51.10	12.49	52.14	19.24
49.04	0.11	50.08	4.94	51.12	12.61	52.16	19.37
49.06	0.16	50.10	5.08	51.14	12.73	52.18	19.51
49.08	0.20	50.12	5.22	51.16	12.85	52.20	19.64
49.10	0.26	50.14	5.36	51.18	12.96	52.22	19.77
49.12	0.31	50.16	5.51	51.20	13.07	52.24	19.90
49.14	0.37	50.18	5.65	51.22	13.17	52.26	20.03
49.16	0.43	50.20	5.80	51.24	13.26	52.28	20.16
49.18	0.48	50.22	5.94	51.26	13.36	52.30	20.28
49.20	0.53	50.24	6.09	51.28	13.44	52.32	20.41
49.22	0.58	50.26	6.24	51.30	13.52	52.34	20.53
49.24	0.63	50.28	6.39	51.32	13.58	52.36	20.66
49.26	0.69	50.30	6.54	51.34	13.64	52.38	20.78
49.28	0.75	50.32	6.69	51.36	13.69	52.40	20.91
49.30	0.81	50.34	6.84	51.38	13.71	52.42	21.03
49.32	0.88	50.36	6.99	51.40	13.70	52.44	21.15
49.34	0.95	50.38	7.15	51.42	13.61	52.46	21.27
49.36	1.02	50.40	7.30	51.44	13.79	52.48	21.39
49.38	1.09	50.42	7.45	51.46	13.98	52.50	**21.51**
49.40	1.17	50.44	7.61	51.48	14.16		
49.42	1.24	50.46	7.76	51.50	14.34		
49.44	1.32	50.48	7.92	51.52	14.52		
49.46	1.40	50.50	8.07	51.54	14.70		
49.48	1.49	50.52	8.23	51.56	14.87		
49.50	1.58	50.54	8.39	51.58	15.04		
49.52	1.66	50.56	8.54	51.60	15.21		
49.54	1.76	50.58	8.70	51.62	15.38		
49.56	1.85	50.60	8.85	51.64	15.55		
49.58	1.94	50.62	9.01	51.66	15.71		
49.60	2.04	50.64	9.16	51.68	15.87		
49.62	2.14	50.66	9.32	51.70	16.03		
49.64	2.24	50.68	9.47	51.72	16.19		
49.66	2.35	50.70	9.63	51.74	16.35		
49.68	2.45	50.72	9.78	51.76	16.51		
49.70	2.56	50.74	9.94	51.78	16.66		
49.72	2.67	50.76	10.09	51.80	16.82		
49.74	2.78	50.78	10.24	51.82	16.97		
49.76	2.90	50.80	10.39	51.84	17.12		
49.78	3.01	50.82	10.54	51.86	17.27		
49.80	3.13	50.84	10.69	51.88	17.42		
49.82	3.25	50.86	10.84	51.90	17.57		
49.84	3.37	50.88	10.99	51.92	17.71		
49.86	3.49	50.90	11.13	51.94	17.86		
49.88	3.62	50.92	11.28	51.96	18.00		
49.90	3.74	50.94	11.42	51.98	18.14		
49.92	3.87	50.96	11.56	52.00	18.28		
49.94	4.00	50.98	11.70	52.02	18.42		
49.96	4.13	51.00	11.84	52.04	18.56		
49.98	4.26	51.02	11.98	52.06	18.70		
50.00	4.39	51.04	12.11	52.08	18.84		
50.02	4.53	51.06	12.24	52.10	18.97		

Summary for Pond POND 4B: POND 4B

Inflow Area = 39.678 ac, 3.29% Impervious, Inflow Depth > 4.75" for 100yr Talbot event
Inflow = 50.83 cfs @ 12.17 hrs, Volume= 15.692 af
Outflow = 45.10 cfs @ 12.55 hrs, Volume= 16.114 af, Atten= 11%, Lag= 23.1 min
Primary = 45.10 cfs @ 12.55 hrs, Volume= 16.114 af

Routing by Sim-Route method, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 50.94' @ 12.55 hrs Surf.Area= 40,700 sf Storage= 66,512 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 122.1 min (1,032.9 - 910.7)

Volume	Invert	Avail.Storage	Storage Description
#1	48.90'	106,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.90	2,378	0	0
49.00	12,688	753	753
49.25	24,390	4,635	5,388
49.50	32,399	7,099	12,487
49.75	34,894	8,412	20,898
50.00	36,984	8,985	29,883
51.00	40,925	38,955	68,838
51.75	58,241	37,187	106,025

Device	Routing	Invert	Outlet Devices
#1	Primary	48.75'	**30.0" Round Culvert X 2.00** L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.75' / 48.70' S= 0.0016 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	48.75'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	48.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	49.40'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	50.60'	**6.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Primary	50.60'	**160.0 deg x 30.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)

Primary OutFlow Max=45.10 cfs @ 12.55 hrs HW=50.94' TW=50.57' (Dynamic Tailwater)
- **1=Culvert** (Outlet Controls 25.53 cfs @ 3.73 fps)
  - **2=Orifice/Grate** (Passes < 0.57 cfs potential flow)
  - **3=Orifice/Grate** (Passes < 1.02 cfs potential flow)
  - **4=Sharp-Crested Rectangular Weir** (Passes < 23.43 cfs potential flow)
  - **5=Sharp-Crested Rectangular Weir** (Passes < 4.42 cfs potential flow)
- **6=Sharp-Crested Vee/Trap Weir** (Weir Controls 19.57 cfs @ 1.79 fps)

Stage-Discharge for Pond POND 4B: POND 4B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.90	0.00	49.94	10.51	50.98	56.37
48.92	0.20	49.96	10.96	51.00	58.77
48.94	0.26	49.98	11.41	51.02	61.21
48.96	0.32	50.00	11.87	51.04	63.72
48.98	0.39	50.02	12.34	51.06	66.28
49.00	0.46	50.04	12.74	51.08	68.90
49.02	0.55	50.06	13.11	51.10	71.57
49.04	0.64	50.08	13.48	51.12	74.30
49.06	0.73	50.10	13.86	51.14	77.07
49.08	0.84	50.12	14.24	51.16	79.91
49.10	0.95	50.14	14.63	51.18	82.79
49.12	1.06	50.16	15.02	51.20	85.73
49.14	1.19	50.18	15.41	51.22	88.72
49.16	1.32	50.20	15.81	51.24	91.75
49.18	1.45	50.22	16.21	51.26	94.84
49.20	1.60	50.24	16.61	51.28	97.98
49.22	1.75	50.26	17.02	51.30	101.17
49.24	1.84	50.28	17.43	51.32	104.41
49.26	1.88	50.30	17.85	51.34	107.70
49.28	1.91	50.32	18.26	51.36	111.03
49.30	1.95	50.34	18.69	51.38	114.42
49.32	1.98	50.36	19.11	51.40	117.85
49.34	2.02	50.38	19.54	51.42	121.33
49.36	2.05	50.40	19.97	51.44	124.86
49.38	2.08	50.42	20.40	51.46	128.43
49.40	2.12	50.44	20.84	51.48	132.05
49.42	2.21	50.46	21.28	51.50	135.72
49.44	2.34	50.48	21.72	51.52	139.43
49.46	2.50	50.50	22.16	51.54	143.19
49.48	2.69	50.52	22.61	51.56	146.99
49.50	2.89	50.54	23.06	51.58	150.84
49.52	3.12	50.56	23.51	51.60	154.74
49.54	3.36	50.58	23.97	51.62	158.68
49.56	3.61	50.60	24.42	51.64	162.66
49.58	3.88	50.62	25.14	51.66	166.69
49.60	4.16	50.64	26.09	51.68	170.75
49.62	4.46	50.66	27.18	51.70	174.87
49.64	4.77	50.68	28.39	51.72	179.02
49.66	5.08	50.70	29.71	51.74	**183.22**
49.68	5.41	50.72	31.13		
49.70	5.75	50.74	32.63		
49.72	6.10	50.76	34.22		
49.74	6.46	50.78	35.89		
49.76	6.83	50.80	37.64		
49.78	7.20	50.82	39.45		
49.80	7.59	50.84	41.34		
49.82	7.98	50.86	43.30		
49.84	8.38	50.88	45.32		
49.86	8.79	50.90	47.41		
49.88	9.21	50.92	49.56		
49.90	9.64	50.94	51.77		
49.92	10.07	50.96	54.04		

Summary for Link sp4 PR: Prop Design Point 4

Inflow Area = 82.285 ac, 7.77% Impervious, Inflow Depth > 5.06" for 100yr Talbot event
Inflow = 85.78 cfs @ 12.35 hrs, Volume= 34.673 af
Primary = 85.78 cfs @ 12.36 hrs, Volume= 34.673 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 5.00-100.00 hrs, dt= 0.01 hrs

102 Point manual elevation table, To= 0.00 hrs, dt= 0.25 hrs, feet =

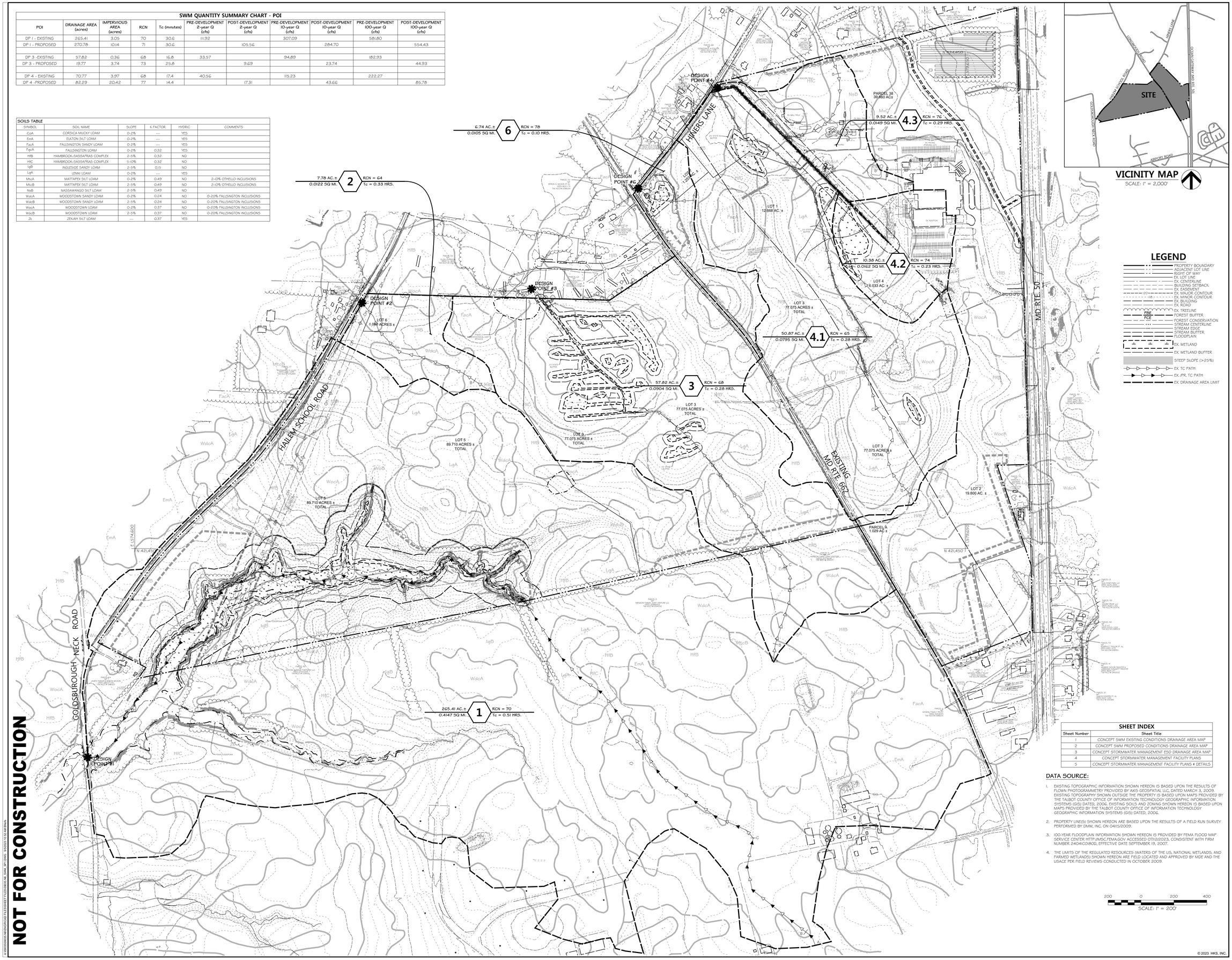
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
44.08	44.17	44.25	44.75	45.75	45.90	45.50	45.00	44.88
44.75	44.63	44.50	44.46	44.42	44.38	44.33	44.29	44.25
44.24	44.24	44.23	44.22	44.22	44.21	44.20	44.20	44.19
44.18	44.18	44.17	44.16	44.16	44.15	44.14	44.14	44.13
44.13	44.12	44.11	44.11	44.10	44.09	44.09	44.08	44.07
44.07	44.06	44.05	44.05	44.04	44.03	44.03	44.02	44.01
44.01	44.00	44.00						

SWM QUANTITY SUMMARY CHART - POI

POI	DRAINAGE AREA (acres)	IMPERVIOUS AREA (acres)	RCN	Tc (minutes)	PRE-DEVELOPMENT 2-year Q (cfs)	POST-DEVELOPMENT 2-year Q (cfs)	PRE-DEVELOPMENT 10-year Q (cfs)	POST-DEVELOPMENT 10-year Q (cfs)	PRE-DEVELOPMENT 100-year Q (cfs)	POST-DEVELOPMENT 100-year Q (cfs)
DP 1 - EXISTING	265.41	3.05	70	30.6	111.92		307.09		561.80	
DP 1 - PROPOSED	270.78	10.14	71	30.6		105.56		284.70		554.43
DP 3 -EXISTING	57.82	0.36	68	16.8	33.57		94.89		182.93	
DP 3 - PROPOSED	19.77	3.74	73	25.8		9.69		23.74		44.93
DP 4 - EXISTING	70.77	3.97	68	17.4	40.56		115.23		222.27	
DP 4 -PROPOSED	82.29	20.42	77	14.4		17.31		43.66		85.78

SOILS TABLE

SYMBOL	SOIL NAME	SLOPE	K FACTOR	HYDRIC	COMMENTS
CoA	CORSICA MUCKY LOAM	0-2%	---	YES	
EmA	ELKTON SILT LOAM	0-2%	---	YES	
FacA	FALLSINGTON SANDY LOAM	0-2%	---	YES	
FagA	FALLSINGTON LOAM	0-2%	0.32	YES	
HfB	HAMBROOK-SASSAFRAS COMPLEX	2-5%	0.32	NO	
HfC	HAMBROOK-SASSAFRAS COMPLEX	5-10%	0.32	NO	
IgB	INGLESIDE SANDY LOAM	2-5%	0.15	NO	
LgA	LENNI LOAM	0-2%	---	YES	
MtcA	MATTAPEX SILT LOAM	0-2%	0.49	NO	2-10% OTHELLO INCLUSIONS
MtcB	MATTAPEX SILT LOAM	2-5%	0.49	NO	2-10% OTHELLO INCLUSIONS
NsB	NASSAWANGO SILT LOAM	2-5%	0.49	NO	
WacA	WOODSTOWN SANDY LOAM	0-2%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WacB	WOODSTOWN SANDY LOAM	2-5%	0.24	NO	0-20% FALLSINGTON INCLUSIONS
WocA	WOODSTOWN LOAM	0-2%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
WocB	WOODSTOWN LOAM	2-5%	0.37	NO	0-20% FALLSINGTON INCLUSIONS
Zk	ZEKIAH SILT LOAM	---	0.37	YES	



VICINITY MAP

SCALE: 1" = 2,000'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- RIGHT OF WAY
- EX. LOT LINE
- EX. CENTERLINE
- BUILDING SETBACK
- EX. EASEMENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- FDE / FCE — EX. TREELINE
- FOREST BUFFER
- FOREST CONSERVATION
- STREAM CENTERLINE
- STREAM EDGE
- STREAM BUFFER
- FLOODPLAIN
- EX. WETLAND
- EX. WETLAND BUFFER
- STEEP SLOPE (>25%)
- EX. TC PATH
- EX. PR. TC PATH
- EX. DRAINAGE AREA LIMIT

SHEET INDEX

Sheet Number	Sheet Title
1	CONCEPT SWM EXISTING CONDITIONS DRAINAGE AREA MAP
2	CONCEPT SWM PROPOSED CONDITIONS DRAINAGE AREA MAP
3	CONCEPT STORMWATER MANAGEMENT ESD DRAINAGE AREA MAP
4	CONCEPT STORMWATER MANAGEMENT FACILITY PLANS
5	CONCEPT STORMWATER MANAGEMENT FACILITY PLANS & DETAILS

DATA SOURCE:

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON THE RESULTS OF FLOWN PHOTOGRAMMETRY PROVIDED BY AXIS GEOSPATIAL LLC, DATED MARCH 3, 2009. EXISTING TOPOGRAPHY SHOWN OUTSIDE THE PROPERTY IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006. EXISTING SOILS AND ZONING SHOWN HEREON IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006.
2. PROPERTY LINE(S) SHOWN HEREON ARE BASED UPON THE RESULTS OF A FIELD RUN SURVEY PERFORMED BY DMW, INC. ON 04/15/2009.
3. 100-YEAR FLOODPLAIN INFORMATION SHOWN HEREON IS PROVIDED BY FEMA FLOOD MAP SERVICE CENTER HTTP://MSC.FEMA.GOV ACCESSED 07/3/2023, CONSISTENT WITH FIRM NUMBER 24041C0160D, EFFECTIVE DATE SEPTEMBER 19, 2007.
4. THE LIMITS OF THE REGULATED RESOURCES (WATERS OF THE US, NATIONAL WETLANDS, AND FARMED WETLANDS) SHOWN HEREON ARE FIELD LOCATED AND APPROVED BY MDE AND THE USACE PER FIELD REVIEWS CONDUCTED IN OCTOBER 2009.

