TOWN OF KENNEBUNKPORT
PRELIMINARY SUBDIVISION APPLICATION

THE GLEN AT GOOSEROCKS

PREPARED FOR
K.J. TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

PREPARED BY
ATLANTIC RESOURCE CONSULTANTS
541 US ROUTE ONE, SUITE 21
FREEPORT, MAINE 04032
207.869.9050

OCTOBER 2022

Atlantic Resource Consultants
Engineering Strategies and Solutions

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APPLICATION FOR SUBDIVISION
KENNEBUNKPORT PLANNING BOARD

Preliminary Plan Application [X] **Final Plan Application** [ ]

PROPOSED SUBDIVISION NAME: The Glen at Gooserocks

APPLICANT INFORMATION

Property Owner: K.J. Trudo Properties, LLC
Address: 20 Apple Blossom Lane
Kennebunkport
Phone: _____ Email: creativecoastconstruction@gmail.com

Applicant/
Authorized Agent
Name: Atlantic Resource Consultants, LLC
Address: 541 US ROUTE ONE, Suite 21

Phone: 207-869-9050 Email: Jasonv@arc-maine.com

**** Please be sure to include a Letter of Authority if you are the Agent****

If applicant is a corporation, check if licensed in Maine: Yes [X] No [ ] and attach a copy of State's "Certificate of Good Standing".

Land surveyor, engineer, architect or others preparing plan: _____
Jason Vafiades, PE LEED AP
Address: Atlantic Resource Consultants, LLC
541 US Route One, Suite 21
Phone: 207-869-9050 Email: Jasonv@arc-maine.com

Please provide proof of the applicant(s) legal interest in the property to be developed? Please provide one of the following:

- A copy of the recorded Deed. (attached)
- Executed Purchase and Sales Agreement.

LAND INFORMATION

Location of Property: Goose Rocks Road
street address

Assessor's Tax Maps: Map: 15 Block: 1 Lot(s) 1
Registry of Deeds: Book: 18632 Page: 387

Zoning District? Farm & Forest / Shoreland Zone

Resource Protection ☐ Shoreland Zone ☒

Is any portion of the property withing two hundred fifty (250) feet of the high water mark of a pond, river or saltwater body? Yes ☒ No ☐

Total acreage of parcel: 43.54
Acreage to be developed: 6.1

Has this land been part of a prior approved subdivision? Yes ☐ No ☒
Or part of other divisions within the past 5 years? Yes ☒ No ☐

Identify existing uses of land (farmland, woodlot, etc.): Undeveloped and wooded

Does the parcel include any water bodies? Yes ☒ No ☐

Is any portion of the property within a special flood hazard area as identified by the Federal Emergency Management Agency (FEMA)? Yes ☒ No ☐

List the names and addresses of abutting property owners within 200' on a separate sheet and attach to this application.

GENERAL INFORMATION

Proposed name of development: The Glen at Gooserocks

Number of lots or units: 9 residential lots + 1 open space lot

Anticipated date for construction: Spring 2023

Anticipated date of completion: TBD

Does this development require extension of public infrastructure: Yes ☐ No ☒

If yes, what?

- ☐ Roads
- ☐ Water Lines
- ☐ Other
- ☐ Fire Protect
- ☐ Storm Drainage
- ☐ Sewer Lines
- ☐ Sidewalks

Estimated cost for infrastructure improvements: $_____

Identify method for water supply to the proposed development:

- ☒ Individual Wells
- ☐ Public Water Supply
- ☐ Central Well w/Distribution
- ☐ Other (please state alternative)

Identify method of sewage disposal to the proposed development:

- ☒ Individual Septic Tanks
- ☐ Connection to Public Sewer
- ☐ Central On-site Disposal w/Distribution Lines
- ☐ Other (please state alternative)

Identify method of fire protection for the proposed development:

- ☐ Hydrants connected to the public water system
- ☐ Dry hydrants located on existing pond or water body
- ☐ Existing fire pond
- ☒ Individual Fire Suppression System
- ☐ Other (please state alternative)

Does the applicant propose to dedicate to the public any streets, recreation or common lands?

If any:

Streets	Yes ☐	No ☒	Estimated Length _____
Recreation Area	Yes ☐	No ☒	Estimated Acreage _____
Common Land(s)	Yes ☐	No ☒	Estimated Acreage _____

Does the applicant intend to request waivers of any of the subdivision submission requirements? If yes, list them and state reasons for the request:

Dead-end streets or cul-de-sacs are limited to 1,000 feet. A waiver from this length standard will allow the road design to avoid and minimize natural resource impacts and road crossings.

To the best of my knowledge, all the above stated information submitted in this application is true and correct.

Signature _____ Date 10/28/2022

Printed name Lucien Langlois (Atlantic Resource Consultants, LLC)

For Office Use Only

Date Received: _____

Application Fee: _____
Lot/Dwelling Fee: _____
Legal Notice Posting Fee: _____
Postage Fee: _____
Paid by (payment type/name): _____
Escrow Funds: _____
Escrow Funds Lot/Dwelling: _____

KENNEBUNKPORT SUBDIVISION REGULATIONS § 415-7.2. SUBMISSIONS.

1. **Name of Subdivision**
   a. "The Glen at Gooserocks" – Kennebunkport – Tax Map 15 Block 1 Lot 1
2. **Verification of Right, Title, or Interest**
   a. K.J. Trudo Properties, LLC is the owner of the project site. The corporation is in Good Standing with the State of Maine. See Exhibit 2.
3. **Standard Boundary Survey**
   a. A boundary survey was created by Patrick W. Johnson (PLS #2408) of JPS Professional Services. See Exhibit 17.
4. **Most Recent Deed**
   a. K.J. Trudo Properties, LLC is the owner of the project site as seen in Book 18632 on Page 387 recorded in the York Registry of Deeds on April 16, 2021. See Exhibit 4.
5. **Proposed Deed Restrictions**
   a. There will be two, 15-foot-wide easements for access to the open space. One easement will be located between Lots 7 and 8, starting from the west side of the cul-da-sac. Another easement will be located between Lots 3 and 5, starting from the east side of the cul-da-sac.
6. **Proposed Restrictions/Covenants**
   a. A Homeowners Association Agreement will be established. See Exhibit 7.
7. **Sewage Disposal**
   a. Lots will be serviced by individual septic fields. See Exhibit 9.
8. **Water Supply**
   a. Lots will be serviced by individual drilled wells.
9. **Site Plan**
   a. All requirements for the plan set have been included in Exhibit 17.
10. **High Intensity Soil Survey**
    a. A High Intensity Soil Survey was performed by Longview Partners, LLC. See Exhibit 9.
11. **Flood Areas**
    a. A portion of the subdivision is located within Flood Zone B, as depicted on the Effective Flood Insurance Rate Map Community Panel Number 230170 0001 B, dated April 18, 1983. See Exhibits 3 and 17.
12. **Hydrogeologic Assessment**
    a. A hydrogeologic assessment is pending. A copy of the assessment report will be supplied to the Planning Board immediately upon receipt. See Exhibit 10.
13. **Existing Physical Features**

a. The subdivision design has incorporated vegetated privacy buffers around each proposed dwelling unit. Since a minimal amount of clearing is proposed and the site has already been selectively harvested for timber, large specimen trees (21 inches DBH) have not been identified within the proposed clearing limits.

14. Net Residential Area

a. Calculations for net residential area are in compliance with § 415-11.17. and shown on the plan set and boundary survey in Exhibit 17.

15. Natural Resources

a. Longview Partners, LLC has conducted a wetland delineation and vernal pool surveys on the project site. Vernal pool surveys were performed in accordance with methods outlined by the Maine Department of Environmental Protection (MDEP). Vernal pools have been confirmed to be non-significant. All natural resource boundaries are identified on the plan set included in Exhibit 17.

16. Zoning District

a. The subdivision is located within the Farm & Forest zoning district. Due to a contiguous freshwater wetland over 10 acres in size, located on the south side of Goose Rocks Road, a 250-foot Shoreland Zone buffer extends into the southern portion of the subdivision. See Exhibit 17.

17. Existing and Proposed Drainage/Utilities

a. All existing and proposed features on or within 200 feet of the property are identified on the plan set included in Exhibit 17.

18. Existing/Proposed Streets

a. The width and location of proposed streets and open space within the subdivision are identified on the plan set included in Exhibit 17. Access to the proposed subdivision will be from Goose Rocks Road.

19. Open Space

a. 284,373 square feet (15% of the parcel size) will be preserved as open space. All residents will have easy, feasible access to the designated open space. Two easements to access the open space, one at each cul-da-sac, have been incorporated. See Exhibit 17.

20. Proposed Public Use Land

a. At this time, land is not proposed to be dedicated for public use.

21. Vehicular Traffic

a. Creation of the subdivision is anticipated to generate 90 additional vehicle trips per day as calculated from trip generation rates within the Trip Generation Manual. Since the subdivision will not create 40 or more parking spaces or 200 vehicle trip per day, a traffic impact analysis is not required for the project.

22. Stormwater Management Plan

a. Stormwater Management for Maine: Best Management Practices, published by the MDEP was utilized by ARC professional engineers to create a Stormwater Management Plan. Additionally, the subdivision is currently under review by the

MDEP pursuant to Stormwater Management Law. See Exhibit 12 for the full stormwater management report.

23. Erosion and Sedimentation Control Plan

a. An erosion and sedimentation control plan has been prepared by ARC engineers in accordance with the "Maine Erosion and Sedimentation Control Handbook for Construction: Best Management Practices," published by the MDEP. A detailed description of prescribed erosion and sedimentation controls is listed on the plan set included in Exhibit 17

24. Wildlife Habitats

a. There are no Critical Habitats within the project area under the jurisdiction of the Office of the U.S. Fish and Wildlife Service. Vernal pools were surveyed and determined to be non-significant by the MDEP. There are no high or moderate value wildlife habitats identified on the project site by the Maine Department of Inland Fisheries and Wildlife. Occurrences of spotted turtle, a State Threatened species, have been documented adjacent to the project site. Wetland stream crossings have been sized to allow for not only aquatic organism passage during low flows but also for reptile and amphibian migration. See Exhibit 13.

25. Historic Area

a. ARC contacted the Maine Historic Preservation Commission for a review of the project site. MHPC concluded that there will be no historic properties affected by the proposed project. See Exhibit 14.

26. Technical and Financial Capacity

a. Atlantic Resource Consultants, LLC (ARC) provides a full range of site planning and civil engineering services that cover all phases from project inception through site selection, due diligence, master planning, site civil design, permitting, and construction administration. ARC staff has a wealth of experience including work on major infrastructure improvements, resort and leisure facilities, residential, commercial and institutional land development projects. ARC has partnered with Longview Partners, LLC to evaluate on-site natural resources and soil conditions to support site development. Longview Partners have decades of experience working as Professional Soil Scientist, Wetland Scientists and Site Evaluators.

b. The applicant has the financial capacity to construct and effectively manage the proposed subdivision - see Exhibit 5. Creative Coast Construction, a family business with over 30 years of contracting experience, will be developing the subdivision.

EXHIBIT I
DEVELOPMENT DESCRIPTION

Project Summary

The applicant proposes to construct a ten-lot residential subdivision to provide housing opportunities in the Town of Kennebunkport. In this case, the applicant is assumed to be the developer of the subdivision, developing and constructing homes on each lot prior to individual sale. The subject property is located off of Goose Rocks Road in Kennebunkport approximately 0.5 miles east of the Log Cabin Road intersection. The project site is identified as Lot 1 on the Town of Kennebunkport's Tax Map 15-1. The subdivision will be named 'The Glen at Goose Rocks'.

In total, the subdivision includes nine residential lots with each lot containing over 3 acres of upland area, and one open space lot. The project will be served by private well and septic on-site. Utilities such as power, cable and telephone will be installed from Goose Rocks Road and ran underground. Fire suppression and protection will be provided by sprinkler systems in each home. Access to the site will be from Goose Rocks Road via a single road that splits into two segments each with a cul-de-sac.

Access to each lot was carefully vetted to minimize the impacts to natural resources. The project proposes to cross four freshwater wetlands and two streams in order to access buildable areas. A total wetland alteration of 10,202 SF will be required to construct the access roadways, a stormwater BMP, and the driveway for Lot #6. Otherwise, proposed development has been situated outside of delineated resources and their respective setbacks. In an effort to prevent birds from striking building windows and sustaining injuries, bird screens will be used on windows for each new home.

Due to the amount of proposed natural resource impacts and new impervious area, Natural Resources Protection Act (NRPA) and Stormwater Management Law applications have been submitted to the Maine Department of Environmental Protection. The proposed project also requires authorization from the U.S. Army Corps of Engineers for the proposed impacts to streams and wetlands.

Existing Conditions

The subject property consists of 43.54 acres of slightly to moderately sloped topography. Predominant surface soil types in this area of the site are identified by the Natural Resource Conservation Service (NRCS) Web Soil Survey as Lyman loam, Lyman-Rock outcrop complex, and Biddeford mucky peat.

The project site generally drains in a southeasterly direction to an unnamed stream that ultimately crosses Goose Rocks Road. The stream is tributary to Round Swamp Brook which is tributary to Batson River and the Atlantic Ocean. The project area is located within the subwatershed of Batson River-Frontal Goosefare Bay.

The project site is currently undeveloped woodland. The property has a series of wood-cutting trails and has been selectively cleared within the last 10-years. Natural resource mapping and subsurface soil investigations on the site were undertaken in 2021 and 2022 by Longview Partners to support permitting for this project. A network of freshwater wetlands, streams, and non-significant vernal pools were identified in the project area and are depicted on the project drawings.

Construction Schedule

Construction of the project is anticipated to begin in the late winter/spring of 2023 once all local, state, and federal permitting has been completed. The majority of tree removal will be limited to October 16 – April 14. Any tree removal or clearing activities will be avoided in the summer months of June and July in order to reduce the chances of adverse impacts to bat species. In-stream construction will be avoided between October and July so that the work is conducted during low flow periods.

EXHIBIT 2
AGENT AUTHORIZATION / CERTIFICATE OF GOOD STANDING

The proposed project will be undertaken by K.J. Trudo Properties, LLC. Regulatory permitting will be completed by Atlantic Resource Consultants, LLC. A copy of the signed Agent Authorization form is provided in this section. A copy of the Certificate of Good Standing for K.J. Trudo Properties, LLC is included in this section.

Atlantic Resource Consultants
Engineering Strategies and Solutions

541 US Route One, Suite 21
Freeport, Maine 04032
Tel: 207.869.9050

September 30, 2021

Jonathan Trudo
K.J. Trudo Properties, LLC
20 Apple Blossom Lane
Kennebunkport, Maine 04046

RE: Sketch Plan Application for Subdivision
Goose Rocks Road, Kennebunkport, ME
Agent Authorization Letter

To Whom It May Concern,

K.J. Trudo Properties, LLC has retained Atlantic Resource Consultants, LLC to undertake regulatory permitting for the referenced project. Atlantic Resource Consultants, LLC is hereby authorized to act as agent on our behalf for matt ers related to these permits.

Sincerely

Jonathan Trudo, dba
K.J. Trudo Properties, LLC

State of Maine

Department of the Secretary of State

I, the Secretary of State of Maine, certify *that according to the provisions of the Constitution and Laws of the State of Maine, the Department of the Secretary of State is the legal custodian of the Great Seal of the State of Maine which is hereunto affixed and of the reports of formation, amendment and cancellation of articles of organization of limited liability companies and annual reports filed by the same.*

I further certify *that K.J. TRUDO PROPERTIES, LLC is a duly formed limited liability company under the laws of the State of Maine and that the date of formation is January 16, 2007.*

I further certify *that said limited liability company has filed annual reports due to this Department, and that no action is now pending by or on behalf of the State of Maine to forfeit the articles of organization and that according to the records in the Department of the Secretary of State, said limited liability company is a legally existing limited liability company in good standing under the laws of the State of Maine at the present time.*

In testimony whereof, I have caused the Great Seal of the State of Maine to be hereunto affixed. Given under my hand at Augusta, Maine, this twenty-fourth day of May 2022.

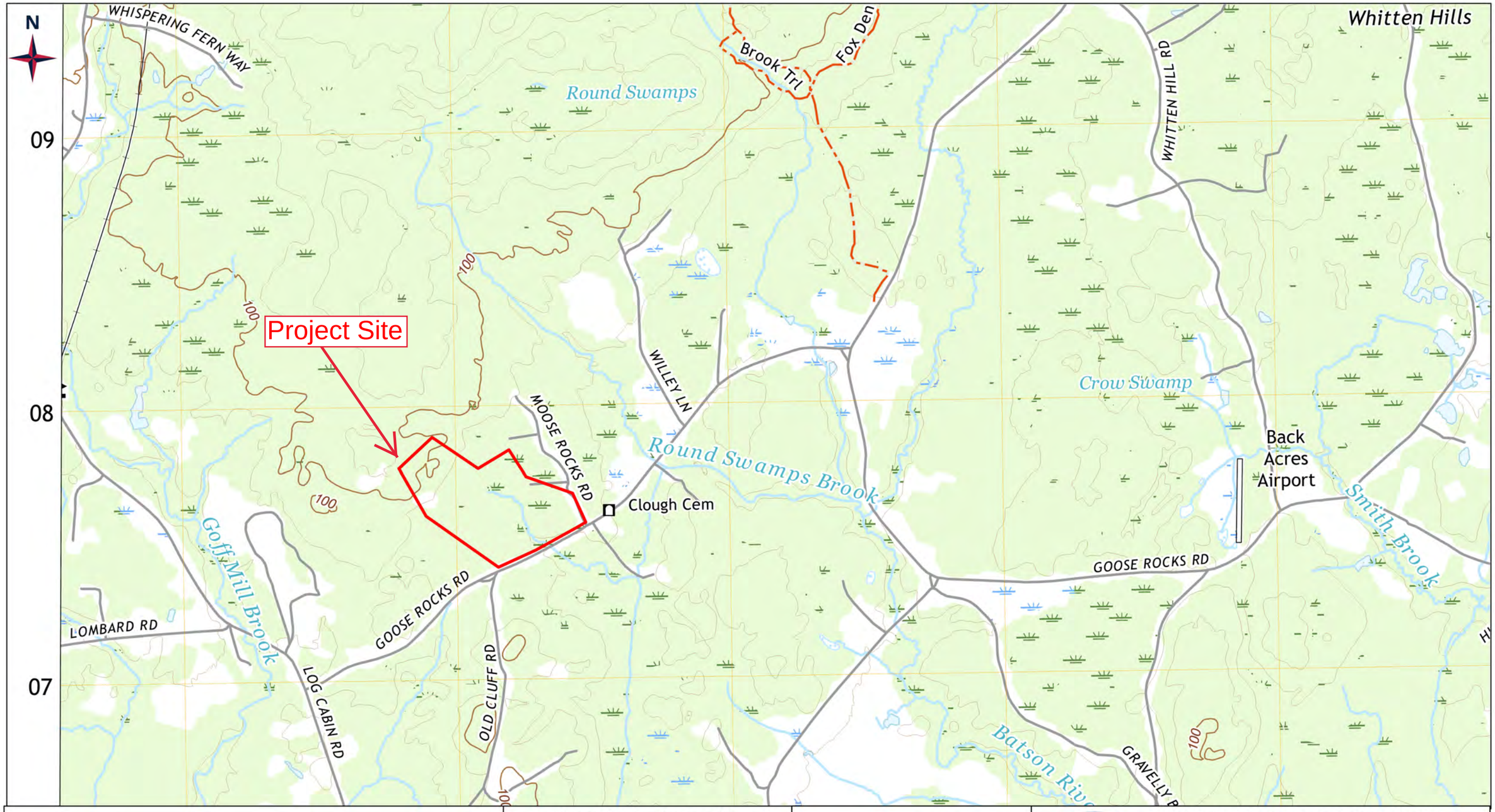
Shenna Bellows

Shenna Bellows

Secretary of State

EXHIBIT 3
LOCATION MAP / TAX MAP / FEMA FLOOD MAP

The proposed project will be undertaken on an approximately 44.43-acre parcel that can be identified on Map 15, Block 1, Lot 1 on the Town of Kennebunkport's tax maps. The subject property is located off Goose Rocks Road in Kennebunkport, approximately 0.5 miles east of the Log Cabin Road intersection. A copy of the location map, tax map, and FEMA flood map is included in this section.



0 ft 1000 ft 2000 ft 3000 ft 4000 ft 5000 ft

Created By: Lucien Langlois
Date Created: 2/18/2022
Source: U.S.G.S.
Projection: UTM 19N (NAD83)
Project # 21-059

USGS Location Map

K.J. Trudo Properties, LLC
20 Apple Blossom Lane
Kennebunkport, ME 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

Assessor's Maps

Legend

- Property Boundary
- Local Road
- *Off ROW Road*
- *River, Stream, Brook*
- *Waterbody*
- *Swamp*
- 17 Map Number

Property Boundary
8-81-2
4378

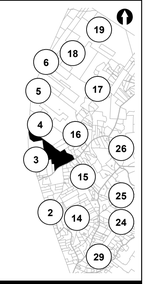
Map 8
Block 81
Lot 2

Property Area in Square Feet

REVISED & REPRINTED BY CAI Technologies

Town-Wide Locator Map

Local Locator Map



Scale and Orientation

0 125 250

1 inch = 250 feet

Notes

Disclaimer:
The Town of Kennebunkport shall not be held liable for discrepencies in land conveyance based on the content of these maps. These maps are for assessing purposes only.
 Maps revised to April 1, 2020.

MAP 15(B)

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet**
Base Flood Elevation in Feet Where Uniform Within Zone**
Elevation Reference Mark
Zone D Boundary
River Mile

ZONE B
ZONE A1
ZONE A5
ZONE B
513
(EL 987)
RM7X
M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal base flood elevations shown on this map include the effects of wave action.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

INITIAL IDENTIFICATION:
DECEMBER 6, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS:
DECEMBER 3, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
APRIL 18, 1983
FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF KENNEBUNKPORT, MAINE
YORK COUNTY

PANEL 1 OF 8
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230170 0001 B

EFFECTIVE DATE:
APRIL 18, 1983

Federal Emergency Management Agency

EXHIBIT 4
TITLE, RIGHT, OR INTEREST

The proposed project will be undertaken on a parcel of land that is owned by the applicant, K.J. Trudo Properties, LLC. A copy of the property deed is included in this section.

NANCY E HAMMOND, REGISTER OF DEEDS
E-RECORDED Bk 18632 PG 387
Instr # 2021022065
04/16/2021 02:25:11 PM
Pages 3 YORK CO

Maine R.E. Transfer Tax Paid

DLN: 1002140140094

WARRANTY DEED

I, PAUL P. MURPHY, of Lewiston, County of Androscoggin, State of Maine, for consideration paid grant to K.J. Trudo Properties, LLC, with WARRANTY CONVENANTS, a certain lot or parcel of land situated on the northerly side of the Goose Rocks Road in Kennebunkport, County of York, State of Maine, bounded as described as Exhibit "A" attached hereto.

Being a portion of the premises conveyed to this Grantor by deed of D. Jerome Murphy, M.D. dated November 30, 1960 and recorded in York County Registry of Deeds on October 5, 1961 at Book 1455, Page 235.

WITNESS my hand and seal this 16 day of April, 2021.

WITNESS

PAUL P. MURPHY

STATE OF MAINE
COUNTY OF YORK, ss. April 16, 2021

Then personally appeared the above-named PAUL P. MURPHY and acknowledged the foregoing instrument to be his free act and deed.

Before me,

~~Notary Public~~/Attorney at Law

Scott M. Edmunds
ATTORNEY AT LAW

EXHIBIT "A"

A certain lot or parcel of land situated on the northerly side of Goose Rocks Road in the town of Kennebunkport, County of York, State of Maine bounded and described as follows:

Beginning at an iron pin with cap (PLS 2070) found on the northerly sideline of Goose Rocks Road at the southwest corner of land now or formerly of Timothy H. Good & Wendy Webster as recorded in the York County Registry of Deeds in Book 10234, Page 63. Said pin also being at the southeast corner of a 33 foot wide right of way (Moose Rocks Road) as recorded in the said Registry in Book 151, Page 216. Thence by the following courses and distance:

1) S 74°-33'-00" W along the northerly sideline of Goose Rocks Road a distance of 33.30 feet to a drill hole.

2) S 74°-33'-00" W along the northerly sideline of Goose Rocks Road a distance of 71.30 feet to a point.

3) S 77°-32'-00" W along the northerly sideline of Goose Rocks Road a distance of 390.00 feet to a point.

4) S 78°-16'-00" W along the northerly sideline of Goose Rocks Road a distance of 371.70 feet to a point.

5) S 82°-47'-00" W along the northerly sideline of Goose Rocks Road a distance of 313.40 feet to a point at land to be retained by Paul Philip Murphy.

6) N 38°-06'-00" W along land to be retained a distance of 1072.80 feet to a point.

7) N 13°-29'-00" W along land to be retained a distance of 672.10 feet to a point.

8) N 62°-07'-00" E along land to be retained a distance of 557.60 feet to a point on the southwesterly sideline of land now or formerly of David W. & Lisa C. Thompson as recorded in the said Registry in Book 6715, Page 64.

9) S 34°-00'-00" E along land of said Thompson a distance of 133.10 feet to an iron pin with cap (RLS 747) found at land now or formerly of David & Patricia Shorthill as recorded in the said Registry of deeds in Book 7649, Page 214.

10 S 34°-00'-00" E along land of said Shorthill and a stone wall a distance of 45.19 feet to a point.

11) S 41°-51'-00" E along land of said Shorthill and a stone wall a distance of 84.80 feet to a point.

12) S 38°-10'-00" E along land of said Shorthill and a stone wall a distance of 156.6 feet to a point.

13) S 37°-50'-00" E along land of said Shorthill and a stone wall a distance of 86.78 feet to a point.

14) S 39°-53'-00" E along land of said Shorthill a distance of 179.60 feet to an iron pin with cap (RLS 747) found.

15) N 75°-25'-00" W along land of said Shorthill a distance of 446.90 feet to an iron pin with cap (RLS 747) found at land now or formerly of Eileen Lang as recorded in the said Registry in Book 10087, Page 173.

16) S 14°-33'-00" E along land of said Lang a distance of 388.00 feet to a drill hole found.

17) S 51°-28'-00" E along land of said Lang a distance of 489.30 feet to an iron pin with cap (RLS 747) found at land now or formerly of Barry M. & Stacy Miller as recorded in the said Registry in Book 17131, Page 1.

18) S 51°-28'-00" E along land of said Miller a distance of 83.20 feet to an iron pin with cap (PLS 2070) found on the westerly sideline of said 33 foot right of way.

19) S 85°-37'-00" E along land of said Miller and across said right of way a distance of 33.70 feet to an iron pin with cap (PLS 2070) found at land of said Good & Webster said pin also being on the easterly sideline of said 33 foot right of way.

20) S 07°-39'-00" E along land of said Good & Webster a distance of 372.80 feet to the point of beginning.

EXHIBIT 5
TECHNICAL & FINANCIAL CAPACITY

The applicant has retained Atlantic Resource Consultants, LLC to undertake regulatory permitting for the proposed project. Atlantic Resource Consultants, LLC (ARC) provides a full range of site planning and civil engineering services that cover all phases from project inception through site selection, due diligence, master planning, site civil design, permitting, and construction administration. ARC staff has a wealth of experience including work on major infrastructure improvements, resort and leisure facilities, residential, commercial, and institutional land development projects. ARC has partnered with Longview Partners, LLC to evaluate on-site natural resources and soil conditions to support site development. Longview Partners has decades of experience working as licensed Professional Soil Scientist, Wetland Scientists and Site Evaluators.

The applicant has the financial capacity to construct and effectively manage the subdivision. Creative Coast Construction, a family business with over 30 years of contracting experience and a leading custom home builder in the area, will be developing the subdivision. The applicant and Creative Coast Construction share common ownership.