200 0 200 400
SCALE: 1" = 200'

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Reston, VA 20191

MCGS
MAGNETIC NORTH

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 28823, EXPIRATION DATE: 01/07/2024

STATE OF MARYLAND — PROFESSIONAL ENGINEER — 9/5/23

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
CONCEPT SWM EXISTING CONDITIONS DRAINAGE AREA MAP

SHEET NO.
1 OF 5

PLOT DATE:
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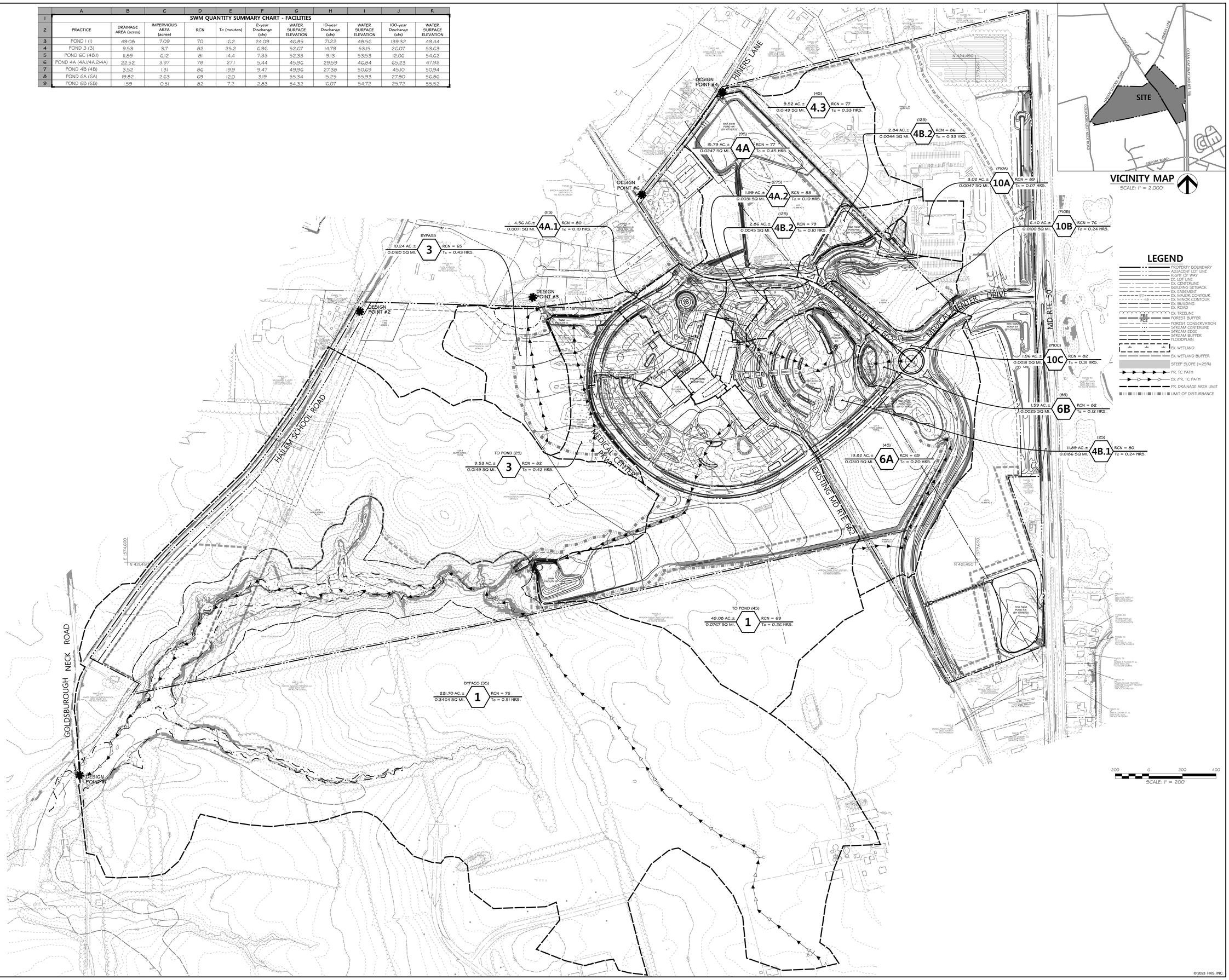
	A	B	C	D	E	F	G	H	I	J	K
1	SWM QUANTITY SUMMARY CHART - FACILITIES										
2	PRACTICE	DRAINAGE AREA (acres)	IMPERVIOUS AREA (acres)	RCN	Tc (minutes)	2-year Discharge (cfs)	WATER SURFACE ELEVATION	10-year Discharge (cfs)	WATER SURFACE ELEVATION	100-year Discharge (cfs)	WATER SURFACE ELEVATION
3	POND I (I)	49.08	7.09	70	16.2	24.09	46.85	71.22	48.56	139.32	49.44
4	POND 3 (3)	9.53	3.7	82	25.2	6.96	52.67	14.79	53.15	26.07	53.63
5	POND 6C (4B.1)	11.89	6.12	81	14.4	7.33	52.33	9.13	53.53	12.06	54.62
6	POND 4A (4A1/4A.2/4A)	22.52	3.97	78	27.1	5.44	45.96	29.59	46.84	65.23	47.92
7	POND 4B (4B)	3.52	1.31	86	19.9	9.47	49.96	27.38	50.69	45.10	50.94
8	POND 6A (6A)	19.82	2.63	69	12.0	3.19	55.34	15.25	55.93	27.80	56.86
9	POND 6B (6B)	1.59	0.51	82	7.2	2.83	54.32	16.07	54.72	25.72	55.52



NOT FOR CONSTRUCTION

PLOT DATE:
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LICENSE NO. 28623 EXPIRATION DATE: 01/07/2024

STATE OF MARYLAND — BRIAN MCDONALD — PROFESSIONAL ENGINEER
9/5/23

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
CONCEPT SWM PROPOSED CONDITIONS DRAINAGE AREA MAP

SHEET NO.
2 OF 5

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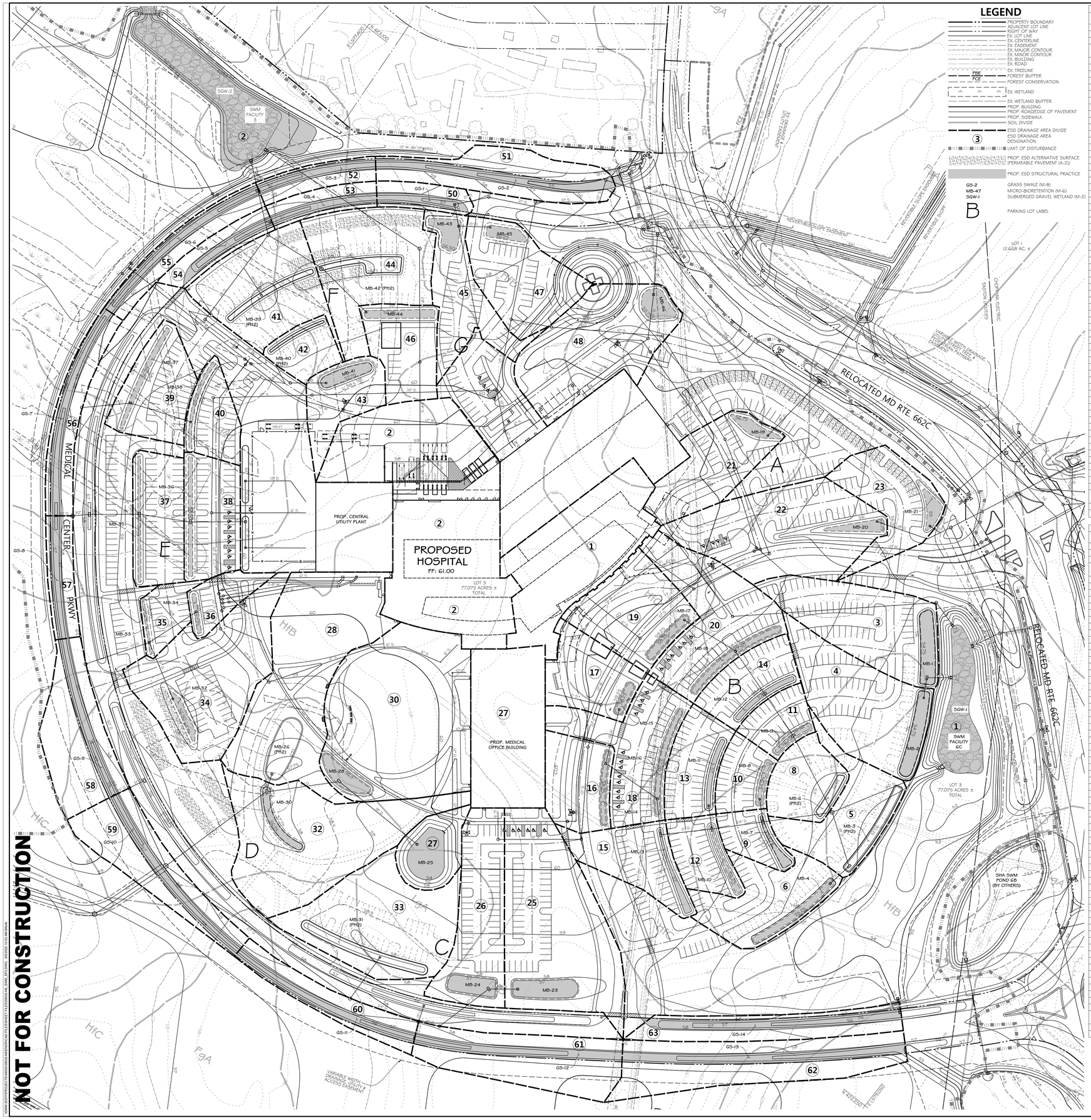

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- EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- EX. TREELINE
- FBE — FOREST BUFFER
- FCE — FOREST CONSERVATION
- EX. WETLAND
- EX. WETLAND BUFFER
- PROP. BUILDING
- PROP. ROADEDGE OF PAVEMENT
- PROP. SIDEWALK
- SOIL DIVIDE
- ESD DRAINAGE AREA DIVIDE
- 3 — ESD DRAINAGE AREA DESIGNATION
- LIMIT OF DISTURBANCE
- PROP. ESD ALTERNATIVE SURFACE (PERMEABLE PAVEMENT (A-2))
- PROP. ESD STRUCTURAL PRACTICE
- GS-2 — GRASS SWALE (M-8)
- MB-47 — MICRO-BIORETENTION (M-6)
- SGW-1 — SUBMERGED GRAVEL WETLAND (M-2)
- B — PARKING LOT LABEL

ESD SUMMARY CHART

Drainage Area	Type of ESD Practice	Name of ESD Practice (Structure Name)	On-Site or Off-Site Structure	Runoff Curve Number (RCN) Weighted	Maryland Grid Coordinate NAD83 Meters Northing	Maryland Grid Coordinate NAD83 Meters Easting
Lot A (12 PS)	(A-2)	Phase 1-C	On-Site			
Lot A (31 PS)	(A-2)	Phase 1-B	On-Site			
Lot D (43 PS)	(A-2)	Phase 2-C	On-Site			
Lot F (43 PS)	(A-2)	Phase 2-C	On-Site			
1	(M-2)	1	On-Site			
2	(M-2)	2	On-Site			
3	(M-6)	1	On-Site			
4	(M-6)	2	On-Site			
5	(M-6)	3	On-Site			
6	(M-6)	4	On-Site			
8	(M-6)	6	On-Site			
9	(M-6)	7	On-Site			
10	(M-6)	8	On-Site			
11	(M-6)	9	On-Site			
12	(M-6)	10	On-Site			
13	(M-6)	11	On-Site			
14	(M-6)	12	On-Site			
15	(M-6)	13	On-Site			
16	(M-6)	14	On-Site			
17	(M-6)	15	On-Site			
18	(M-6)	16	On-Site			
19	(M-6)	17	On-Site			
20	(M-6)	18	On-Site			
21	(M-6)	19	On-Site			
22	(M-6)	20	On-Site			
23	(M-6)	21	On-Site			
25	(M-6)	23	On-Site			
26	(M-6)	24	On-Site			
27	(M-6)	25	On-Site			
28	(M-6)	26	On-Site			
30	(M-6)	28	On-Site			
32	(M-6)	30	On-Site			
33	(M-6)	31	On-Site			
34	(M-6)	32	On-Site			
35	(M-6)	33	On-Site			
36	(M-6)	34	On-Site			
37	(M-6)	35	On-Site			
38	(M-6)	36	On-Site			
39	(M-6)	37	On-Site			
40	(M-6)	38	On-Site			
41	(M-6)	39	On-Site			
42	(M-6)	40	On-Site			
43	(M-6)	41	On-Site			
44	(M-6)	42	On-Site			
45	(M-6)	43	On-Site			
46	(M-6)	44	On-Site			
47	(M-6)	45	On-Site			
48	(M-6)	46	On-Site			
50	(M-8)	1	On-Site			
51	(M-8)	2	On-Site			
52	(M-8)	3	On-Site			
53	(M-8)	4	On-Site			
54	(M-8)	5	On-Site			
55	(M-8)	6	On-Site			
56	(M-8)	7	On-Site			
57	(M-8)	8	On-Site			
58	(M-8)	9	On-Site			
59	(M-8)	10	On-Site			
60	(M-8)	11	On-Site			
61	(M-8)	12	On-Site			
62	(M-8)	13	On-Site			
63	(M-8)	14	On-Site			
TOTAL/ AVERAGE	-	-			-	-

Standard No.: TOE-SWM-7.01

ESD SUMMARY CHART CONTINUED

Drainage Area	ESD Practice Total Drainage Area (ac)	ESD Practice Impervious Drainage Area (ac)	Surface Area of ESD Practice (ac)	Target PE (in.)	Actual PE (in.)	Target ESDv (cf)	Actual ESDv (cf)
Lot A (12 PS)	0.04	0.04	0.04			N/A	311
Lot A (31 PS)	0.12	0.12	0.12			N/A	984
Lot D (43 PS)	0.16	0.16	0.16			N/A	1,115
Lot F (43 PS)	0.16	0.16	0.16			N/A	1,115
1	0.82	0.82	0.23			4,283	7,863
2	1.66	1.66	0.36			8,636	12,452
3	0.65	0.42	0.05			2,243	4,133
4	0.69	0.41	0.06			2,236	4,119
5	0.45	0.26	0.03			1,391	2,563
6	0.46	0.29	0.04			1,553	2,860
8	0.28	0.18	0.02			943	1,687
9	0.16	0.10	0.01			559	1,030
10	0.20	0.15	0.01			774	974
11	0.19	0.15	0.01			776	974
12	0.23	0.16	0.01			854	1,426
13	0.30	0.21	0.02			1,147	1,865
14	0.29	0.21	0.02			1,132	1,865
15	0.36	0.21	0.02			1,124	1,944
16	0.33	0.11	0.02			660	1,215
17	0.35	0.20	0.01			1,014	1,267
18	0.55	0.38	0.02			2,034	2,568
19	0.49	0.27	0.02			1,479	2,206
20	0.65	0.40	0.03			2,142	2,623
21	0.44	0.24	0.03			1,308	2,410
22	0.65	0.48	0.03			2,618	2,894
23	0.41	0.21	0.02			1,166	2,148
25	1.06	0.47	0.06			2,624	4,833
26	0.56	0.35	0.04			1,876	3,456
27	0.90	0.68	0.09			3,644	6,712
28	1.10	0.16	0.07			1,088	2,004
30	1.28	0.28	0.04			1,762	3,246
32	1.00	0.20	0.03			1,263	2,327
33	0.81	0.27	0.04			1,555	2,864
34	0.84	0.30	0.02			1,722	1,968
35	0.16	0.11	0.01			567	710
36	0.16	0.11	0.01			602	972
37	0.37	0.26	0.02			1,405	2,071
38	0.37	0.27	0.03			1,448	2,647
39	0.38	0.18	0.03			974	1,795
40	0.23	0.16	0.02			840	1,547
41	0.61	0.38	0.02			2,052	2,346
42	0.16	0.11	0.01			591	667
43	0.29	0.19	0.03			1,015	1,870
44	0.71	0.38	0.04			2,084	3,840
45	0.41	0.26	0.04			1,393	2,566
46	0.34	0.21	0.03			1,117	2,058
47	0.50	0.30	0.02			1,646	2,599
48	0.75	0.35	0.04			1,916	3,529
50	0.14	0.08	0.01			38	77
51	0.49	0.15	0.04			134	508
52	0.16	0.08	0.02			45	236
53	0.16	0.09	0.01			44	210
54	0.17	0.10	0.01			47	181
55	0.27	0.12	0.03			74	404
56	0.31	0.13	0.03			84	430
57	0.18	0.08	0.02			50	269
58	0.51	0.11	0.02			141	341
59	0.49	0.13	0.03			135	409
60	0.29	0.12	0.03			81	408
61	0.58	0.13	0.03			160	430
62	0.71	0.18	0.04			197	565
63	0.38	0.22	0.01			106	153
TOTAL/ AVERAGE	29.14	15.65	2.59			74,743	127,921

Standard No.: TOE-SWM-7.01

SCALE: 1" = 60'

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Reston, VA 20191

NORTH
MAGNETIC NORTH

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 28823, EXPIRATION DATE: 01/07/2024

STATE OF MARYLAND — STEVEN M. BRADFORD — PROFESSIONAL ENGINEER
9/5/23

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMV PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

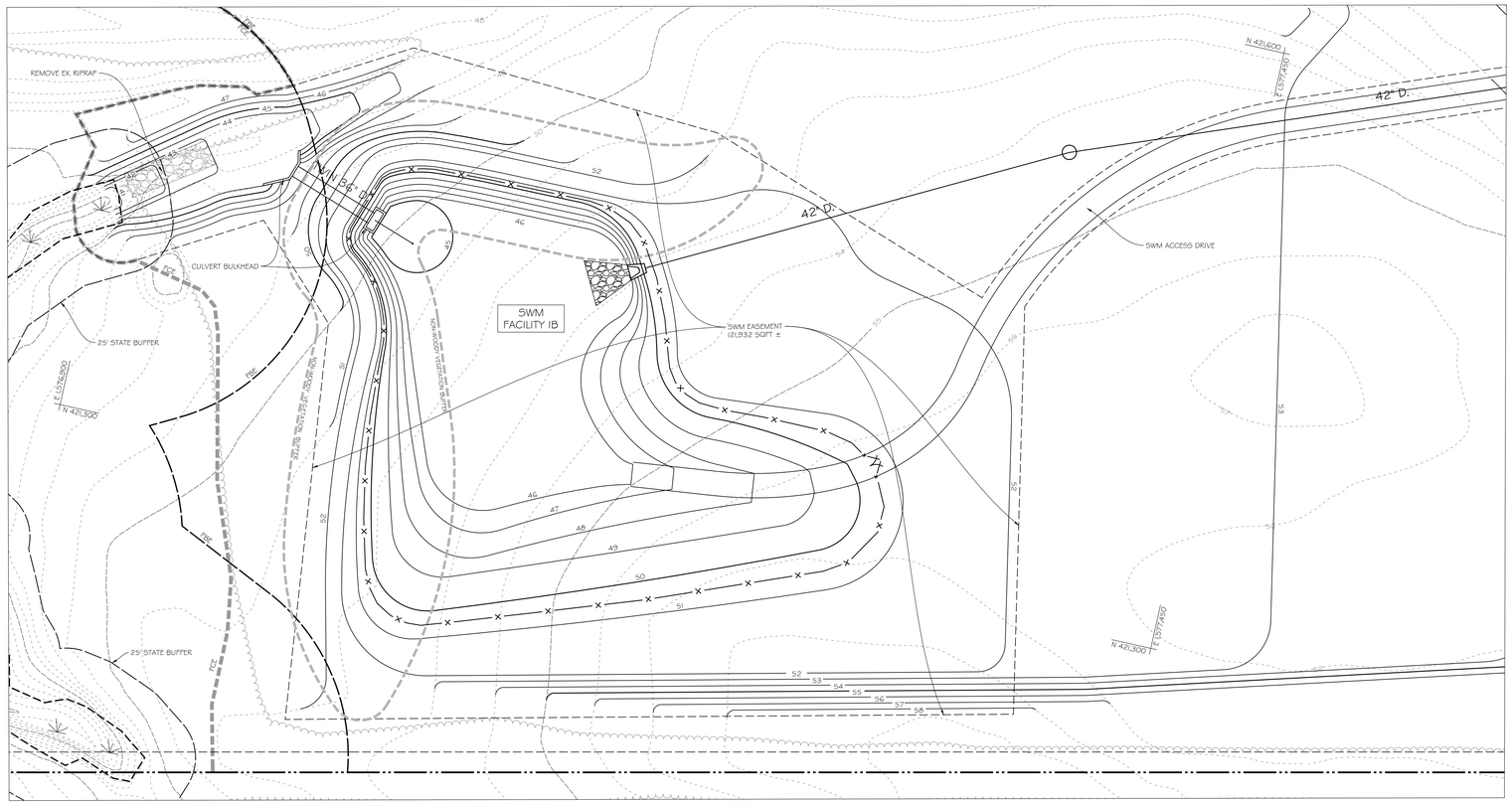
ISSUE
SKETCH PLAN

SHEET TITLE
CONCEPT STORMWATER MANAGEMENT ESD DRAINAGE AREA MAP

SHEET NO.
3 OF 5

PLOT DATE:
NAME:G:\PROJECTS\09035\N6\MEDICAL FILES\SHEET FILES\SHEET FILES\ESD\ESD_MAP_SP1.DWG 9/5/2023 10:53 AM Brina

SWM FACILITY 6C



SWM FACILITY 1B

NOT FOR CONSTRUCTION

PLOT DATE:

A:\0000\0000\0 NEW\AUTOCAD FILES\HKS FILES\0000 NE_SWM_BPA.DWG 9/5/2023 10:33 AM EMcK

30 0 30 60
SCALE: 1" = 30'

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STATE OF MARYLAND
PROFESSIONAL ENGINEER
9/5/23

REVISION

NO.	DESCRIPTION	DATE

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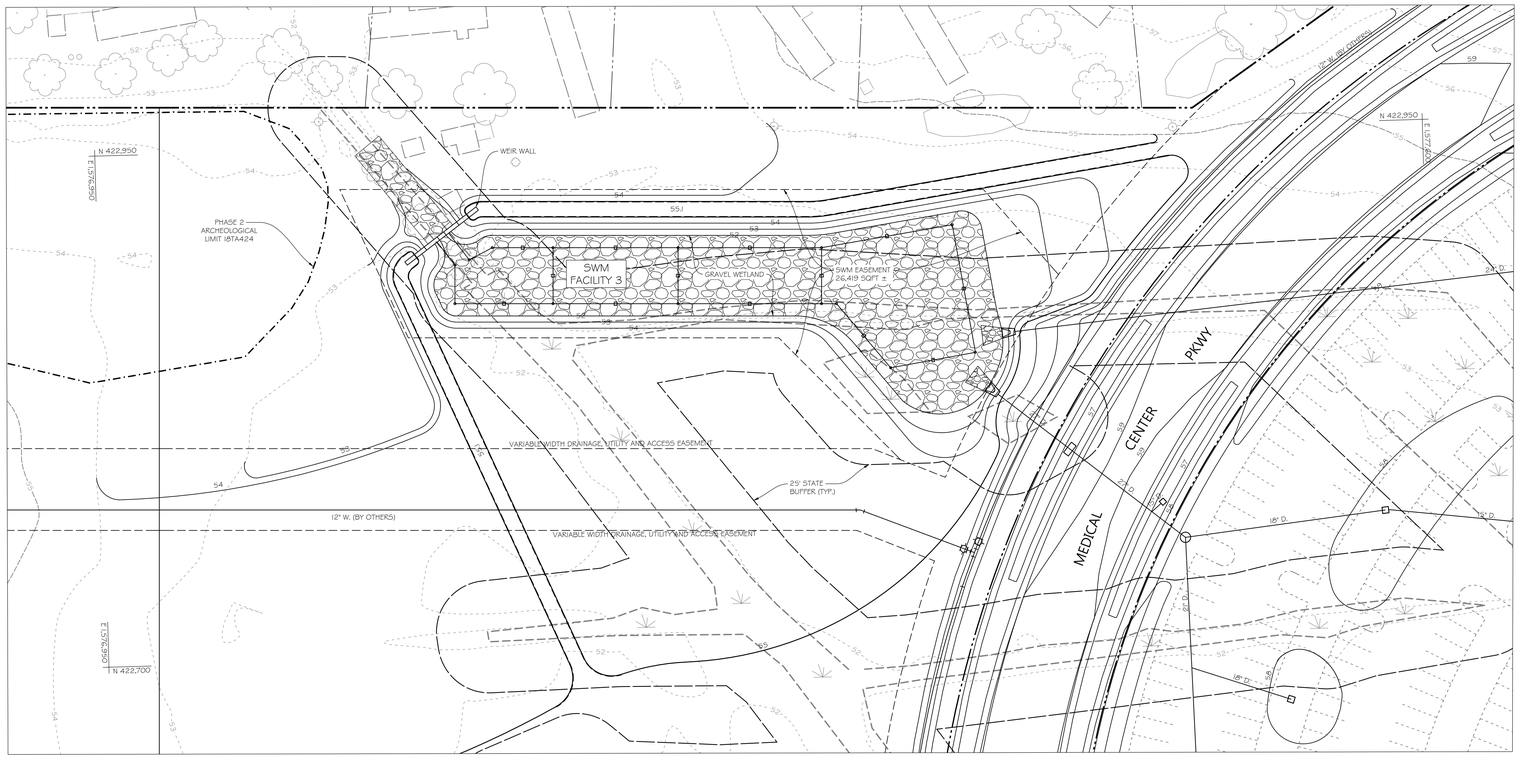
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
CONCEPT STORMWATER MANAGEMENT FACILITY PLANS

SHEET NO.
4 OF 5



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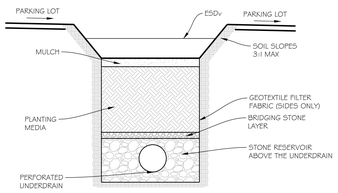
SCALE: 1" = 30'

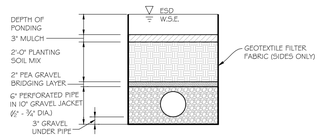
MCS
VARIES (SEE GRID)

SWM FACILITY 3



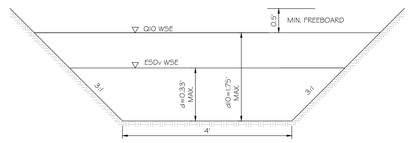
TYPICAL SECTION OF MICRO-BIORETENTION FACILITY

NOT TO SCALE



TYPICAL FILTER SECTION MICRO-BIORETENTION FACILITY

NOT TO SCALE

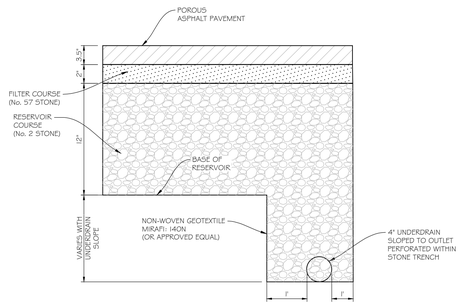


GRASS SWALE TYPICAL SECTION

NOT TO SCALE

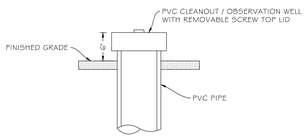
GRASS SWALE MAINTENANCE PLAN

1. FOR GRASSED SWALES, REGULAR MOWING (AT LEAST BI-ANNUALLY) IS CRITICAL IN ORDER TO REDUCE COMPETITION FROM WEEDS AND IRRIGATION MAY BE NEEDED DURING DRY WEATHER TO ESTABLISH VEGETATION. SPARSELY VEGETATED AREAS NEED TO BE RE-SEEDED TO MAINTAIN DENSE COVERAGE.
2. IF WATER DOES NOT DRAIN WITHIN 48 HOURS, THE BOTTOM SOIL SHOULD BE TILLED AND REVEGETATED.
3. INSPECTIONS SHOULD BE PERFORMED ONCE A YEAR TO ASSESS SLOPE INTEGRITY, VEGETATIVE HEALTH, SOIL STABILITY, COMPACTION, EROSION, PONDING, AND SEDIMENTATION. PERIODIC REMOVAL OF SEDIMENT, LITTER, OR OBSTRUCTIONS SHOULD BE DONE AS NEEDED. ERODED SIDE SLOPES AND THE SWALE BOTTOM SHOULD BE REPAIRED AND STABILIZED WHERE NEEDED.



TYPICAL SECTION OF POROUS ASPHALT PAVEMENT WITH UNDERDRAIN

N.T.S.

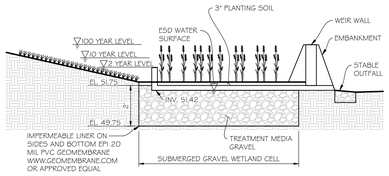


EACH CLEANOUT / OBSERVATION WELL SHALL INCLUDE THE FOLLOWING:

1. FOR AN UNDERGROUND FLUSH MOUNTED CLEANOUT / OBSERVATION WELL, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 40 OR EQUAL, AT LEAST 3-FEET LONG WITH AN INSIDE DIAMETER OF AT LEAST 4-INCHES.
2. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.

CLEANOUT / OBSERVATION WELL DETAIL

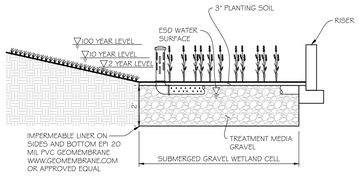
NOT TO SCALE



EXTENDED DETENTION DRY POND WITH SUBMERGED GRAVEL WETLAND CELL

TYPICAL SECTION OF SWM FACILITY #3

NOT TO SCALE



EXTENDED DETENTION DRY POND WITH SUBMERGED GRAVEL WETLAND CELL

TYPICAL SECTION OF SWM FACILITY #6C

NOT TO SCALE

NOT FOR CONSTRUCTION

PLOT DATE:
X:\2019\09035.N6\ENGRDWG\1 FILES\SHEET FILES\09035.N6_SWM_SP.DWG 9/5/2023 10:53 AM BNick

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VARIES (SEE GRID)

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LICENSE NO. 28823, EXPIRATION DATE: 01/07/2024

STATE OF MARYLAND
STEVEN B. BUCHANAN
No. 28823
PROFESSIONAL ENGINEER
9/5/23

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER | DMW PROJECT NUMBER
19782.012 | 09035.N6

DATE
05 SEPTEMBER, 2023

ISSUE
SKETCH PLAN

SHEET TITLE
CONCEPT STORMWATER MANAGEMENT FACILITY PLANS & DETAILS

SHEET NO.
5 OF 5

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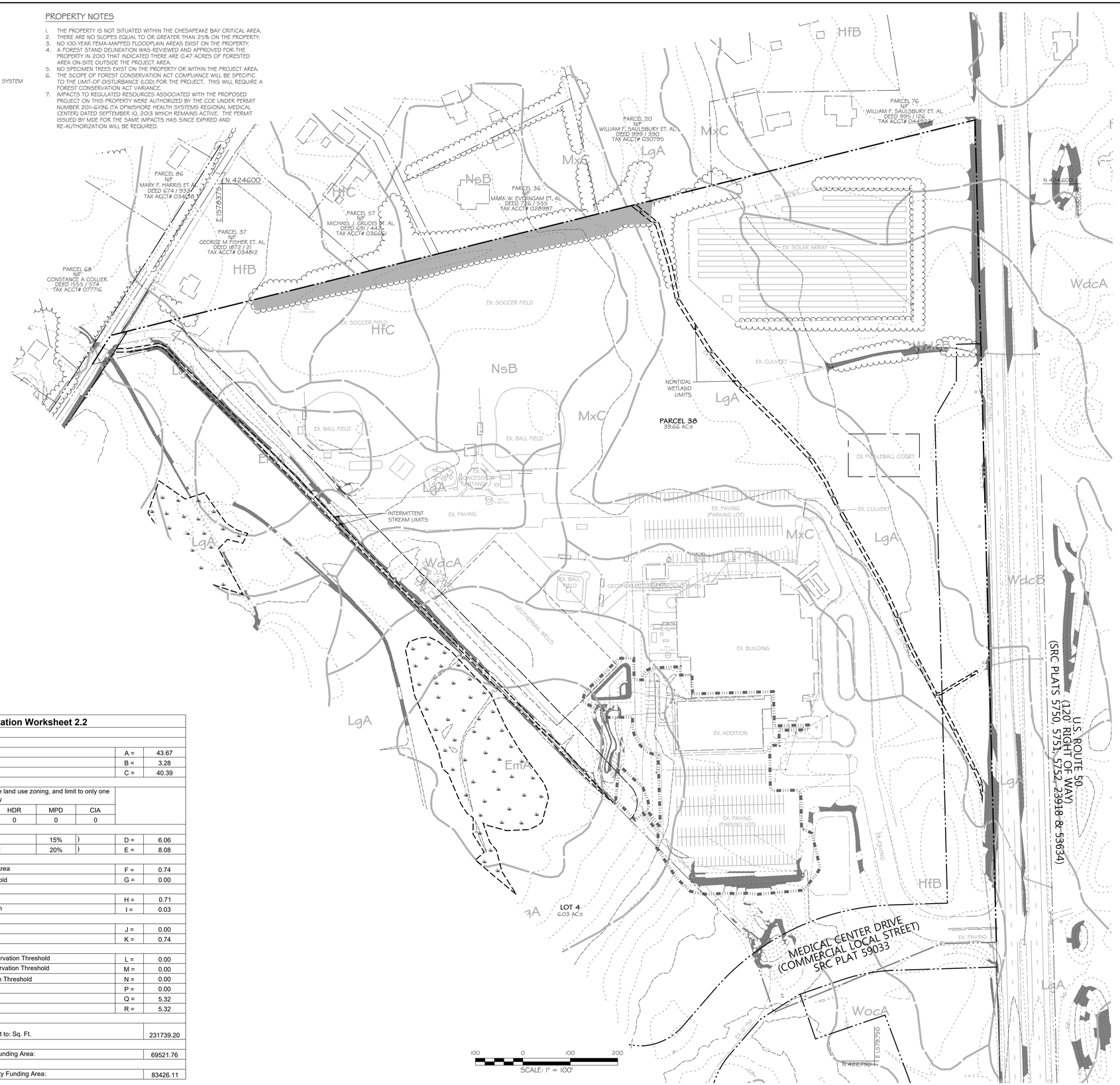
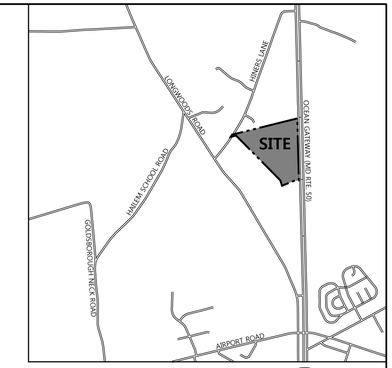
PROPERTY DATA

PROPERTY OWNER:	TALBOT COUNTY 11 NORTH WASHINGTON STREET EASTON, MD 21601
PROPERTY ADDRESS:	10028 OCEAN GATEWAY EASTON, MD 21601
DEVELOPER/APPLICANT:	SHORE HEALTH SYSTEM UNIVERSITY OF MARYLAND MEDICAL SYSTEM 219 SOUTH WASHINGTON STREET EASTON, MD 21601
DESIGN CONSULTANT:	DAFT MCCUNE WALKER, INC. 501 FAIRMOUNT AVE. TOWSON, MD 21286 (410) 296-3333
PROPERTY ZIP CODE:	21601
TAX MAP:	17
TAX ACCT. NO:	036882
OWNER:	38
ZONING:	GI - GOVERNMENT/INSTITUTIONAL
ACREAGE:	±43.67 AC.
EXISTING CONDITION:	RECREATION
PROPOSED DEVELOPMENT:	RECREATION

PROPERTY NOTES

1. THE PROPERTY IS NOT SITUATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
2. THERE ARE NO SLOPES EQUAL TO OR GREATER THAN 25% ON THE PROPERTY.
3. NO 100-YEAR FEMA-MAPPED FLOODPLAIN AREAS EXIST ON THE PROPERTY.
4. A FOREST STAND DELINEATION WAS REVIEWED AND APPROVED FOR THE PROPERTY IN 2010 THAT INDICATED THERE ARE 0.47 ACRES OF FORESTED AREA ON-SITE OUTSIDE THE PROJECT AREA.
5. NO SPECIMEN TREES EXIST ON THE PROPERTY OR WITHIN THE PROJECT AREA.
6. THE SCOPE OF FOREST CONSERVATION ACT COMPLIANCE WILL BE SPECIFIC TO THE LIMIT-OF-DISTURBANCE (LOD) FOR THE PROJECT. THIS WILL REQUIRE A FOREST CONSERVATION ACT VARIANCE.
7. IMPACTS TO REGULATED RESOURCES ASSOCIATED WITH THE PROPOSED PROJECT ON THIS PROPERTY WERE AUTHORIZED BY THE COE UNDER PERMIT NUMBER 2011-61196 (TA DPW/SHORE HEALTH SYSTEMS REGIONAL MEDICAL CENTER) DATED SEPTEMBER 10, 2013 WHICH REMAINS ACTIVE. THE PERMIT ISSUED BY MDE FOR THE SAME IMPACTS HAS SINCE EXPIRED AND RE-AUTHORIZATION WILL BE REQUIRED.