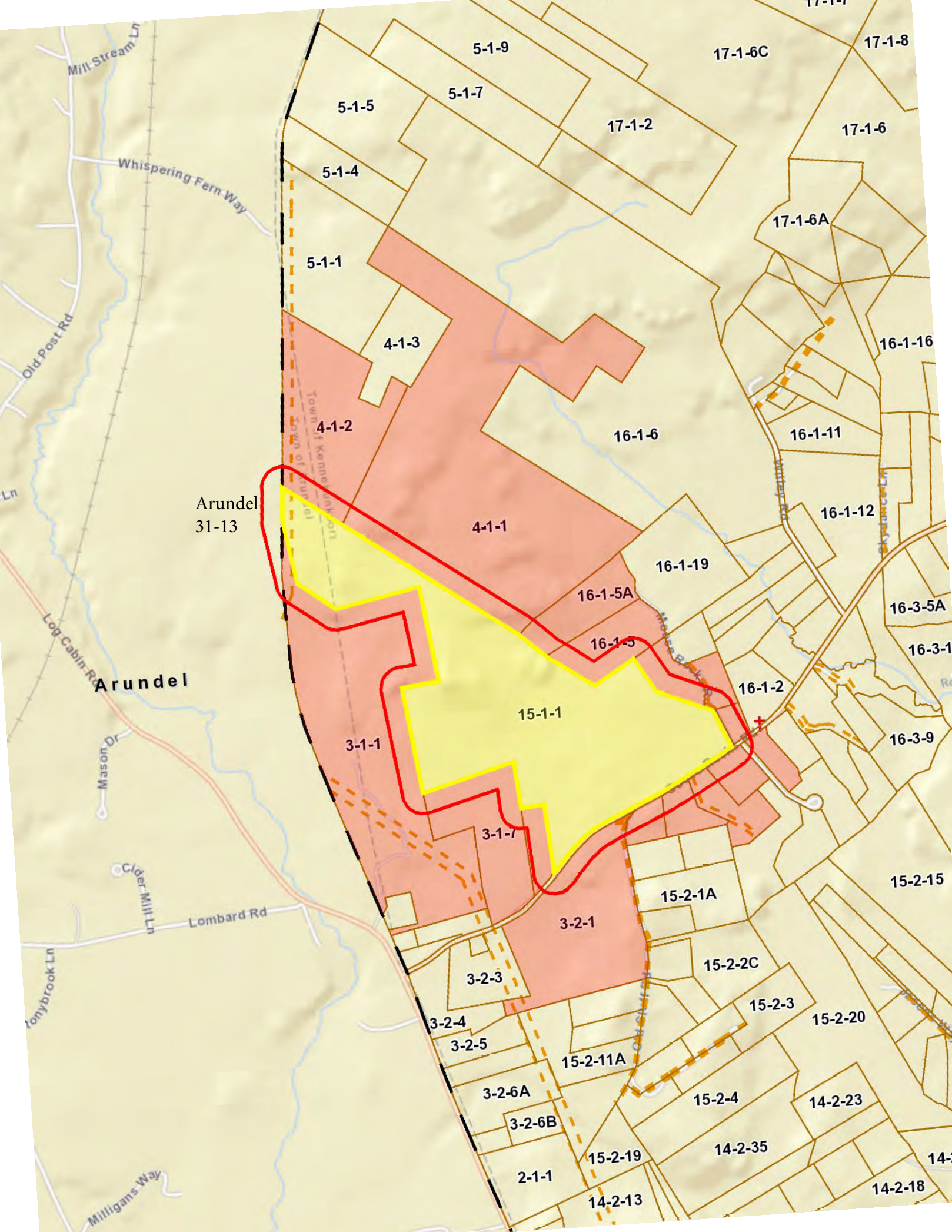
EXHIBIT 6
ABUTTER NOTIFICATION

Notices

All abutters within 200 feet of the project were identified using the Town's Tax Assessor's maps and assessing data, and the survey obtained for this project by JPS Surveying and Engineering., the project surveyors. The list of names and mailing addresses of the owners of abutting property and an associated map is provided in this section.

Trudo Abutters List

Town of Kennebunkport - Assessing Database						
Map	**Lot**	**Owner**	**Address**	**Town**	**State**	**Zip Code**
3-1	1	NEW ENGLAND ELECTRIC RAILWAY	PO BOX A	KENNEBUNKPORT	ME	04046
3-1	7	OWEN B PICKUS TRUST	20 GOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
3-1	8	MCMANN, JAMES & COLLEEN	38 GOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
3-2	1	TOWN OF KENNEBUNKPORT	PO BOX 566	KENNEBUNKPORT	ME	04046
4-1	2	NEW ENGLAND ELECTRIC RAILWAY	PO BOX A	KENNEBUNKPORT	ME	04046
4-1	1	KENNEBUNKPORT CONSERVATION TRUST	PO BOX 7004	CAPE PORPOISE	ME	04014
15-1	1-A	GOOD, TIMOTHY & WENDY	PO BOX 1794	KENNEBUNKPORT	ME	04046
15-2	1-E	BITHER, GREGORY & NANCY	75 GOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
15-2	1-C	KLIMCSAK, THOMAS M & DEIRDRE A	19 SCHACK AVENUE	SOUTH RIVER	NJ	08882
15-2	1H	WALSH, GEORGE JR. & CAROLYN	4 MARDIN LANE	STONEHAM	MA	02180
15-2	1G	FORTIN, BLAINE & TRACY	43 GOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
15-2	1F	PIMLEY, SCOTT & LANNING, LORRI	2 OLD CLUFF ROAD	KENNEBUNKPORT	ME	04046
16-1	1-C	MILLER, BARRY & STACY	7 MOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
16-1	5-A	THOMPSON, DAVID & LISA	40 MOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
16-1	5	SHORTHILL, DAVID & PATRICIA	30 MOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
16-1	1-B	LANG, EILEEN	12 MOOSE ROCKS ROAD	KENNEBUNKPORT	ME	04046
Town of Arundel - Assessing Database						
31	13	N E ELECTRIC RAILWAY HISTORICAL SO	PO BOX DRAWER A	ARUNDEL	ME	04046


Arundel
31-13
Arundel
5-1-9
5-1-7
5-1-5
5-1-4
5-1-1
17-1-6C
17-1-8
17-1-2
17-1-6
17-1-6A
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4-1-1
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16-1-16
16-1-11
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15-1-1
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3-1-7
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3-2-3
3-2-4
3-2-5
3-2-6A
3-2-6B
2-1-1
15-2-1A
15-2-2C
15-2-3
15-2-20
15-2-11A
15-2-4
15-2-19
14-2-23
14-2-35
14-2-13
14-2-18
Mill Stream Ln
Whispering Fern Way
Old Post Rd
Log Cabin Rd
Mason Dr
Cider Mill Ln
Lombard Rd
Milligans Way
Old Farm Rd
Skyline Ln
Town of Kennebunkport
Town of Arundel

EXHIBIT 7
DEED RESTRICTIONS / COVENANTS

The applicant is proposing a Homeowners Association Agreement be established.

EXHIBIT 8
SOLID WASTE

Solid Wastes Generated During Construction of the Site Improvements

This project will require about 6.10 acres of woodland to be cleared at the site for construction of the proposed roadways and driveways, stormwater management areas, and lot development. The clearing of trees at the site is expected to generate about 122 CY of stumps. Since a portion of the parcel was selectively cut within the last 10 years, proposed clearing activities are not anticipated to include a significant quantity of high-quality trees, suitable for saw logs. Any valuable trees will be cut and exported from the site separately from the remaining materials. The remaining wood biomass will be cut or chipped on site. The biomass will either be retained on site for erosion control materials or processed and sent to a biomass facility. The pine stumps, being larger and bulky, will be excavated and/or chipped onsite for use as erosion control mix or landscape mulch.

Other Demolition and Removal Wastes Include:

Other solid waste from site activity will be minor. Some cardboard or Kraft wrapping is anticipated for the building system and minor solid wastes may also be generated by the workers. Other waste could include various containers, short lengths of pipe, or conduit. The construction contract will require the Contractor to attempt a recycling level of 75%. Materials not recycled will be required to be disposed of at the locations specified in this section.

Construction and Demolition Debris from the proposed project is accepted at the Town of Kennebunk Transfer Station, which has a contract with CPRC Group of Scarborough, Maine through 2025. The Town of Kennebunk Transfer Station is licensed through the Maine Department of Environmental Protection under Department Order #S-021473-WH-A-N. All solid waste generated from the proposed project will be handled and hauled in accordance with the Town of Kennebunkport's Solid Waste Rules and Regulations.

Hazardous & Special Wastes

There are no known areas of hazardous or special wastes at the project site. If any hazardous or special waste is identified during construction, Maine DEP will be notified immediately. A licensed waste hauler will be retained to dispose of the material at a licensed facility. The Applicant will retain records of the collection, transport, and disposal of any such material. The development will not use hazardous materials or cleaning products in greater than typical household quantities.

Solid Waste Generated from residential structures

Residential waste and recycling will be handled through the Town of Kennebunkport waste management system. The Town utilizes a weekly curbside collection of household trash and bi-weekly collection of recycling. Residents also have the option of hiring a private company to pick up trash at their residences.

Miscellaneous Solid Wastes

Provisions for miscellaneous wastes will follow Maine DEP recommendations.

Residential house construction debris.
The local dumpster provider in this area is Pine Tree Waste, Inc. and Casella Waste Systems, Inc. Construction debris that leaves the site in one of their dumpsters is ultimately hauled to the Town of Kennebunk Sea Road Transfer Station or the company's licensed facility.

Attachments

Attachment A – Computations of Types and Volumes of Solid Wastes for Construction Project

ATTACHMENT A

Computation Volumes of Solid Waste for Construction Project

SOLID WASTES COMPUTATIONS AND DISPOSAL

- Type: Wood Waste from Clearing Operations
- Basis of Quality Computations: Assume 20 CY of stumps/acre for wood
- Site Construction: Miscellaneous Areas Onsite

Location	Area to be Cleared	Rate per Acre	Yield
Goose Rocks Rd Project Site	6.10 ac+/-	20 cubic yards per acre	122 CY
Total			**122 CY**

DISPOSITION

Trees: Cut above stump line – chip and haul to biomass burner; paper company; or use on-site as mulch.

Stumps: The owner intends on grinding stumps on-site and utilizing that material for erosion control mix, or haul to approved disposal area.

Other Wastes Associated with Other Site Construction:

Cardboard from packaging etc. – Quantity should be limited. Construction documents will require a recycling program. Specify a goal of 75% recycling. All other to be placed in a separate dumpster on the site paid for and designated for Contractor.

NEW BUILDING CONSTRUCTION:

Basis of Estimate: 5 CY/1,000 s.f. of finished space

Area: Approximately 9*4,000 sf homes =36,000 +/- square feet

Solid Waste: Approximately 180 CY

Set a goal in the construction documents to require segregation of cardboard and paper with a goal of 75%; segregation of metals with a goal of 85%.

Total: 180 CY before recycling

Net: 126 CY if 70 % of material is recycled

Require Contractor to: Provide 30 CY dumpsters. Haul to facilities identified in the narrative above with shipping manifest. The contractor should identify recycling methods and sites prior to construction.

EXHIBIT 9
SOILS

Soil Survey Map

A Class-A Medium Intensity Soil Survey Map from the Natural Resource Conservation Service (NRCS) Web Soil Survey is included in this section. The soils at the site were shown to be mostly Lyman-Turnbridge Complex and Lyman-Turnbridge-Rock Outcrop Complex. Smaller areas of Biddeford, Scantic silt loam, and Naskeag soils were also identified. Lyman-Turnbridge soils are somewhat excessively drained to well drained, with no apparent water table or only inches from the bedrock surface during spring and periods of heavy precipitation. A Class-A High Intensity Soil Survey was undertaken at the site by Longview Partners, LLC. A copy of the Soil Narrative Report, which includes a site plan and soil test pit logs, is included in this section. Soil mapping verified that the predominant soil types are Lyman-Turnbridge Complex and Lyman-Turnbridge-Rock Outcrop Complex.

Geotechnical Investigation

A detailed geotechnical investigation was not undertaken at the site for this project. The observed soil conditions are generally loamy glacial tills; however, the limiting factor for building site development is depth to bedrock. The project consists of residential houses, access roadways, and stormwater management BMP's. There is sufficient information on subsurface conditions to support the proposed development.

Hydric Soils Mapping

Wetland investigations and delineations at the site were undertaken by Longview Partners, LLC in accordance with the U.S. Army Corps of Engineers *Wetland Delineation Manual* (1987) and the *Regional Supplement.* Multiple areas of forested freshwater wetlands with some areas of scrub shrub wetland interspersed, were identified on the property. Two unnamed streams were identified on the project site. Impacts are proposed to on-site freshwater wetlands. A 25-foot setback will be maintained off of the two streams, except for the road crossings.

Soil Conditions and Design Implications

The existing Conditions Plan shows the locations of subsurface soil investigations and delineated natural resources at the site. The subsurface soil conditions are generally favorable for site development.

LONGVIEW PARTNERS, LLC

ENVIRONMENTAL PERMITTING SPECIALISTS

Soil Narrative Report

Prepared for

Creative Coast Construction

(Atlantic Resource Consultants)

Goose Rocks Road

Kennebunkport, Maine

April, 2022

Map prepared for a proposed residential subdivision

Maps scaled 1" = 100', base map provided by Atlantic resource Consultants

Mapping meets Maine Association of Professional Soil Scientists Class A High-Intensity mapping standards with minimum mapping units of 1/8 acre

BIDDEFORD
(Histic Humaquept)

SETTING

Parent Material: Derived from marine & lacustrine sediments.

Landform: Nearly level lowlands.

Position in Landscape: Usually occupies the lowest position within the landscape.

Slope Gradient Ranges: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Biddeford soil is very poorly drained with a perched water table within 0.5 feet of the soil surface, and may be ponded at the surface for some portion of the year.

Typical Profile Description:
Surface layer: Very dark brown mucky peat, 0-12"
Subsurface layer: Gray silt loam, 12-16"
Subsoil layer: Olive gray/dark gray silty clay, 16-35"
Substratum: Gray silty clay & silty clay loam, 35-65"

Hydrologic Group: Group D

Surface Run Off: Very slow

Permeability: Moderate or moderately slow in upper horizons, slow or very slow in substratum.

Depth to Bedrock: Deep, more than 40 inches.

Hazard to Flooding: This soil is intermittently ponded, and may rarely flood in areas adjacent to streams and rivers during periods of prolonged wetness.

INCLUSIONS
(Within Mapping Unit)

Similar: Scantic, Whately, Roundabout, Bucksport
Dissimilar: Sebago, Chocorua, Wonsqueak

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to a high water table throughout the year. Biddeford soil has very low potential for dwellings with foundations and road construction due to ponding and low strength. Biddeford soil is unsuitable for subsurface wastewater disposal as defined by the State of Maine Subsurface Wastewater Disposal Rules. Biddeford soil is usually classified a wetland, based on the combined consideration of hydric conditions, hydrology, and vegetation.

LYMAN-TUNBRIDGE COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, or only inches from the bedrock surface during spring and periods of heavy precipitation.

Typical Profile Description:

Surface layer: Black & reddish brown loam & fine sandy loam, 0-4"
Subsurface layer: Very dusky red loam, 4-6"
Subsoil layer: Dark red loam, 6-10"
Substratum layer: Dark brown to brown loam, 10-20"

Hydrologic Group: Group C/D

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid.

Depth to Bedrock: Shallow (Lyman, 10-20") to moderately deep (Tunbridge, 20-40").

Hazard to Flooding: None

Erosion Factors: K: .20 - .32

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield, Skerry (deeper than 40" to bedrock)

Dissimilar: Naskeag (in depressional areas), Colonel, Brayton

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factors for building site development is shallow to bedrock. Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation. Portions of these map units are suitable for subsurface wastewater disposal, where the depth to limiting factor is greater than 15" from the mineral soil surface within Shoreland Zoned areas, and 9"-15" in non-Shoreland Zoned areas. This soil requires a 24-inch separation distance between the bottom of any disposal area and the bedrock surface , and 3.3 sq.ft/gpd and 1.7 sq.ft/gpd for bed disposal area and chamber area, respectively.

For stormwater design: Limiting factor for stormwater design is bedrock, which is generally less than 20". These soils are generally well drained, with no seasonal water table except for short durations on the bedrock surface. Permeabilities are 2-6 inches per hour in all horizons.

LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Uppermost locations on landform; sideslopes, shoulders, and crests of ridges.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained (Lyman) to well drained (Tunbridge) with no apparent water table other than run off across the bedrock surface occasionally, during spring and periods of heavy precipitation. These soils occur in a non-repeating pattern with exposed bedrock outcrop, and cannot be separated in mapping.

Typical Profile Description:

Surface layer:	Black & reddish brown loam & fine sandy loam, 0-4"
Subsurface layer:	Very dusky red loam, 4-6"
Subsoil layer:	Dark red loam, 6-10"
Substratum layer:	Dark brown to brown loam, 10-20"

Hydrologic Group: Group C/D

Surface Run Off: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow (Lyman 10-20") to moderately deep (Tunbridge 20-40").

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield, Skerry (deeper than 40" to bedrock)

Dissimilar: Colonel (greater than 40" to bedrock), Naskeag (in microdepressions)

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is depth to bedrock, which ranges from 0" to 40" within this complex. Blasting or ripping of the more fractured bedrock is necessary for deep excavation. Tunbridge and Lyman (9"-15" deep to bedrock outside shoreland zone areas) soils are suitable for subsurface wastewater disposal in accordance with State of Maine Subsurface Wastewater Disposal Rules. These soils require a 24-inch separation distance between the bedrock surface and the bottom of any disposal system. These soils also require 3.3 and 1.7 sq.ft/gpd for disposal beds and chamber area, respectively.

Development with public sewer and water: The limiting factor for building site development is depth to bedrock, which is 0-40" within this complex. Blasting or ripping of the more fractured bedrock is necessary for deep excavation. Proper foundation drainage or other site modification is recommended for construction.

NASKEAG
(Aeric Haplaquods)

SETTING

Parent Material: Loamy and sandy glacial till.

Landform: Depressions of glaciated bedrock ridges.

Position in Landscape: Lowest positions in depressions or concavities in landform.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained, with a perched water table 0-1.5 feet beneath the soil surface.

Typical Profile Description:

Surface layer: Very dusky red muck, 0-5"
Subsurface layer: Light brownish gray and brown sandy loam or loamy sand, 5-16"
Subsoil layer: Dusky red loamy sand, 10-26"
Substratum: Light yellowish brown gravelly sandy loam to loamy sand, 26-38"

Hydrologic Group: Group C

Surface Run Off: Moderate or moderately rapid (across bedrock surface)

Permeability: Rapid

Depth to Bedrock: Moderately deep, 20-40" to bedrock surface.

Hazard to Flooding: None, but may be ponded for short duration in spring and during periods of excessive rainfall.

Erosion Factors: .10

INCLUSIONS
(Within Mapping Unit)

Similar: Lyman, Tunbridge, Colonel, Brayton, Swanton,Pillsbury

Dissimilar: Rock Outcrop, Peacham, Naskeag (Variant-V.P.D.)

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor of this soil for building site development are depth to bedrock less than 40" in Naskeag and wetness due to a water table perched above the bedrock surface or hardpan. Proper foundation drainage is recommended for construction. Naskeag does not meet the minimum requirements for subsurface wastewater disposal as defined by the State of Maine Subsurface Wastewater Disposal Rules. This soil (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

SCANTIC
(Typic Haplaquepts)

SETTING

Parent Material: Marine or lacustrine sediments.

Landform: Level or gently sloping marine or lake plains.

Position in Landscape: Lower to intermediate positions.

Slope Gradient Ranges: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained, with a perched water table 0.5 to 1.0 feet beneath the soil surface.

Typical Profile Description:

Surface layer: Dark grayish brown silt loam, 0-9"
Subsurface layer: Olive gray silt loam, 9-11"
Subsoil layer: Olive gray, silty clay loam, 11-16"
Substratum: Olive gray clay, 16-65"

Hydrologic Group: Group D

Surface Run Off: Slow

Permeability: Moderate or moderately slow in upper profile, slow to very slow in dense substratum.

Depth to Bedrock: Very deep, greater than 60".

Hazard to Flooding: May flood occasionally on lowest fringes during spring and periods of excessive precipitation.

INCLUSIONS
(Within Mapping Unit)

Similar: Lamoine, Enosburg (Swanton)

Dissimilar: Naskeag, Biddeford, Whately

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to the presence of a shallow water table throughout most of the year. Proper foundation drainage or site modification is recommended for construction. Scantic soil does not meet the minimum requirements for subsurface wastewater disposal, as defined by State of Maine Rules for Subsurface Wastewater Disposal. Scantic soil may be classified as wetlands, based on the combined consideration of hydrology, hydric conditions, and vegetation.

Development for stormwater: Scantic soils are poorly drained with a high perched water table 0.5 to 1.0 feet beneath the soil surface and exhibit permeabilities of 0.2 to 2.0 inches/hr. in the upper 10 inches, and less than 0.2 inches/hr. below 10 inches.

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

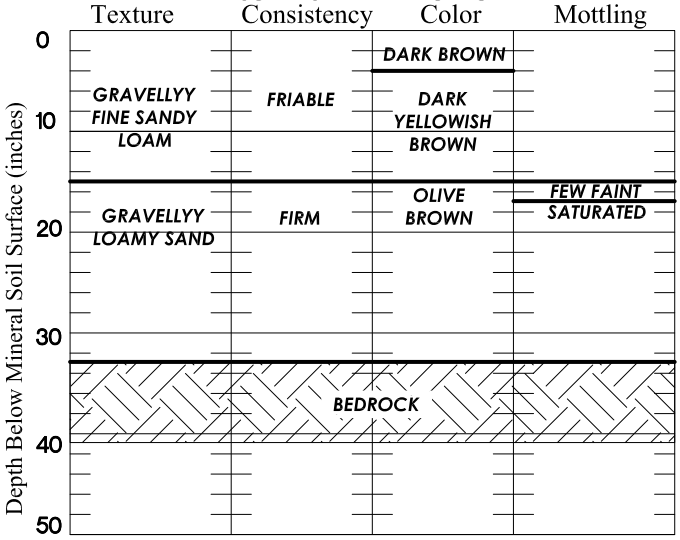
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 1** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

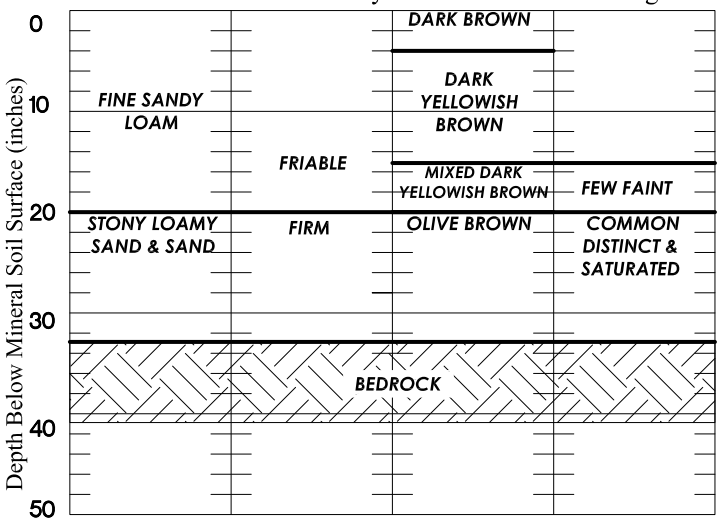


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 2** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



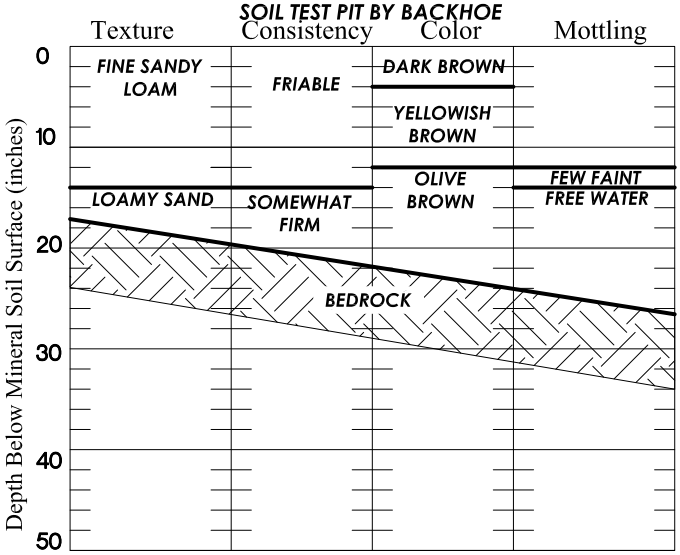
Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 3** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

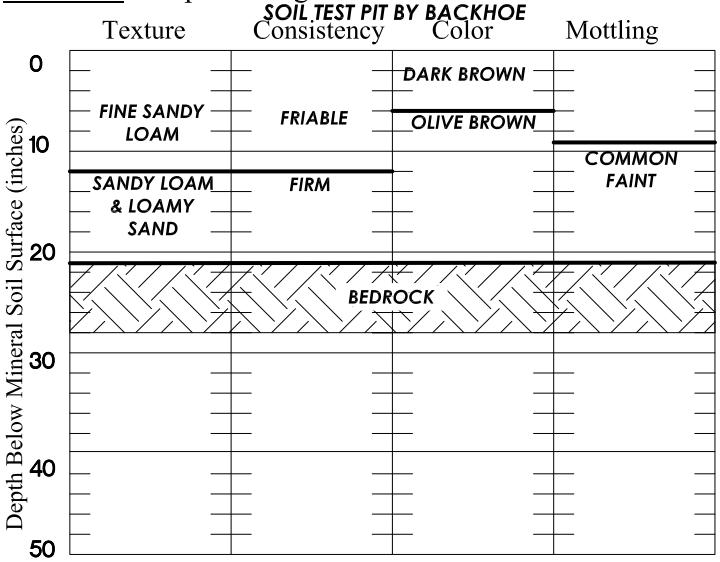


Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	____ %	17-27 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
LYMAN-TUNBRIDGE (SWP VARIANT)			

Observation Hole **TP 4** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	____ %	21 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
LYMAN (VARIANT)			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

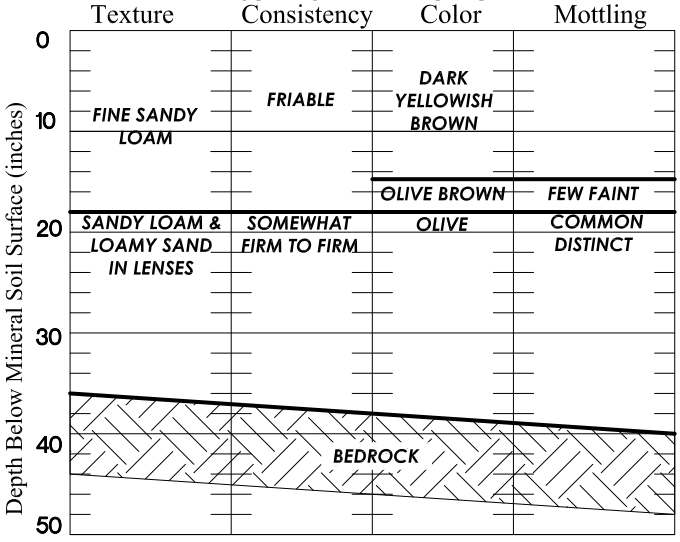
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 5** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

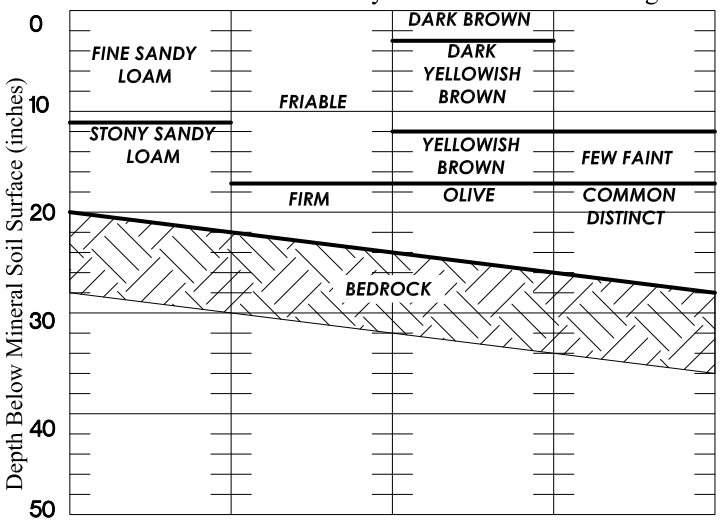


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

Observation Hole **TP 6** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



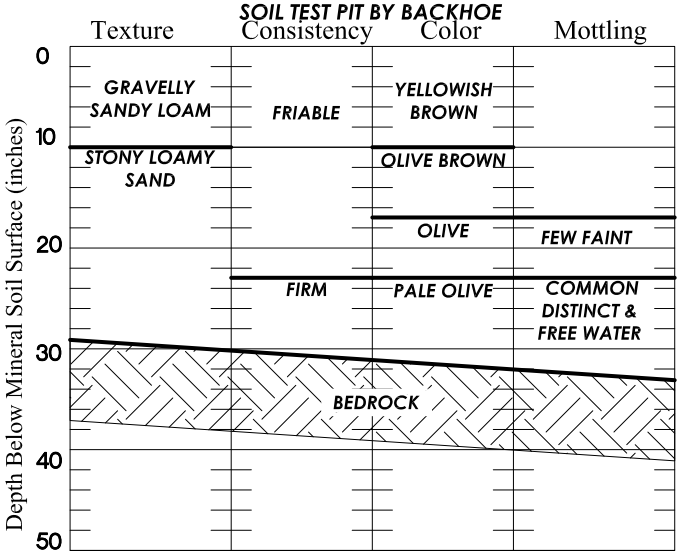
Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	_____ %	20-28 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 7** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

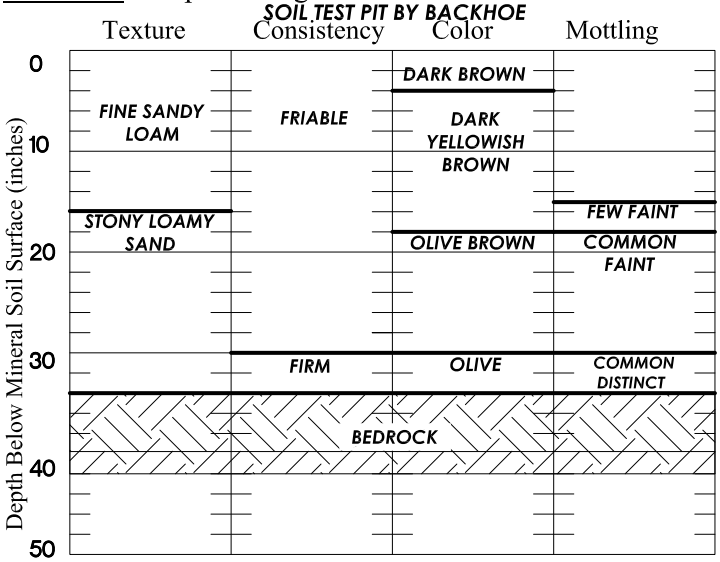


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	17 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 8** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