VICINITY MAP

SCALE: 1" = 2,000'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT LOT LINE
- 120 EX. MAJOR CONTOUR
- 115 EX. MINOR CONTOUR
- EX. BUILDING
- EX. ROAD
- EX. WETLAND
- LIMIT OF DISTURBANCE FOR ADDITION
- BtB / LIB SOILS
- EXISTING FORESTED AREA TOTAL: ±22,130 SF/±0.51 AC.
- ≥25% STEEP SLOPES

DATA SOURCE:

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON THE RESULTS OF FLOWN PHOTOGRAMMETRY PROVIDED BY AXIS GEOSPATIAL LLC, DATED MARCH 3, 2009. EXISTING TOPOGRAPHY SHOWN OUTSIDE THE PROPERTY IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006. EXISTING SOILS AND ZONING SHOWN HEREON IS BASED UPON MAPS PROVIDED BY THE TALBOT COUNTY OFFICE OF INFORMATION TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATED, 2006.
2. PROPERTY LINE(S) SHOWN HEREON ARE BASED UPON THE RESULTS OF A FIELD RUN SURVEY PERFORMED BY DMW, INC. ON 04/15/2009.
3. 100-YEAR FLOODPLAIN INFORMATION SHOWN HEREON IS PROVIDED BY FEMA FLOOD MAP SERVICE CENTER HTTP://MSC.FEMA.GOV ACCESSED 07/12/2023, CONSISTENT WITH FIRM NUMBER 24041C0180D, EFFECTIVE DATE SEPTEMBER 19, 2007.
4. THE LIMITS OF THE REGULATED RESOURCES (WATERS OF THE US, NONTIDAL WETLANDS, AND FARMED WETLANDS) SHOWN HEREON ARE FIELD LOCATED AND CONSISTENT WITH THE APPROVED JURISDICTIONAL DETERMINATION DATED JANUARY 12, 2011, ISSUED BY THE UNITED STATES ARMY CORPS OF ENGINEERS (COE) AND MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE). THE LIMITS ARE CONSISTENT WITH THE COE AUTHORIZATION OF PERMIT NUMBER 2011-61196 (TA DPW/SHORE HEALTH SYSTEMS REGIONAL MEDICAL CENTER) DATED SEPTEMBER 10, 2013 THAT REMAINS ACTIVE.

Forest Conservation Worksheet 2.2

Net Tract Area			
A.	Total Tract Area	A =	43.67
B.	Deductions	B =	3.28
C.	Net Tract Area	C =	40.39
Land Use Category			

Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	0	1	0	0	0

D.	Afforestation Threshold (Net Tract Area x	15%)	D =	6.06
E.	Conservation Threshold (Net Tract Area x	20%)	E =	8.08
Existing Forest Cover				
F.	Existing Forest Cover within the Net Tract Area		F =	0.74
G.	Area of Forest Above Conservation Threshold		G =	0.00
Break Even Point				
H.	Break Even Point		H =	0.71
I.	Forest Clearing Permitted Without Mitigation		I =	0.03
Proposed Forest Clearing				
J.	Total Area of Forest to be Cleared		J =	0.00
K.	Total Area of Forest to be Retained		K =	0.74
Planting Requirements				
L.	Reforestation for Clearing Above the Conservation Threshold		L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold		M =	0.00
N.	Credit for Retention above the Conservation Threshold		N =	0.00
P.	Total Reforestation Required		P =	0.00
Q.	Total Afforestation Required		Q =	5.32
R.	Total Planting Requirement		R =	5.32
**PIL Calculation		Convert Planting Requirement to: Sq. Ft.		231739.20
		If Project is inside a Priority Funding Area:		69521.76
		If Project is outside of a Priority Funding Area:		83426.11

DAFT McCUNE WALKER INC

501 FAIRMOUNT AVENUE SUITE 300 TOWSON, MD 21286
P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

SIMPLIFIED FOREST STAND DELINEATION

TALBOT COUNTY COMMUNITY CENTER

OCEAN GATEWAY (ROUTE 50)

TALBOT COUNTY, MARYLAND

MDG NAD83 (2011)

SEAL

THIS PLAN HAS BEEN PREPARED BY ERIC CHODNICKI, A QUALIFIED PROFESSIONAL EMPLOYED WITH DAFT McCUNE WALKER, INC. WHO MEETS THE REQUIREMENTS OF COMAR 08.19.06.01.

SIGNATURE

DATE: 09/05/23

DATE	BY	REVISIONS

ISSUE DATES

REVIEW:	/ /
BID:	
PERMIT:	
CONSTRUCTION:	
BASE:	EJC
DRAWN:	AMT/EJC
DESIGNED:	EJC
CHECKED BY:	
DATE CHECKED:	
SCALE:	1" = 100'
PROJECT NO:	09035.N6
DRAWING:	

1 of 1

A:\09035\09035.N6\EN\PLAN\FLAN\FLEES\09035.N6_FCCC_FSD.DWG 8/10/2023 10:58 AM gpitts

APPENDIX B-3

DEVELOPMENT SITE PLAN SUBMITTAL CHECKLIST

NOTE: **THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A DEVELOPMENT SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.**

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER "N/A".

1. Vicinity map showing relationship to surroundings, including existing, proposed, or mapped streets within 1,000 feet and municipal boundaries within 1,000 feet of the tract. ✔
2. Each sheet numbered and the relationship shown to total number of sheets. ✔
3. Dimensions in feet and decimal parts. ✔
4. North arrow. ✔
5. Boundary survey or survey of record of the property showing courses, distances and area. ✔
6. Detailed plans drawn at a scale that is legible, preferably on one (1) sheet. ✔
7. Existing contours with intervals not more than one (1) foot. Elevations shall be based on NAVD88 datum (include benchmark on plan). ✔
8. Location, width and names of existing platted streets or other public streets, railroad and utility rights-of-way, parks, open space areas, and municipal corporation lines within or adjoining the tract. ✔
9. Proposed public improvements, highways, or other major improvements planned on or near the site. ✔
10. Rights-of-way for all drainage purposes and utilities ✔
11. All existing and proposed utilities, including location, grade and size of, service entrances, meter locations, transformer ✔

locations and sizes of mains:

a) Storm drain (including invert elevations and profiles). ✔
b) Sewerage facilities (including invert elevations and profiles). ✔
c) Catch basins. ✔
d) Drainage ways, channels. ✔
e) Pumping Stations. n/a
f) Water mains. ✔
g) Streetlights. ✔
h) Electric, telephone, and/or cable television lines. ✔
i) Fire hydrants. ✔
j) Direction of, distance to and size of nearest water mains and sewers if not located on or adjacent to the site. ✔
k) Gas ✔

12. Conditions on adjoining lands; direction and gradient of ground slope, embankments, retaining walls, railroads and towers or other influences when identified by the applicant or Town Planner to be of concern. ✔

13. Locations of all existing or proposed buildings, structures, parking facilities and other improvements. Submission shall include a scale dimension from the property line to the proposed building. ✔

14. If alteration is made to an existing building, structure, or other improvement, dotted lines shall denote features or locations to be abandoned and solid lines shall denote proposed features. ✔

15. Building setback lines. ✔

16. Signature and seal of licensed surveyor, registered professional engineer, registered architect, registered landscape architect or planner (AICP), responsible for the accuracy of the site plan. ✔

17. Drainage calculations and certification. n/a

18. Legend which clearly indicates existing and proposed improvements and natural features. The legend or title block must include the following information: ✔

a) Zoning district. ✔
b) Tax map and parcel number. ✔
c) Developer's name and address. ✔
d) Owner's name and address. ✔

e) Scale. ✔
f) Date of drawing; date and type of revisions. ✔
g) Utility symbols.
h) Name of projects. ✔

19. Notes which identify: _____

a) Board of Appeals' case number/approval date (if applicable). n/a
b) Projected building schedule:
i. Start tbd
ii. Finish tbd
c) Number of parking spaces
i. Existing ✔
ii. Proposed ✔
iii. Required ✔

d) Number of residential units by type (if applicable). n/a

e) Residential density in units per acre (if applicable). n/a

20. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks. ✔

21. The location, size, height, number, and orientation of all of all proposed signs. n/a

22. Landscaping plan and legend prepared in accordance with Section 615 of this Ordinance. n/a

23. If residential development, include homeowner's association documentation when common open space and buffer areas are provided. n/a

24. Certificates and statements. ✔

25. Sedimentation and erosion control plan. n/a

26. The Forest Conservation Plan and Forest Conservation worksheet shall be submitted in accordance with the provisions of the Town of Easton's Forest Conservation Ordinance. n/a

27. Renderings or sketches which accurately depict the architecture of any proposed structures. ✔

This checklist completed by Brittany Wallace Date 8/28/23

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Easton Staff Development Review

Property Information

Address	29315 Dover Road, Easton, MD 21601						
Tax Map	105	Grid	-	Parcel	2844	Lot	3
Deed Refernce:	Liber	2048	Folio	320			
Plat Reference:	Liber		Folio				
Base Zoning District		CG	Historic District Y ☐ N ☑		Planning Redevelopment Y ☐ N ☑		

Purpose of Application / Description of Work:

Construction of a two-story addition to an existing single-story, standalone building that is currently used as a veterinarian clinic, and shifting the existing designated parking spaces to the parking lot on the neighboring parcel (within the existing shared-use agreement).

Owner

Name	East Coast Vets, LLC c/o Patrick Allen		
Mailing Address	29315 Dover Road, Easton, MD 21601		
Telephone No.	410-463-6451	Email	pallen@eastcoastvet.com

Applicant / Agent

Name	Lane Engineering, LLC c/o Brittany Wallace		
Mailing Address	117 Bay St, Easton, MD 21601		
Telephone No.	410-822-8003	Email	bwallace@leinc.com

Surveyor / Engineer

Name	Brittany Wallace	License No.	60891	Expiration Date	4/13/25
Mailing Address	117 Bay St, Easton, MD 21601				
Telephone No.	410-822-8003	Email	bwallace@leinc.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent: BMWallace

Date: 8/28/23

Printed Name of Applicant or Agent: Brittany M. Wallace

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date **09/27/2023** **ESDR 23-20 / 2023-1028**

Completeness Check Date

Revisions/Resubmissions Required Y ☐ N ☐

Resubmission Date Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☐ N ☐

BOZA Required Y ☐ N ☐

Historic District Commission Required Y ☐ N ☐

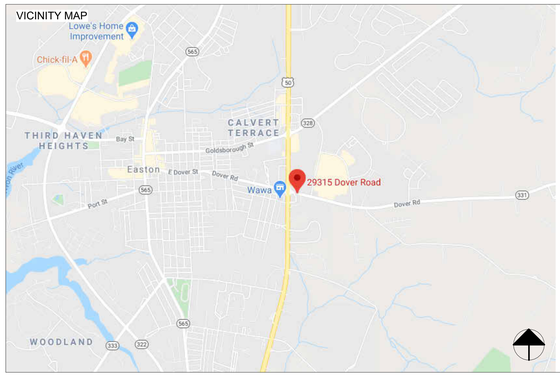
Resubmission for ESDR Required Y ☐ N ☐

Staff Signature Date

Revised 02-2019

RECEIVED
SEP 0 6 2023
TOWN OF EASTON

VICINITY MAP



East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Town of Easton, Talbot County, Maryland
Tax Map: 105
Tax Parcel: 2844
Lot No.: 3
Lot Area: 22,771 sf
Deed: 2048/320

Owner/Developer:

George Hocker
1101 Cowpens Ave.
Baltimore, MD
410-398-2955

Patrick Allen, DVM

BRIDGEWORKS CONSTRUCTION
DENTAL • VETERINARY • MEDICAL

7520 MAIN STREET, SUITE 101
SYKESVILLE, MARYLAND 21784
877-497-2256

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ARCHITECT:

MEP ENGINEER:

STRUCTURAL ENGINEER:

CIVIL ENGINEER:

INTERIOR DESIGNER:

SPECIALTY EQUIPMENT:

ABBREVIATIONS

A	
ABV	ABOVE
A/C	AIR CONDITIONING
ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISHED FLOOR
ADJ	ADJUSTABLE, ADJACENT
ALT	ALTERNATE
ANOD	ANODIZED
ARCH	ARCHITECT, ARCHITECTURAL
AUTO	AUTOMATIC
B	
BD	BOARD
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BRZ	BRONZE
C	
CAB	CABINET
CI	CAST IRON
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CLO	CLOSET
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE, CONFIGURATION
CPT	CARPET
CT	CERAMIC TILE
D	
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
DWR	DRAWER
E	
(E)	EXISTING
EA	EACH
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATION, ELEVATOR
EMER	EMERGENCY
EQ	EQUAL
EXH	EXHAUST
EXP	EXPOSURE
EXT	EXTERIOR
F	
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FLR	FLOOR
FLUOR	FLUORESCENT
FT	FEET
FUT	FUTURE
G	
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GL	GLASS/GLAZING
GLA	GROSS LEASABLE AREA
GYP BD	GYPSUM BOARD
H	
H	HIGH, HEIGHT
HC	HOLLOW CORE
HDW	HARDWARE
HMF	HOLLOW METAL FRAME
HORZ	HORIZONTAL
HR	HOUR
HGT	HEIGHT
HTR	HEATER
HVAC	HEATING VENTILATION AND AIR CONDITIONING
I	
INCAD	INCANDESCENT
INCL	INCLUDE, INCLUDED
INSUL	INSULATE, INSULATION
INT	INTERIOR
J	
JAN	JANITOR
JT	JOINT
K	
KT	KITCHEN
L	
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LVR	LOUVER
LVP	LUXURY VINYL PLANK
LVT	LUXURY VINYL TILE
M	
MAS	MASONRY
MAX	MAXIMUM
MDF	MEDIUM DENSITY FIBERBOARD
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MSG	MANUFACTURER'S STANDARD GAUGE
MTL	METAL
N	
NAT	NATURAL
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O	
O/C	ON CENTER
OPG	OPENING
P	
PART	PARTITION
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLY	PLY, PLYWOOD
PNL	PANEL
PR	PAIR, PAIRED
PT	PAINT, PRESSURE TREATED
PTD	PAINTED
Q	
QT	QUARRY TILE
QUAL	QUALITY
QTY	QUANTITY
R	
(R)	EXISTING TO BE REMOVED
R	RADIUS
RCP	REFLECTED CEILING PLAN
RECEP	RECEPTACLE
REF	REFERENCE, REFRIGERATOR
REQD	REQUIRED
REV	REVISION
RM	ROOM
S	
SC	SOLID CORE
SCHD	SCHEDULE
SECT	SECTION
SF	SQUARE FEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL, SOLID SURFACE
ST	STONE
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURE, STRUCTURAL
SUSP	SUSPENDED
T	
T/D	TELEPHONE/DATA
TEL	TELEPHONE
TEMP	TEMPORARY
THK	THICK, THICKNESS
THR	THRESHOLD
TV	TELEVISION
TYP	TYPICAL
U	
UC	UNDERCUT
UL	UNDERWRITERS LABORATORY
UNO	UNLESS OTHERWISE NOTED
USF	USABLE SQUARE FEET
V	
VCT	VINYL COMPOSITE TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VNR	VENEER
W	
W	WIDTH
WC	WATER CLOSET
WD	WOOD
WH	WATER HEATER
X	
XFMR	TRANSFORMER
XS	EXTRA STRONG (STEEL)
Y	
YD	YARD
YR	YEAR

SYMBOLS LEGEND

NORTH ARROW	
0	GRID BUBBLE
Name / Elevation	ELEVATION LABEL
1 / A101 (DETAIL / SHEET)	SECTION HEAD
1 / 4 A101 2 / 3 (DETAIL / SHEET)	INTERIOR ELEVATION
	SPOT ELEVATION
1 / A101 (DETAIL / SHEET)	CALLOUT TAG
1 View Name / 1/8" = 1'-0"	VIEW TITLE TAG
Room / 101 / XX (NAME / NUMBER / AREA (SF) FLOOR FINISH CEILING FINISH)	ROOM TAG
101	DOOR TAG
1	WINDOW TAG
1	WALL TYPE TAG
1	REVISION TAG
1	KEY NOTE
	MAP POINT

REFERENCED STANDARDS

ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICAN DISABILITIES ACT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASSE	AMERICAN SOCIETY OF SAFETY ENGINEERS
ASTM	AMERICAN STANDARD FOR TESTING AND MATERIALS
CISCA	CEILINGS & INTERIOR SYSTEMS CONSTRUCTION ASSOCIATION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
GA	GYPSUM ASSOCIATION
ICC	INTERNATIONAL CODE COUNCIL
ISO	INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
NFPA	NATIONAL FIRE PROTECTION AGENCY
PCI	PRECAST PRESTRESSED CONCRETE INSTITUTE
PTI	POST-TENSIONING INSTITUTE
SDI	STEEL DECK INSTITUTE
SJI	STEEL JOIST INSTITUTE
UL	UNDERWRITERS LABORATORY
WDMA	WINDOW AND DOOR MANUFACTURERS ASSOCIATION

APPLICABLE CODES

International Building Code / 2018
National Electrical Code / 2017
International Fuel Gas Code / 2018
International Mechanical Code / 2018
International Plumbing Code / 2018
International Fire Code / 2018
International Energy Conservation Code / 2018
International Green Construction Code / 2018

https://eastonmd.gov/547/Article-II-Building-Code-forBuildings
Verified 05/17/23

Project shall be fully compliant with COMAR 0.9.12.53 and 2010 ADAAG for accessibility

CODE ANALYSIS

PROJECT DESCRIPTION

Two-story addition to and existing single-story, standalone building, and tenant fit out for business use as a Veterinary Clinic:

- New construction of a two-story addition including foundation, slab, bearing wall and roof framing.
- New exterior finishes to match existing.
- New construction of HVAC, plumbing and electrical system(s); interior non-bearing partitioning; interior flooring and finishes; ceiling tile and grid; and installation of veterinary-specific equipment.