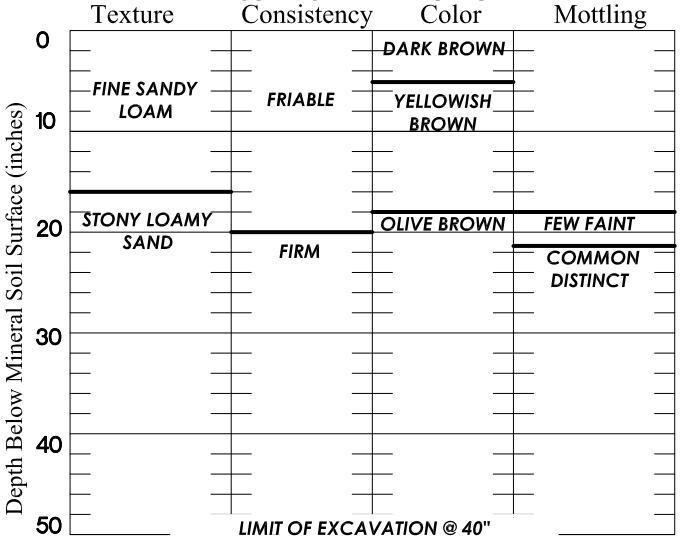
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 9** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

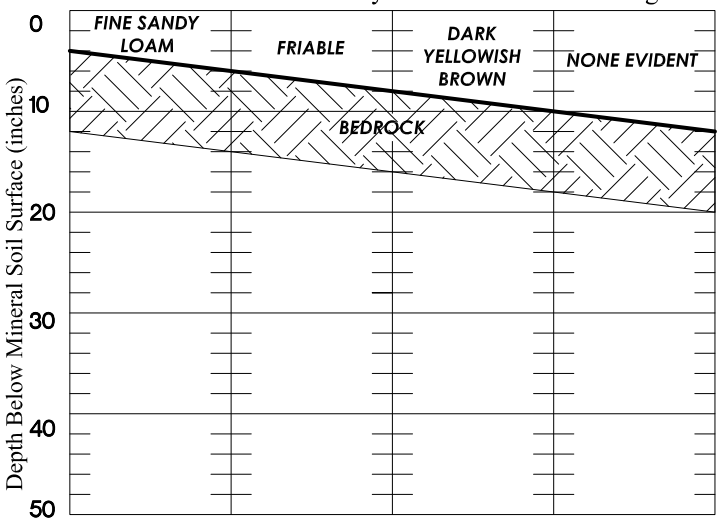


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	____ %	18 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
SKERRY			

Observation Hole **TP 10** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



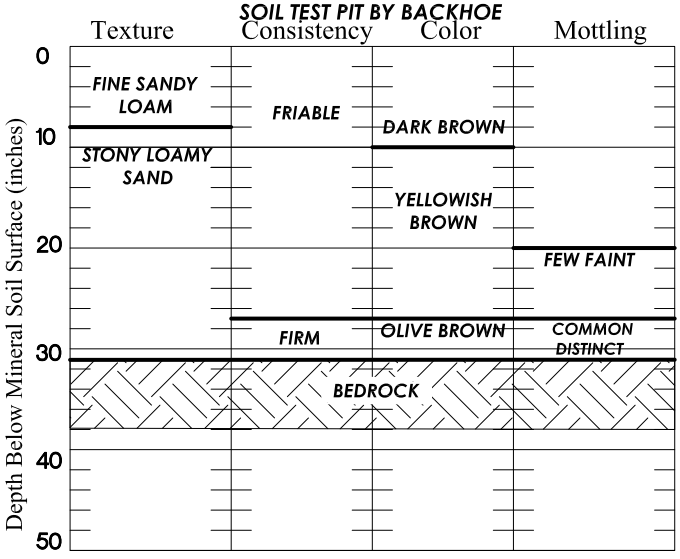
Soil Classification	Slope	Limiting Factor	
2 / AI (Profile / Condition)	____ %	4-12"	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
ABRAM/LYMAN			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 11** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

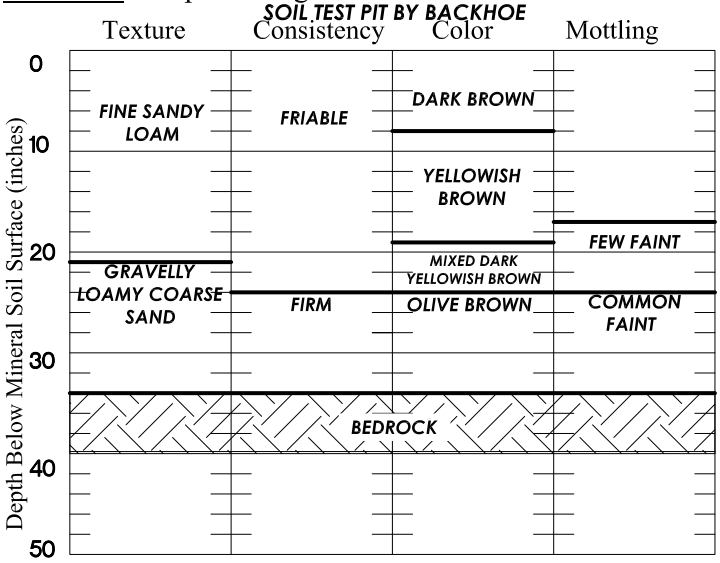


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	____ %	31 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 12** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	____ %	17 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

James Logan

SIGNATURE

237/213

LSE/CSS #

2/23/22

DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

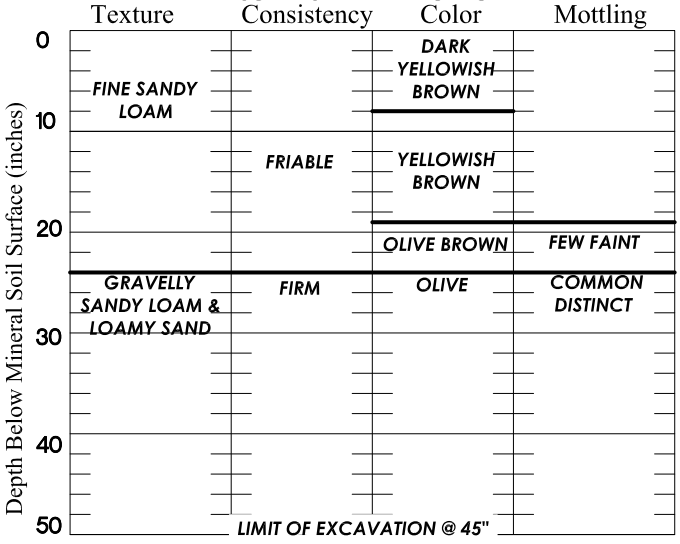
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 13** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

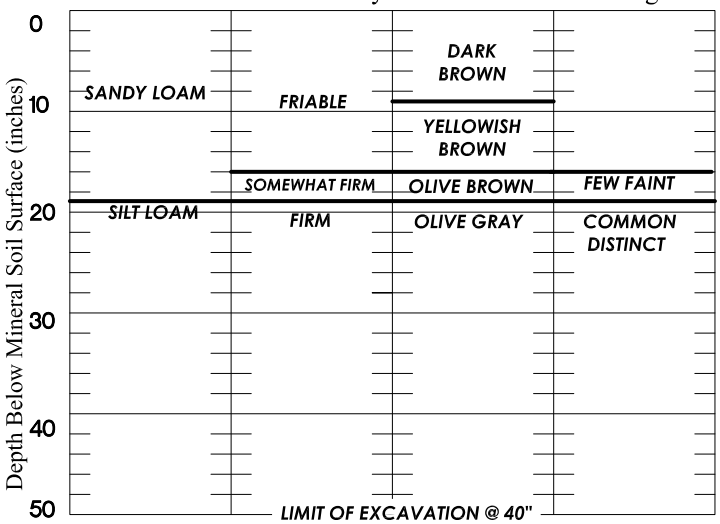


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	_____ %	19 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
SKERRY/DIXFIELD			

Observation Hole **TP 14** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



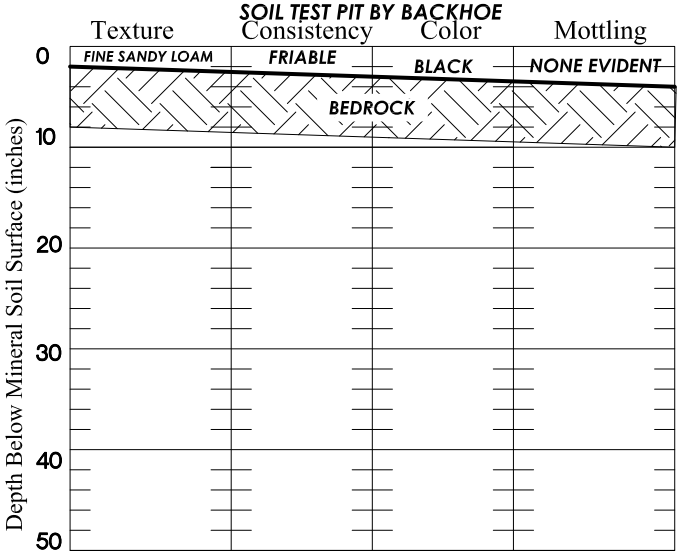
Soil Classification	Slope	Limiting Factor	
8 / C (Profile / Condition)	_____ %	16 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
DIXFIELD (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 15** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

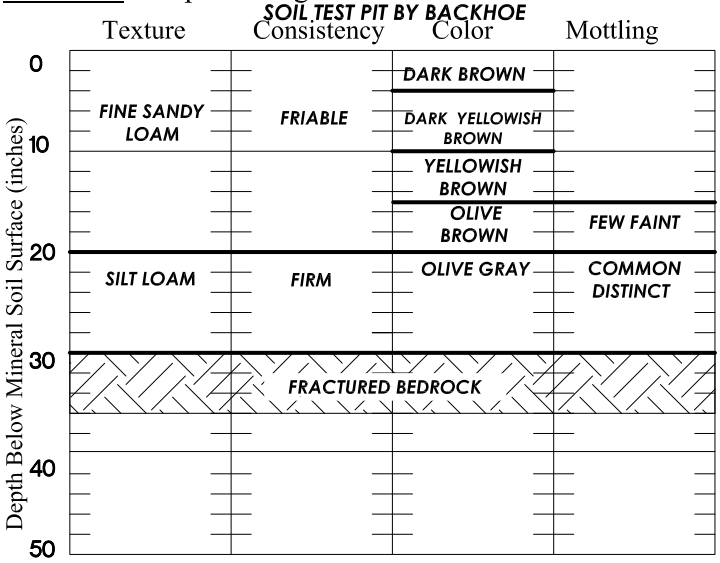


Soil Classification	Slope	Limiting Factor	
2 / AI (Profile / Condition)	_____ %	2-4 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
ABRAM			

Observation Hole **TP 16** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
8 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (ATYPICAL)			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

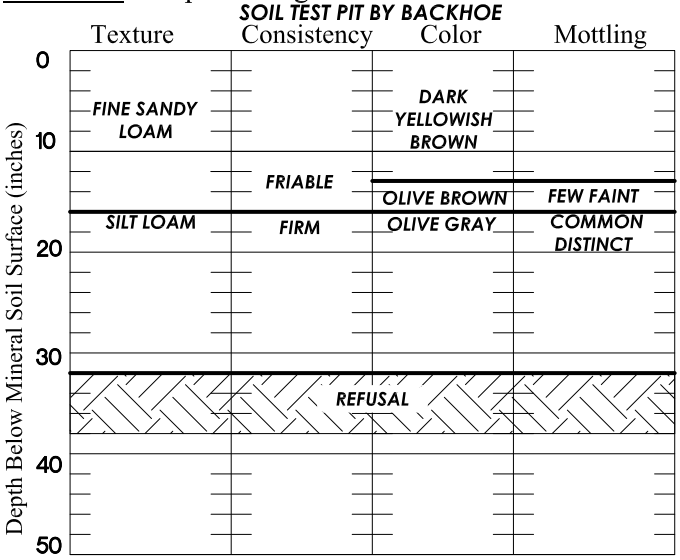
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 17** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

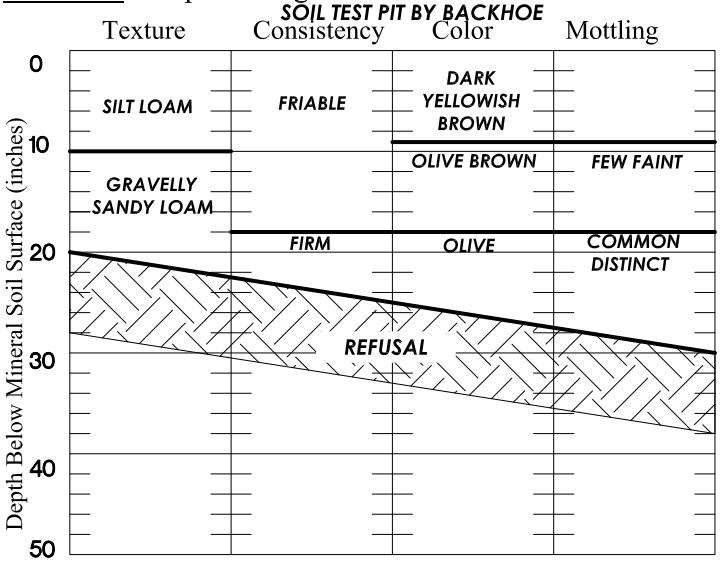


Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	13 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (ATYPICAL)			

Observation Hole **TP 18** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



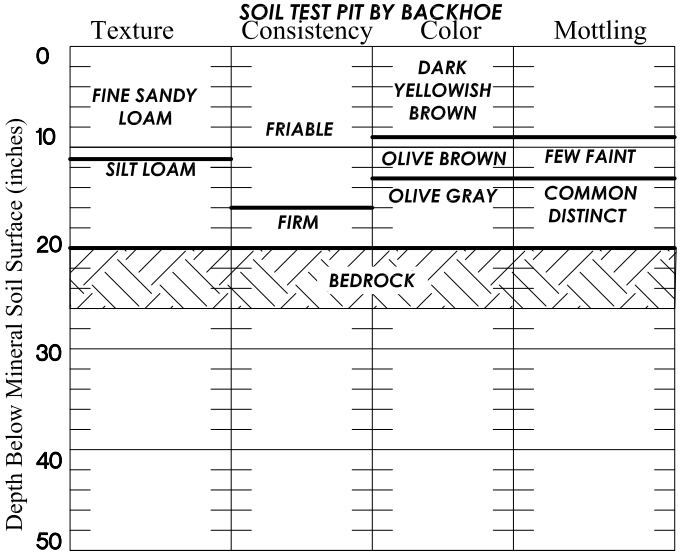
Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	9 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 19** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

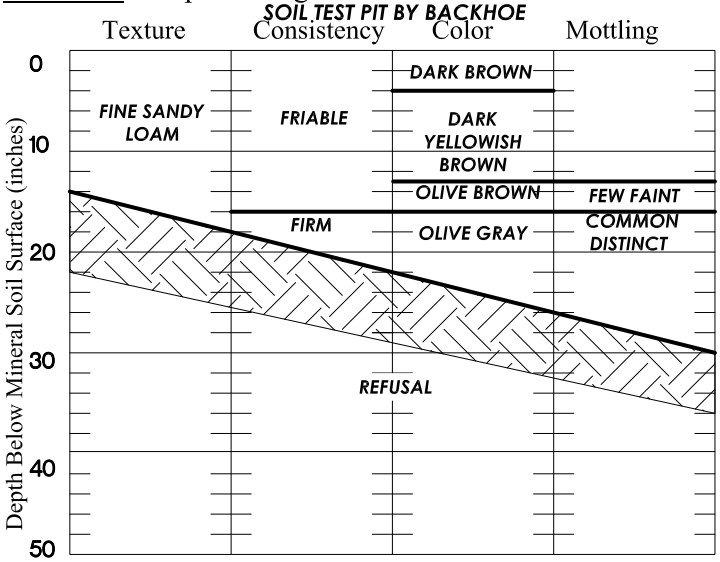


Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	9 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

Observation Hole **TP 20** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	14-30 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

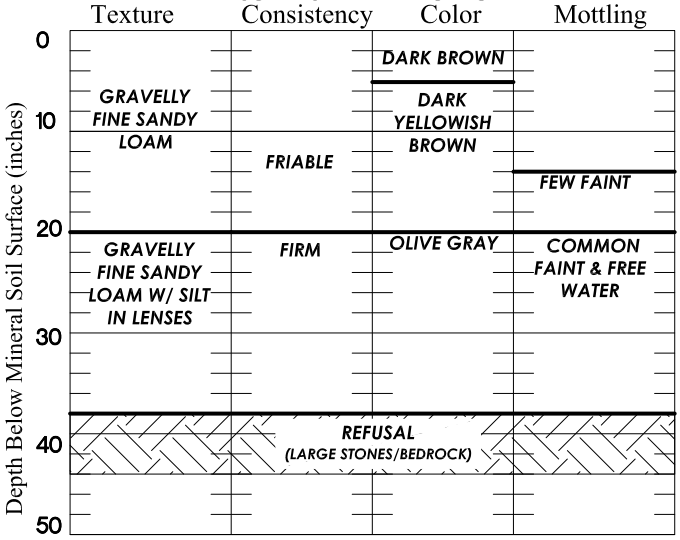
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 21** ■ Test Pit □ Boring

SOIL TEST PIT BY BACKHOE

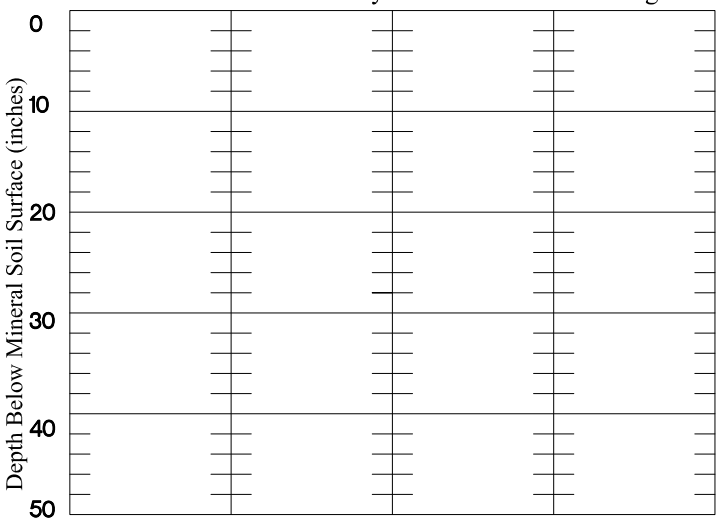
_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
8 / Profile; AIII/D / Condition; TUNBRIDGE (VARIANT)	____ %	14 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole _____ ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

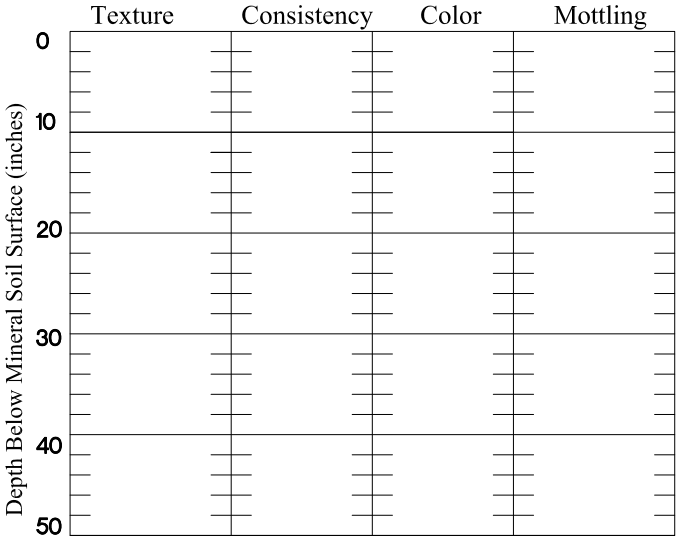


Soil Classification	Slope	Limiting Factor	
____ / Profile; ____ / Condition	____ %	____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole _____ ■ Test Pit □ Boring

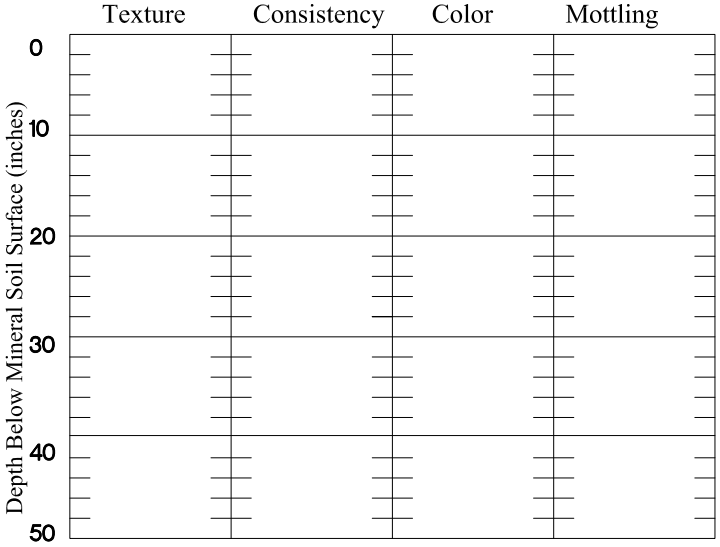
_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
____ / Profile; ____ / Condition	____ %	____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole _____ ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
____ / Profile; ____ / Condition	____ %	____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

SIGNATURE	LSE/CSS #	DATE
James Logan	237/213	2/23/22

DELINEATION NOTES:
WETLAND STUDY CONDUCTED NOVEMBER 26 & 29, AND DECEMBER 5, 2018, AND AUGUST 11 & 17, 2021.

PLAN NOTES:
THIS PLAN IS A COMPOSITE OF PROPERTY BOUNDARY INFORMATION PER A SURVEY PLAN BY JPS SURVEY DATED JULY 12, 2021, MAINE OFFICE OF GIS AERIAL PHOTOGRAPH & 2' TOPOGRAPHIC CONTOURS AND SUBMETER GPS LOCATION OF WETLAND BOUNDARIES & OTHER SITE FEATURES AS DEPICTED BY LONGVIEW PARTNERS, LLC.

ZONING NOTES:
THE SUBJECT PROPERTY IS LOCATED IN THE FARM & FOREST ZONE PER TOWN OF KENNEBUNKPORT ZONING MAPS.

FARM & FOREST ZONING REQUIREMENTS

MINIMUM LOT SIZE:	130,680 SQ. FT.
MINIMUM LOT WIDTH:	200 FEET
MAXIMUM LOT COVERAGE:	10%
MINIMUM LOT SIZE/DWELLING UNIT:	130,680 SQ. FT.
FRONT PROPERTY LINE SETBACK:	20 FEET
SIDE PROPERTY LINE SETBACK:	15 FEET
REAR PROPERTY LINE SETBACK:	15 FEET
MINIMUM OPEN SPACE:	20%
MAXIMUM BUILDING HEIGHT:	35 FEET

LEGEND:

- FRESHWATER WETLAND AREA (LOCATED BY LONGVIEW PARTNERS SUBMETER GPS)
- MDEP JURISDICTIONAL STREAM CHANNEL (LOCATED BY LONGVIEW PARTNERS SUBMETER GPS)
- TP 1 — SOIL TEST PIT (LOCATED BY LONGVIEW PARTNERS SUBMETER GPS)
- POTENTIAL WASTEWATER DISPOSAL SITE

POOL #2 (NON-SIGNIFICANT)
POOL #1 (NON-SIGNIFICANT)
POTENTIAL MDEP WETLAND OF SPECIAL SIGNIFICANCE
MDEP JURISDICTIONAL STREAM CHANNEL (75' SETBACK FOR STRUCTURES)
MAN-MADE POND/ NON-SIGNIFICANT VERNAL POOL (PER 2018 STUDY)
FRESHWATER WETLAND AREA
NON-SIGNIFICANT VERNAL POOL (PER 2018 STUDY)
EXISTING WOODS ROAD
MOOSE ROCKS ROAD
GOOSE ROCKS ROAD
TP 1, TP 2, TP 3, TP 4, TP 5, TP 6, TP 7, TP 8, TP 9, TP 10, TP 11, TP 12, TP 13, TP 14, TP 15, TP 16, TP 17, TP 18, TP 19, TP 20, TP 21

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

WETLAND DELINEATION & SOIL TEST PIT LOCATION PLAN

PREPARED FOR
CREATIVE COAST CONSTRUCTION
GOOSE ROCKS ROAD
(MAP 15, BLK 1, P/O LOT 1)
KENNEBUNKPORT, MAINE

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT:	SCALE:	CHECKED:	PLAN DATE:
BO	1" = 100'	JL	3/9/22

SOILS MAP LEGEND:

- TP — SOIL TEST PIT (LOCATED BY SUBMETER GPS)
- SOIL BOUNDARY LINE
- LIMITS OF HIGH-INTENSITY SOIL SURVEY
- SURFACE WATER RUNOFF (LOCATED BY SUBMETER GPS)
- WETLAND BOUNDARY (LOCATED BY SUBMETER GPS)

SLOPE DESIGNATION

A	0 – 3%
B	3 – 8%
C	8 – 20%
D	20%+

NOTES: SEE ACCOMPANYING SOIL NARRATIVE REPORT, DATED APRIL, 2022
ALL SOIL TEST PITS EXCAVATED BY BACKHOE

THE ACCOMPANYING SOILS SURVEY WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, FEBRUARY 1995, AS AMENDED.