A separate building permit shall be obtained for the following disciplines attached to this contract:

- Automatic Fire Sprinkler
- Monitored Fire Alarm

OCCUPANT LOAD - MEANS OF EGRESS

SHEET INDEX

Number	Name	08/23/23 Schematic Design	Developed Design	MPE Design	L1 Review	For Permit	Revision 1	Revision 2	Revision 3	Revision 4	Revision 5	As-Built
General												
A0.0	Cover	X										
Framing												
A2.1	Lower Level Framing Plan - Phase 2	X										
A2.2	Upper Level Framing Plan Phase 2	X										
A2.3	Upper Level Roof Plan - Phase 2	X										
A2.4	Lower Level Reflected Ceiling Plan - Phase 2	X										
A2.5	Upper Level Reflected Ceiling Plan - Phase 2	X										
Elevations												
A3.1	Exterior Elevations	X										
A3.2	Exterior Elevations	X										
A3.3	Exterior Rendering	X										
Finishes												
A4.2	Lower Level Finish Plan - Phase 2	X										
A4.3	Upper Level Finish Plan - Phase 2	X										

Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

Cover

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A0.0

Scale

8/23/2023 21:36:00

1 Lower Level Framing Plan Phase 2
1/4" = 1'-0"

BRIDGEWORKS CONSTRUCTION
DENTAL • VETERINARY • MEDICAL

7520 MAIN STREET, SUITE 101
SYKESVILLE, MARYLAND 21784
877-497-2256

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ARCHITECT:

MEP ENGINEER:

STRUCTURAL ENGINEER:

CIVIL ENGINEER:

INTERIOR DESIGNER:

SPECIALTY EQUIPMENT:

Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

Lower Level Framing Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A2.1

Scale 1/4" = 1'-0"

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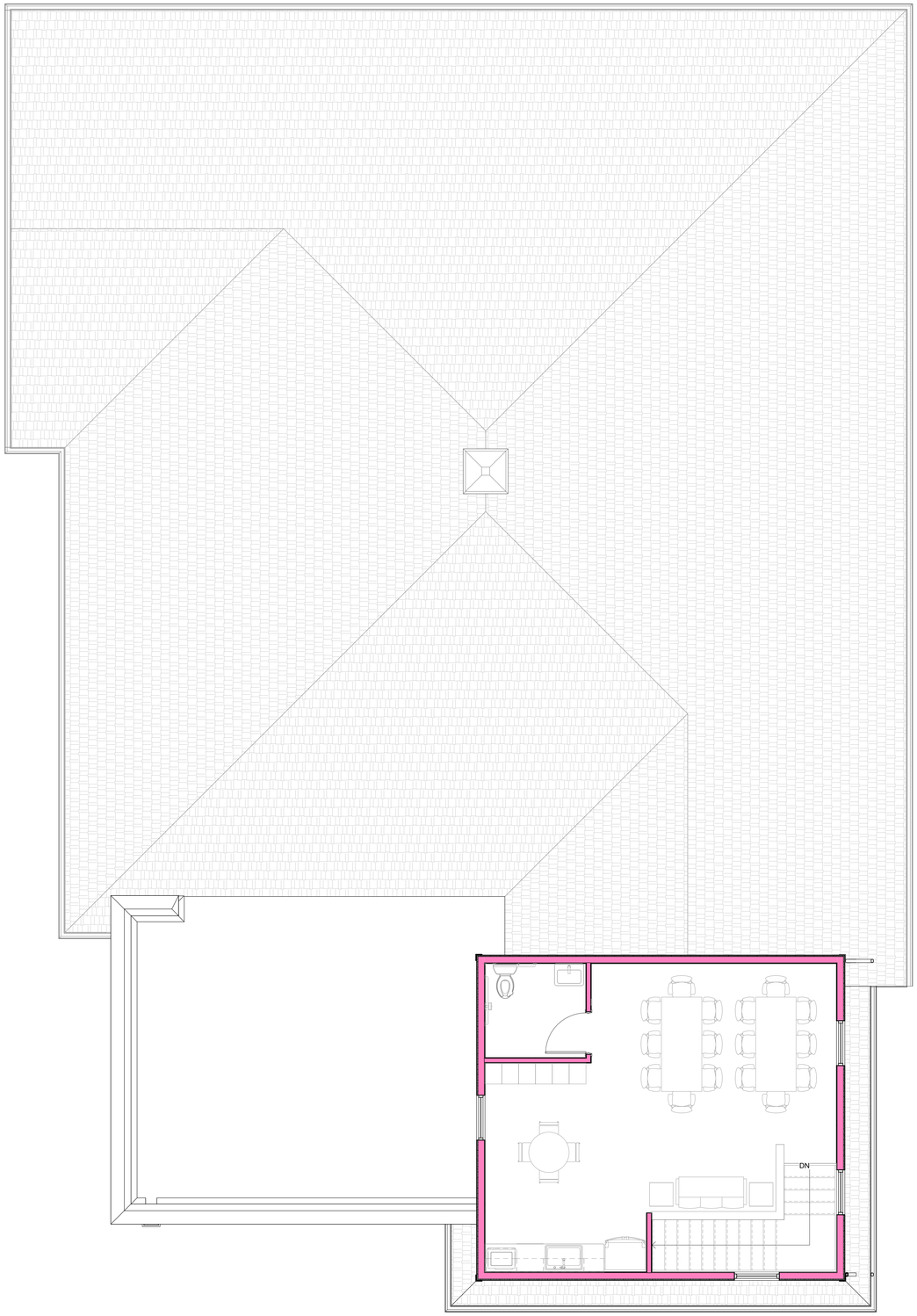

1 Upper Level Framing Plan - Phase 2
1/4" = 1'-0"

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Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

Upper Level Framing Plan Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A2.2

Scale	1/4" = 1'-0"

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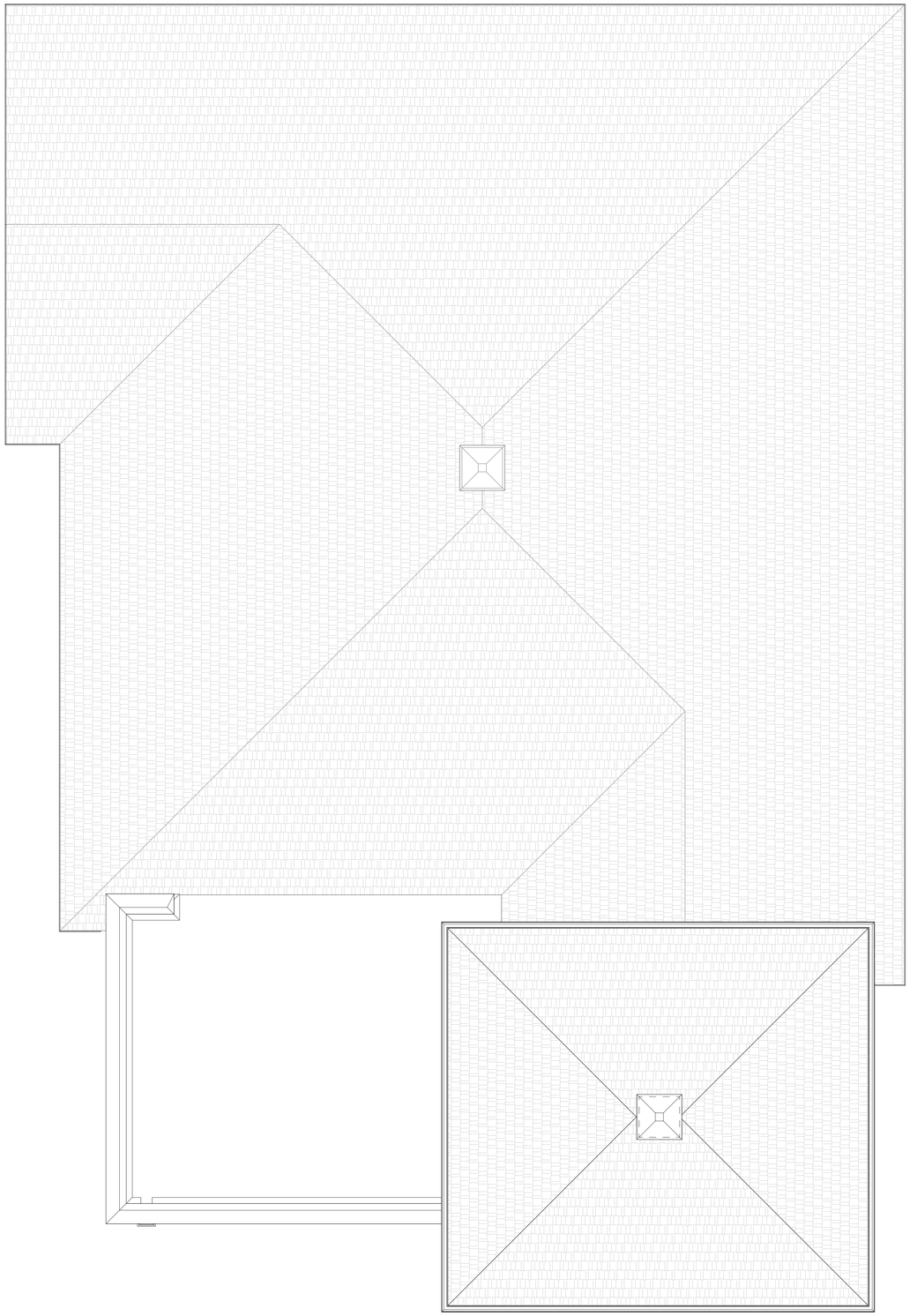

1 Upper Level Roof Plan - Phase 2
1/4" = 1'-0"

BRIDGEWORKS CONSTRUCTION
DENTAL • VETERINARY • MEDICAL

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CIVIL ENGINEER:

INTERIOR DESIGNER:

SPECIALTY EQUIPMENT:

Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

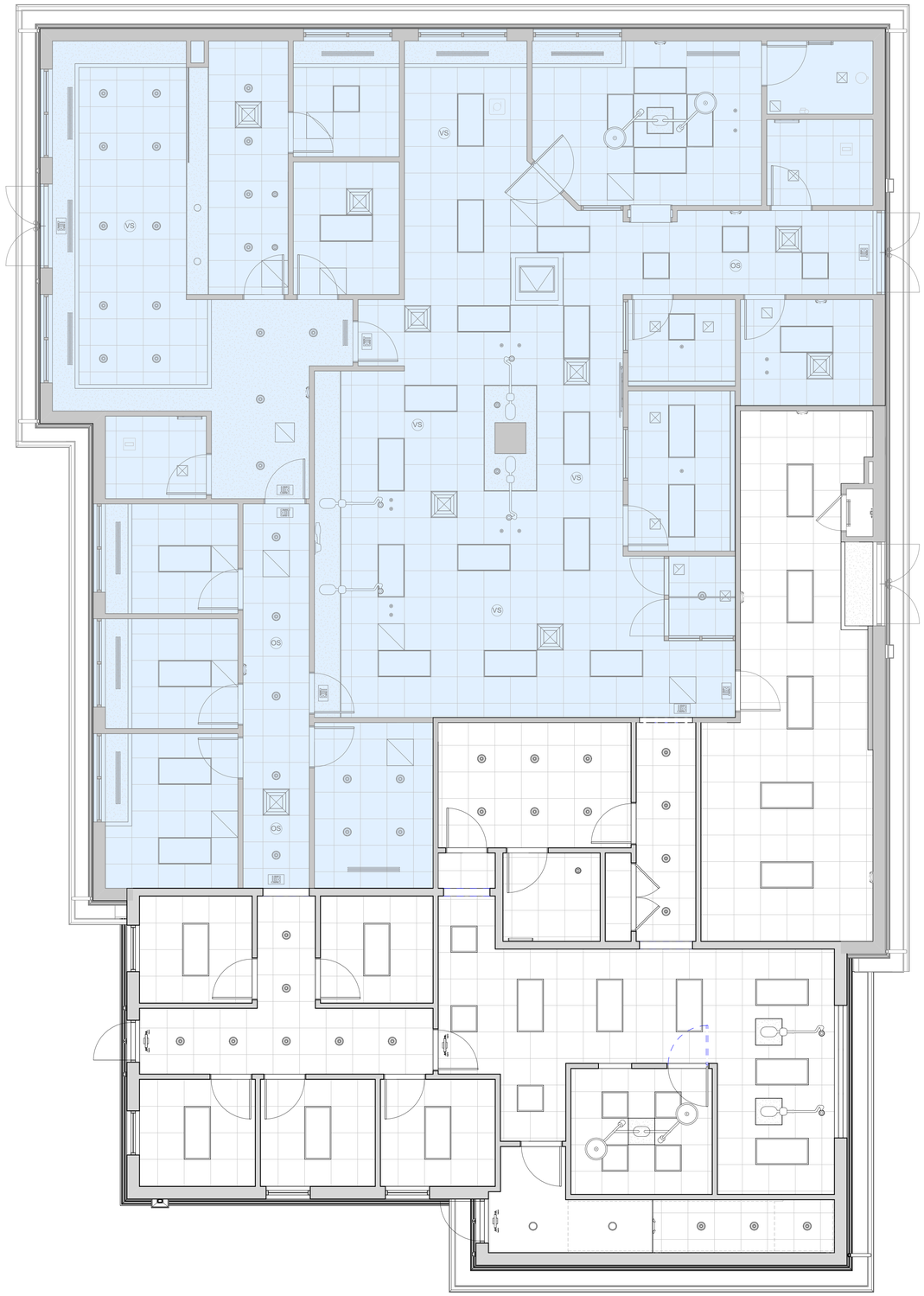
Upper Level Roof Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A2.3

Scale 1/4" = 1'-0"

8/23/2023 21:36:03



1 Lower Level Reflected Ceiling Plan - Phase 2
1/4" = 1'-0"

BRIDGEWORKS CONSTRUCTION
DENTAL • VETERINARY • MEDICAL

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ARCHITECT:

MEP ENGINEER:

STRUCTURAL ENGINEER:

CIVIL ENGINEER:

INTERIOR DESIGNER:

SPECIALTY EQUIPMENT:

Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

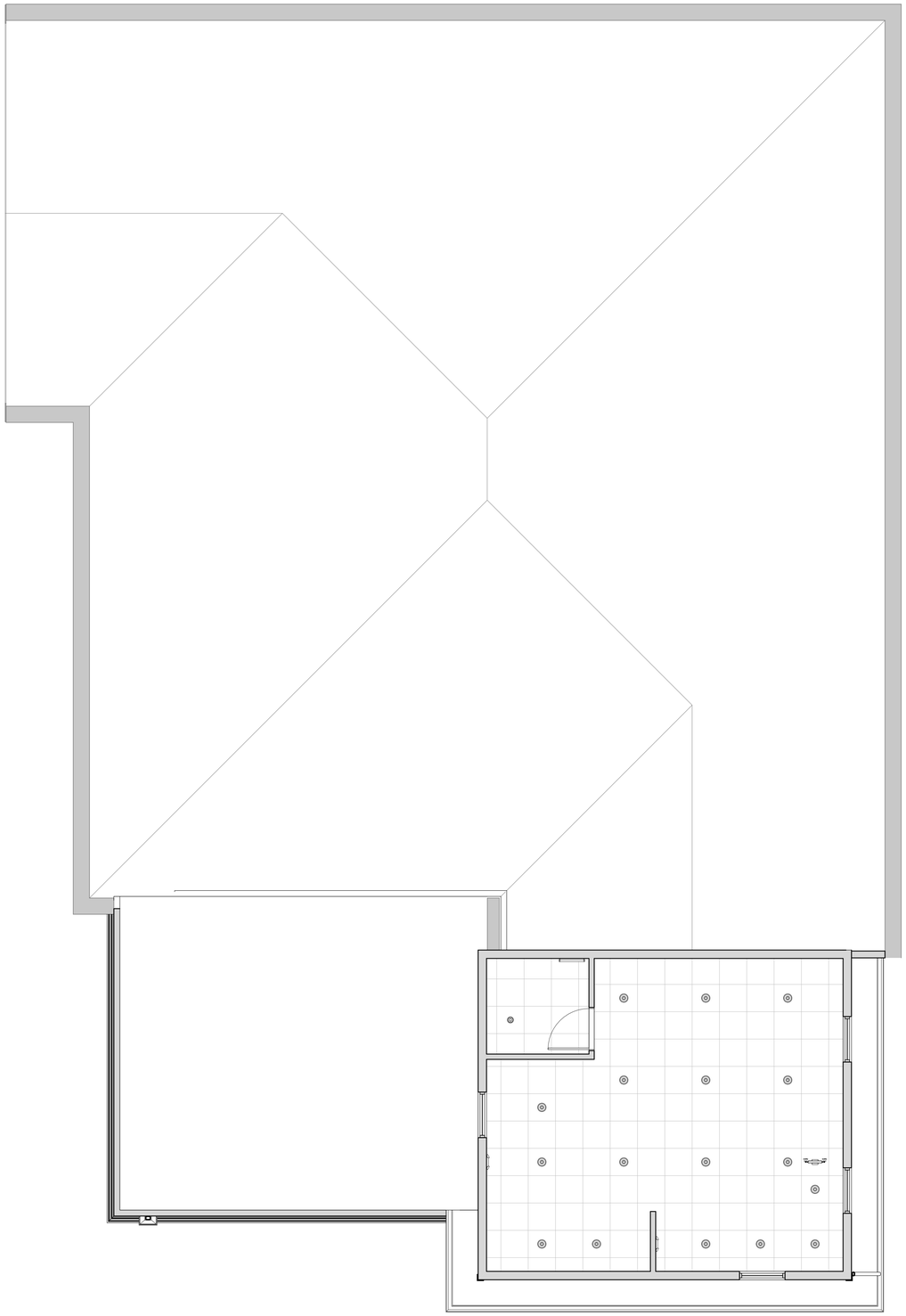
Lower Level Reflected Ceiling Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A2.4

Scale	1/4" = 1'-0"

8/23/2023 21:36:09



1 Upper Level Reflected Ceiling Plan - Phase 2
1/4" = 1'-0"

BRIDGEWORKS CONSTRUCTION
DENTAL • VETERINARY • MEDICAL

7520 MAIN STREET, SUITE 101
SYKESVILLE, MARYLAND 21784
877-497-2256

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ARCHITECT:

MEP ENGINEER:

STRUCTURAL ENGINEER:

CIVIL ENGINEER:

INTERIOR DESIGNER:

SPECIALTY EQUIPMENT:

Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

Upper Level Reflected Ceiling Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A2.5

Scale 1/4" = 1'-0"

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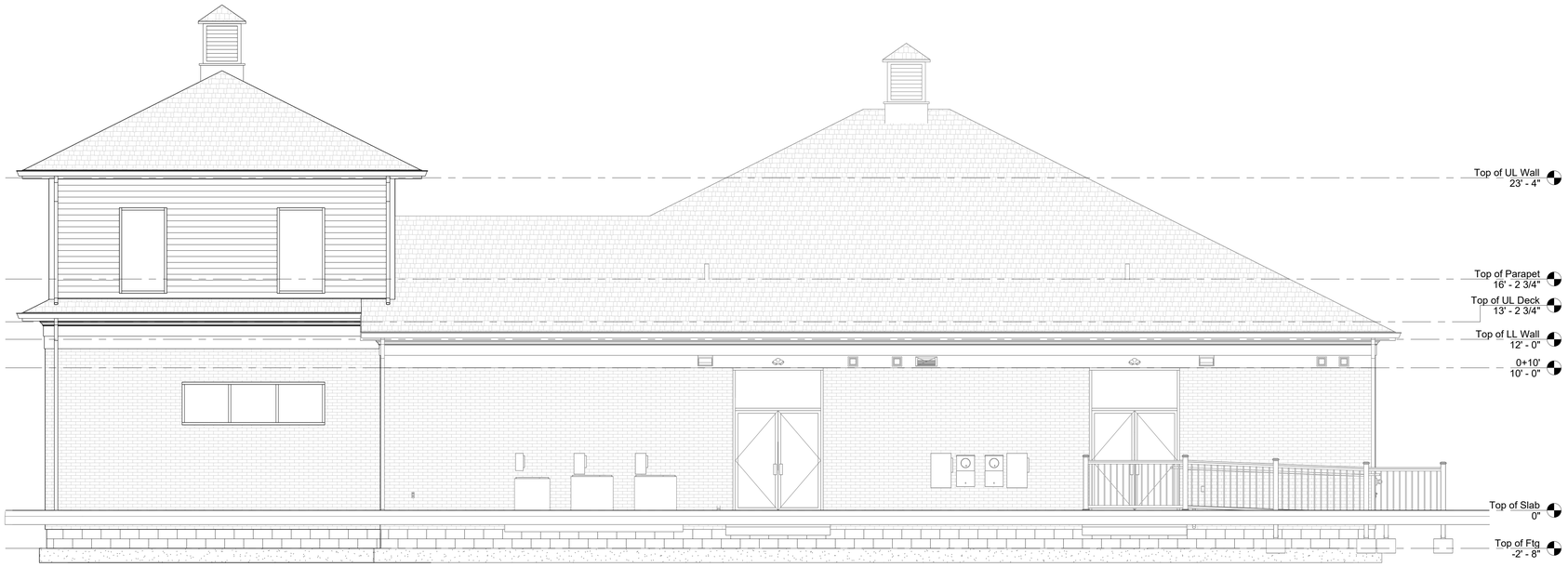
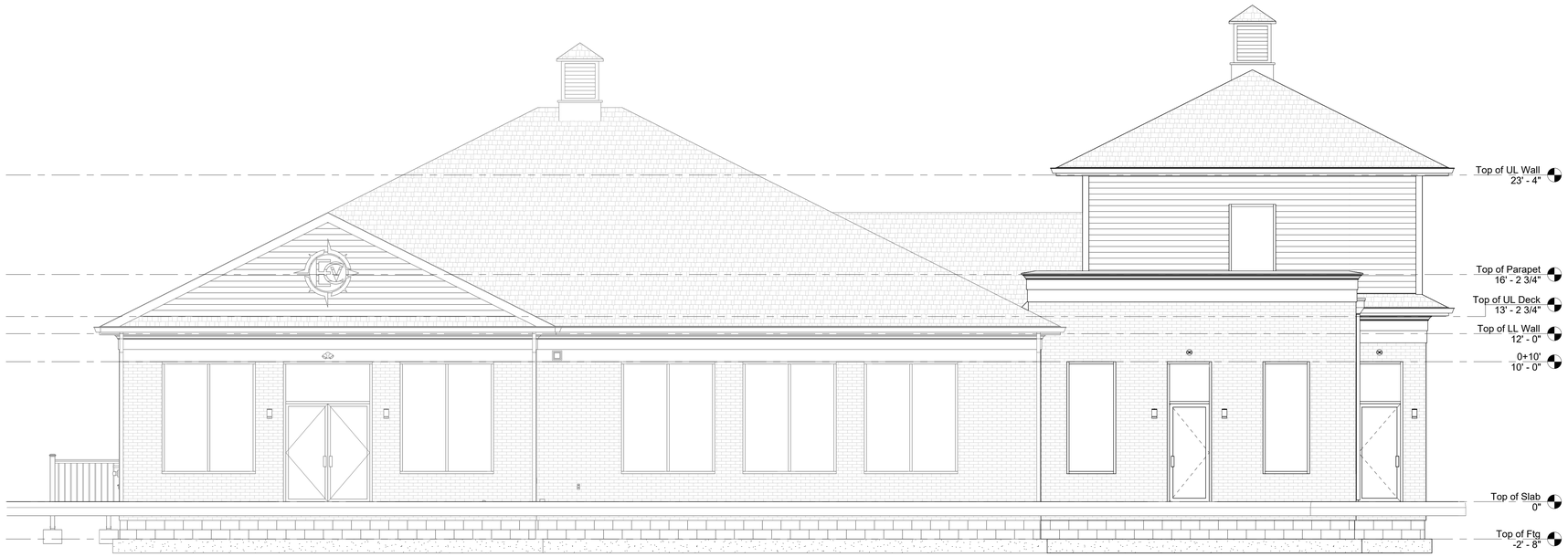


2 Rear Elevation
1/4" = 1'-0"



1 Front Elevation
1/4" = 1'-0"

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Revisions

No.	Description	Date

For Permit

East Coast Vets Family Pet Health Center

29315 Dover Rd
Easton, MD 21601

Patrick Allen, DVM

Exterior Elevations

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A3.1

Scale	1/4" = 1'-0"

8/23/2023 21:36:21

2 Left Side Elevation
1/4" = 1'-0"

1 Right Side Elevation
1/4" = 1'-0"

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East Coast Vets Family Pet Health Center

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Easton, MD 21601

Patrick Allen, DVM

Exterior Elevations

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A3.2

Scale 1/4" = 1'-0"

8/23/2023 21:36:36

1 Exterior Rendering

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Patrick Allen, DVM

Exterior Rendering

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A3.3

Scale

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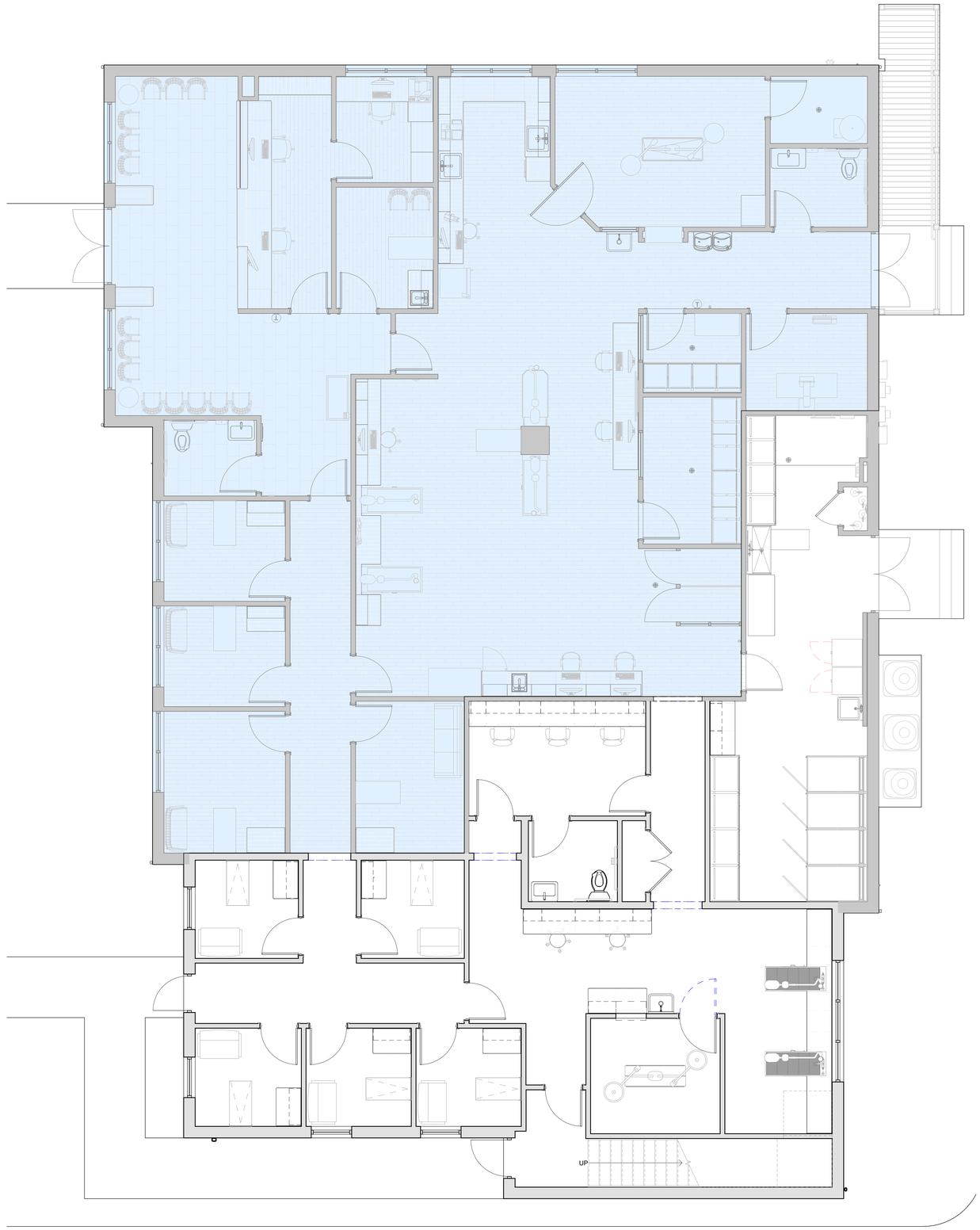

1 Lower Level Finish Plan - Phase 2
1/4" = 1'-0"

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Patrick Allen, DVM

Lower Level Finish Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A4.2

Scale 1/4" = 1'-0"

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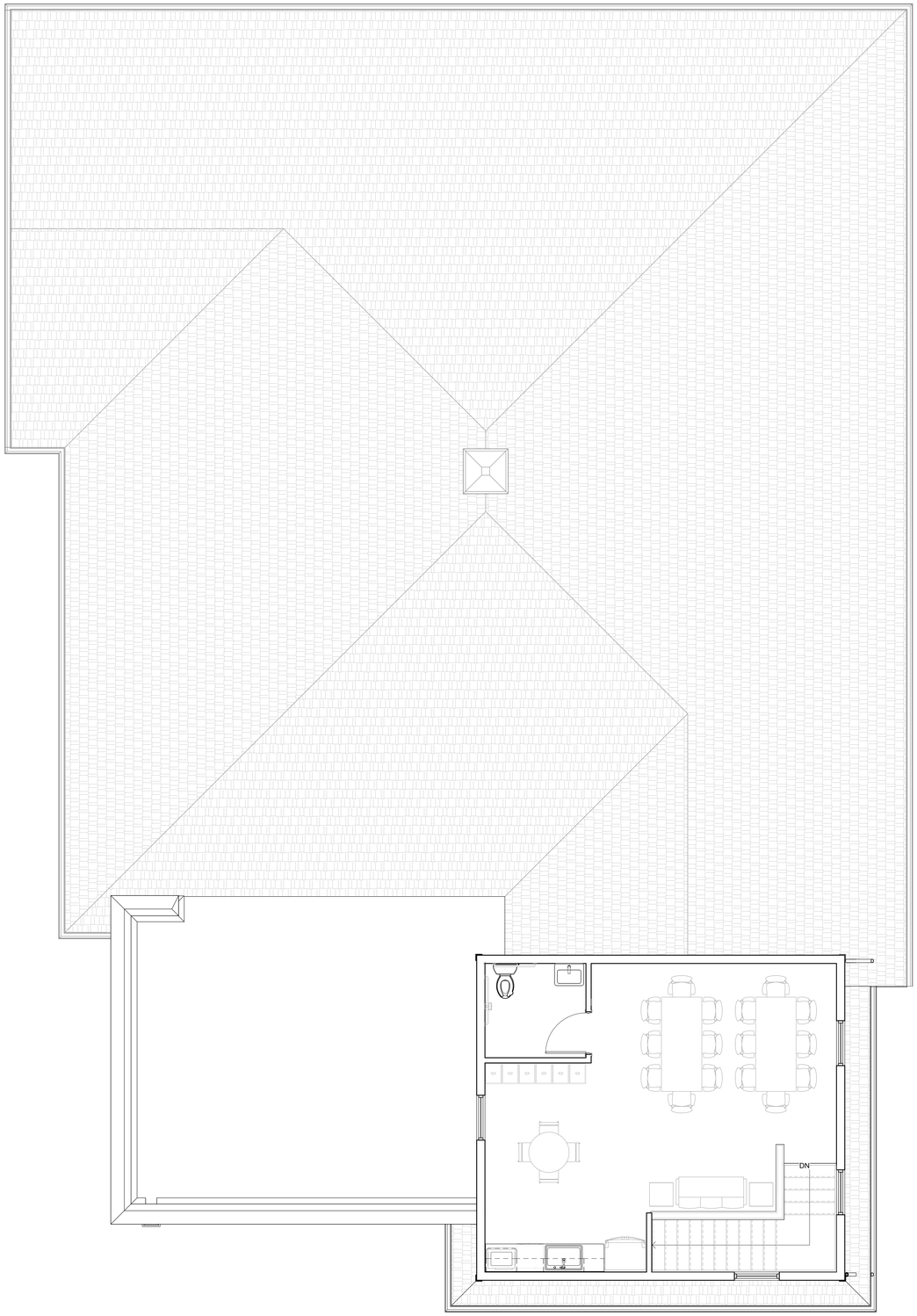

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1/4" = 1'-0"

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Easton, MD 21601

Patrick Allen, DVM

Upper Level Finish Plan - Phase 2

Project number	20-V002
Date	210823
Drawn by	rtk
Checked by	rtk

A4.3

Scale	1/4" = 1'-0"

8/23/2023 21:37:31

BUILDING PERMIT SITE PLAN
FOR
EAST COAST VET, LLC
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND

PROJECT DATA

PROPERTY: TAX MAP 105, PARCEL 2844, LOT 3
29315 DOVER ROAD
EASTON, MARYLAND 21601

OWNER: GEORGE H HOCKER, JR., TRUSTEE
HARRIET G. HOCKER, TRUSTEE
3616 CLEAR DRIVE CT
GLENWOOD, MD 21738

DEVELOPER: EAST COAST VETS, LLC
C/O PATRICK ALLEN
29315 DOVER ROAD
EASTON, MARYLAND 21601
(410) 463-6451

DEED REFERENCE: 2048/320

ZONING CLASSIFICATION: CG (COMMERCIAL GENERAL)

SITE AREA: 0.523 ACRES±

BUILDING SETBACKS: FRONT – 25'
REAR – 15'
SIDE – 10'
STATE HIGHWAY (MD RT 50) – 25'

MAXIMUM BUILDING HEIGHT PERMITTED: 50'
BUILDING HEIGHT PROPOSED: LESS THAN 50'

EXISTING CONDITIONS: 4,200 SF VETERINARY CLINIC AND ASSOCIATED PARKING LOT AND STORMWATER MANAGEMENT FACILITY

PROPOSED DEVELOPMENT: PROPOSED BUILDING ADDITION (1,285 SF) AND ASSOCIATED SITE IMPROVEMENTS

STORMWATER MANAGEMENT: REQUIREMENTS MET FROM PREVIOUS DEVELOPMENT, PROPOSED IMPROVEMENTS LESS THAN 5,000 SF, THEREFORE PROPOSED IMPROVEMENTS EXEMPT FROM STORMWATER MANAGEMENT REQUIREMENTS.

FOREST CONSERVATION: SUBJECT PROJECT IS EXEMPT FROM REQUIREMENTS

SPECIAL EXCEPTIONS/VARIANCES: NONE

REFUSE/TRASH: EXISTING ON-SITE DUMPSTER ENCLOSURE TO BE USED

SITE LIGHTING: NO CHANGES TO EXISTING SITE LIGHTING

PARKING CALCULATIONS

TOTAL SITE PARKING REQUIRED: 1 SPACE/250 GFA; 22 SPACES
TOTAL SITE PARKING PROVIDED: 23 SPACES (THE PROPOSED PARKING IS LOCATED ON PARCEL 2840. AUTHORIZATION FOR THIS OFF-SITE USE IS PROVIDED IN A PREVIOUSLY RECORDED "DECLARATION OF SHARED USE EASEMENT AREA")

ADA ACCESSIBLE PARKING SPACES REQUIRED: 1 VAN
ADA ACCESSIBLE PARKING SPACES PROVIDED: 2 SPACES, INCLUDING 1 VAN ACCESSIBLE

PROJECT NOTES

1. PROPERTY BOUNDARY AND EXISTING CONDITIONS SURVEYED BY LANE ENGINEERING, LLC IN JULY 2014 AND JUNE 2017.
2. SITE TOPOGRAPHY AS SHOWN HEREIN WAS DERIVED FROM A FIELD SURVEY BY LANE ENGINEERING, LLC DATED JULY 2014 AND JUNE 2017.
3. THE UNDERGROUND UTILITIES (SEWER, WATER, ELECTRIC, CABLE TV, COMMUNICATIONS, FIBER OPTICS, ETC.) SHOWN HEREON WERE TAKEN FROM A SHAPE FILE (GIS) PROVIDED BY EASTON UTILITIES COMMISSION.
4. THE ELEVATIONS SHOWN HEREON ARE NAVD 1988 DATUM.
5. THE COORDINATES SHOWN HEREON ARE BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83 (2011).
6. THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.
7. THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE 'X' FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0193C FOR TALBOT COUNTY, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

   FLOOD ZONE LEGEND
   ZONES A, AE, AH, AO, AR, A99, V & VE – 1% ANNUAL CHANCE FLOOD
   ZONE X (SHADED) – 0.2% ANNUAL CHANCE FLOOD
   ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

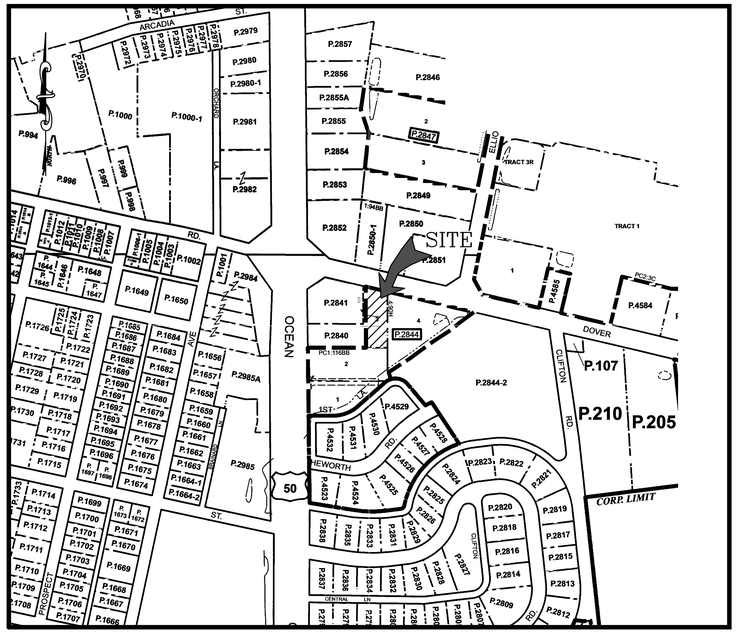
   THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.
8. PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON.

STORMWATER MANAGEMENT COMPLIANCE

THE PROPOSED CONSTRUCTION DISTURBANCE (4,537 SF), IS LESS THAN 5,000 SF.; THEREFORE, THE DEVELOPMENT ACTIVITY IS EXEMPT FROM STORMWATER MANAGEMENT COMPLIANCE.

SEDIMENT AND EROSION CONTROL COMPLIANCE

THE PROPOSED CONSTRUCTION DISTURBANCE (4,537 SF), IS LESS THAN 5,000 SF.; THEREFORE, THE DEVELOPMENT ACTIVITY IS EXEMPT FROM SEDIMENT AND EROSION CONTROL COMPLIANCE.



VICINITY MAP

300' 150' 0' 150' 300' 600'
SCALE IN FEET

INDEX OF SHEETS

PDF SHEET	SHEET No.	TITLE
1	1 OF 4	TITLE SHEET
2	2 OF 4	EXISTING CONDITIONS & DEMOLITION PLAN
3	3 OF 4	BUILDING PERMIT SITE PLAN
4	4 OF 4	SITE DETAILS

STATEMENT OF PURPOSE & INTENT

THE PURPOSE OF THESE PLANS IS TO OBTAIN SITE PLAN APPROVAL AND PROVIDE NECESSARY CONSTRUCTION INFORMATION TO CONSTRUCT A TWO-STORY, 1,292 GROSS SFA BUILDING ADDITION TO THE EXISTING SINGLE-STORY BUILDING, MAINTAIN THE EXISTING UTILITIES, AND SHIFT THE EXISTING DESIGNATED PARKING SPACES TO THE NEIGHBORING PARCEL WITHIN AN ESTABLISHED SHARED-USE AGREEMENT.