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

STATE OF MAINE
JAMES LOGAN #213
CERTIFIED SOIL SCIENTIST

CLASS A HIGH-INTENSITY SOIL SURVEY

PREPARED FOR
CREATIVE COAST CONSTRUCTION
GOOSE ROCKS ROAD
(MAP 15, BLK 1, P/O LOT 1)
KENNEBUNKPORT, MAINE

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT:	SCALE:	CHECKED:	PLAN DATE:
BO	1" = 100'	JL	4/14/22

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for York County, Maine

Goose Rocks Subdivision

March 21, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

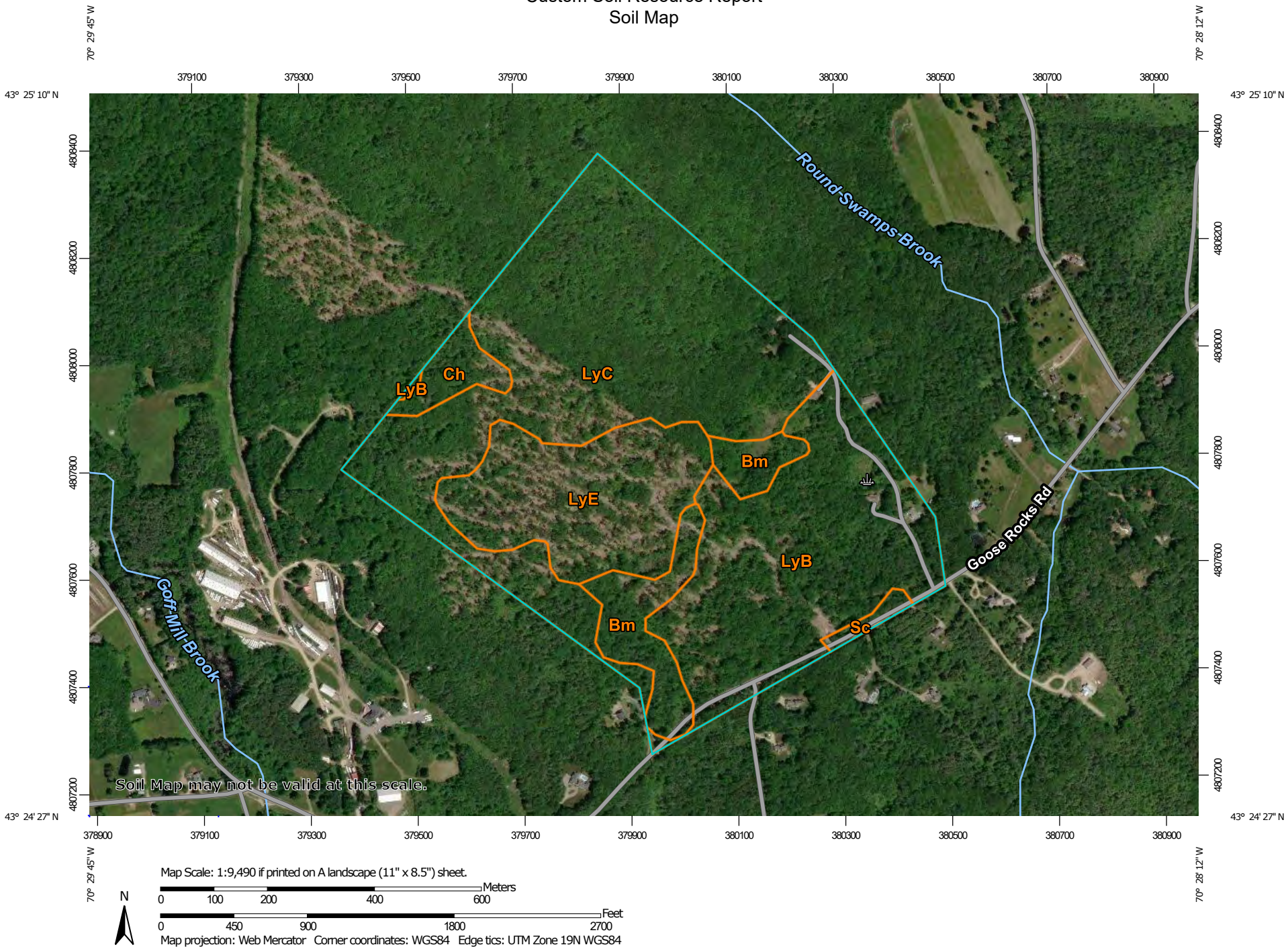
alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: York County, Maine
Survey Area Data: Version 20, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bm	Biddeford mucky peat, 0 to 3 percent slopes	12.5	7.7%
Ch	Chocorua peat	4.3	2.6%
LyB	Lyman-Rock outcrop complex, 3 to 8 percent slopes	45.5	28.0%
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	72.0	44.3%
LyE	Lyman-Rock outcrop complex, 15 to 80 percent slopes	26.8	16.5%
Sc	Scantic silt loam, 0 to 3 percent slopes	1.3	0.8%
Totals for Area of Interest		**162.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

York County, Maine

Bm—Biddeford mucky peat, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t0jn
Elevation: 10 to 900 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Biddeford and similar soils: 82 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Biddeford

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Organic material over glaciomarine deposits

Typical profile

Oe - 0 to 12 inches: mucky peat
Eg - 12 to 16 inches: silt loam
Bg - 16 to 45 inches: silty clay
Cg - 45 to 65 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: F144BY304ME - Wet Clay Flat, F144BY002ME - Marine Terrace Depression
Hydric soil rating: Yes

Ch—Chocorua peat

Map Unit Setting

National map unit symbol: 9k57
Elevation: 0 to 1,020 feet
Mean annual precipitation: 48 to 51 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Chocorua and similar soils: 87 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chocorua

Setting

Landform: Bogs
Parent material: Organic material

Typical profile

Oe - 0 to 32 inches: mucky peat
H2 - 32 to 65 inches: stratified gravelly sand to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp
Hydric soil rating: Yes

LyB—Lyman-Rock outcrop complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2trqh
Elevation: 0 to 560 feet

Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyman, very stony, and similar soils: 65 percent
Rock outcrop: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Igneous and metamorphic rock

Typical profile
R - 0 to 10 inches: bedrock

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to very high (0.00 to 14.17 in/hr)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

LyC—Lyman-Rock outcrop complex, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2trqj
Elevation: 0 to 790 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Lyman, very stony, and similar soils: 62 percent
Rock outcrop: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Very Stony

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile
Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam

Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144BY701ME - Shallow Till
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to very high (0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

LyE—Lyman-Rock outcrop complex, 15 to 80 percent slopes

Map Unit Setting

National map unit symbol: 2trqp

Elevation: 0 to 980 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyman, very stony, and similar soils: 60 percent
Rock outcrop: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 15 to 80 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144BY701ME - Shallow Till
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, mountainflank, side slope, crest, free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Igneous and metamorphic rock

Typical profile
R - 0 to 10 inches: bedrock

Properties and qualities
Slope: 15 to 80 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to very high (0.00 to 14.17 in/hr)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Sc—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2slv3
Elevation: 10 to 900 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Scantic and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting
Landform: Marine terraces, river valleys
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciomarine deposits

Typical profile
Ap - 0 to 9 inches: silt loam
Bg1 - 9 to 16 inches: silty clay loam
Bg2 - 16 to 29 inches: silty clay
Cg - 29 to 65 inches: silty clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

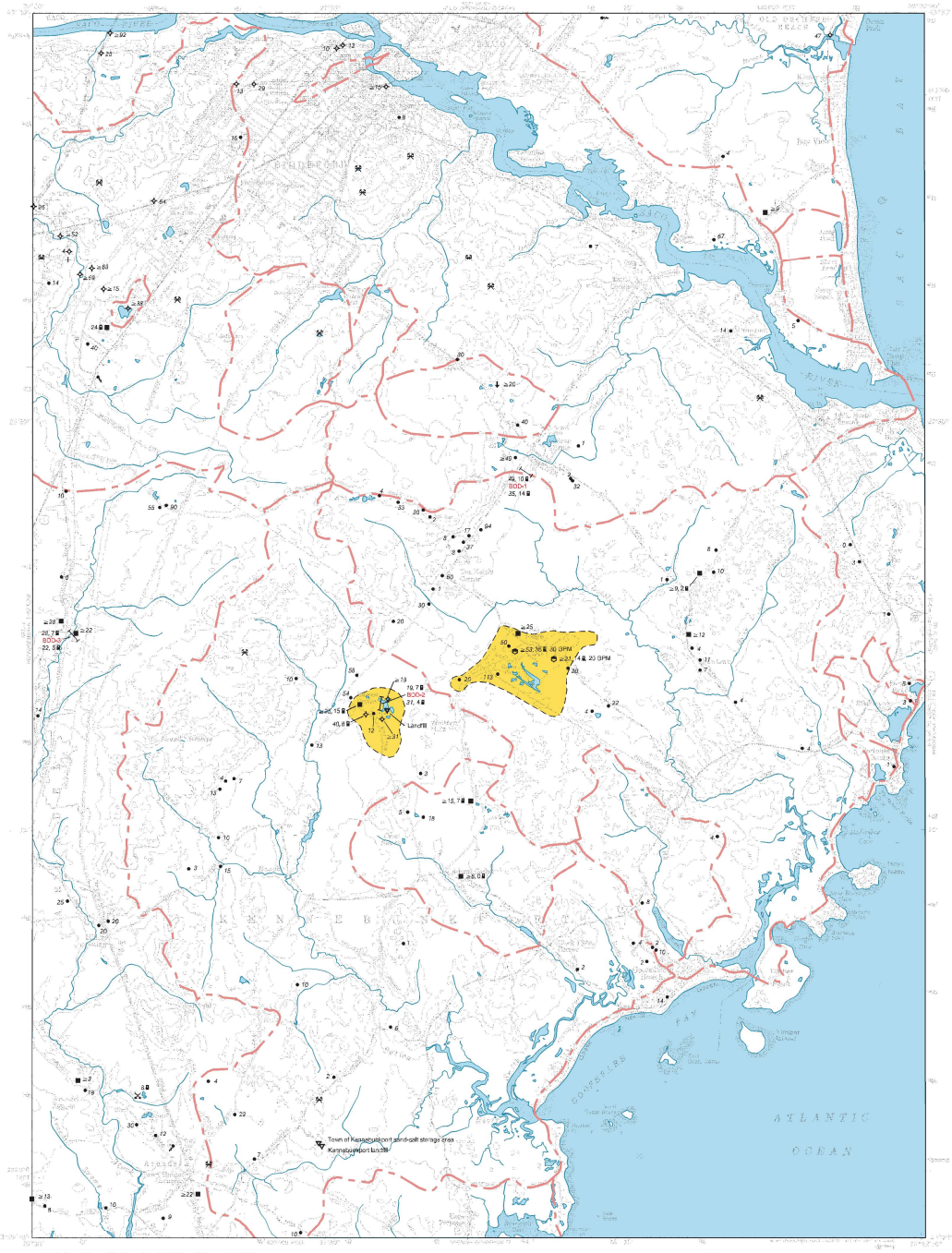
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

EXHIBIT 10
HYDROGEOLOGIC ASSESSMENT

Although the proposed subdivision on Goose Rocks Road will be served by private individual septic, no part of the proposed development will be located over a sand and gravel aquifer as shown on a map entitled, "Hydrogeologic Data for Significant Sand and Gravel Aquifers" by Maine Geological Survey, 1985, Map No.4, most recent addition. The above-mentioned map is included in this section.

Because the project site contains areas of shallow to bedrock soils, a hydrogeologic assessment is required. A copy of the hydrogeologic report will be submitted to the Planning Board immediately upon receipt.

Significant Sand and Gravel Aquifers



Aquifer boundaries modified from: Lanctot, E. M., and Tolman, A. L., 1985, Hydrogeologic data for significant sand and gravel aquifers in parts of York and Cumberland Counties, Maine: Map 4: Maine Geological Survey, Open-File Map 85-93, scale 1:50,000.

Well inventory data from U.S. Geological Survey Basic-Data Reports and additional data collected by Maine Geological Survey field assistants during the 1978-1984, and 1995 field seasons.

Drainage basin boundaries compiled by U.S. Geological Survey, Water Resources Division, Augusta, Maine, with funding from the Maine Low-Level Radioactive Waste Authority.

Quadrangle Location

SCALE 1:24,000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

MILE

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Biddeford quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not imply responsibility for any present or potential effects on the natural resources.

SIGNIFICANT SAND AND GRAVEL AQUIFERS (yields greater than 10 gallons per minute)

Approximate boundary of surficial deposits with significant saturated thickness where potential ground-water yield is moderate to excellent.

Surficial deposits with good to excellent potential ground-water yield; yields generally greater than 50 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yield zones are based on subsurface data where available, and may vary from mapped extent in areas where data are unavailable.

Surficial deposits with moderate to good potential ground-water yield; yields generally greater than 10 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yields may exceed 50 gallons per minute in deposits hydraulically connected with surface-water bodies, or in extensive deposits where subsurface data are available.

SURFICIAL DEPOSITS WITH LESS FAVORABLE AQUIFER CHARACTERISTICS (yields less than 10 gallons per minute)

Areas with moderate to low or no potential ground-water yield (includes areas underlain by till, marine deposits, colian deposits, alluvium, swamps, thin glacial sand and gravel deposits, or bedrock); yields in surficial deposits generally less than 10 gallons per minute to a properly constructed well.

SEISMIC-LINE INFORMATION

Profiles for selected 12-channel seismic lines are shown on Plate 2 of Open-File Report 83-1 (Tolman and others, 1983). Length of 12-channel and single-channel seismic lines as shown on the map is to scale.

53 Depth to bedrock, in feet below land surface.

≥53 Depth to bedrock exceeds depth shown (based on calculations).

12 Depth to water level, in feet below land surface.

MAP-7 131, 23 Twelve-channel seismic line, with depth to bedrock and depth to water shown at the midpoint of the line, in feet below land surface.

69, 12 MAP-E 72, 12 Single-channel seismic line, with depth to bedrock and depth to water shown at each end of the line, in feet below land surface. Unless otherwise indicated, data shown above the line-identifier box refers to the northern end of the seismic line.

The 3-letter identifier for a line is an abbreviation for the topographic quadrangle. If the 3-letter identifier for the line is followed by a number (ex: MAP - 7, MAP - 4), the line is a 12-channel line. If the identifier is followed by a letter (ex: MAP - E, MAP- P), the line is a single-channel line. Seismic interpretations by C. D. Neil and D. H. Tepper.

GEOLOGIC AND WELL INFORMATION

50 Depth to bedrock, in feet below land surface

≥13 Penetration depth of boring; ≥ symbol refers to minimum depth to bedrock based on boring depth or refusal

6 Depth to water level in feet below land surface (observed in well, spring, test boring, pit, or seismic line)

Gravel pit (overburden thickness noted in feet, e.g. 5-12')

Quarry

4 GPM Yield (flow) of well or spring in gallons per minute (GPM)

Spring, with general direction of flow

Drilled overburden well

Dug well

Observation well (project well if labeled; nonproject well if unlabeled)

Test boring (project boring if labeled; nonproject boring if unlabeled)

Driven point

Test pit

Drilled bedrock well

Potential point source of ground-water contamination

Bedrock outcrop

Surface-water drainage-basin boundary; surface-water divides generally correspond to ground-water divides. Horizontal direction of ground-water flow generally is away from divides and toward surface-water bodies.

OTHER SOURCES OF INFORMATION

1. Tolman, A. L., Tepper, D. H., Prescott, G. C., and Gammon, S. O., 1998, Hydrogeology of significant sand and gravel aquifers, northern York and southern Cumberland Counties, Maine: Maine Geological Survey, Open-File Report 83-1, 4 plates.
2. Hildreth, C. T., 1998, Surficial materials of the Biddeford quadrangle, Maine: Maine Geological Survey, Open-File Map 98-183.
3. Hildreth, C. T., 1990, Surficial geology of the Biddeford 7.5' quadrangle, York County, Maine: Maine Geological Survey, Open-File Report 90-36, 6 p.
4. Caswell, W. B., 1987, Ground water handbook for the state of Maine, Second Edition: Maine Geological Survey, Bulletin 39, 135 p.
5. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
6. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.

Biddeford Quadrangle, Maine

Compiled by
Craig D. Neil

Preliminary aquifer boundaries mapped by:
Carol T. Hildreth

Digital cartography by:
Robert A. Johnston

Robert G. Marvinney
State Geologist

Cartographic design and editing by:
Robert D. Tucker
Bennett J. Wilson, Jr.

Funding for the preparation of this map was provided in part by the Maine Department of Environmental Protection.

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Home page: http://www.maine.gov/doc/nrimc/nrimc.htm

Open-File No. 98-149
1998

WHAT IS AN AQUIFER?

Ground water, as the name implies, is water found below the land surface in the pore spaces between sand grains and in fractures in the bedrock (see diagrams below). An *aquifer* is a water-bearing geologic formation capable of yielding a usable amount of ground water to a well. In Maine there are two types of aquifers: loose soil materials (such as sand, gravel, and other sediments) and fractured bedrock. A sand and gravel deposit is considered a *significant aquifer* when a well in that deposit is capable of being continuously pumped at a rate of 10 gallons per minute (gpm) or more. To sustain a yield of 10 gpm or more, a deposit must be permeable enough for water to flow readily into the well as it is pumped (see section on *porosity* and *permeability* below), and there must be a sufficient depth of water in the well so that it will not be pumped dry.

The diagram below shows a schematic cross section of a sand and gravel aquifer in Maine. The symbols above the diagram correspond to the well symbols shown on the map at left. Information typically shown for these wells includes type of well, depth to bedrock, depth to water, and well yield. The blue line in the diagram is the *water table*. The area below the water table is called the *saturated zone*, where all pore spaces between the sediment particles are filled with water. In order to yield water, a well must extend below the water table into the saturated zone. Notice that the water table corresponds to the water level in most wells and in the stream.

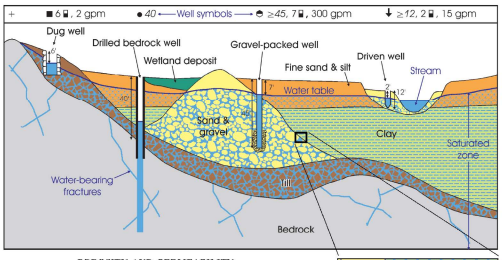
Several types of wells, common in Maine, are shown in the diagram. A *dug well* is a large diameter hole excavated by hand or backhoe. The hole is kept from caving in by installing a lining that may be stone, tile, or cement blocks. The hole must be deep enough to extend below the water table. The shallow dug well in the diagram has a yield of 2 gpm. Although the yield is often low, dug wells generally supply enough ground water for a household because of the large amount of water stored in the well.

A *gravel-packed* well is usually installed into coarse-grained sediment and is drilled with a much larger diameter than the final casing and screen diameter. To increase the yield and pumping efficiency of the well, the space around the well screen is filled with selected gravel that increases the permeability in the immediate vicinity of the well. The gravel-packed well in the diagram has a high yield of 300 gpm. Such high-yielding gravel-packed wells are commonly drilled for municipal or industrial water systems.

A *driven well* or *well point* can be installed into sand and gravel where the water table is within about 20 feet of the ground surface. A 2 to 3 inch diameter pipe, equipped with a well screen at its lower end, is driven into the deposit until the screen is below the water table. This pipe acts as a casing, and water is pumped directly from the aquifer. The driven well in the diagram has a significant yield of 15 gpm. Although the yield is relatively high, driven wells generally only supply a single household because very little water is stored in the well casing.

Wells of any type constructed in the other sediments shown in the diagram (clay or fine sand and silt) would yield some water, but yields would be low or than for wells in coarse-grained sand and gravel deposits.

Another type of well common in Maine is the *drilled bedrock well*. This well is drilled into the underlying rock with steel casing to isolate the well from potential surface-water contamination. In this type of well, water is found when the well hole intersects water-bearing fractures in the bedrock. Notice how the water level in this well is not the same level as the water table. The well casing isolates the bedrock well from the overlying sediments. The water level is controlled by water pressure in the fractures in the bedrock and is not related to the water table in the overlying materials.

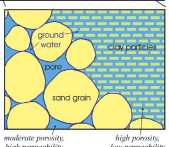


POROSITY AND PERMEABILITY

The diagram at right is an enlarged view of a section of the diagram above. Note that the section shown is below the water table and that ground water completely fills the pore spaces between the sediment grains. In an aquifer, the more pore space there is, the more water the aquifer can hold. This is called the *porosity* of a deposit. *Permeability* refers to the ability of a surficial deposit to transmit water. Permeability depends on the size of the spaces between the sediment grains.

Permeability is related to porosity, but is not the same. Porosity determines the capacity of the material to hold water. Permeability determines its ability to yield water. For example, clay is made of tiny particles with a large amount of pore space between them. However, the pore spaces are so small that they create a resistance to flow which reduces ground-water permeability. Sand and gravel may not be as porous as clay, but the pore spaces are larger and better connected and the materials are much more permeable.

Permeability is an important characteristic since it determines whether ground water can actually be drawn into a pumping well.



moderate porosity, high permeability — *high porosity, low permeability*

HOW ARE AQUIFERS MAPPED?

Operating a twelve-channel seismograph, Piscataquis County, Maine.

When mapping sand and gravel aquifers, geologists visit gravel pits, stream banks, road cuts, and other surface exposures to describe materials and identify deposits. This surficial geology mapping is supplemented with seismic-refraction studies and the installation of observation wells and test borings. In addition, much information about an aquifer may already be available from water-company exploration, large construction projects, town well inventories, and other sources. This information, along with aerial photographs and previously published maps, allows the geologist to define the boundaries of favorable surficial deposits and estimate how well the deposits will yield water to a well.

The boundaries of favorable surficial deposits do not necessarily coincide with the aquifer boundaries. In some areas, a thin cover of favorable coarse-grained material may overlie fine-grained sediments, till, or bedrock. A well in that material would not be able to sustain a yield of 10 gpm, so the area would not be mapped as an aquifer. In other areas, fine-grained sediments or till may overlie favorable coarse-grained sediments and the subsurface deposit may not be recognized as an aquifer.

Single- and 12-channel seismic-refraction studies are conducted to determine the saturated thickness of a deposit by establishing the depth to water table and bedrock surface. The 12-channel seismic survey has the additional advantage of providing the topography of the buried bedrock surface at a site.

Installing monitoring wells and drilling test borings provide direct information about the aquifer characteristics of a deposit. This work provides information on the depth to water table and bedrock surface, water quality, and how easily the sediment transmits water.

GROUND-WATER FLOW AND CONTAMINATION

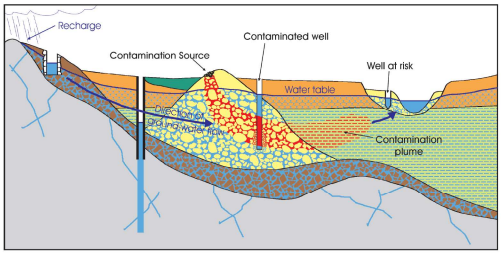
Ground water is replenished or *recharged* by rainwater and melting snow that soak into the soil. This water percolates downward and eventually reaches the water table. When recharge is high during spring snowmelt and fall rains, the amount of ground water increases and the water table rises. When recharge is low during the late summer or when the ground is frozen during the winter, the water table becomes lower.

Notice in the diagram below that ground water is not static; it flows. This concept is very important, especially when ground water becomes contaminated. Once in the ground-water system, contaminants usually travel along the paths followed by ground water and are sometimes able to migrate considerable distances over time.

In the diagram below, a plume of contamination originates at the source in the sand and gravel deposit. This source could be a landfill, a leaking fuel storage tank, or an accidental spill. As the contaminant seeps into the subsurface system and enters the aquifer, it flows with the ground water. In the diagram, the plume contaminated the gravel-packed well as it passed by. The driven well near the stream is not contaminated, but is at risk since the plume is flowing in that direction. The dug well on the hillside, however, is not affected because it is upgradient of the source, hence the contaminated ground water flows away from this well.

Once ground water is contaminated, it is very difficult and expensive to correct. To design a clean-up plan, monitoring wells are installed under the direction of a hydrogeologist or other specialist. These wells define the three-dimensional extent of the affected area. Sometimes it is possible to pump contaminants to the surface using remediation wells within the plume. Often the only solution for a homeowner is to install filtering devices or to abandon the well and find an alternative water supply.

Installing a monitoring well, Washington County, Maine.



HOW TO USE THIS MAP

Types of Information Shown on this Map: The yellow and red colored areas on the map indicate significant aquifers, zones where ground-water yield is estimated to be 10 gpm or greater. The boundaries of the aquifers are drawn by a geologist based, in part, on the well data shown on the map. Areas not mapped as aquifer may be thin or unsaturated sand and gravel deposits, surficial deposits other than sand and gravel, or bedrock.

The well data on the map provide information about the type of well, depth to water table, depth to bedrock, and yield of the wells in the area. This information is useful when making decisions about water supply, a drainage plan, or the need for blasting.

Information from seismic refraction studies also is shown on the map. Seismic studies give detailed information about depth to water table and depth to and shape of the bedrock surface. Geologic cross sections generated from seismic information are shown in associated reports listed in the references below the map at left.

Surface-water drainage-basin boundaries are also shown on the map. Horizontal direction of ground-water flow generally is away from drainage divides and toward surface-water bodies.

Uses of this Map: Sand and gravel aquifer maps are useful in two major categories of decision-making: ground-water supply and ground-water protection. For ground-water supply, these maps are useful in locating areas favorable for developing water supplies for municipal, industrial, or residential use. Information on the map, such as depth to bedrock and well yield, indicate the potential for ground-water production.

Ground-water protection is another important function of these maps. Knowledge of the location and extent of sand and gravel aquifers is critical when siting potential contamination sites such as landfills and salt storage facilities. When used in conjunction with other geologic information, this map can help planners and municipal officials make much more informed decisions to guide industrial growth or residential development.

If ground-water contamination occurs, the general trend of the plume migration can be deduced from these maps by analyzing the drainage basin boundaries and the local surface water bodies.

For further assistance in interpreting this map, contact a geologist at the Maine Geological Survey.

EXHIBIT 11
TRIP GENERATION MEMO

A traffic impact memorandum was completed by Atlantic Resource Consultants, LLC and is included in this section.

Atlantic Resource Consultants
Engineering Strategies and Solutions

541 US Route One, Suite 21
Freeport, Maine 04032
Tel: (207) 869 9050
info@arc-maine.com

Traffic Impacts Memorandum

To: Town of Kennebunkport Planning Board

From: Jason A Vafiades, PE LEED AP;

Date: June 21, 2022

Re: The Glen at Gooserocks, Preliminary Subdivision Application

---

Dear Members of the Town of Kennebunkport Planning Board,

On behalf of K.J. Trudo Properties, LLC., we have prepared this traffic impact memo for your reference.

The project will result in a total of 9 new, single family residential units, all being serviced by the new subdivision roadways. Per the ITE Manual's Trip Generation Manual's guidance, a single-family residential unit can be expected to produce 10 daily trips and 1 daily AM and PM peak hour trips. Thus, the entire project will only add an additional 90 daily and 8 AM and PM peak hour trips, which fall well below the thresholds for any MDOT Traffic Permits or other traffic engineering considerations. It is our opinion that there will be negligible impacts to local traffic patterns and roadway infrastructure.

Should you have any questions, please contact me at your earliest convenience.

Jason A Vafiades

Jason A. Vafiades, PE LEED AP
Principal
Atlantic Resource Consultants, LLC

EXHIBIT 12
STORMWATER MANAGEMENT REPORT

A copy of the Stormwater Management Report is included in this section.

EXHIBIT 13
WILDLIFE HABITAT

Correspondence with the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the Maine Natural Areas Program (MNAP) are included in this section.

Vernal pool assessment forms prepared by Longview Partners are included in this section. Vernal pools were determined to be non-significant and are visible on the state-maintained GIS layer accessible to the public.

A plan set detailing natural resource impacts have been included in this section. Resource crossings have been designed to allow for migration by frogs, salamanders, and turtles as well as provide for adequate water flows.

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

November 3, 2021

Jason Vafiades
Atlantic Resource Consultants
541 U.S. Route One, Suite 21
Freeport, ME 04032

RE: Information Request – Goose Rocks Road Project, Kennebunkport

Dear Jason:

Per your request received on October 04, 2021, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Goose Rocks Road* project in Kennebunkport. Please note that our comments should be considered preliminary.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Spotted Turtle - Occurrences of spotted turtle, a State Threatened species, have been documented adjacent to the proposed project. Spotted turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools. They also use small streams, shrub swamps, wet meadows, bogs, and forested swamps. MDIFW recommends that a detailed assessment of habitat potential and spotted turtle surveys be conducted in the spring and reported. As these surveys should be conducted with the assistance of our species specialists, please contact Derek Yorks (Derek.Yorks@maine.gov or 207-941-4475) with our Reptile, Amphibian, and Invertebrate Group in Bangor for further information on spotted turtle survey protocols and reporting expectations. We recommend that you work closely with MDIFW staff to design a project that minimizes the risk for potential Take and Harassment of MESA-protected species.

Significant Wildlife Habitat

Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA)

within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. It is unclear if vernal pool surveys have been conducted; if not, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

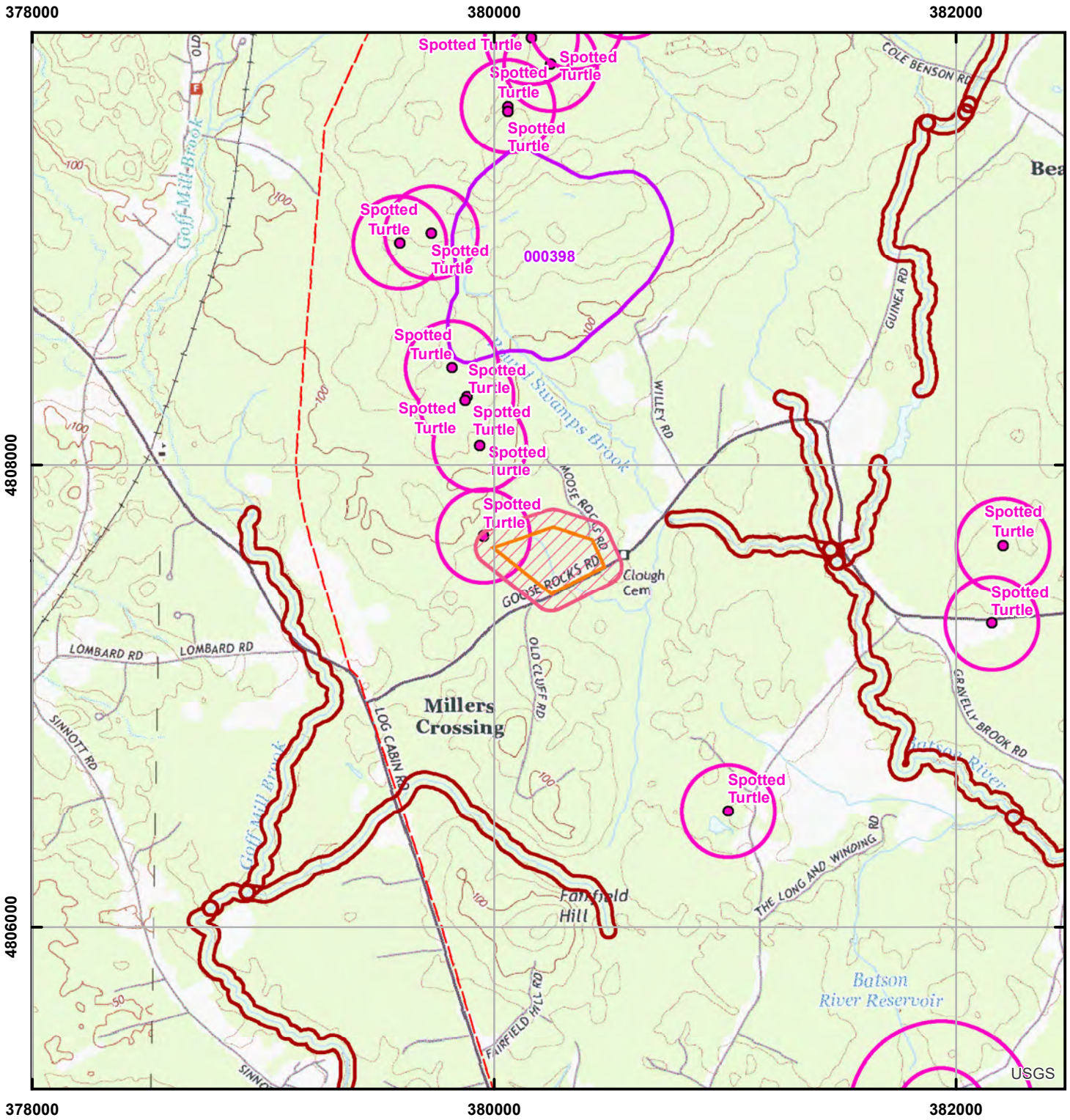
We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Becca Settele
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Goose Rocks Road, Kennebunkport (Version 1)

Miles

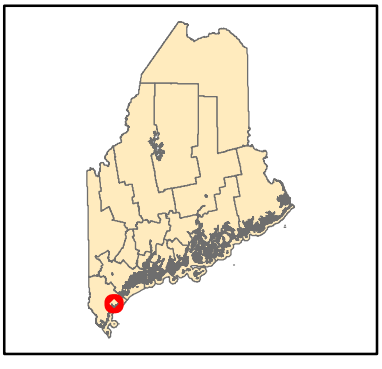
0 0.125 0.25 0.5 0.75 1

Projection: UTM, NAD83, Zone 19N

Date: 10/6/2021

Maine Department of Inland Fisheries and Wildlife

- ProjectSearchAreas - All Versions
- Maine Cliff and Talus Areas
- Deer Winter Area
- LUPC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl and Wading Bird
- 2008 Iwwh - Shoreland Zoning
- Tidal Waterfowl and Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover and Least Tern
- Aquatic ETSc - 2.5 mi review
- Rare Mussels - 5 mi review
- Maine Heritage Fish Waters
- Arctic Charr Habitat
- Redfin Pickerel and Swamp Darter Habitats - buffer100ft
- Special Concern occupied habitats - 100ft buffer
- Wild Lake Trout Habitats



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

October 13, 2021

Lucien Langlois
Atlantic Resource Consultants
541 US Route One, Suite 21
Freeport, ME 04032

Via email: lucien@arc-maine.com

Re: Rare and exemplary botanical features in proximity to: Goose Rocks Road 9-lot Subdivision, Kennbeunkport, Maine

Dear Mr. Langlois:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received October 4, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Kennebunkport, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

Rare and Exemplary Botanical Features within 4 miles of
Project: Goose Rocks Road Subdivision, Kennebunkport, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Beach wormwood						
	SC	S1S2	G5T5	2011-11-02	9	<null>
Brackish Tidal Marsh						
	<null>	S3	GNR	2009	15	Tidal wetland (non-forested, wetland)
Button Sedge						
	SC	S2	G5	1880-09-06	2	<null>
	SC	S2	G5	2000-08-15	3	<null>
Coast-blite Goosefoot						
	PE	SH	G5	2007-08-10	17	Tidal wetland (non-forested, wetland)
Freshwater Tidal Marsh						
	<null>	S2	G4?	2009	11	Tidal wetland (non-forested, wetland)
Pale Green Orchis						
	SC	S2	G4?T4Q	1991	36	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
	SC	S2	G4?T4Q	1984-06-27	23	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Pitch Pine Bog						
	<null>	S2	G3G5	2015-09-29	20	Forested wetland,Coastal non-tidal wetland (non-forested, wetland)
Pitch Pine Woodland						
	<null>	S3	G2	2016-08-09	30	Rocky summits and outcrops (non-forested, upland)
Pygmyweed						
	SC	S2S3	G5	2006-09-19	27	Open water (non-forested, wetland)
Salt-hay Saltmarsh						
	<null>	S3	G5	2010-10-14	9	Tidal wetland (non-forested, wetland)

Rare and Exemplary Botanical Features within 4 miles of
Project: Goose Rocks Road Subdivision, Kennebunkport, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	<null>	S3	G5	2016-07-12	23	Tidal wetland (non-forested, wetland)
	<null>	S3	G5	2010-10-14	28	Tidal wetland (non-forested, wetland)
	<null>	S3	G5	2020-09-22	13	Tidal wetland (non-forested, wetland)
	<null>	S3	G5	2011-10-21	46	Tidal wetland (non-forested, wetland)
Saltmarsh Bulrush						
	SC	S2	G5	2006-09-19	1	<null>
Saltmarsh False-foxglove						
	SC	S3	G5	2016-07-16	30	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1982	8	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1985	13	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1982	9	Tidal wetland (non-forested, wetland)
	SC	S3	G5	2020-09-22	43	Tidal wetland (non-forested, wetland)
Schreber's Wood-aster						
	PE	SX	G4	1894-09	1	Rocky coastal (non-forested, upland)
Slender Blue Flag						
	T	S2	G4G5	1879-08	4	Tidal wetland (non-forested, wetland)
Small Reed Grass						
	SC	S3	G5	2000-08-15	12	Old field/roadside (non-forested, wetland or upland)
	SC	S3	G5	2010-09-07	15	Old field/roadside (non-forested, wetland or upland)
Smooth Winterberry Holly						
	SC	S3	G5	2013-06-26	16	Forested wetland
	SC	S3	G5	1999-10	26	Forested wetland
	SC	S3	G5	1989-09-06	21	Forested wetland

Rare and Exemplary Botanical Features within 4 miles of
Project: Goose Rocks Road Subdivision, Kennebunkport, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Southern Slender Ladies'-tresses						
	PE	SH	G5T4T5	1918-08-27	1	Dry barrens (partly forested, upland)
Spongy-leaved Arrowhead						
	SC	S3	G5T4	2006-09-19	47	Tidal wetland (non-forested, wetland)
Spotted Wintergreen						
	T	S2	G5	2010-08-20	28	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Sweet Pepper-bush						
	SC	S2	G5	1917-09	9	Hardwood to mixed forest (forest, upland),Forested wetland
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2010-10-14	3	Tidal wetland (non-forested, wetland)
White Vervain						
	SC	S1?	G5	2013-summer	5	Hardwood to mixed forest (forest, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Wild Garlic						
	SC	S2	G5	2017-06-14	29	Forested wetland,Hardwood to mixed forest (forest, upland)

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of 1 to 5. Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 **G1**	**Critically Imperiled** – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 **G2**	**Imperiled** – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 **G3**	**Vulnerable** – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 **G4**	**Apparently Secure** – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 **G5**	**Secure** – At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX **GX**	**Presumed Extinct** – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH **GH**	**Possibly Extinct** – Known from only historical occurrences but still some hope of rediscovery.
S#S# **G#G#**	**Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU **GU**	**Unrankable** – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR **SNR**	**Unranked** – Global or subnational conservation status not yet assessed.
SNA **GNA**	**Not Applicable** – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems.
Qualifier	**Definition**
S#? **G#?**	**Inexact Numeric Rank** – Denotes inexact numeric rank.
Q	**Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	**Infraspecific Taxon (trinomial)** – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	**Endangered** – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	**Threatened** – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	**Special Concern** – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	**Potentially Extirpated** – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	**Excellent** – Excellent estimated viability/ecological integrity.
B	**Good** – Good estimated viability/ecological integrity.
C	**Fair** – Fair estimated viability/ecological integrity.
D	**Poor** – Poor estimated viability/ecological integrity.
E	**Extant** – Verified extant, but viability/ecological integrity not assessed.
H	**Historical** – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	**Extirpated** – Documented loss of population/destruction of habitat.
U	**Unrankable** – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	**Not Ranked** – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
http://www.maine.gov/dacf/mnap

maine DEPARTMENT OF Agriculture Conservation & Forestry
NATURAL AREAS

Maine State Vernal Pool Assessment Form

INSTRUCTIONS:

- **Complete all 3 pages of form thoroughly. Most fields are required for pool registration.**
- **Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.**

Observer's Pool ID: Pool #1 **MDIFW Pool ID:** _____

1. PRIMARY OBSERVER INFORMATION

a. Observer name: James Logan

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

2. PROJECT CONTACT INFORMATION

a. Contact name: ○ same as observer ○ other _____

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

c. Project Name: Paul Murphy, Goose Rocks Road

3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ○ Yes ○ No If no, was landowner permission obtained for survey? ○ Yes ○ No

b. Landowner's contact information (required)

Name: Paul Murphy Phone: _____

Street Address: 93 Lisbon Street City: Lewiston State: ME Zip: 0424

c. ☑ Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Kennebunkport

Brief site directions to the pool (using mapped landmarks):

Please see attached directions & Vernal Pool Location Plan prepared by Longview Partners, LLC

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: 70 29' 01" W Latitude/Northing: 43 24' 47" N

Coordinate system: Lat/Lon WGS 84

Check one:

○ GIS shapefile
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)

○ The pool perimeter is delineated by multiple GPS points. (Excellent)
- Include map or spreadsheet with coordinates.

○ The above GPS point is at the center of the pool. (Good)

○ The center of the pool is approximately _____ m ○ ft ○ in the compass direction of _____ degrees from the above GPS point. (Acceptable)

5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): _____

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- ○ Isolated depression
- ○ Floodplain depression
- ○ Pool associated with larger wetland complex
- ○ Other: _____

■ Check all wetland types that best apply to this pool:

- ☑ Forested swamp
- ☑ Shrub swamp
- ☐ Peatland (fen or bog)
- ☐ Emergent marsh
- ☐ Wet meadow
- ☐ Lake or pond cove
- ☐ Abandoned beaver flowage
- ☐ Active beaver flowage
- ☐ Slow stream
- ☐ Floodplain
- ☐ Mostly unvegetated pool
- ☐ ATV or skidder rut
- ☐ Dug pond or borrow pit
- ☐ Roadside ditch
- ☐ Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: ○ Natural ○ Natural-Modified ○ Unnatural ○ Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Pool is naturally-occurring. Standing water is contained by bedrock outcroppings.

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- ○ Permanent
- ○ Semi-permanent (drying partially in all years and completely in drought years)
- ○ Ephemeral (drying out completely in most years)
- ○ Unknown

Explain:

Pool was almost completely dry on date of third and final visit on May 7, 2018

■ Maximum depth at survey: ○ 0-12" (0-1 ft.) ○ 12-36" (1-3 ft.) ○ 36-60" (3-5 ft.) ○ >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 80 ○ m ○ ft Length: 125 ○ m ○ ft

■ Predominate substrate in order of increasing hydroperiod:

- ○ Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- ○ Mineral soil (sphagnum moss present)
- ○ Organic matter (peat/muck) shallow or restricted to deepest portion
- ○ Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- ☐ Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- ☑ Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- ☑ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- ☑ Sphagnum moss (anchored or suspended)
- ☐ Wet site ferns (e.g. royal fern, marsh fern)
- ☑ Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- ☐ Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- ☐ No vegetation in pool

■ Faunal indicators (check all that apply):

- ☐ Fish
- ☐ Bullfrog or Green Frog tadpoles
- ☐ Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- ○ No inlet or outlet
- ○ Intermittent inlet or outlet
- ○ Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- ○ Other or Unknown (explain): _____

6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: April 11, April 24, & May 7, 2018

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? ◉ Yes ◉ No
- Was the entire pool surveyed for egg masses? ○ Yes ◉ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)									Tadpoles/Larvae[4]					
	Visit #1	Visit #2	Visit #3	Confidence Level[1]			Egg Mass Maturity[2]			Observed			Confidence Level[1]		
Wood Frog	21	38	0	3	3	3	F	M/A			X			3	
Spotted Salamander	0	0													
Blue-spotted Salamander	0	0													
Fairy Shrimp[3]	0	0													

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	☐	☐	☐		Wood Turtle	☐	☐	☐	
Spotted Turtle	☐	☐	☐		Ribbon Snake	☐	☐	☐	
Ringed Boghaunter	☐	☐	☐		Other:	☐	☐	☐	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

☐ SVP ☐ Potential SVP ☑ Non Significant VP ☐ Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

This pool did not contain enough egg masses for inclusion as a significant vernal pool based on our 3 visits to the project site.

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

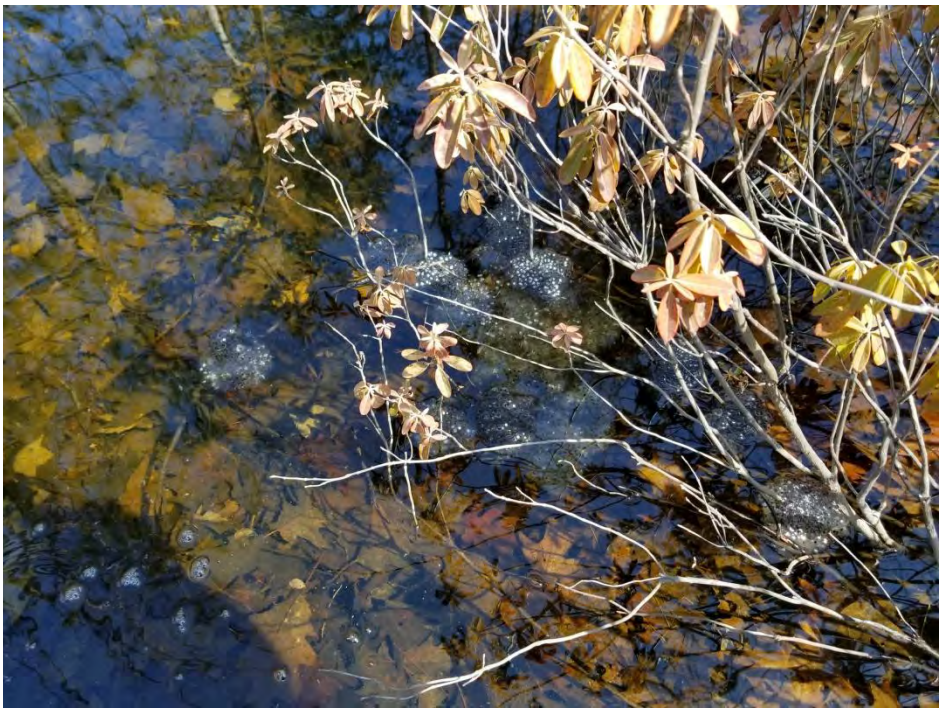
For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ☐ **Significant** ☐ **Potentially Significant** but lacking critical data ☐ **Not Significant** due to: ○ does not meet biological criteria. ○ does not meet MDEP vernal pool criteria.

Comments:

Paul P. Murphy property
Goose Rocks Road
(Map 15, Block 1, Portion of Lot 1)
Kennebunkport, Maine
2018 Vernal Pool Assessment

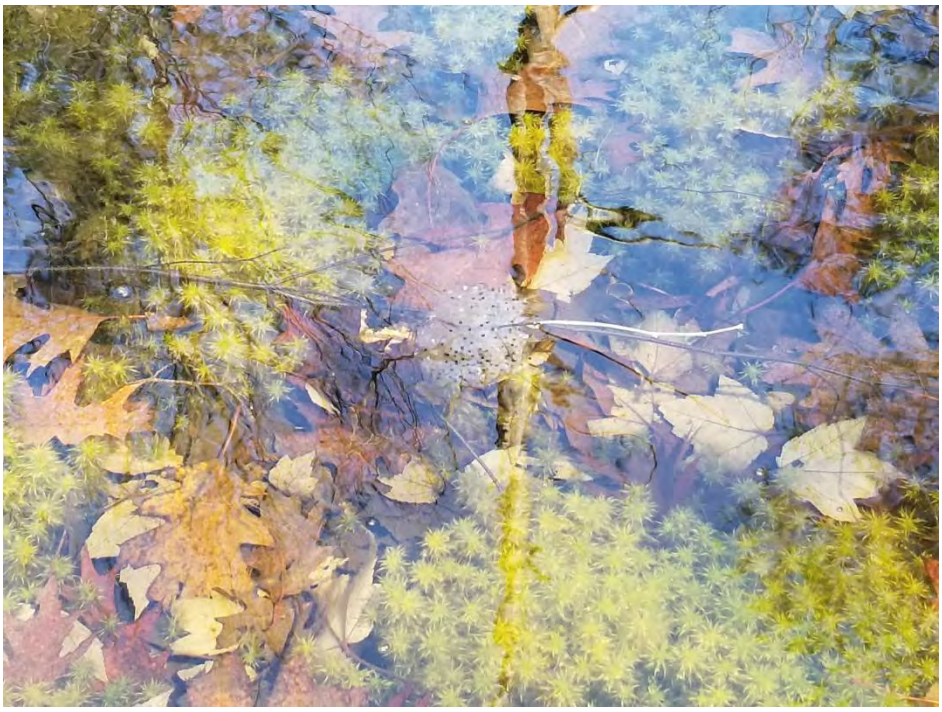
Naturally-occurring vernal pool habitat April 11, 2018 (Pool #1)



Wood frog egg masses in Pool # 1, April 11, 2018

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

Paul P. Murphy property
Goose Rocks Road
(Map 15, Block 1, Portion of Lot 1)
Kennebunkport, Maine
2018 Vernal Pool Assessment



Wood frog egg masses in Pool # 1, April 11, 2018

Naturally-occurring vernal pool habitat April 11, 2018 (Pool #2)

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

Paul P. Murphy property
Goose Rocks Road
(Map 15, Block 1, Portion of Lot 1)
Kennebunkport, Maine
2018 Vernal Pool Assessment

Area of standing water hydrology <6" deep (Pool # 1) April 24, 2018

Pool #1, April 24, 2018

Maine State Vernal Pool Assessment Form

INSTRUCTIONS:

- **Complete all 3 pages of form thoroughly. Most fields are required for pool registration.**
- **Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.**

Observer's Pool ID: Pool #1 **MDIFW Pool ID:** _____

1. PRIMARY OBSERVER INFORMATION

a. Observer name: James Logan

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

2. PROJECT CONTACT INFORMATION

a. Contact name: ○ same as observer ○ other _____

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

c. Project Name: Paul Murphy, Goose Rocks Road

3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ○ Yes ○ No If no, was landowner permission obtained for survey? ○ Yes ○ No

b. Landowner's contact information (required)

Name: Paul Murphy Phone: _____

Street Address: 93 Lisbon Street City: Lewiston State: ME Zip: 0424

c. ☑ Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Kennebunkport

Brief site directions to the pool (using mapped landmarks):

Please see attached directions & Vernal Pool Location Plan prepared by Longview Partners, LLC

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: 70 29' 01" W Latitude/Northing: 43 24' 47" N

Coordinate system: Lat/Lon WGS 84

Check one:

○ GIS shapefile
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)

○ The pool perimeter is delineated by multiple GPS points. (Excellent)
- Include map or spreadsheet with coordinates.

○ The above GPS point is at the center of the pool. (Good)

○ The center of the pool is approximately _____ m ○ ft ○ in the compass direction of _____ degrees from the above GPS point. (Acceptable)

5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): _____

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- ○ Isolated depression
- ○ Floodplain depression
- ○ Pool associated with larger wetland complex
- ○ Other: _____

■ Check all wetland types that best apply to this pool:

- ☑ Forested swamp
- ☑ Shrub swamp
- ☐ Peatland (fen or bog)
- ☐ Emergent marsh
- ☐ Wet meadow
- ☐ Lake or pond cove
- ☐ Abandoned beaver flowage
- ☐ Active beaver flowage
- ☐ Slow stream
- ☐ Floodplain
- ☐ Mostly unvegetated pool
- ☐ ATV or skidder rut
- ☐ Dug pond or borrow pit
- ☐ Roadside ditch
- ☐ Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: ○ Natural ○ Natural-Modified ○ Unnatural ○ Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Pool is naturally-occurring. Standing water is contained by bedrock outcroppings.

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- ○ Permanent
- ○ Semi-permanent (drying partially in all years and completely in drought years)
- ○ Ephemeral (drying out completely in most years)
- ○ Unknown

Explain:

Pool was almost completely dry on date of third and final visit on May 7, 2018

■ Maximum depth at survey: ○ 0-12" (0-1 ft.) ○ 12-36" (1-3 ft.) ○ 36-60" (3-5 ft.) ○ >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 80 ○ m ○ ft Length: 125 ○ m ○ ft

■ Predominate substrate in order of increasing hydroperiod:

- ○ Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- ○ Mineral soil (sphagnum moss present)
- ○ Organic matter (peat/muck) shallow or restricted to deepest portion
- ○ Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- ☐ Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- ☑ Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- ☑ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- ☑ Sphagnum moss (anchored or suspended)
- ☐ Wet site ferns (e.g. royal fern, marsh fern)
- ☑ Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
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■ Faunal indicators (check all that apply):

- ☐ Fish
- ☐ Bullfrog or Green Frog tadpoles
- ☐ Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

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Spotted Salamander	0	0													
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1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

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Spotted Turtle	☐	☐	☐		Ribbon Snake	☐	☐	☐	
Ringed Boghaunter	☐	☐	☐		Other:	☐	☐	☐	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

☐ SVP ☐ Potential SVP ☑ Non Significant VP ☐ Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

This pool did not contain enough egg masses for inclusion as a significant vernal pool based on our 3 visits to the project site.

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650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ☐ **Significant** ☐ **Potentially Significant** but lacking critical data ☐ **Not Significant** due to: ○ does not meet biological criteria. ○ does not meet MDEP vernal pool criteria.

Comments:

Paul P. Murphy property
Goose Rocks Road
(Map 15, Block 1, Portion of Lot 1)
Kennebunkport, Maine
2018 Vernal Pool Assessment

Wood frog egg masses in Pool #2, April 11, 2018

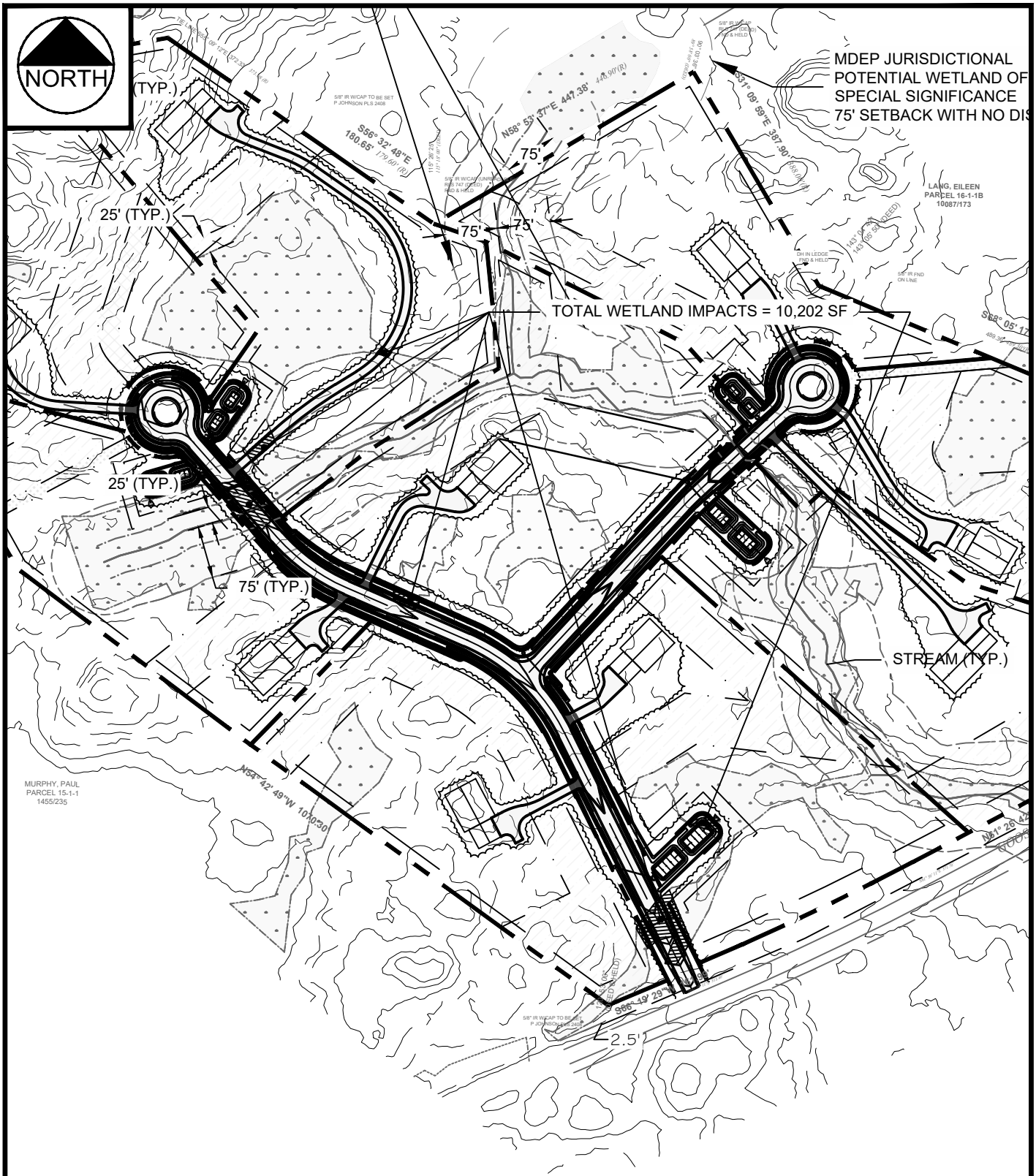
Man-made vernal pool habitat April 11, 2018

Paul P. Murphy property
Goose Rocks Road
(Map 15, Block 1, Portion of Lot 1)
Kennebunkport, Maine
2018 Vernal Pool Assessment

Pool #2, April 24, 2018

Mature wood frog egg masses in Pool #2, April 24, 2018

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS



REFERENCE: THE GLEN AT GOOSE ROCKS

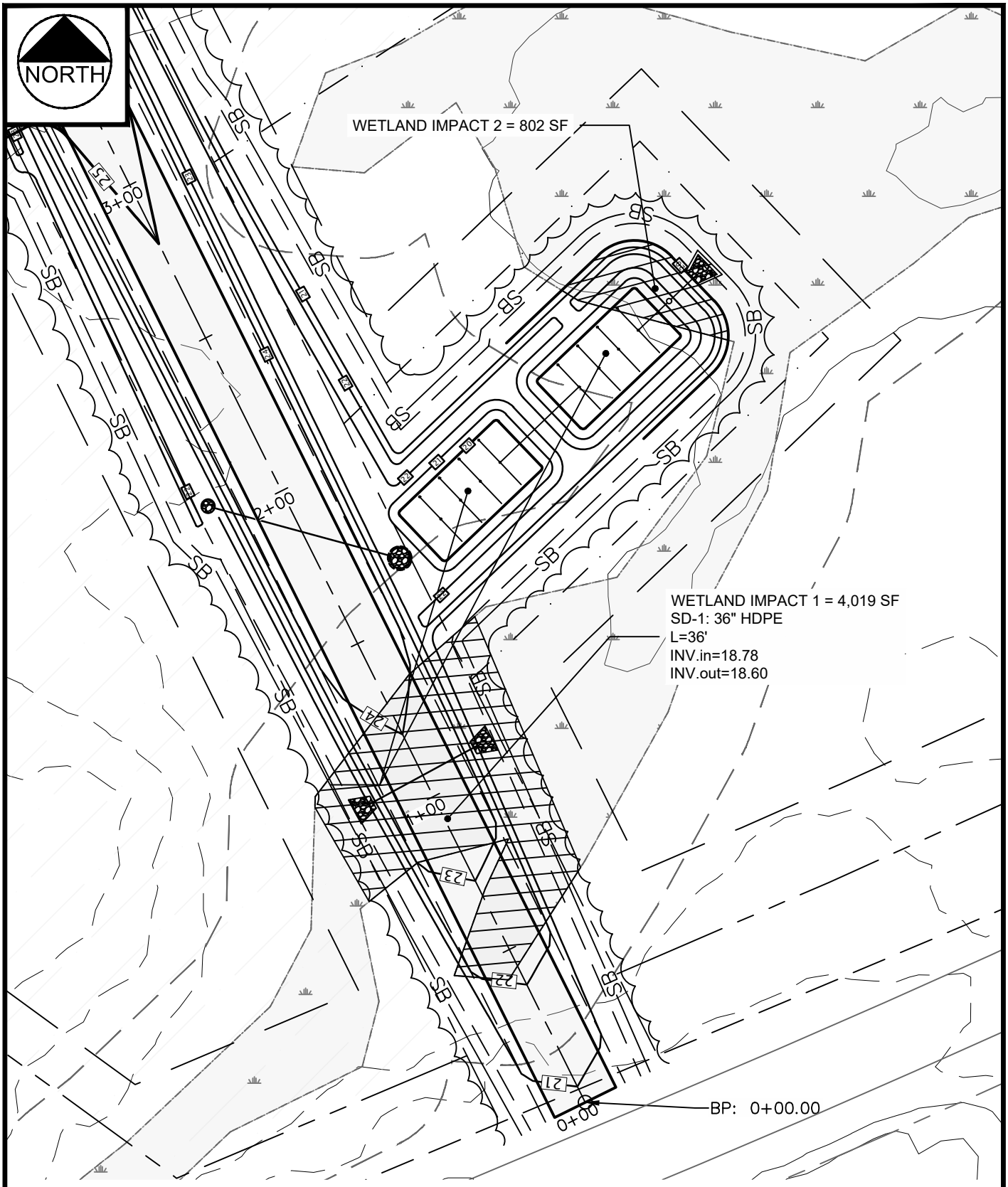
TAX MAP 15 BLOCK 1 LOT 1
KENNEBUNKPORT, ME 04046

WETLAND IMPACTS

Atlantic Resource Consultants
Engineering Strategies and Solutions
541 US Route One | Suite 21 | Freeport, ME 04032

DRAWN: ZWG	DATE: 9/14/2022	FIGURE 1
DESIGNED: JAV	SCALE: 1"=200'	
CHECKED: JAV	JOB NO. 20-007	
FILE NAME: THE GLEN AT GOOSE ROCKS		

S:\21-059 Trudo Kennebunkport Subdivision\Drawings\21-059 Base MDEP Submission.dwg zach 9/28/2022 1:31 PM