VICINITY MAP
SCALE: 1" = 1,000'

APPROVED: PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN PLANNER DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED: PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON DIRECTOR – PLANNING DATE

REVISIONS

No.	DATE	DESCRIPTION	BY

WARNING!!
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MISS UTILITY
BEFORE YOU DIG CALL 1-800-441-8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

SITE ADDRESS
29315 DOVER ROAD
EASTON, MARYLAND 21601

OWNER
GEORGE H HOCKER, JR., TRUSTEE
HARRIET G. HOCKER, TRUSTEE
3616 CLEAR DRIVE CT
GLENWOOD, MD 21738

DEVELOPER
EAST COAST VETS, LLC
C/O PATRICK ALLEN
29315 DOVER ROAD
EASTON, MARYLAND 21601
(410) 463-6451

CIVIL ENGINEER
LANE ENGINEERING, LLC
C/O TIMOTHY W. GLASS, P.E.
117 BAY STREET
EASTON, MD 21601
(410) 822-8003

ARCHITECT
BRIDGEWORKS CONSTRUCTION
C/O BOB KEYSER
7524 MAIN ST
SUITE 201
SYKESVILLE, MD 21784
(877) 497-2256

CONTRACTOR
TO BE DETERMINED

UTILITY CONTACTS
DRAINAGE/STORMWATER MANAGEMENT
TOWN OF EASTON
14 S. HARRISON STREET
EASTON, MD 21601
(410) 820-8822

ALL ELECTRIC, NATURAL GAS, WATER, CABLE, SANITARY SEWER
EASTON UTILITIES COMMISSION
201 N. WASHINGTON STREET
EASTON, MD 21601
(410) 822-6110

TELEPHONE
VERIZON
1401 MOUNT HERMAN ROAD
SALISBURY, MD 21804
(410) 860-8029

PERMITTING AGENCIES
TOWN OF EASTON
ENGINEERING DEPARTMENT
14 S. HARRISON STREET
EASTON, MD 21601
(410) 820-8822

TALBOT COUNTY SOIL CONSERVATION DISTRICT
28577 MARY'S COURT, SUITE 3
EASTON, MD 21601
(410) 822-1577

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 , Expiration Date: 04/13/2025.

SEAL
STATE OF MARYLAND — TIMOTHY W. GLASS — No. 60891 — PROFESSIONAL ENGINEER
8/28/23
DATE

TITLE SHEET

EAST COAST VETS, LLC
29315 DOVER ROAD

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 105, PARCEL 2844, LOT 3

ISSUED FOR:	DATE:	BY:
AGENCY SUBMITTAL 01	8/28/23	BMW

SHEET No. 1 OF 4	DATE: 8/28/2023
SCALE: AS NOTED	JOB No. 230108
	FILE No. 1347

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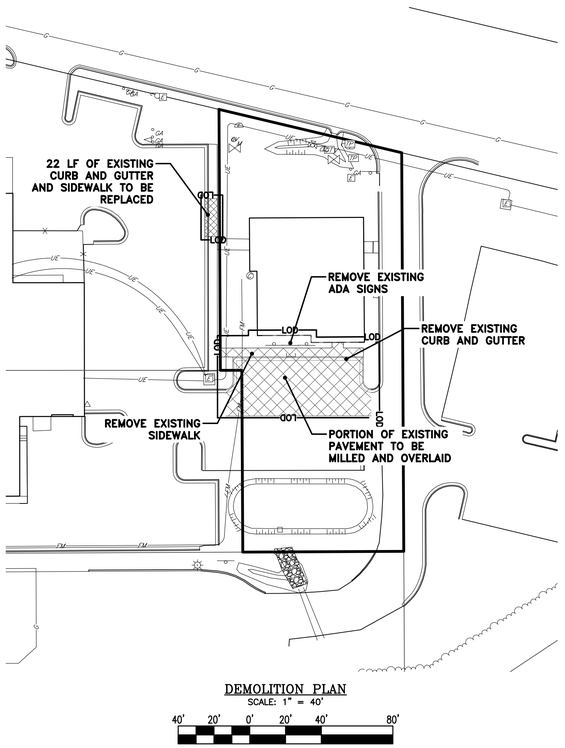
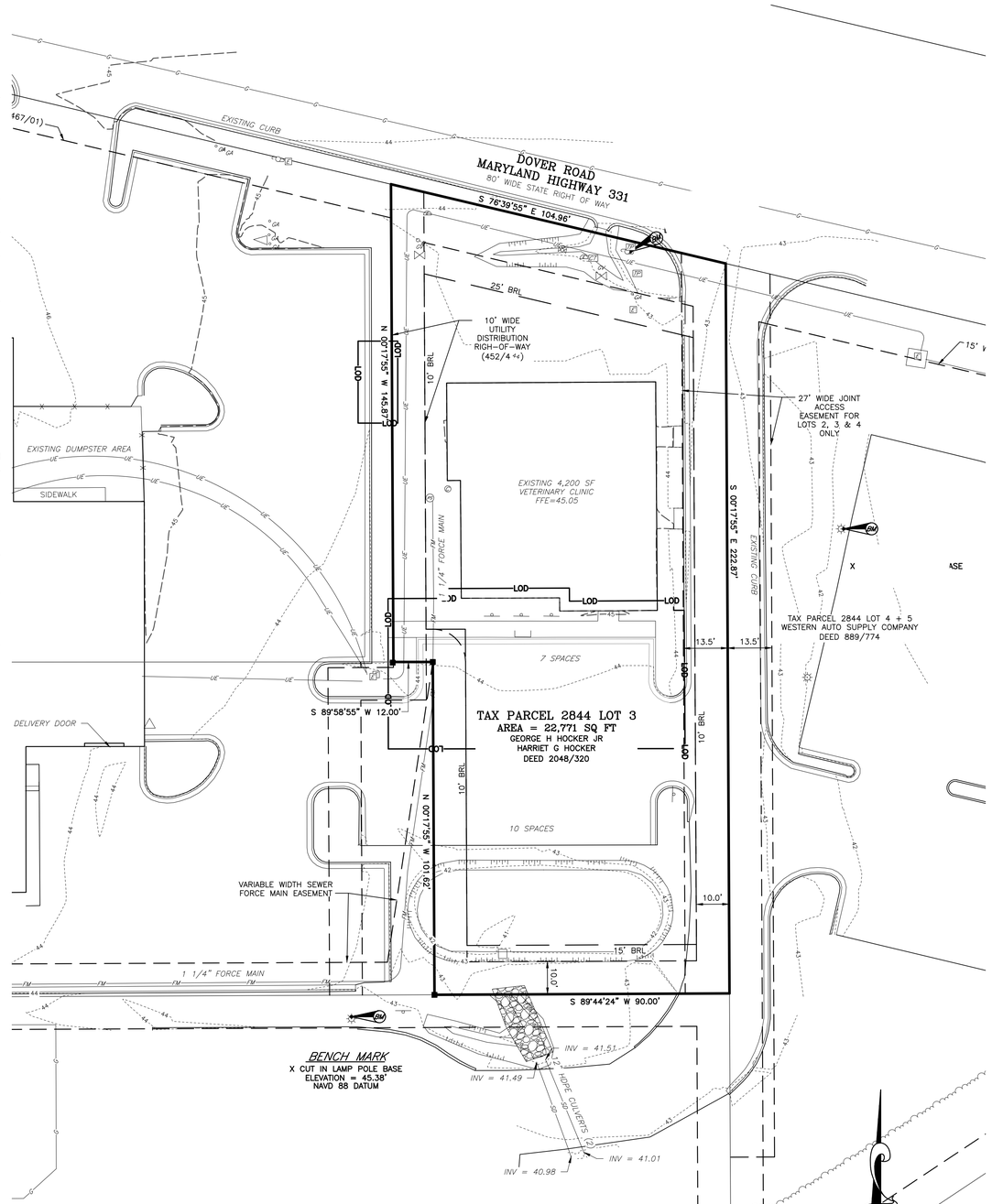
Date: 08/29/2023 – 1:28pm User: bwallace Project Manager:TWG
Drawing Path: C:\awp\Ac-Publish_25900\CSP-PLTS-230108.dwg | 1 OF
XREF File(s): VLD-BASE-230108 (AB – CSP-PLTS-130251)/HATCH-BASE-230108/CSP-BASE-230108/CBS-BASE-2436-230108/VSF-BASE-230108 (FROM 130251)/RAR-BASE-230108

	EXISTING	PROPOSED
SURVEY MONUMENTATION		
CONCRETE MONUMENT		
STONE		
COMPUTED POINT		
BENCH MARK	BM	
PROPERTY LINE		
CABLE TV		
CABLE TV PEDESTAL	CT	CT
ELECTRICAL		
CABINET	EC	EC
TRANSFORMER BOX	E	E
HANDHOLE		
ELECTRIC UNDERGROUND	UE	UE
GAS		
SHUTOFF VALVE	GV	
OVER HEAD UTILITIES		
GUY WIRE ANCHOR	GA	GA
LAMP POLE		
UTILITY POLE		
SANITARY SEWER		
CLEAN OUT		C
PUMPSTATION MANHOLE	PS	PS
FORCE MAIN	FM	FM
STORMDRAIN		
DOWNSPOUT	SDS	SDS
STORMDRAIN	SD	
TELEPHONE		
TELEPHONE PEDESTAL	TP	TP
WATER		
FIRE HYDRANT		
WATER METER	W	W
VALVE		
WATER MAIN	W	
SERVICE LEAD		
TOPOGRAPHIC FEATURES		
SINGLE POST SIGN		
ADA HANDRAIL		
DITCH TOP OF BANK		
DEPRESSION		
MAJOR CONTOUR	25	25
MINOR CONTOUR	24	24
VEGETATION		
TREE LINE		
SOIL EROSION CONTROL		
SILT FENCE		SF
LIMITS OF DISTURBED AREA (LOD)		LOD
LOD AND SILT FENCE		LOD/SF
PAVEMENT		
DRAINAGE FLOW INDICATOR		
HANDICAP PARKING		
HEAVY DUTY PAVEMENT		
REGULAR DUTY PAVEMENT		
CONCRETE		
MISCELLANEOUS		
EXISTING IMPROVEMENTS TO BE DEMOLISHED		



DEMOLITION PLAN
SCALE: 1" = 40'

40' 20' 0' 20' 40' 80'
SCALE IN FEET



EXISTING CONDITIONS PLAN
SCALE: 1" = 20'

MD COORDINATE SYSTEM NAD 83 (2011)

20' 10' 0' 10' 20' 40'
SCALE IN FEET

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TOWN OF EASTON – TOWN PLANNER DATE

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STATE OF MARYLAND — BRIAN M. WALTERS — No. 60891 — PROFESSIONAL ENGINEER
8.29.23
DATE

EXISTING CONDITIONS & DEMOLITION PLAN

EAST COAST VETS, LLC
29315 DOVER ROAD

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 105, PARCEL 2844, LOT 3

ISSUED FOR:	DATE:	BY:
AGENCY SUBMITTAL 01	8/28/23	BMW

SHEET No. 2 OF 4	DATE: 8/28/2023
SCALE: AS NOTED	JOB No. 230108
	FILE No. 1347

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Drawing Path: C:\swap\AcPublish_25900\CSP-PLTS-230108.dwg | 2 OF
XREF File(s): VLD-BASE-230108 (AB – CSP-PLTS-13025I)/HATCH-BASE-230108/CSP-BASE-230108/CBS-BASE-2436-230108/VSF-BASE-230108 (FROM 13025I)/RAR-BASE-230108

SITE NOTES

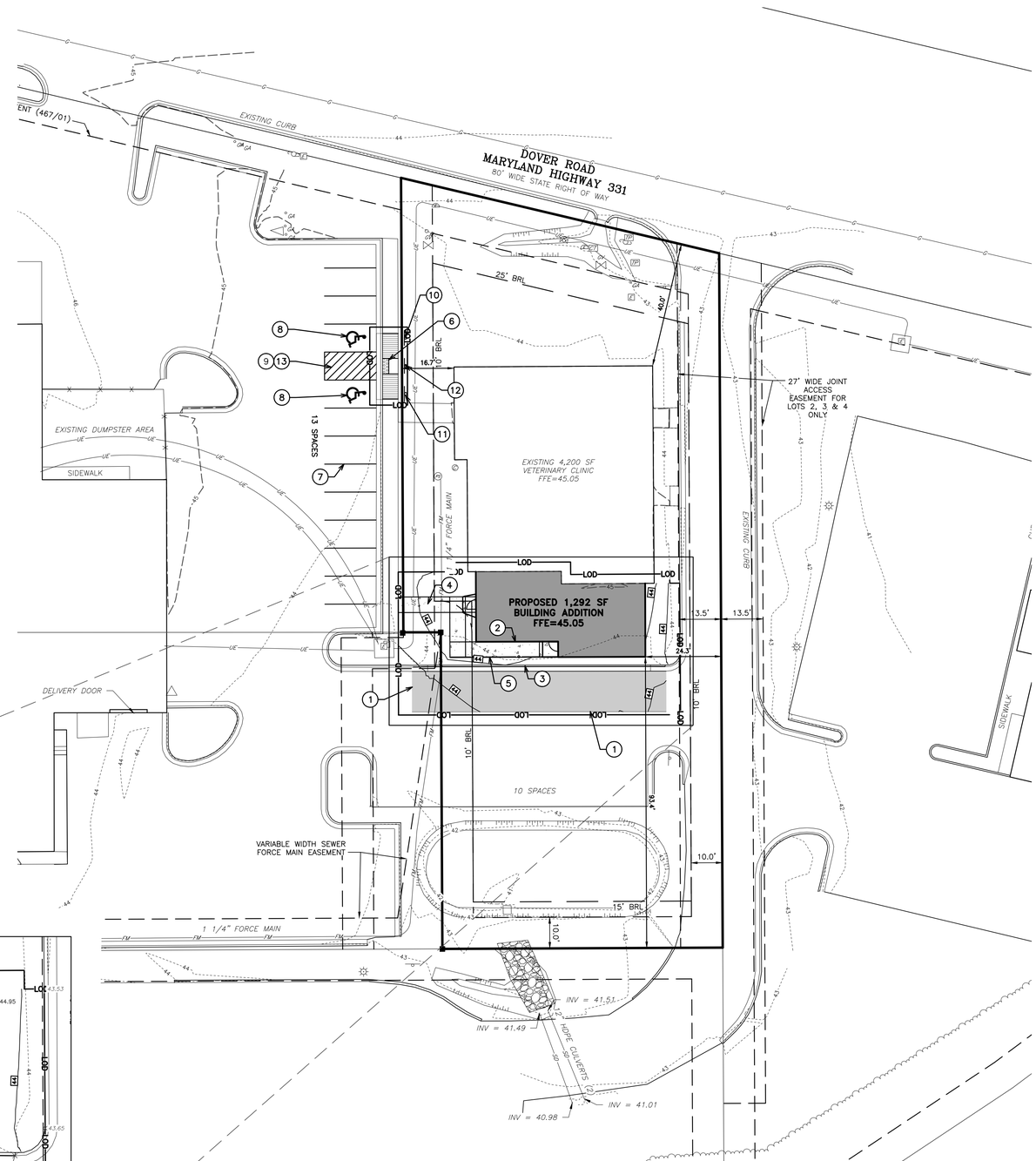
1. BUILDING OUTLINES SHOWN BASED ON ARCHITECTURAL FLOOR PLAN PROVIDED BY OWNER. CONTRACTOR SHALL VERIFY WITH OWNER/ARCHITECT/ENGINEER EXACT DIMENSIONS OF FOUNDATION. STAKE OUT SHALL BE PER FOUNDATION PLAN PROVIDED BY OWNER AND NOT BASED ON DIMENSIONS SHOWN OR SCALED HERE ON.
2. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT LOCATION OF WATER AND SEWER AND OTHER UTILITY CONNECTIONS.
3. COORDINATE LOCATION OF LEADWALK WITH DOOR LOCATIONS PER ARCHITECTURAL PLANS.
4. ALL DIMENSIONS AND RADII REFER TO FLOWLINE OF CURB OR EDGE OF PAVEMENT.
5. COORDINATE WITH UTILITY SERVICE PROVIDERS FOR THE RELOCATION OF EXISTING UTILITIES, IF REQUIRED, AND FOR THE INSTALLATION OF PROPOSED UTILITIES.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS/SPECIFICATIONS FOR ASPHALT MIX, CR-6, IMPORTED STRUCTURAL FILL TO ENGINEER FOR REVIEW AND APPROVAL.
7. A MINIMUM CLEARANCE OF 2 FEET SHALL BE MAINTAINED BETWEEN THE FACE OF CURB AND ANY PART OF A TRAFFIC SIGN OR LIGHT POLE.
8. ADJUST ALL EXISTING VALVE BOXES, CLEANOUTS, AND STRUCTURE RIMS TO PROPOSED GRADE AS REQUIRED.

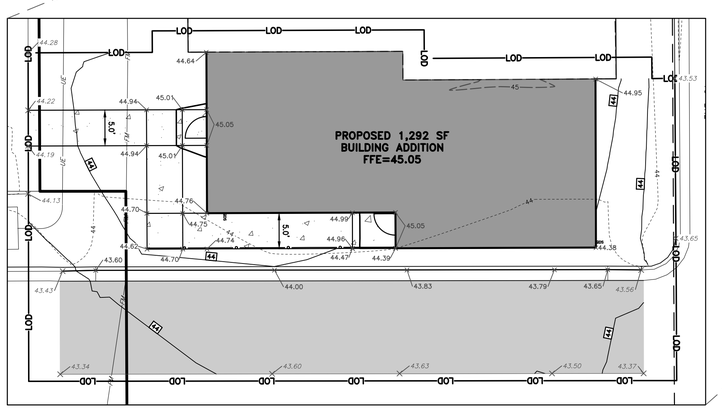
GRADING NOTES

1. USE EROSION CONTROL MATTING FOR ALL SIDE SLOPES 3:1 OR STEEPER.
2. STOCKPILE STRIPPED TOPSOIL AT AN OFFSITE LOCATION WITH AN APPROVED SEDIMENT CONTROL PLAN AS REQUIRED.
3. SPOT ELEVATIONS REFER TO EDGE OF PAVEMENT, FLOWLINE OF CURB OR GROUND SURFACE.
4. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION.
5. PROVIDE A SMOOTH GRADING TRANSITION BETWEEN ALL DISTURBED AND EXISTING AREAS.
6. SIDEWALKS SHALL HAVE MAX CROSS SLOPE OF 2.0% AND MAX LONGITUDINAL SLOPE OF 5.0%.
7. LANDING PAD AT DOOR ENTRANCES SHALL HAVE 2.0% MAX SLOPE. SIZE OF LANDING PAD PER PLAN AND CODE REQUIREMENTS.
8. IMPORTED STRUCTURAL FILL SHALL BE TESTED PER ASTM D-1557 FOR MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT. ALL STRUCTURAL SOILS SHALL BE PLACED IN 8" LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
9. PROPOSED PARKING LOT BASE SHALL BE PROOF ROLLED AND APPROVED BY ENGINEER PRIOR TO ASPHALT PLACEMENT.
10. DURING BACKFILLING AND FINISH GRADING AROUND BUILDING PERIMETER, CONTRACTOR SHALL PROVIDE 6" MINIMUM FALL IN THE FIRST 10' (5% SLOPE MIN) AWAY FROM BUILDING PERIMETER UNLESS SHOWN OTHERWISE WITH REGARDS TO LEAD WALKS, SIDEWALKS, PATIOS AND LANDINGS.

SITE & UTILITY KEY NOTES

1. MILL EXISTING PAVEMENT AND TIE TO EXISTING PAVEMENT W/ SMOOTH TRANSITION
2. INSTALL FULL DEPTH EXPANSION MATERIAL WHERE CONCRETE ABUTS RIGID STRUCTURES AND/OR CURBING (TYP)
3. REVERSE CURB AND GUTTER, TRANSITION TO FLUSH. MATCH EXISTING CURB PROFILE
4. 5' CONCRETE SIDEWALK PER DETAIL (TYP)
5. HANDRAIL PER DETAIL
6. PARALLEL SIDEWALK ADA RAMP PER TOWN OF EASTON DETAIL TOE-R-7.04
7. 4" WIDE WHITE WATER BASED PAVEMENT MARKINGS (TYP)
8. ADA PAVEMENT MARKING SYMBOL PER DETAIL (TYP)
9. ACCESS AISLE STRIPING PER DETAIL (TYP)
10. ADA PARKING SIGN PER DETAIL
11. VAN ACCESSIBLE ADA PARKING SIGN PER DETAIL
12. NO PARKING IN ACCESS AISLE SIGN PER DETAIL
13. HANDICAP PARKING SPACES AND ACCESS AISLES SHALL HAVE 2% MAXIMUM GRADE (TYP)





DETAILED SPOT GRADING INSET
SCALE: 1" = 10'

10' 5' 0' 5' 10' 20'
SCALE IN FEET

MD COORDINATE SYSTEM
NAD 83 (2011)

20' 10' 0' 10' 20' 40'
SCALE IN FEET

APPROVED:
PLANS ARE
TOWN OF EASTON – TOWN PLANNER DATE

APPROVED:
ISSUED FOR
REVIEW ONLY
TOWN OF EASTON – TOWN ENGINEER DATE

APPROVED:
PLANS ARE NOT
EASTON DIRECTOR – PLANNING DATE
APPROVED FOR
CONSTRUCTION

REVISIONS			
No.	DATE	DESCRIPTION	BY

WARNING!!
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MISS UTILITY
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PROTECT YOURSELF, GIVE
TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 , Expiration Date: 04/13/2025.

SEAL
STATE OF MARYLAND
BRIAN M. WALTZ
60891
LICENSED PROFESSIONAL ENGINEER
8.29.23
DATE

BUILDING PERMIT SITE PLAN

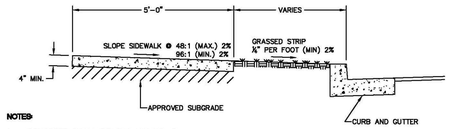
EAST COAST VETS, LLC
29315 DOVER ROAD

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 105, PARCEL 2844, LOT 3

ISSUED FOR:	DATE:	BY:
AGENCY SUBMITTAL 01	8/28/23	BMW

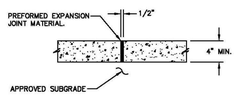
SHEET No. 3 OF 4	DATE: 8/28/2023
SCALE: AS NOTED	JOB No. 230108
	FILE No. 1347

Date: 08/29/2023 – 1:28pm User: bwallace Project Manager: TWG
Drawing Path: C:\swap\AcPublish_25900\CSP-PLTS-230108.dwg | 3 OF
XREF File(s): VLD-BASE-230108 (AB - CSP-PLTS-130251)/MATCH-BASE-230108/CSP-BASE-230108/CBS-BASE-2436-230108/VSF-BASE-230108 (FROM 130251)/PAR-BASE-230108/CEC-BASE-230108



NOTES:

1. CONCRETE SHALL BE SHA MIX NO. 3.
2. CONTRACTION JOINTS SHALL BE TOOLED AT 5'-0" INTERVALS. (4' INTERVALS FOR 4' WIDE SIDEWALK)
3. EXPANSION JOINTS AT INTERVALS NOT GREATER THAN 20'-0".
4. ALL UNPAVED AREAS WITHIN STREET SIDELINES SHALL BE SEEDED OR SODDED PER SPECIFICATIONS.
5. SIDEWALKS AT DRIVEWAY LOCATIONS TO BE 8" THICK.
6. WHERE CONTINUOUS WIDTH OF TRAVEL IS LESS THAN 5'-0", PROVIDE PASSING ZONES AT AN INTERVAL NOT TO EXCEED 200' CENTER TO CENTER. ENTRANCES SHALL BE ACCEPTABLE PASSING ZONES PROVIDED PAVING WIDTH OF 5'-0" IS MAINTAINED AT 48:1 SLOPE.
7. GRASS STRIPS SHALL BE SLOPED AS TO PROVIDE POSITIVE DRAINAGE TOWARD STORMWATER FEATURES.
8. WHERE REVERSE SLOPES OF GRASS STRIPS AND SIDEWALKS ARE REQUIRED TO PROVIDE POSITIVE DRAINAGE TOWARDS A STORMWATER FEATURE, SPOT ELEVATIONS SHALL BE PROVIDED ON FRONT AND BACK OF SIDEWALK. (REVERSE SLOPES MUST BE APPROVED BY THE TOWN PRIOR TO CONSTRUCTION)
9. MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL SHALL BE 5% IN LOCATIONS WITHOUT HANDICAPPED RAMPS.
10. SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS PER THE MOST UP TO DATE DEPARTMENT OF JUSTICE REGULATION 28CFR PART 36.



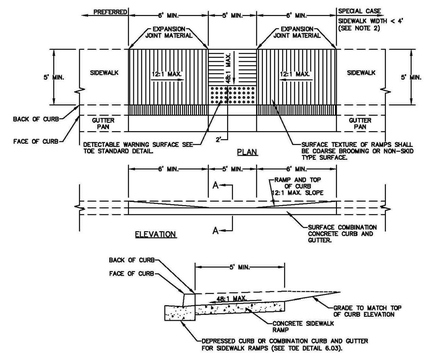
EXPANSION JOINT DETAIL

APPROVAL
TOWN ENGINEER
DATE 1/2020

TOWN OF EASTON STANDARD DETAILS

CONCRETE SIDEWALK

ISSUED: JANUARY 2020 STANDARD NO.: TOE-R-7.01



NOTES:

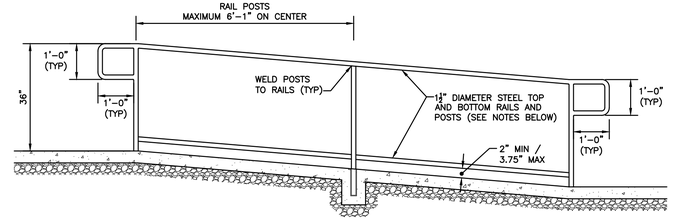
1. TO BE USED WHERE SIDEWALK IS ADJACENT TO THE CURB. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
2. WHERE 60" SIDEWALK CAN NOT BE PROVIDED. A DESIGN WAIVER MUST BE REQUESTED.
3. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL. THE CROSS SLOPE OF THE LANDING AREA CAN NOT EXCEED GRADE OF ROADWAY.
4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH TOE STANDARD DETAIL.
5. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.
6. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MIST BE A MINIMUM OF 5' IN LENGTH.

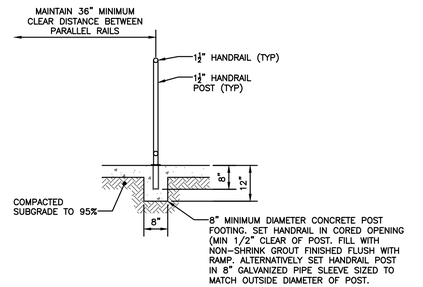
APPROVAL
TOWN ENGINEER
DATE 1/2020

TOWN OF EASTON STANDARD DETAILS

SIDEWALK RAMPS PARALLEL

ISSUED: JANUARY 2020 STANDARD NO.: TOE-R-7.04

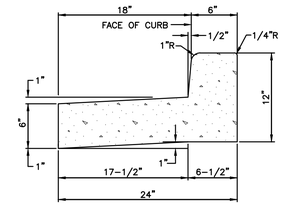




NOTES:

1. POSTS SHALL BE SET IN POST FOOTERS AS SHOWN.
2. REFER TO PLAN FOR RAMP DIMENSIONS AND SLOPES.
3. ALL DIMENSIONS AND MATERIALS FOR HANDRAILS SHALL COMPLY WITH CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN.
4. UNLESS OTHERWISE SPECIFIED, ALL RAMP POSTS, HANDRAILS, RAILINGS AND RETURNS SHALL BE SCHEDULE 40 STEEL PIPE, CLEANED, PRIMED AND PAINTED BLACK WITH 2 COATS OF GLOSSY, EPOXY BASED PAINT.
5. ALL WELDS TO BE GROUND SMOOTH.

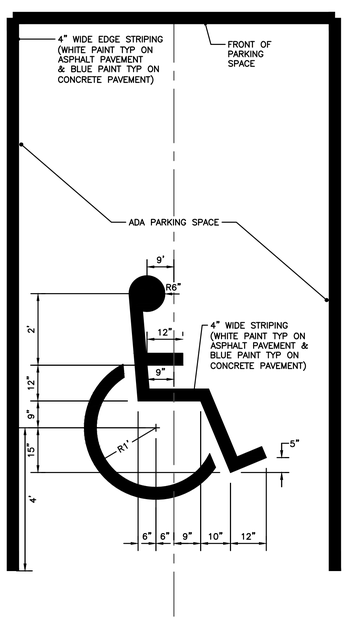
HANDRAIL DETAIL
NOT TO SCALE



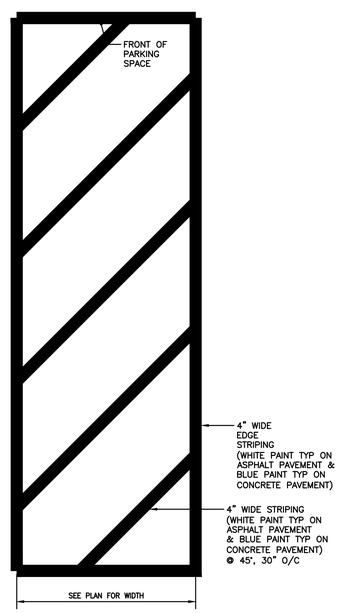
NOTES:

1. ALL CURB & GUTTER CONCRETE SHALL BE SHA MIX NO. 3.
2. CURB & GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 40'-0". EXTRUDED CONCRETE CURB & GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 100'-0".
3. AT HANDICAP RAMPS, CURB PAN MAXIMUM SLOPE SHALL BE 20:1 (5%) (7/8" RISE)

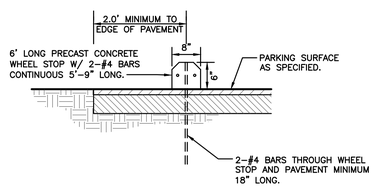
REVERSE CURB AND GUTTER DETAIL
NOT TO SCALE



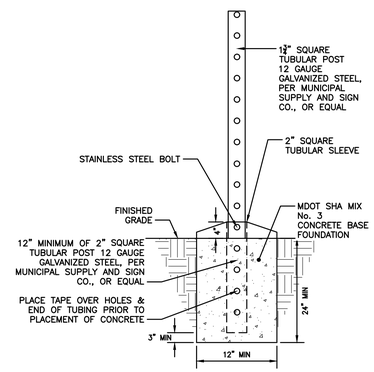
STANDARD ADA PAVEMENT MARKING SYMBOL DETAIL
NOT TO SCALE



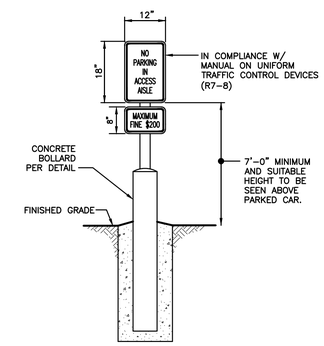
STANDARD ACCESS AISLE STRIPING DETAIL
NOT TO SCALE



CONCRETE WHEEL STOP DETAIL
NOT TO SCALE



SIGN POST DETAIL
NOT TO SCALE



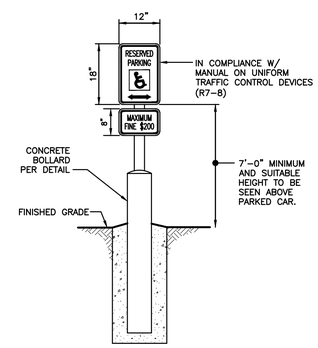
NO PARKING IN ACCESS AISLE SIGN DETAIL
NOT TO SCALE

THERMOPLASTIC PAVEMENT MARKINGS NOTES:

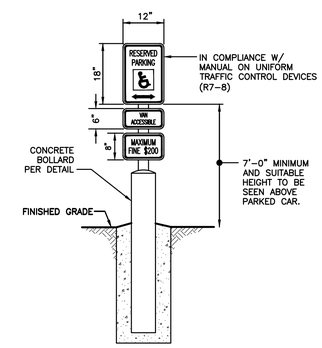
1. MARKING SHALL BE CONSTRUCTED UTILIZING A DURABLE PAVEMENT MARKING TAPE.
2. NOMINAL THICKNESS OF PAVEMENT MARKING TAPE SHALL BE 0.065".
3. PAVEMENT MARKING TAPE SHALL BE ABRASION RESISTANT.
4. THE AVERAGE SKID RESISTANCE SHALL BE 45BPN WHEN MEASURED IN ACCORDANCE WITH ASTM E303.
5. PAVEMENT MARKING TAPE SHALL NOT BE APPLIED EXCEPT BETWEEN MAY 15 AND SEPTEMBER 15. OUT OF SEASON, WHEN THE ROAD SURFACE TEMPERATURES AND AMBIENT AIR TEMPERATURES ARE ABOVE 40°F, THE LOCAL JURISDICTION MAY APPROVE APPLICATION IF ADDITIONAL ADHESIVES ARE UTILIZED.
6. THE PAVEMENT SURFACE SHALL BE CLEANED WITH A BROOM AND HIGH PRESSURED BLOWER BEFORE APPLYING TAPE.
7. PAVEMENT MARKING TAPE SHALL NOT BE APPLIED TO WET SURFACES.
8. APPLICATION OF MARKING TAPE SHALL BE AS APPROVED BY THE MANUFACTURER. PROCEDURE FOR APPLICATION SHALL BE SUBMITTED TO THE LOCAL JURISDICTION FOR REVIEW.

PAINT PAVEMENT MARKINGS NOTES:

1. IMMEDIATELY BEFORE APPLYING THE PAVEMENT MARKING PAINT TO THE PAVEMENT, THE CONTRACTOR SHALL INSURE THE SURFACE IS DRY AN ENTIRELY FREE FROM DIRT, SAND, GREASE, OIL, OR OTHER MATTER WHICH WOULD PREVENT EFFECTIVE ADHESION OF THE PAINT TO THE PAVEMENT.
2. THE SURFACE TEMPERATURE OF THE PAVEMENT SHALL BE A MINIMUM OF 5°C (40°F).
3. WHEN PAINT MUST BE APPLIED BETWEEN THE DATES OF OCTOBER 15 THROUGH APRIL 15 INCLUSIVE OR ON PAVEMENT WITH A SURFACE TEMPERATURE BELOW 5°C (40°F), COLD WEATHER PAINT CAN BE USED WHICH DOES NOT EXCEED EPA'S FEDERAL REGISTER/RULES AND REGULATIONS (40 CFR PART 59 [AD-FRL-6149-7] RIN 2060-AE55), AS AMENDED, FOR VOC CONTENT LIMIT AND SHALL MEET THE AASHTO M248 F AND REQUIREMENTS NOTED BELOW. THESE PRODUCTS SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS.
4. THE COLD WEATHER PAINT SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
   a. PROPERTY TEST METHOD REQUIREMENT
   b. DRY OPACITY (CONTRAST RATIO) ASTM D2244 – WITH A WET FILM THICKNESS OF 18 ± 1 MILS
   c. VOC ASTM D3960 150 G/L (1.25 LB/GAL) MAX
   d. DRYING TIME ASTM D7111 WITH WET FILM THICKNESS OF 15 MILS 15 MINUTES MAX @ 25° C (77°F).
5. PAINTED LANE LINES, EDGE LINES, AND CENTERLINES SHALL HAVE A MINIMUM RETROREFLECTIVITY OF 250 MILLICANDELAS.
6. PAINT SHALL BE MARYLAND FAST DRY WATERBORNE TRAFFIC PAINT, LEAD FREE BY SHERMAN WILLIAMS OR APPROVED EQUAL. (FEDERAL STANDARD 595-38907 YELLOW OR 37925 WHITE).
7. PAVEMENT MARKINGS SHALL BE WARRANTED FOR A MINIMUM OF TWO YEARS.



ADA PARKING SIGN DETAIL
NOT TO SCALE



VAN ACCESSIBLE ADA PARKING SIGN DETAIL
NOT TO SCALE

APPROVED: PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN PLANNER DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED: PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON DIRECTOR – TOWN PLANNER DATE

REVISIONS

No.	DATE	DESCRIPTION	BY

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15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 , Expiration Date: 04/13/2025.

SEAL
STATE OF MARYLAND BRIAN W. WHITE No. 60891 PROFESSIONAL ENGINEER
8.29.23
DATE

SITE DETAILS

EAST COAST VETS, LLC
29315 DOVER ROAD

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 105, PARCEL 2844, LOT 3

ISSUED FOR:	DATE:	BY:
AGENCY SUBMITTAL 01	8/28/23	BMW

SHEET No. 4 OF 4	DATE: 8/28/2023
SCALE: AS NOTED	JOB No. 230108
	FILE No. 1347

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Date: 08/29/2023 – 1:28pm User: bwallace Project Manager: TWG
Drawing Path: C:\awp\Acpublish_25900\CSP-PLTS-230108.dwg | 4 OF
XREF File(s): VLD-BASE-230108 (AB – CSP-PLTS-130251)/MATCH-BASE-230108/CSP-BASE-230108/CBS-BASE-2436-230108/VSF-BASE-230108 (FROM 130251)/RAR-BASE-230108