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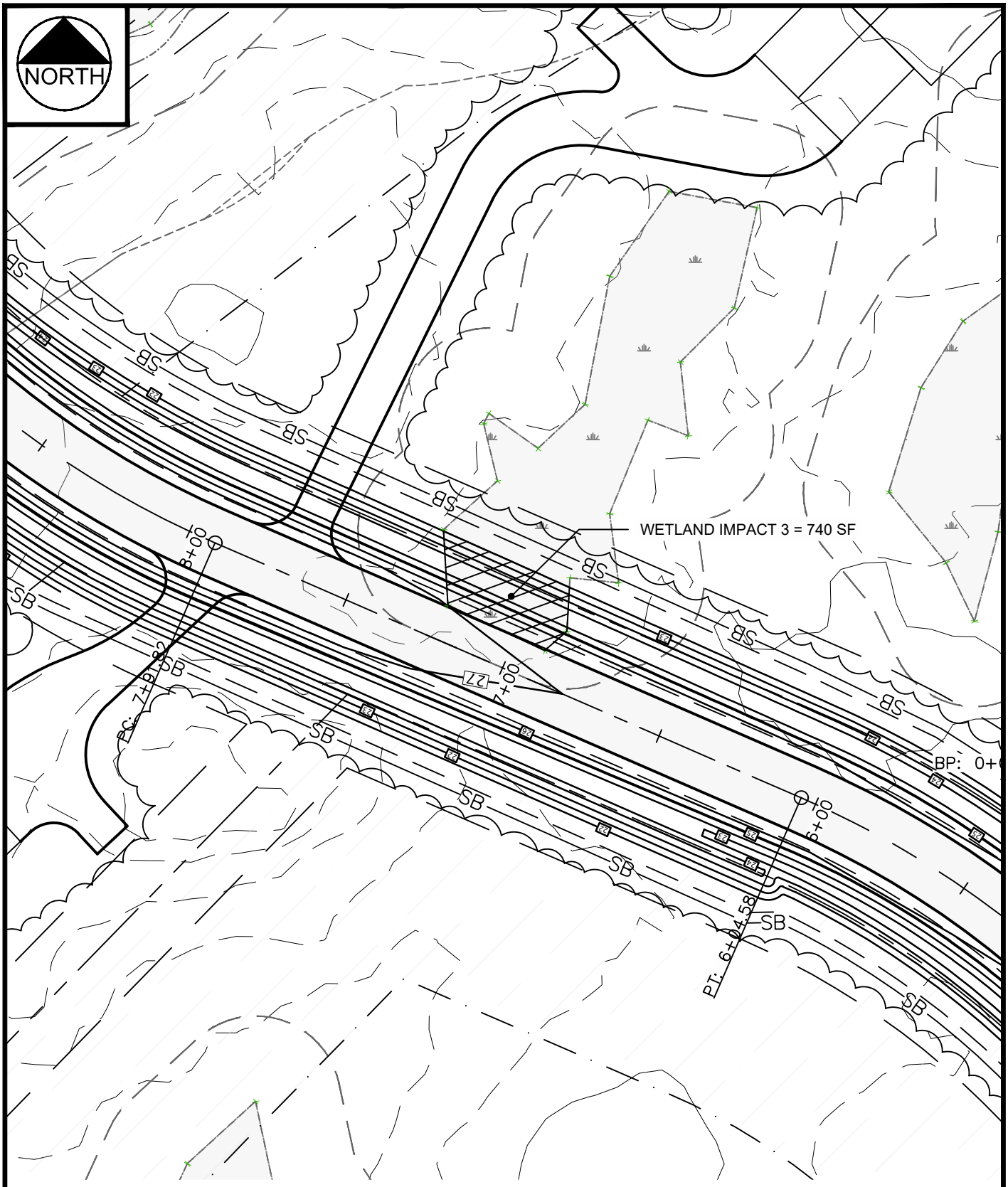
WETLAND IMPACTS

Atlantic Resource Consultants
Engineering Strategies and Solutions
541 US Route One | Suite 21 | Freeport, ME 04032

DRAWN: ZWG	DATE: 9/14/2022	FIGURE
DESIGNED: JAV	SCALE: 1"=40'	2
CHECKED: JAV	JOB NO. 20-007	
FILE NAME: THE GLEN AT GOOSE ROCKS		



REFERENCE: THE GLEN AT GOOSE ROCKS

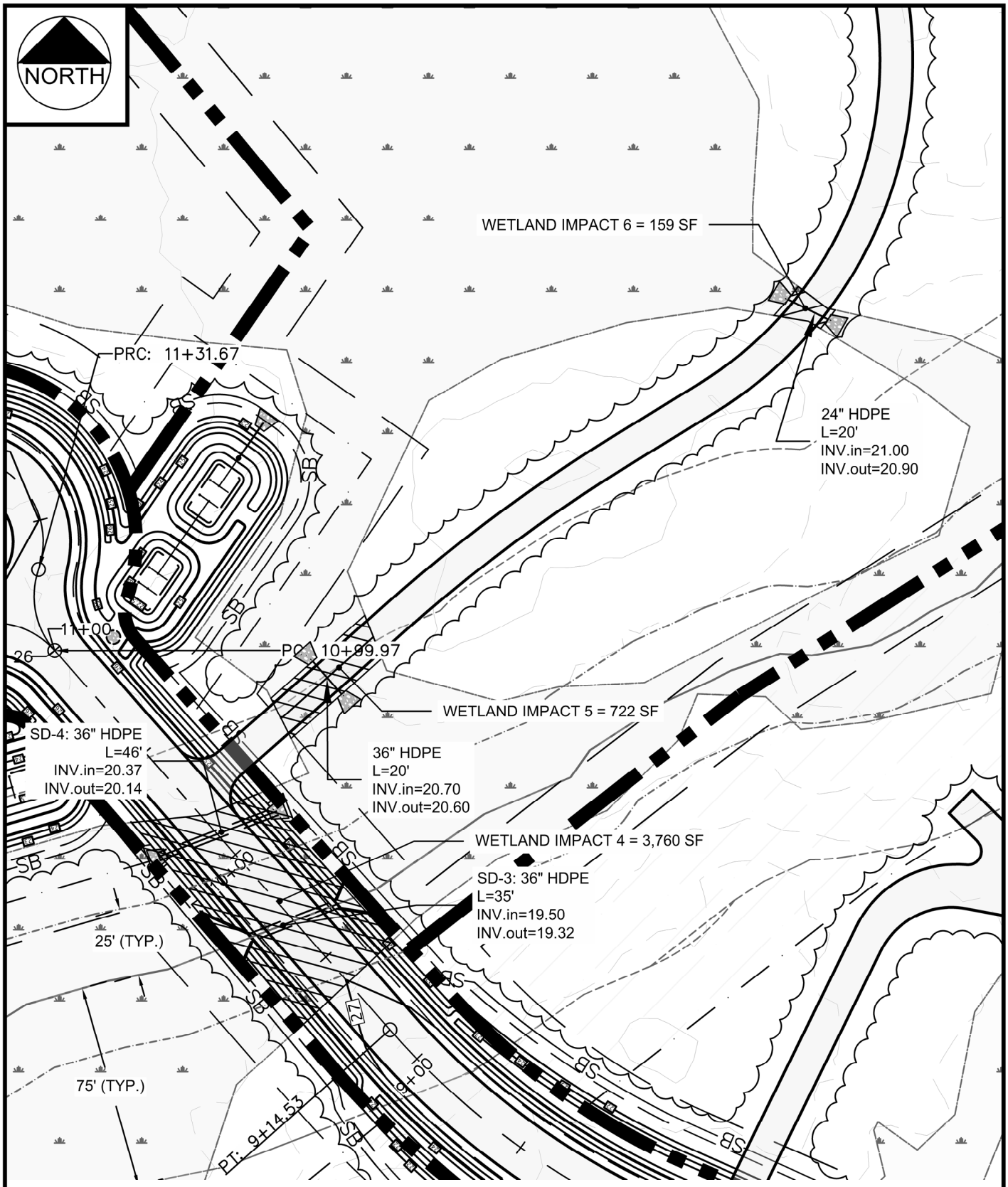
TAX MAP 15 BLOCK 1 LOT 1
KENNEBUNKPORT, ME 04046

WETLAND IMPACTS

Atlantic Resource Consultants
Engineering Strategies and Solutions
541 US Route One | Suite 21 | Freeport, ME 04032

DRAWN:	ZWG	DATE:	9/14/2022
DESIGNED:	JAV	SCALE:	1"=40'
CHECKED:	JAV	JOB NO.	20-007
FILE NAME:	THE GLEN AT GOOSE ROCKS		

FIGURE
3



REFERENCE: THE GLEN AT GOOSE ROCKS

TAX MAP 15 BLOCK 1 LOT 1
KENNEBUNKPORT, ME 04046

WETLAND IMPACTS

Atlantic Resource Consultants
Engineering Strategies and Solutions
541 US Route One | Suite 21 | Freeport, ME 04032

DRAWN:	ZWG	DATE:	9/14/2022
DESIGNED:	JAV	SCALE:	1"=50'
CHECKED:	JAV	JOB NO.	20-007
FILE NAME:	THE GLEN AT GOOSE ROCKS		

FIGURE
4

EXHIBIT 14
MHPC CORRESPONDANCE

Correspondence with the Maine Historic Preservation Commission (MHPC) and Tribal Historic Preservation Officers from the five Maine Indian tribes are included in this section.

Atlantic Resource Consultants
Engineering Strategies and Solutions

541 US Route One, Suite 21
Freeport, Maine 04032
Tel: 207.869.9050
atlanticresourceconsultants@gmail.com

October 4, 2021

Mr. Kirk Mohney
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, Maine 04333

RE: Trudo Subdivision, Kennebunkport Maine

Dear Mr. Mohney,

On behalf of our client K.J. Trudo Properties, LLC, we are contacting you regarding the referenced project. The proposed development will include the construction of a new roadway and driveways to serve 9 Lots on a parcel of land on Goose Rocks Road in the Town of Kennebunkport, Maine. We have enclosed a site location map and preliminary site plan showing the nature and extents of the proposed work.

We would be most grateful if you could review the attached information and contact our office with any information you have on the presence of any historically significant areas in the project area.

If you have any questions regarding this letter, please do not hesitate to contact us.

Regards,

Atlantic Resource Consultants
Lucien Langlois
Environmental Specialist

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

11/3/21
Date

Cc: File Kennebunkport subdivision/Correspondence

ATTACHMENTS:
Sketch Plan
Locus Map

Tribal Historic Preservation Office
Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-214-4051

August 26, 2022

Kayla Gray
Environmental Specialist
Atlantic Resource Consultants, LLC
541 US Route One, Suite 21
Freeport, Maine 04032

Re: Kennebunkport - 20 Appleblossom Lane Development

Dear Kayla;

The Passamaquoddy THPO has reviewed the following applications regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The Projects listed above will not have any impact on cultural and historical concerns of the Passamaquoddy Tribe. Should buried artifacts, human remains, cultural sites or ground features be unexpectedly unearthed during ground disturbing activities, all construction should immediately cease and the resources be examined by a professional archaeologist. Additionally, all appropriate authorities-including all pertinent tribal entities should be notified.

Sincerely;

Donald Soctomah
Soctomah@gmail.com
THPO
Passamaquoddy Tribe

EXHIBIT 15
ADDITIONAL PERMITS

The proposed project requires permitting from the Maine Department of Environmental Protection (MDEP) under the Natural Resources Protection Act (NRPA) and the Stormwater Management Law. A Tier 1 application for impacts to forested freshwater wetlands, a Permit by Rule Notification Form for two stream crossings and adjacency within 75 feet, and a full stormwater application have been submitted to the MDEP for review. The project also requires permitting from the U.S. Army Corps of Engineers for fill proposed within navigable waters.

Construction on the proposed project will not commence until all local, state, and federal approvals are obtained. At this time, state and federal applications are under review.

EXHIBIT 16
BOUNDARY SURVEY

A copy of the boundary survey created by JPS Surveying and Engineering is included as part of the plan set in Exhibit 17.

EXHIBIT 17
SITE PLANS

A copy of the site plan set with boundary survey and plat plan is included in this section.

THE GLEN AT GOOSE ROCKS

STORMWATER MANAGEMENT REPORT

Prepared for: K.J. Trudo Properties, LLC
20 Apple Blossom Lane,
Kennebunkport, ME 04046

Prepared by:

Atlantic Resource Consultants
Engineering Strategies and Solutions

September 2022

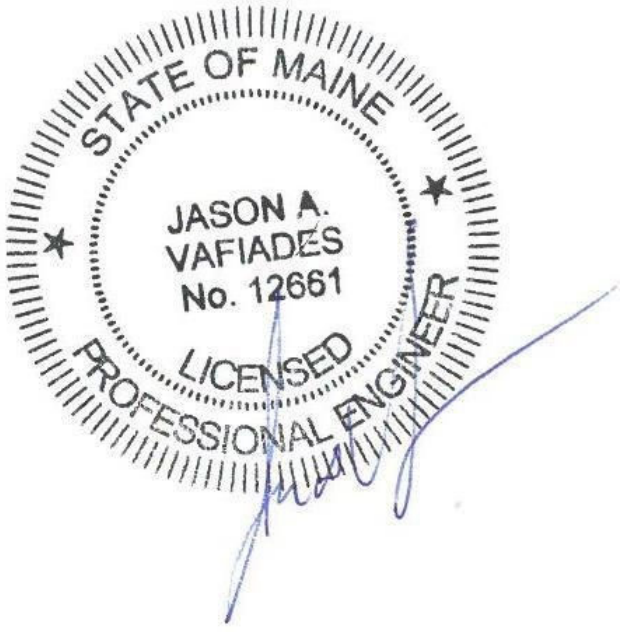


TABLE OF CONTENTS

INTRODUCTION

The applicant proposes to create a 9-lot residential subdivision with the associated access road, electrical utilities and stormwater management. The project site is located on Goose Rocks Road, between Arundel Road and Whitten Hill Road. The subject parcel is identified as Tax Map 15 (b), Block 1, Lot 1 by the Town of Kennebunkport Assessor's Maps. As shown on the Town of Kennebunkport Zoning Map, the subject parcel is in both the Farm and Forest Zone and Shoreland Zone. As shown by FEMA Flood Plain Maps, an area of the subject parcel contains a Zone B flood-prone area.

The proposed development includes a 1,326-foot long roadway and a 746-foot long roadway. Both roadways will be paved with 20-foot wide travel ways and 3-foot wide shoulders, as well as ditches on both sides.

The residences will be served with individual wells and individual septic tanks. There will be one wetland crossing and two stream crossings. The primary stormwater infrastructure will consist of five gravel wetlands.

The total estimated wetland impacts will be approximately 10,202 sf. The total new impervious area will be approximately 2.96 ac and the total new developed area will be approximately 6.10 ac.

EXISTING CONDITIONS

The subject parcel is recorded to be 43.54 acres. The project site is currently undeveloped and wooded. The topography of most of the site (south-southeasterly area) is flat with some moderately sloped hills (0-8% slopes). The northwesterly area of the site is more sloped (8-12% slopes). The site is divided into two subcatchments. The larger subcatchment drains in a southeasterly direction, with a stream named Smith Brook running through the site. Stormwater runoff exits the site through a cross culvert under Goose Rocks Road, traveling southeast. Site drainage is tributary to the Batson River to the southeast. The smaller subcatchment, a southwesterly area of the site, drains off-site through the southwest property boundary.

A Class-A High-Intensity Soil Survey (HISS) was completed by Longview Partners (LVP). The predominant soil types are classified primarily as hydrologic soil groups D and C/D.

STORMWATER MANAGEMENT

New stormwater Best Management Practices (BMP's) have been designed to provide detention and water quality treatment for runoff from new impervious areas associated with new development before allowing it to drain in a controlled manner to the existing receiving waters.

The new stormwater management system will maintain the existing drainage patterns at the site, while protecting water quality and ensuring that there is no increase in peak runoff from the property during design storm conditions. This stormwater management analysis has been prepared in accordance with the Maine Department of Environmental Protection (MDEP) Chapter 500 Regulations for Basic, General and Flooding Standards to ensure that the planned development will not result in a degradation of water quality or any other

significant impacts to locations downstream of the development site as a result of stormwater runoff. Stormwater BMP designations and details can be found in the accompanying project plan set.

METHODOLOGY AND MODELING

Runoff and routing calculations have been performed for the watershed areas affected by the proposed development under pre-development and post-development conditions scenarios. Time of concentration and runoff curve number calculations have been performed using the method described in Natural Resource Conservation Service (NRCS) Technical Release 55 (TR-55) – Urban Hydrology for Small Watersheds. The TR-20 based HydroCAD modeling software has been utilized to perform the more complex runoff and routing calculations, some of which are beyond the scope of the TR-55 method. Time of concentration calculations have been amended where the value given by the TR-55 method is less than six minutes (0.1hr). In these cases, a standard minimum value of six minutes has been used to keep this parameter within the acceptable working range of the model and prevent computational errors.

Design rainfall events have been modeled using the SCS Type III Hydrograph for 24-hour duration storms. The rainfall depth for each return period is taken from Maine Department of Environmental Protection Chapter 500 Stormwater Management, Appendix H (York County). The rainfall depth values for standard design storm frequencies are shown in the table below.

TABLE 1 - 24-Hr Rainfall Depths for York County at Design Storm Frequencies				
Maine Chapter 500: Stormwater Management, Appendix H				
Frequency	2-Year	10-Year	25-Year	100-Year
Rainfall Depth	3.3 in	4.9 in	6.2 in	8.7 in

TABLE 2 – SOIL TYPES (LVP)	
Soil Type	**Hydrologic Soil Group**
Biddeford	D
Lyman-Tunbridge Complex	C/D
Lyman-Tunbridge-Rock Outcrop Complex	C/D
Naskeag	D
Scantic	D

PROPOSED BMPS

Stormwater runoff from the new developed area at the project site will be captured and treated in a series of new Best Management Practices (BMPs). This includes vegetated roadside swales, two 30" HDPE cross culverts, one 60" HDPE cross-culvert, riprap inlets and outlets and five gravel wetlands. The gravel wetlands are shallow grassed depressions filled with a filtering soil media and planted with native wetland plants and grasses. Although primarily designed for quality treatment, the gravel wetlands also provide detention storage, providing a reduction in the peak runoff rate to downstream receiving areas. The slow discharge through the underdrain system provides extended base flows and protects downstream receiving waters from erosive peak flows after storm events. The overflow spillway allows excess flow to pass through the system without causing damage during severe storm events.

NRCS Code 378, the Stormwater Management for Maine: Best Management Practices (MEDEP, 2016) and the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers (October 2016) have been used as guidelines in the design of the stormwater system.

CONDITIONS ANALYSIS

Pre-Development Conditions

In the pre-development condition, the project site is divided into two subcatchments and a contributing off-site subcatchment. The largest subcatchment (1S) contains the southeasterly area of the site and has a stream running through it which exits the site through a culvert under Goose Rocks Road. The smaller subcatchment (2S) drains through the southwestern property boundary.

A summary of the subcatchment areas is given in the table below. Full details of pre-development subcatchment areas, cover conditions and time of concentration flow paths are described in detail in the supporting HydroCAD documentation included in Attachment C of this report. A Pre-Development Conditions Watershed Plan is included in Attachment A of this report.

PRE-DEVELOPMENT WATERSHED CHARACTERISTICS			
SUBCATCHMENT	AREA (ac)	CN	Tc (mins)
1S	40.22	75	102.0
2S	2.38	75	39.20
OS	61.68	71	109.70
TOTAL AREA	**104.28**		

Post-Development Conditions

In the post-development condition, the site is divided into seven subcatchment areas. The site is divided into similar subcatchment areas that have been adjusted to reflect the proposed improvements. The most notable difference is that subcatchment 1S becomes divided into six subcatchments (10S - 15S) such that it includes subcatchments for each of the gravel wetland treatment areas. The overall drainage of the site is mostly unchanged, with two similar Points of Analysis (POA's) where stormwater runoff exits the site. A full listing of the post-development areas in the overall model is shown in the following table. Full details of the post-development subcatchment areas, cover conditions and time of concentration flow paths are described in detail in the supporting HydroCAD documentation included in Attachment C of this report. A Post-Development Conditions Watershed Plan is included in Attachment A of this report.

POST-DEVELOPMENT WATERSHED CHARACTERISTICS			
SUBCATCHMENT	AREA (ac)	CN	Tc (mins)
10S	38.36	74	69.60
11S	0.92	87	6.0
12S	0.15	85	6.0
13S	0.19	85	6.0
14S	0.43	87	6.0
15S	0.17	86	6.0
20S	2.38	75	39.20
OS	61.68	71	109.70
TOTAL AREA	**104.28**		

STORMWATER QUANTITY ANALYSIS

The table below summarizes the peak runoff values for pre-development and post-development conditions during each of the analyzed design storm events. Peak flows for each POA have either been maintained or reduced in the post-development condition.

PEAK RATES (CFS)						
POA	**2-Year**		**10-Year**		**25-Year**	
	Pre	Post	Pre	Post	Pre	Post
POA-1	17.28	16.49	48.77	46.39	70.25	68.54
POA-2	1.55	1.55	3.26	3.26	4.78	4.78

STORMWATER QUALITY ANALYSIS

The project has been designed in accordance with Stormwater Law (Chapter 500) to meet "General Standards", which requires water quality treatment for 75% of new impervious areas and 50% of new developed areas for any linear portion of a project.

The project will utilize five new gravel wetlands to treat the linear potion of the project and forested buffers to treat the nonlinear portion of the project. The BMPs have been designed in accordance with the latest version of the Maine Department of Environmental Protection BMPs Technical Design Manual, to achieve the following stormwater quality treatment percentages.

STORMWATER QUALITY CALCULATIONS: LINEAR TREATMENT										
THE GLEN AT GOOSE ROCKS - GOOSE ROCKS ROAD, KENNEBUNKPORT, MAINE										
	IMPERVIOUS TREATMENT TARGET: 75%					DEVELOPED AREA TREATMENT TARGET: 50%				
SUBCATCHMENT	DESCRIPTION	AREA (SF)	TREATED (SF)	TREATED BY	TREATED AREA (%)	DESCRIPTION	AREA (SF)	TREATED	TREATED BY	TREATED AREA
RA-1	UNTREATED ROW*	8908	0	NONE	0%	UNTREATED ROW	22440	0		0%
RA-2	TREATED ROW	18790	18790	GW-1	100%	TREATED ROW	40002	40002	GW-1	100%
RA-3	TREATED ROW	2681	2681	GW-2	100%	TREATED ROW	6654	6654	GW-2	100%
RA-4	TREATED ROW	3582	3582	GW-3	100%	TREATED ROW	8366	8366	GW-3	100%
RA-5	TREATED ROW	8985	8985	GW-4	100%	TREATED ROW	18542	18542	GW-4	100%
RA-6	UNTREATED ROW	3349	0	NONE	0%	UNTREATED ROW	7551	0	NONE	0%
RA-7	TREATED ROW	3359	3359	GW-5	100%	TREATED ROW	7430	7430	GW-5	100%
Totals		**49654**	**37397**		**75.3%**		**110985**	**80994**		**73%**

* 2698 SF OF IMPERVIOUS REMOVED FROM CALCULATION IN WETLAND CROSSINGS WITH PROPERLY SIZED WETLAND CONNECTION CULVERTS.

STORMWATER QUALITY CALCULATIONS: NON-LINEAR TREATMENT										
THE GLEN AT GOOSE ROCKS - GOOSE ROCKS ROAD, KENNEBUNKPORT, MAINE										
	IMPERVIOUS TREATMENT TARGET: 95%					DEVELOPED AREA TREATMENT TARGET: 80%				
SUBCATCHMENT	DESCRIPTION	AREA (SF)	TREATED (SF)	TREATED BY	TREATED AREA (%)	DESCRIPTION	AREA (SF)	TREATED	TREATED BY	TREATED AREA
LOT 1	HOUSE AND DRIVE	7000	7000	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	17000	17000	LOT BUFFER*	100%
LOT 2	HOUSE AND DRIVE	8500	7800	LOT BUFFER*	92%	HOUSE, DRIVE, LAWN	20000	16000	LOT BUFFER*	80%
LOT 3	HOUSE AND DRIVE	8500	7800	LOT BUFFER*	92%	HOUSE, DRIVE, LAWN	15000	15000	LOT BUFFER*	100%
LOT 4	HOUSE AND DRIVE	8000	8000	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	11000	11000	LOT BUFFER*	100%
LOT 5	HOUSE AND DRIVE	7500	7500	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	13000	13000	LOT BUFFER*	100%
LOT 6	HOUSE AND DRIVE	20000	18000	LOT BUFFER*	90%	HOUSE, DRIVE, LAWN	40000	35000	LOT BUFFER*	88%
LOT 7	HOUSE AND DRIVE	7000	7000	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	15000	15000	LOT BUFFER*	100%
LOT 8	HOUSE AND DRIVE	6000	6000	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	12000	12000	LOT BUFFER*	100%
LOT 9	HOUSE AND DRIVE	7000	7000	LOT BUFFER*	100%	HOUSE, DRIVE, LAWN	12000	12000	LOT BUFFER*	100%
Totals		**79500**	**76100**		**95.7%**		**155000**	**146000**		**94%**

SOIL EROSION AND SEDIMENT CONTROL

A comprehensive Soil Erosion and Sediment Control (SESC) narrative has been prepared that includes Best Management Practices (BMPs) associated with the proposed construction activities. The location of SESC BMPs is shown on the accompanying plans. These are further described on the details and notes sheets in the accompanying plan set.

The Erosion and Sediment Control Report outlines the required construction measures and techniques that will reduce potential degradation of the water quality at downstream locations. Temporary erosion control measures will be incorporated during construction, and long-term surface stabilization practices have been

designed as part of the site development, thus minimizing the potential for erosion and sediment transport. These measures include the constructed BMPs for filtration of runoff from smaller storm events, riprap, permanent seeding and other vegetative stabilization measures. Detailed information on the specific erosion and sedimentation control practices that are to be used on the site are provided on the following plan sheet, which will be included as part of the construction documents for the project.

STORMWATER MAINTENANCE PLAN

The effectiveness of water quality management provisions and other components of the stormwater management system are dependent on their design, upkeep, and maintenance to assure they meet their intended function over an extended period of time. It is critical that the stormwater management facilities are regularly inspected and that maintenance is performed on an as-needed basis.

A Stormwater Management Inspection and Maintenance Manual has been prepared specifically for the project and is included in Attachment D of this section.

CONCLUSIONS

The stormwater management system designed for this project will mitigate impacts of development on stormwater runoff peak discharge rates and provide treatment of non-point source pollutants in the runoff in accordance with Maine's Stormwater Management Act and Regulations. Based on the analysis described in this report, it is expected that runoff from the proposed development will not cause adverse impacts to downstream properties.

Limitations

This analysis is based on the information available to the engineer on site conditions and has been conducted using standard industry software designed to analyze *comparative* changes in land cover conditions. The accuracy of the runoff and routing calculations is limited by the methodology used in the software and the results should be viewed as suitable for comparative studies only.

References

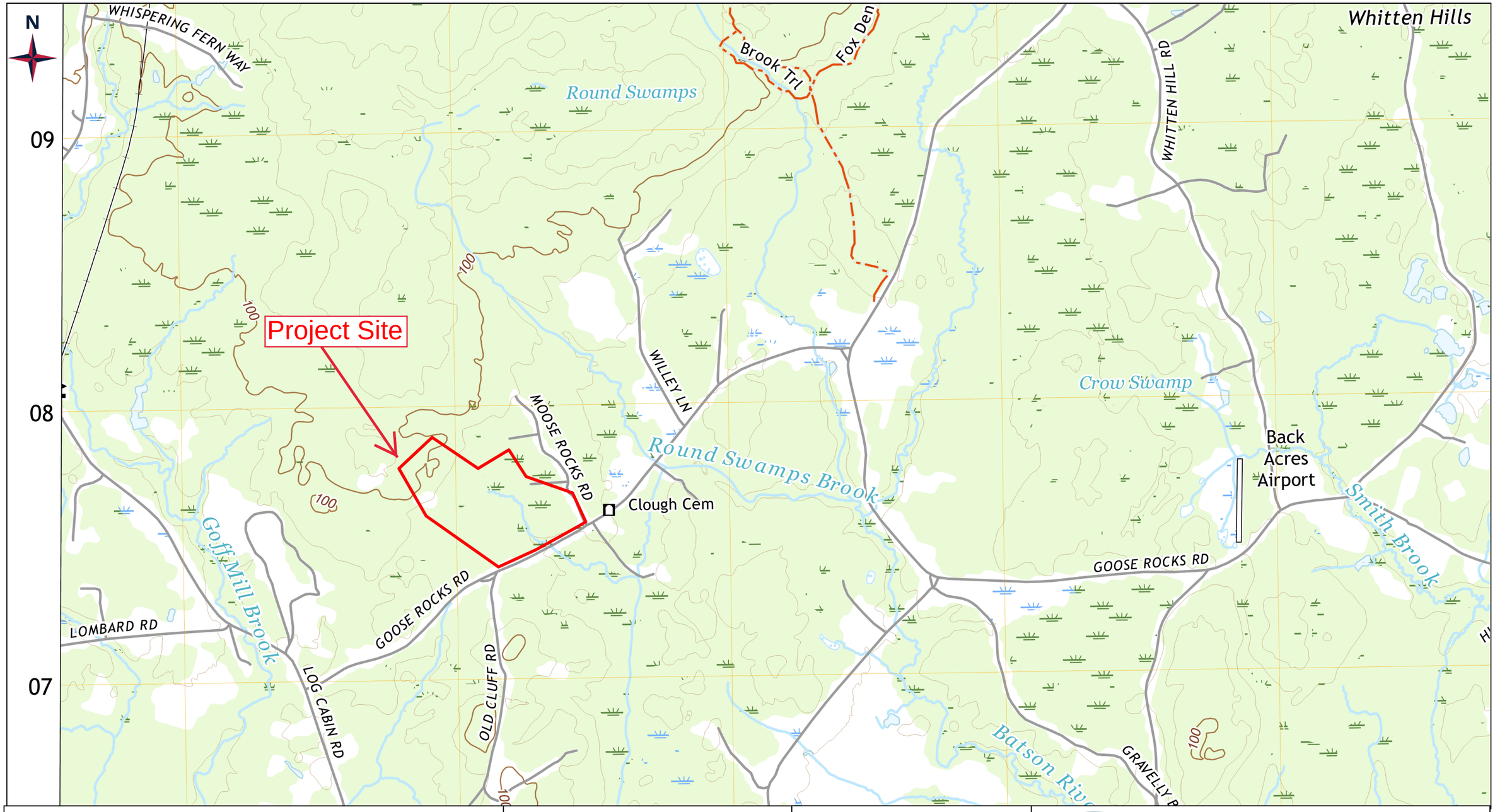
1. NRCS Web Soil Survey
2. NRCS TR-378
3. Stormwater Management for Maine BMPs Design Manual
4. Maine Erosion and Sediment Control Best Management Practices (BMPs): Manual for Designers and Engineers (October 2016)

FIGURES AND ATTACHMENTS

I. Figure 1 USGS Location Map
II. Figure 2 FEMA Flood Map
III. Attachment A Pre-Development & Post-Development Watershed Maps

IV. Attachment B Water Quality Volume Calculations
V. Attachment C TR-20 Computations (HydroCAD)
i. Pre-Development Model
ii. Post-Development Model
VI. Attachment D Stormwater Operations and Maintenance Manual
VII. Attachment E Class-A High Intensity Soil Survey

FIGURES



0 ft 1000 ft 2000 ft 3000 ft 4000 ft 5000 ft

Created By: Lucien Langlois
Date Created: 2/18/2022
Source: U.S.G.S.
Projection: UTM 19N (NAD83)
Project # 21-059

USGS Location Map

K.J. Trudo Properties, LLC
20 Apple Blossom Lane
Kennebunkport, ME 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet**
Base Flood Elevation in Feet Where Uniform Within Zone**
Elevation Reference Mark
Zone D Boundary
River Mile

ZONE B
ZONE A1
ZONE A5
ZONE B
513
(EL 987)
RM7X
M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal base flood elevations shown on this map include the effects of wave action.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

INITIAL IDENTIFICATION:
DECEMBER 6, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS:
DECEMBER 3, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
APRIL 18, 1983
FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF KENNEBUNKPORT, MAINE
YORK COUNTY

PANEL 1 OF 8
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230170 0001 B

EFFECTIVE DATE:
APRIL 18, 1983

Federal Emergency Management Agency

ATTACHMENT A – WATERSHED MAPS

NORTH

SOILS LEGEND	
SOIL NAME	HYDROLOGIC SOIL GROUP
Biddeford 0-3 % slopes	D
Lyman-Tunbridge Complex, 3-8% slopes	C/D
Lyman-Tunbridge-Rock Outcrop Complex, 3-20% slopes	C/D
Lyman-Tunbridge Complex, 3-8% slopes	C/D
Naskeag, 0-8% slopes	C
Scantic, 0-3% slopes	D

NOTE: ALL WETLAND AREA SOIL TYPES ARE CONSIDERED TO BE HYDROLOGIC SOIL GROUP D

DRAINAGE LEGEND

- 4S — SUBCATCHMENT LABEL
- 3R — REACH LABEL
- REACH PATH
- TIME OF CONCENTRATION
- SUBCATCHMENT DIVIDE
- SOILS BOUNDARY
- POA 1 — POINT OF ANALYSIS

LEGEND

EXISTING	DESCRIPTION
——— — — ———	BOUNDARY LINE/R.O.W.
	WETLANDS
- - - - - - - - - - - -	EDGE WETLAND
==========	GRAVEL ROAD
--122--	--120-- CONTOURS

SHEET FLOW L=60' S=0.008

S.C. FLOW L=1639' S=0.010

SHEET FLOW L=60' S=0.008

S.C. FLOW L=421' S=0.005

N49° 48'14"W 200.41'

OS

1S

2S

OSR

S.C. FLOW L=410' S=0.006

S.C. FLOW L=130' S=0.038

S.C. FLOW L=474' S=0.006

CHANNEL L=1277' S=0.005

S.F. L=60' S=0.005

S.C. FLOW L=242' S=0.003

POA 1

POA 2

PARCEL 16-1-5A THOMPSON, DAVID M.& LISA C 6771/64

SHORTHILL, DAVID W & PATRICI PARCEL 18-1-5 7649/214

MURPHY, PAUL PARCEL 15D-1 1460/235

MURPHY, PAUL PARCEL 15-1 1455/235

LANG, EILEEN PARCEL 18-1-1B 10087/173

MILLER, BARRY M & STACY PARCEL 16-1-1C 11177/5001

GOOD, TIMOTHY P & WENDY PARCEL 18-1-1A 10224/63

MDEP JURISDICTIONAL 75' STREAM SETBACK & TOWN OF KENNEBUNKPORT SHORELAND ZONE (TYP.)

MDEP JURISDICTIONAL POTENTIAL WETLANDS OF SPECIAL SIGNIFICANCE 75' SETBACK WITH NO DISTURBANCE

MDEP JURISDICTIONAL 25' WETLAND SETBACK (TYP.)

STREAM (TYP.)

BIDDEFORD

NASKEAG

SCANTIC

LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION

SCALE

0 — 75 — 150 — 300

SCALE in FEET
1"=150'

REV	DATE	DESCRIPTION
A	9-10-2022	ISSUED TO MDEP FOR STORMWATER PERMIT

REVISIONS

STATE OF MAINE — JASON A. VAFIADES No. 12661 — LICENSED PROFESSIONAL ENGINEER — 9/10/2022

PROJECT: GOOSE ROCKS SUBDIVISION
KENNEBUNKPORT, ME 04046

PLAN: PRE-DEVELOPMENT DRAINAGE PLAN

CLIENT:

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN:	D-100	DATE:	SEPTEMBER 2022
DESIGNED:	JAV	SCALE:	1"=150'
CHECKED:	APP	JOB NO.	21-059
FILE NAME:			
SHEET:			

S:\21-059 Trudo Kennebunkport Subdivision\Drawings\XREF\Sheet Date.dwg

NORTH

SOILS LEGEND	
SOIL NAME	HYDROLOGIC SOIL GROUP
Biddeford 0-3 % slopes	D
Lyman-Tunbridge Complex, 3-8% slopes	C/D
Lyman-Tunbridge-Rock Outcrop Complex, 3-20% slopes	C/D
Lyman-Tunbridge Complex, 3-8% slopes	C/D
Naskeag, 0-8% slopes	C
Scantic, 0-3% slopes	D

NOTE: ALL WETLAND AREA SOIL TYPES ARE CONSIDERED TO BE HYDROLOGIC SOIL GROUP D

DRAINAGE LEGEND

- 4S — SUBCATCHMENT LABEL
- 4P — POND LABEL
- 3R — REACH LABEL
- REACH PATH
- TIME OF CONCENTRATION
- SUBCATCHMENT DIVIDE
- SOILS BOUNDARY
- POA 1 — POINT OF ANALYSIS

LEGEND

EXISTING	DESCRIPTION	PROPOSED
— — — —	BOUNDARY LINE/R.O.W.	— — — —
ılılı	WETLANDS	
- - - - - - - -	EDGE WETLAND	
	EDGE PAVEMENT	
	GRAVEL ROAD	— — — —
--122-- --120--	CONTOURS	—122— —120—
	CULVERT	
	RIPRAP	

SHEET FLOW L=60' S=0.008

S.C. FLOW L=1639' S=0.010

N49° 48'14"W 200.41'

SHEET FLOW L=60' S=0.008

S.C. FLOW L=421' S=0.005

S.C. FLOW L=410' S=0.006

S.C. FLOW L=130' S=0.038

S.C. FLOW L=474' S=0.006

S.C. FLOW L=242' S=0.003

S.F. L=60' S=0.005

CHANNEL L=450 S=0.002

P.F. L=40' S=0.005

CHANNEL FLOW L=783' S=0.005

OSR

13S 12S 14S 15S 20S 11S

GW1 GW2 GW3 GW4 GW5

1R 2R 3R 4R 5R 6R

POA 1

POA 2

MDEP JURISDICTIONAL 75' STREAM SETBACK & TOWN OF KENNEBUNKPORT SHORELAND ZONE (TYP.)

MDEP JURISDICTIONAL POTENTIAL WETLAND OF SPECIAL SIGNIFICANCE 75' SETBACK WITH NO DISTURBANCE

MDEP JURISDICTIONAL 75' SETBACK (TYP.)

25' (TYP.)

STREAM (TYP.)

PARCEL 16-1-5A THOMPSON, DAVID W.& LISA C 6771/64

MURPHY, PAUL PARCEL 15S-1 1465/235

SHORTHILL, DAVID W & PATRICIA PARCEL 16-1-5 7649/214

LANG, EILEEN PARCEL 16S-1B 9087/173

MILLER, BARRY M & STACY PARCEL 16-1/C 11138/61

GOOD, TIMOTHY H & WENDY PARCEL 16-1-NA 10234/63

SCALE

0 75 150 300

SCALE in FEET
1"=150'

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
A	9-10-2022	ISSUED TO MDEP FOR STORMWATER PERMIT

REVISIONS

STATE OF MAINE — JASON A. VAFIADES No. 12661 — LICENSED PROFESSIONAL ENGINEER — 9/10/2022

PROJECT: THE GLEN AT GOOSE ROCKS

PLAN: POST-DEVELOPMENT TREATMENT PLAN

CLIENT: KJ TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN:	ZWG	DATE:	SEPTEMBER 2022
DESIGNED:	JAV	SCALE:	1"=150'
CHECKED:	APP	JOB NO.	21-059
FILE NAME:			
SHEET:			

S:\21-059 Trudo Kennebunkport Subdivision\Drawings\XREF\Sheet Date.dwg

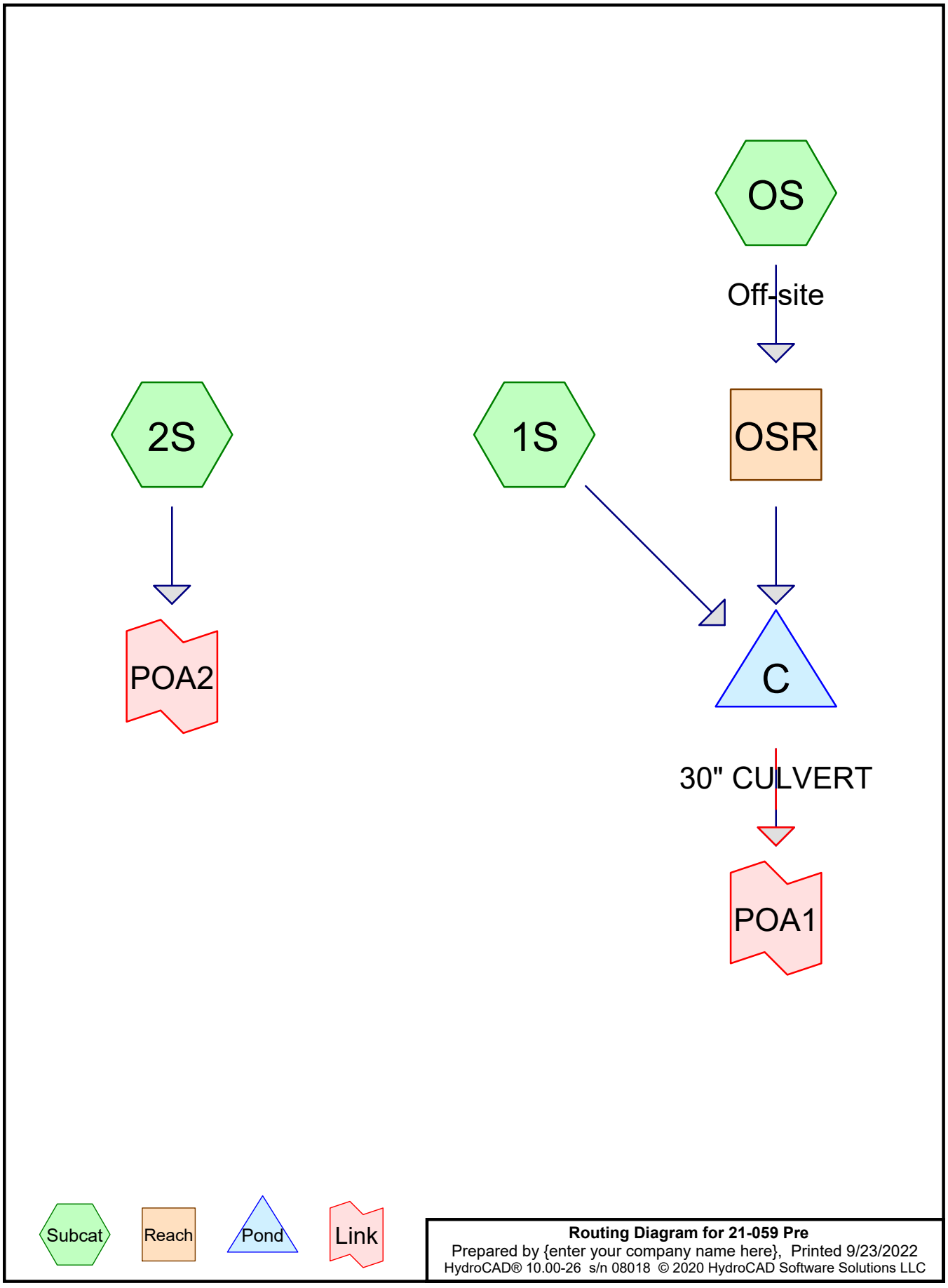
ATTACHMENT B – WATER QUALITY VOLUME CALCULATIONS

Subcatchment Area	New Impervious Area	New Landscaped Area	New Developed Area	Water Quality Volume Required	Water Quality Volume Provided	BMP	Min. Area Reqd	Area Provd
TREATED AREAS								
11S	18790	21212	40002	2273	5490	Gravel Wetland 1	1364	1600
12S	2681	3973	6654	356	1630	Gravel Wetland 2	214	400
13S	3582	4784	8366	458	1630	Gravel Wetland 3	275	400
14S	8985	9557	18542	1067	3307	Gravel Wetland 4	640	900
15S	3359	4071	7430	416	1739	Gravel Wetland 5	249	300

1. WQV is calculated as 1" over the contributing impervious area plus 0.4" over the contributing landscaped area
2. Minimum area requirements are calculated as and 5% contributing impervious area plus 2% contributing landscaped area for gravel wetlands

ATTACHMENT C – HYDROCAD RUNOFF AND ROUTING CALCULATIONS

ATTACHMENT C (I) – PRE-DEVELOPMENT MODEL



Routing Diagram for 21-059 Pre
Prepared by {enter your company name here}, Printed 9/23/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.471	96	Gravel Roads (1S)
15.600	79	Woods, Fair, HSG D (OS)
57.927	70	Woods, Good, HSG C (1S, 2S, OS)
30.281	77	Woods, Good, HSG D (1S, 2S, OS)

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Runoff Area=1,751,955 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=2,351' Tc=102.0 min CN=75 Runoff=14.48 cfs 3.895 af

Subcatchment 2S: Runoff Area=103,566 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=302' Tc=39.2 min CN=75 Runoff=1.55 cfs 0.230 af

Subcatchment OS: Off-site Runoff Area=2,686,862 sf 0.00% Impervious Runoff Depth=0.99"
Flow Length=2,120' Tc=109.7 min CN=72 Runoff=17.52 cfs 5.100 af

Reach OSR: Avg. Flow Depth=0.81' Max Vel=0.43 fps Inflow=17.52 cfs 5.100 af
n=0.100 L=1,664.0' S=0.0018 '/' Capacity=19.25 cfs Outflow=12.48 cfs 5.092 af

Pond C: 30" CULVERT Peak Elev=17.43' Storage=8,659 cf Inflow=17.76 cfs 8.988 af
Primary=17.28 cfs 8.987 af Secondary=0.00 cfs 0.000 af Outflow=17.28 cfs 8.987 af

Link POA1: Inflow=17.28 cfs 8.987 af
Primary=17.28 cfs 8.987 af

Link POA2: Inflow=1.55 cfs 0.230 af
Primary=1.55 cfs 0.230 af

Summary for Subcatchment 1S:

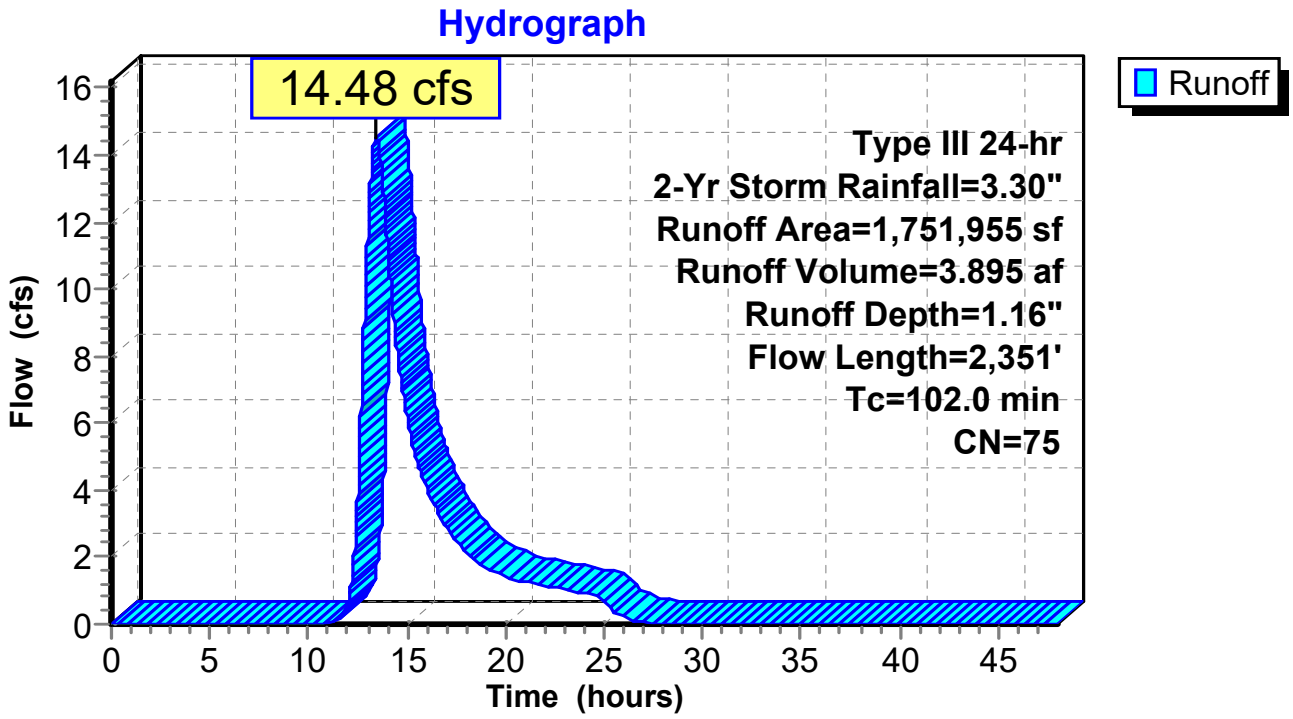
Runoff = 14.48 cfs @ 13.48 hrs, Volume= 3.895 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	556,845	70	Woods, Good, HSG C
*	1,174,610	77	Woods, Good, HSG D
*	20,500	96	Gravel Roads
	1,751,955	75	Weighted Average
	1,751,955		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.5	1,277	0.0050	0.80	32.08	**Channel Flow, E-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.100 Earth, dense brush, high stage
102.0	2,351	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

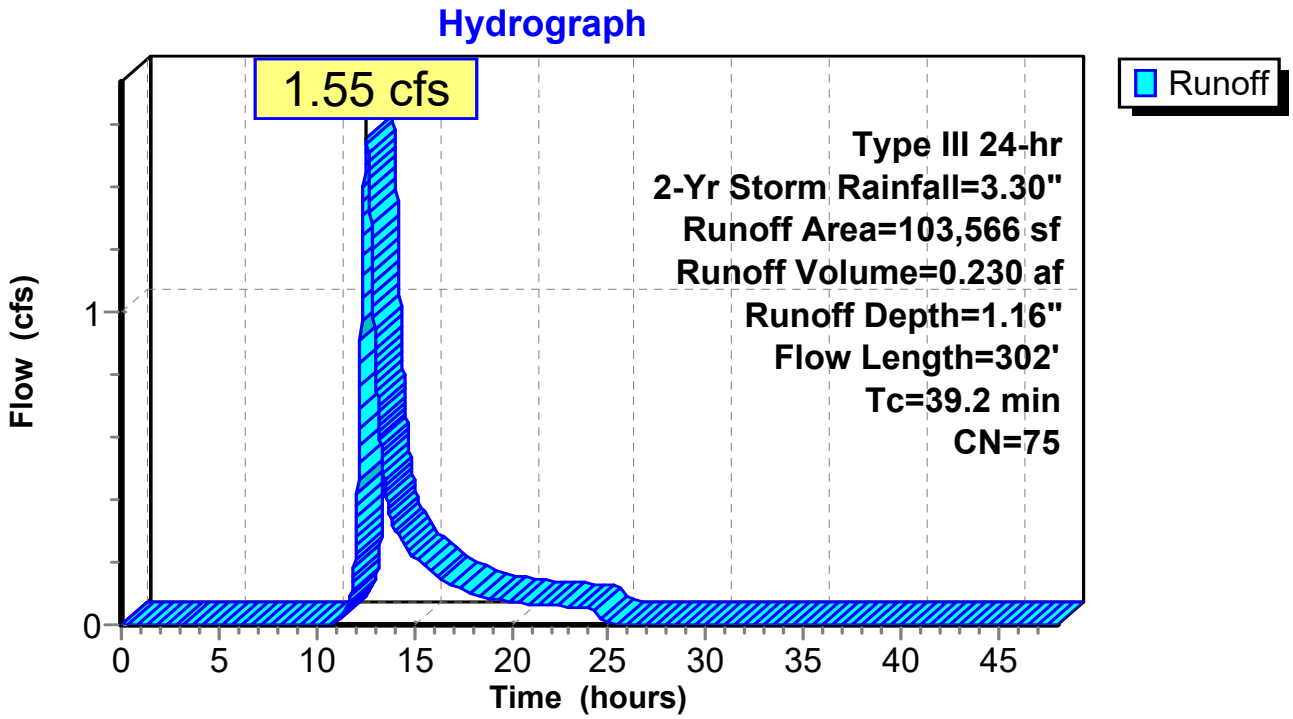
Runoff = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
30,010	77	Woods, Good, HSG D
36,778	77	Woods, Good, HSG D
36,778	70	Woods, Good, HSG C
103,566	75	Weighted Average
103,566		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 2S:



Summary for Subcatchment OS: Off-site

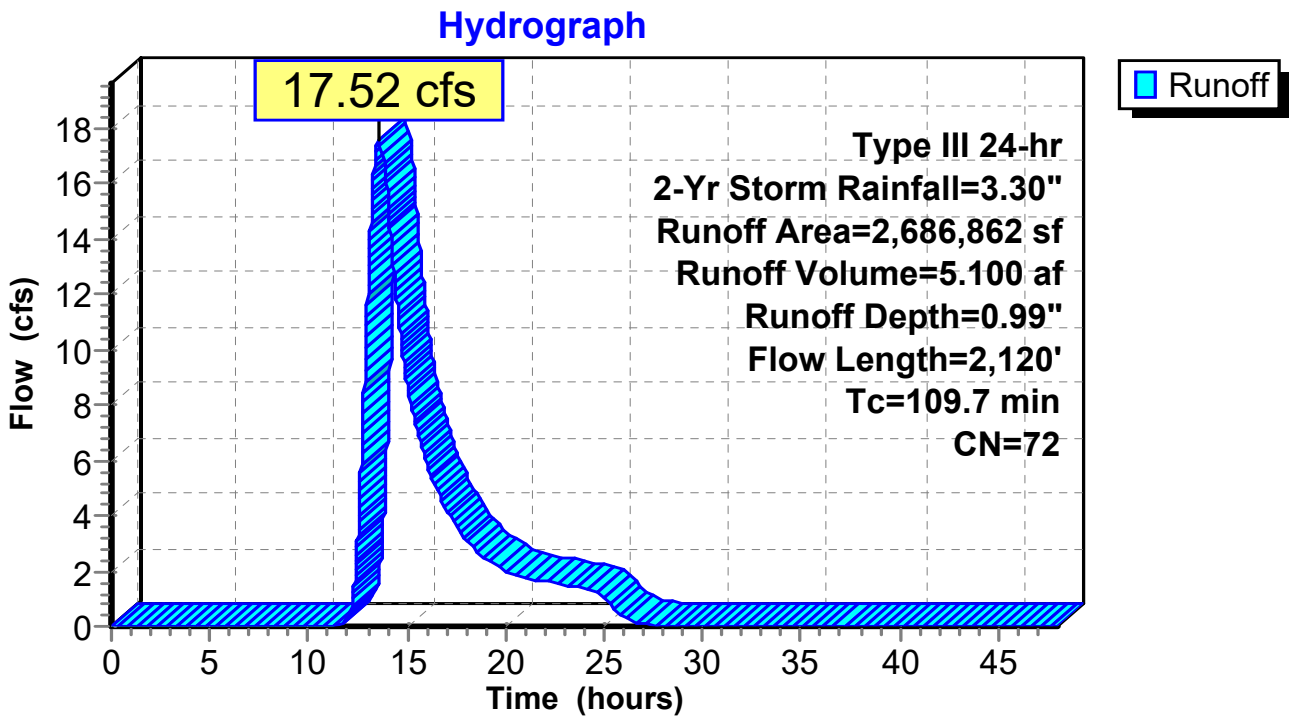
Runoff = 17.52 cfs @ 13.54 hrs, Volume= 5.100 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
679,543	79	Woods, Fair, HSG D
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	72	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2-Yr Storm event
Inflow = 17.52 cfs @ 13.54 hrs, Volume= 5.100 af
Outflow = 12.48 cfs @ 15.44 hrs, Volume= 5.092 af, Atten= 29%, Lag= 114.1 min

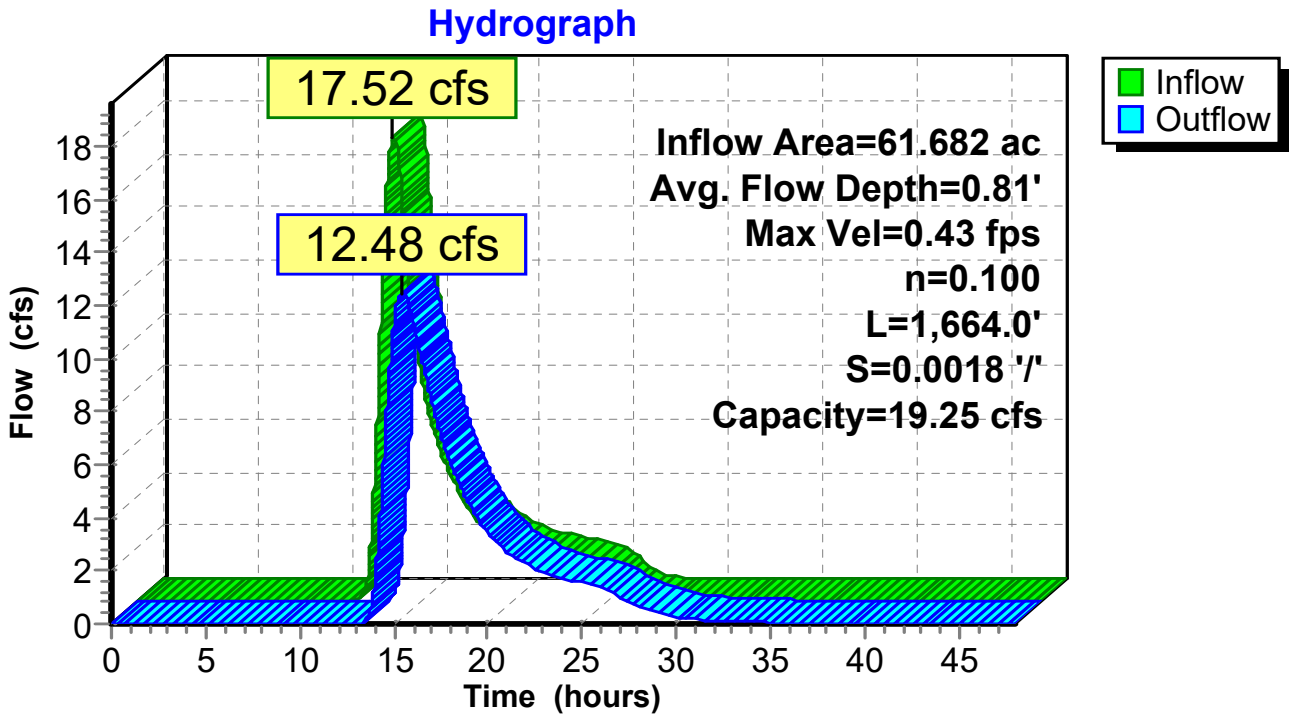
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.43 fps, Min. Travel Time= 64.9 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 183.0 min

Peak Storage= 48,584 cf @ 14.36 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 1.06" for 2-Yr Storm event
Inflow = 17.76 cfs @ 15.24 hrs, Volume= 8.988 af
Outflow = 17.28 cfs @ 15.54 hrs, Volume= 8.987 af, Atten= 3%, Lag= 18.0 min
Primary = 17.28 cfs @ 15.54 hrs, Volume= 8.987 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 17.43' @ 15.54 hrs Surf.Area= 9,257 sf Storage= 8,659 cf

Plug-Flow detention time= 6.9 min calculated for 8.987 af (100% of inflow)
Center-of-Mass det. time= 6.8 min (1,048.0 - 1,041.2)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,125 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

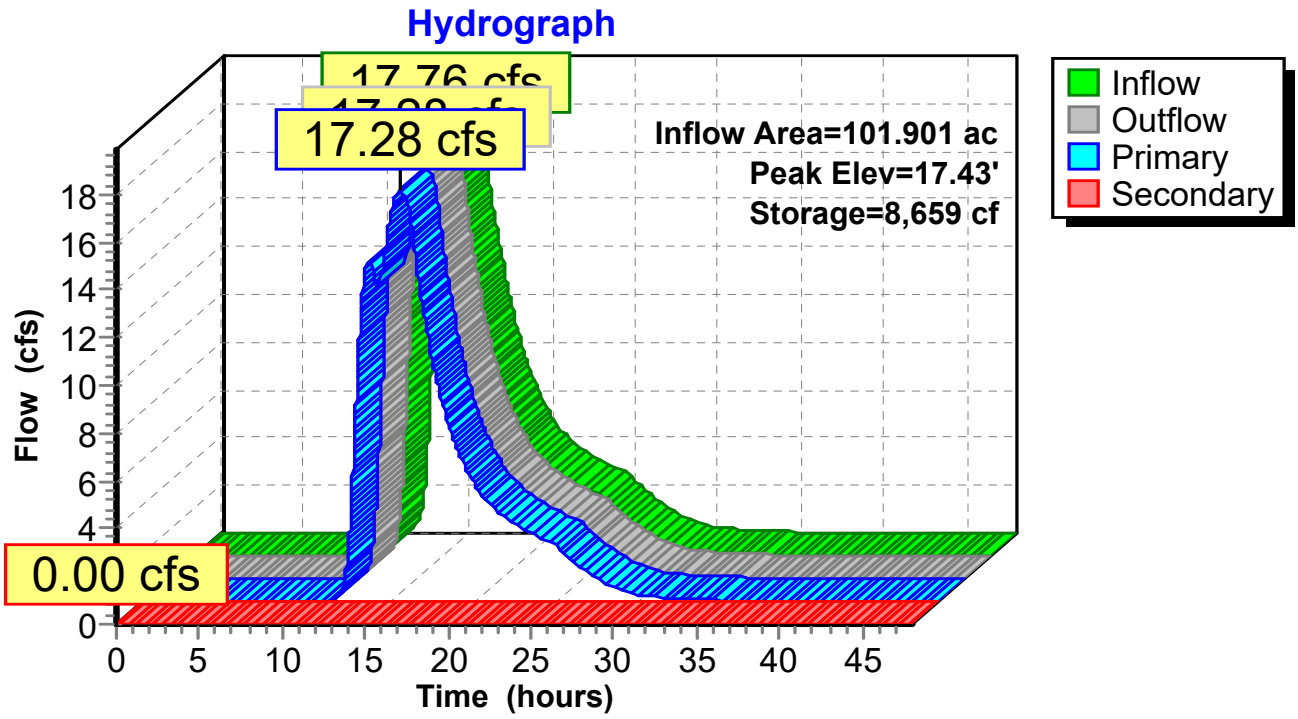
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	1,250	0	0
16.00	2,500	1,875	1,875
17.00	5,000	3,750	5,625
17.50	10,000	3,750	9,375
18.00	25,000	8,750	18,125

Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=17.28 cfs @ 15.54 hrs HW=17.43' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 17.28 cfs @ 4.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond C: 30" CULVERT

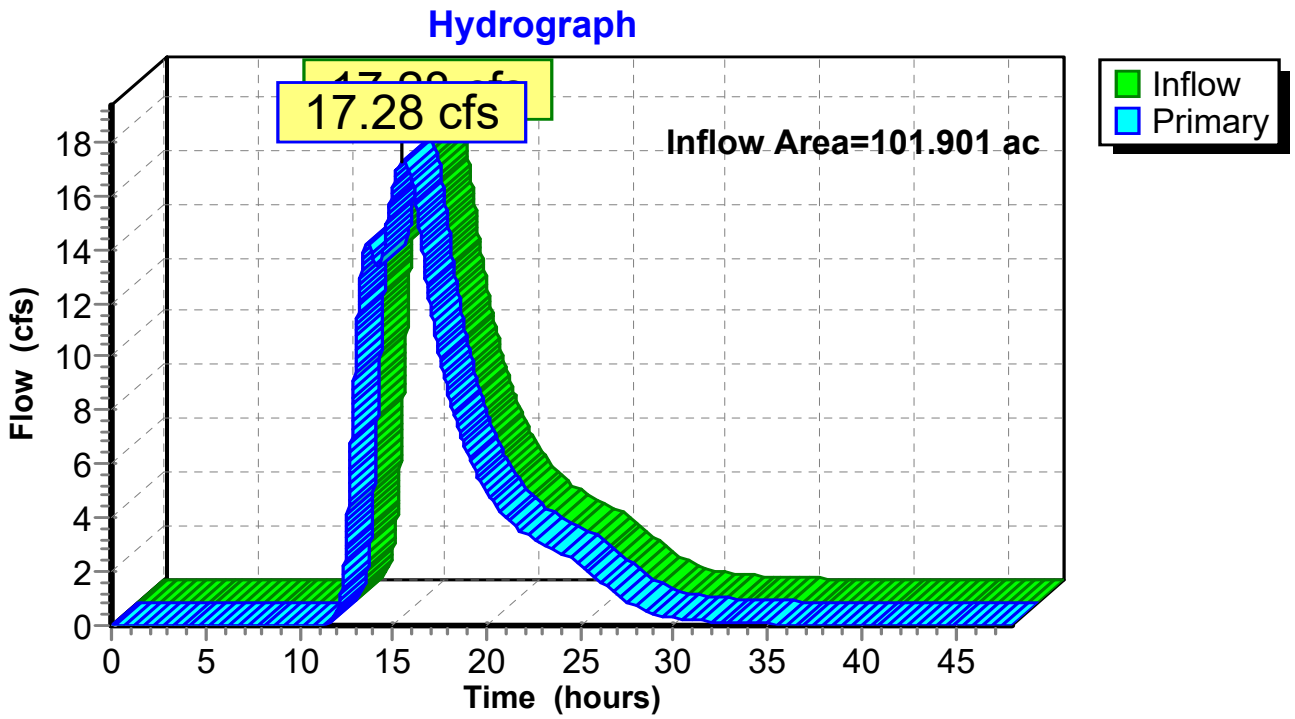


Summary for Link POA1:

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 1.06" for 2-Yr Storm event
Inflow = 17.28 cfs @ 15.54 hrs, Volume= 8.987 af
Primary = 17.28 cfs @ 15.54 hrs, Volume= 8.987 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

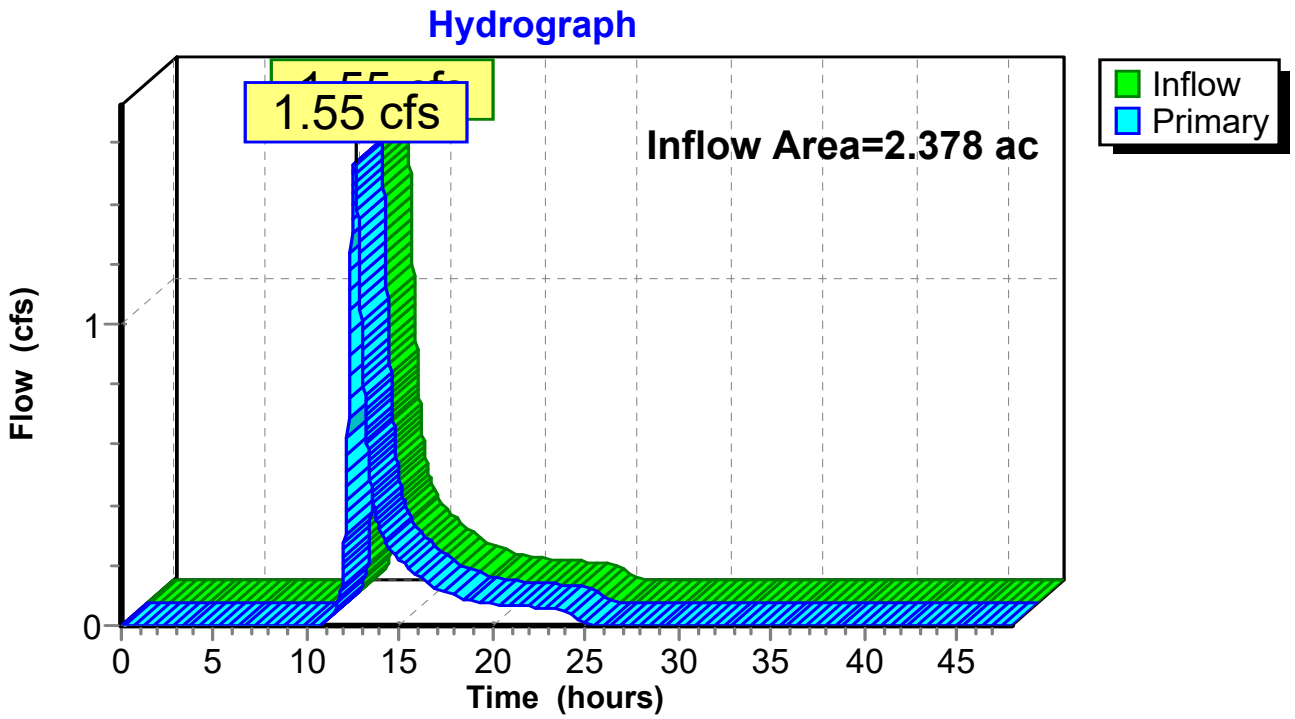


Summary for Link POA2:

Inflow Area = 2.378 ac, 0.00% Impervious, Inflow Depth = 1.16" for 2-Yr Storm event
Inflow = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af
Primary = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



Summary for Subcatchment 1S:

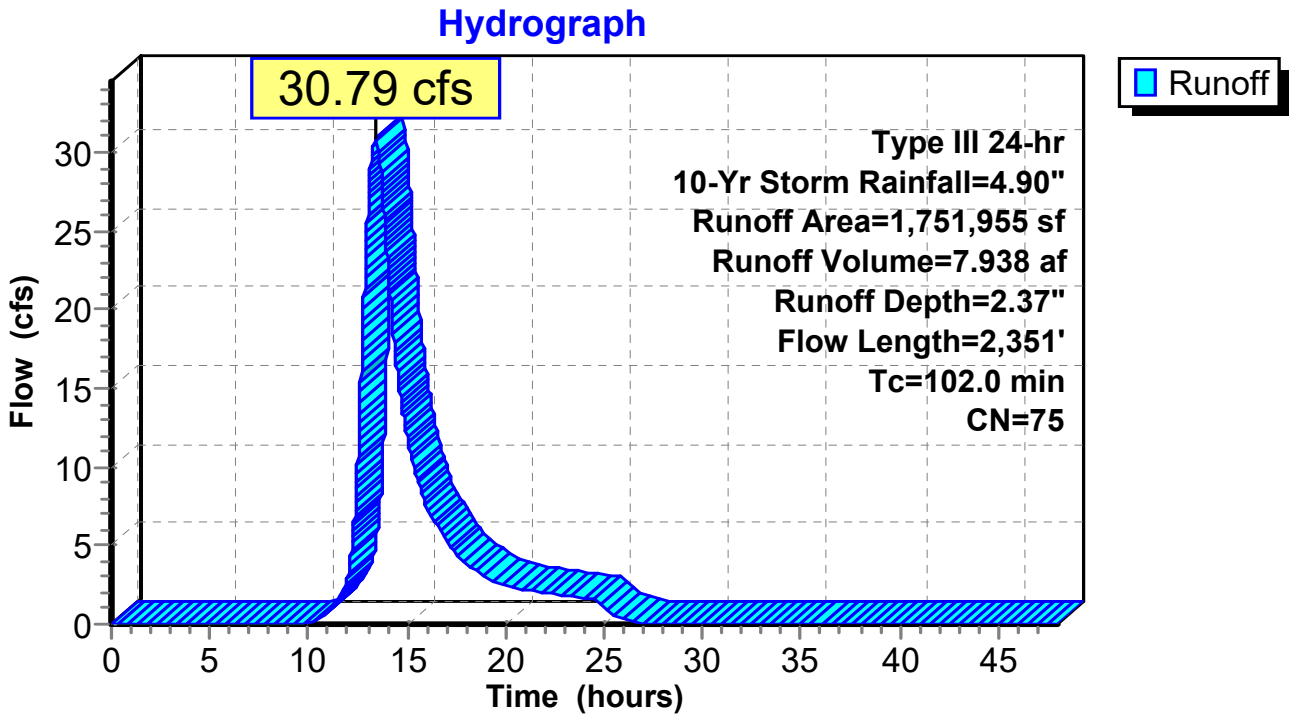
Runoff = 30.79 cfs @ 13.38 hrs, Volume= 7.938 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	556,845	70	Woods, Good, HSG C
*	1,174,610	77	Woods, Good, HSG D
*	20,500	96	Gravel Roads
	1,751,955	75	Weighted Average
	1,751,955		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.5	1,277	0.0050	0.80	32.08	**Channel Flow, E-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.100 Earth, dense brush, high stage
102.0	2,351	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

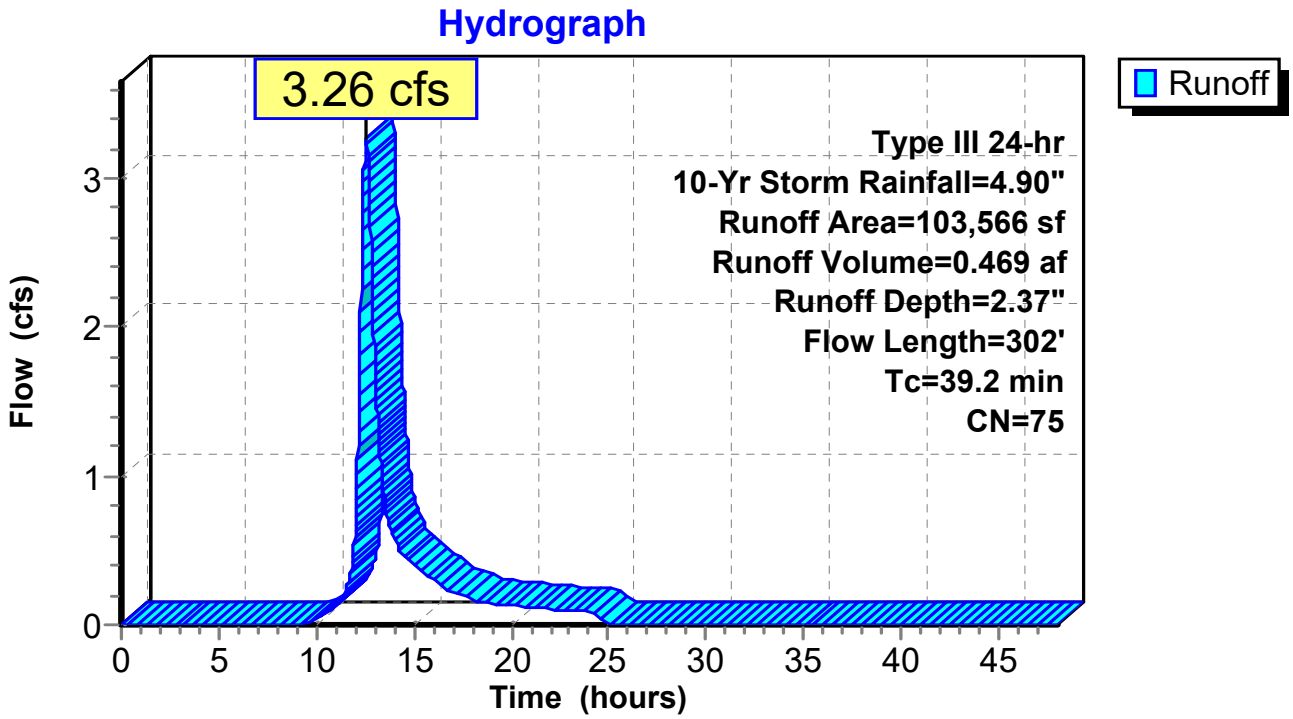
Runoff = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
30,010	77	Woods, Good, HSG D
36,778	77	Woods, Good, HSG D
36,778	70	Woods, Good, HSG C
103,566	75	Weighted Average
103,566		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 2S:



Summary for Subcatchment OS: Off-site

Runoff = 40.06 cfs @ 13.53 hrs, Volume= 10.903 af, Depth= 2.12"

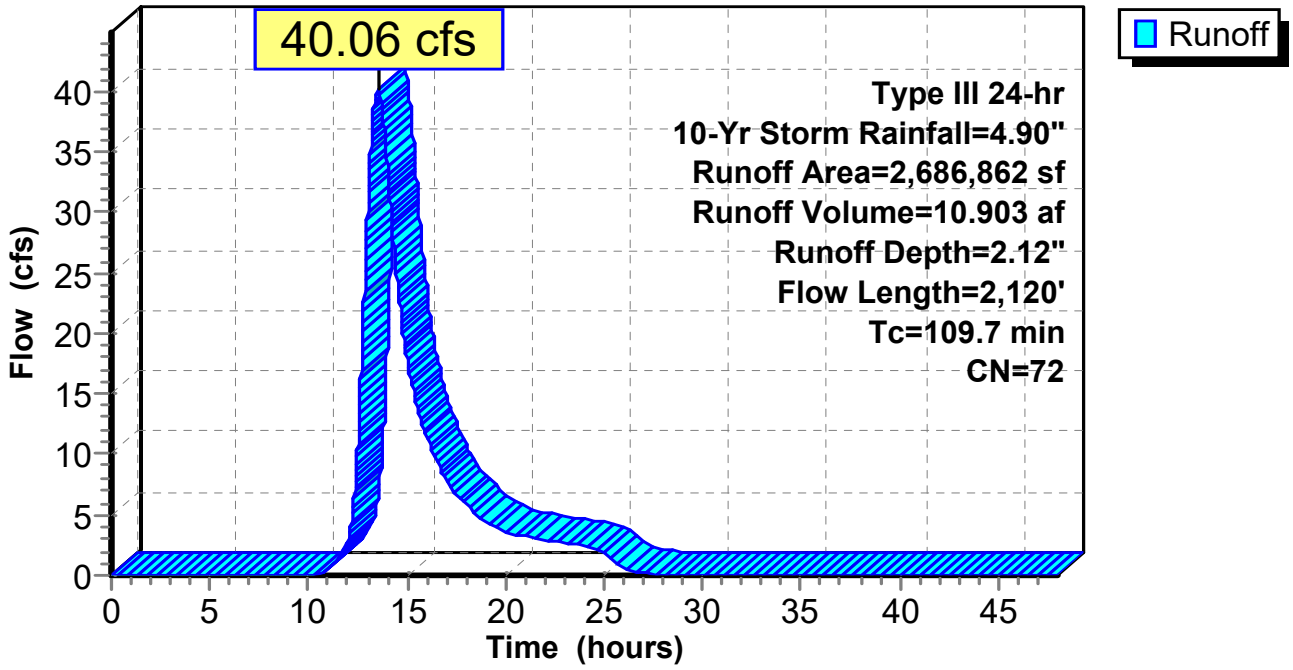
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
679,543	79	Woods, Fair, HSG D
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	72	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site

Hydrograph



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 2.12" for 10-Yr Storm event
Inflow = 40.06 cfs @ 13.53 hrs, Volume= 10.903 af
Outflow = 30.86 cfs @ 15.01 hrs, Volume= 10.895 af, Atten= 23%, Lag= 88.8 min

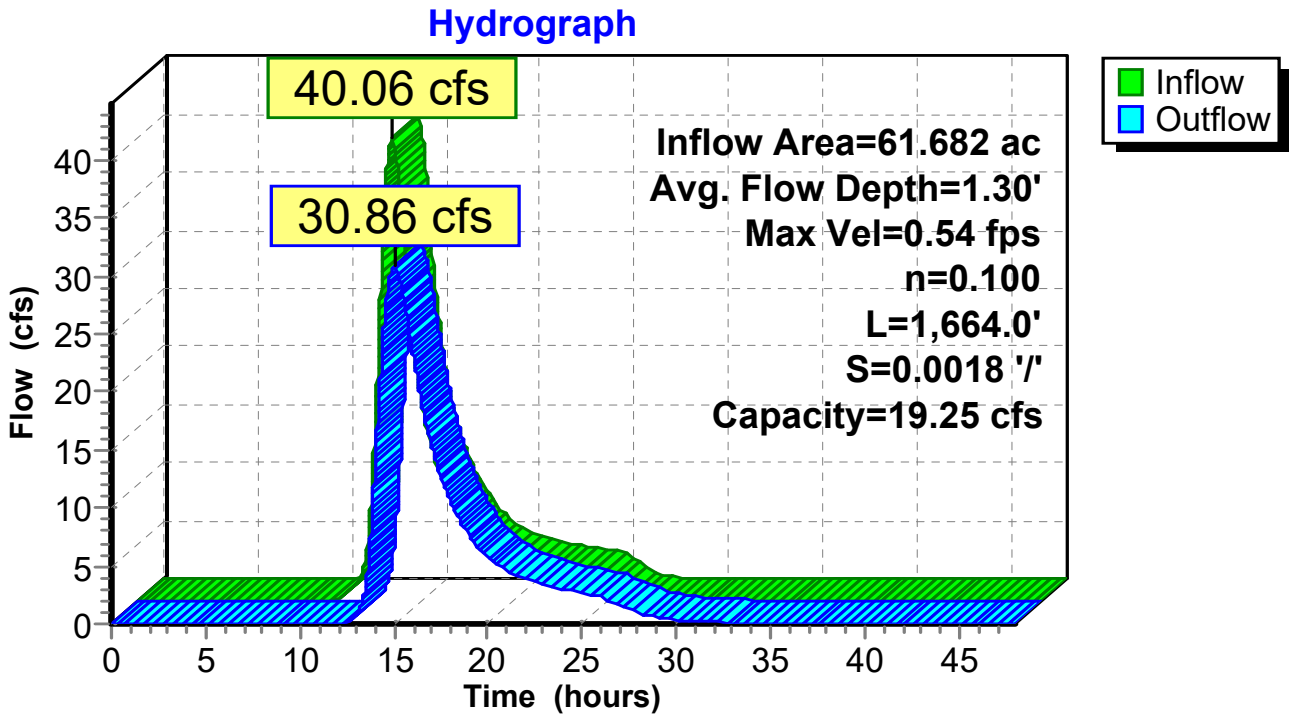
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 51.8 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 155.3 min

Peak Storage= 95,926 cf @ 14.14 hrs
Average Depth at Peak Storage= 1.30'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 2.22" for 10-Yr Storm event
Inflow = 43.45 cfs @ 14.78 hrs, Volume= 18.833 af
Outflow = 48.77 cfs @ 14.78 hrs, Volume= 18.832 af, Atten= 0%, Lag= 0.0 min
Primary = 28.11 cfs @ 14.78 hrs, Volume= 16.284 af
Secondary = 20.66 cfs @ 14.78 hrs, Volume= 2.548 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 19.04' @ 14.78 hrs Surf.Area= 25,000 sf Storage= 18,125 cf

Plug-Flow detention time= 8.5 min calculated for 18.832 af (100% of inflow)
Center-of-Mass det. time= 8.5 min (1,011.6 - 1,003.2)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,125 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	1,250	0	0
16.00	2,500	1,875	1,875
17.00	5,000	3,750	5,625
17.50	10,000	3,750	9,375
18.00	25,000	8,750	18,125

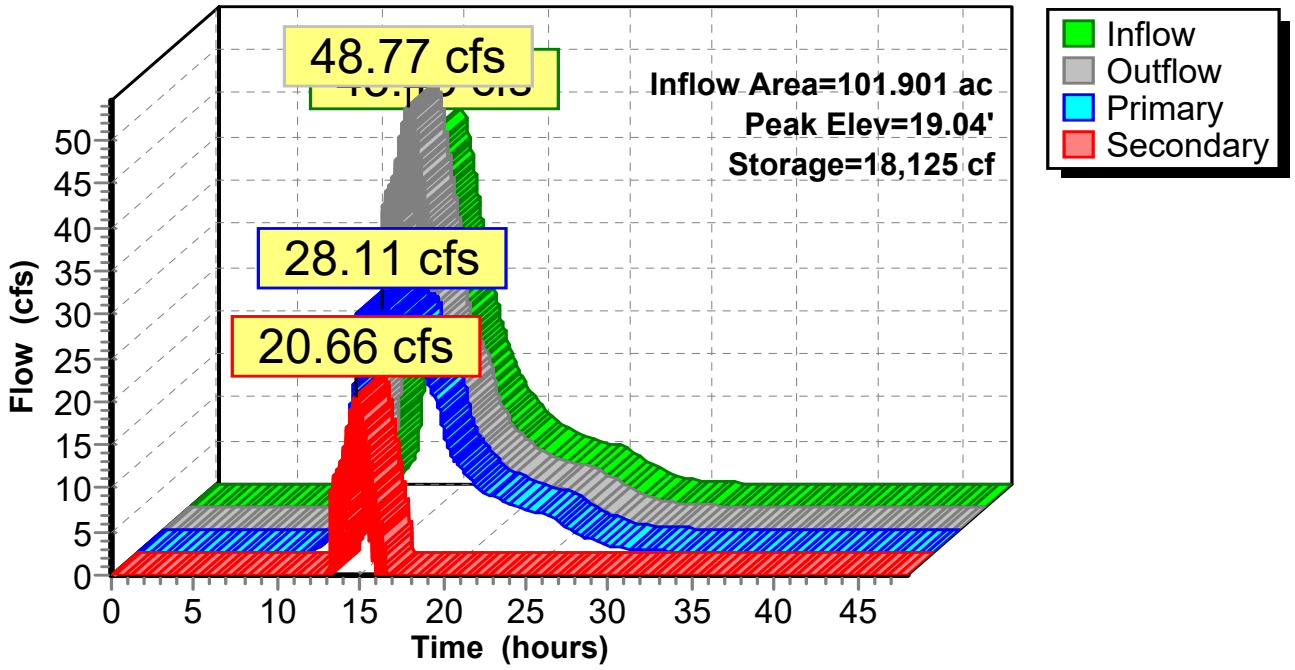
Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=28.11 cfs @ 14.78 hrs HW=19.04' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 28.11 cfs @ 6.68 fps)

Secondary OutFlow Max=20.63 cfs @ 14.78 hrs HW=19.04' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 20.63 cfs @ 1.44 fps)

Pond C: 30" CULVERT

Hydrograph

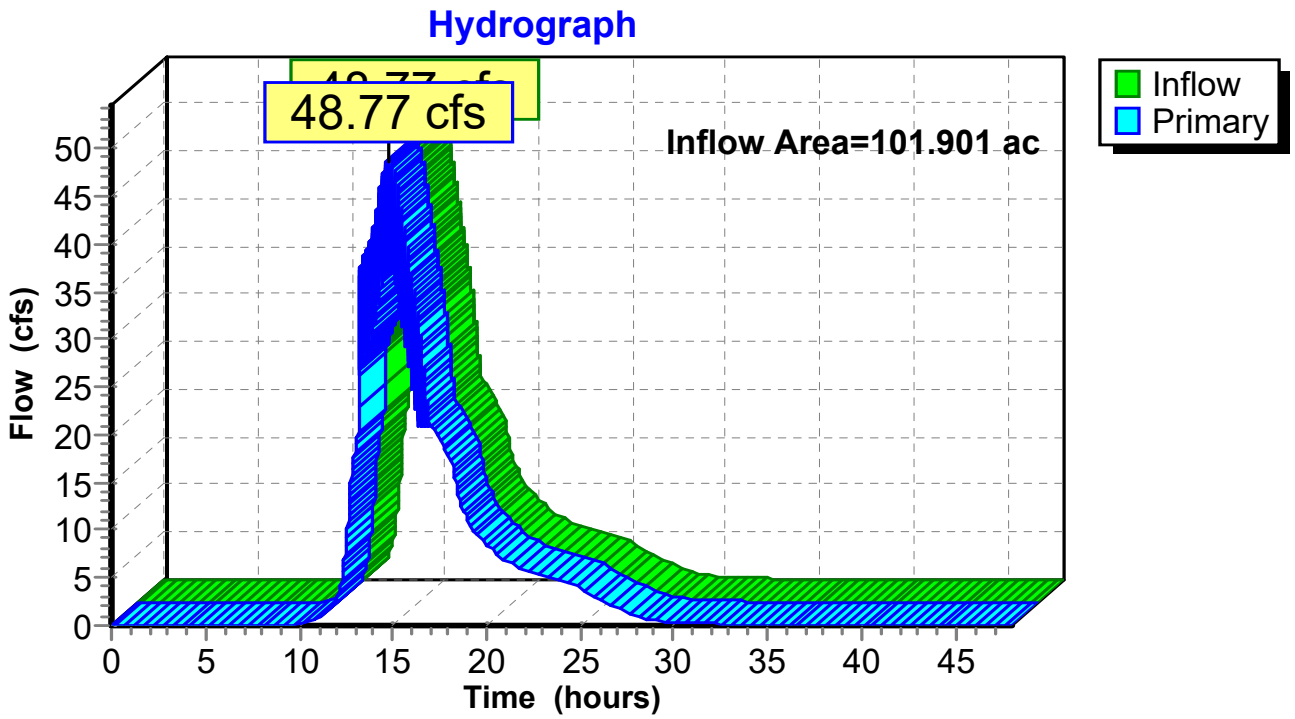


Summary for Link POA1:

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 2.22" for 10-Yr Storm event
Inflow = 48.77 cfs @ 14.78 hrs, Volume= 18.832 af
Primary = 48.77 cfs @ 14.78 hrs, Volume= 18.832 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

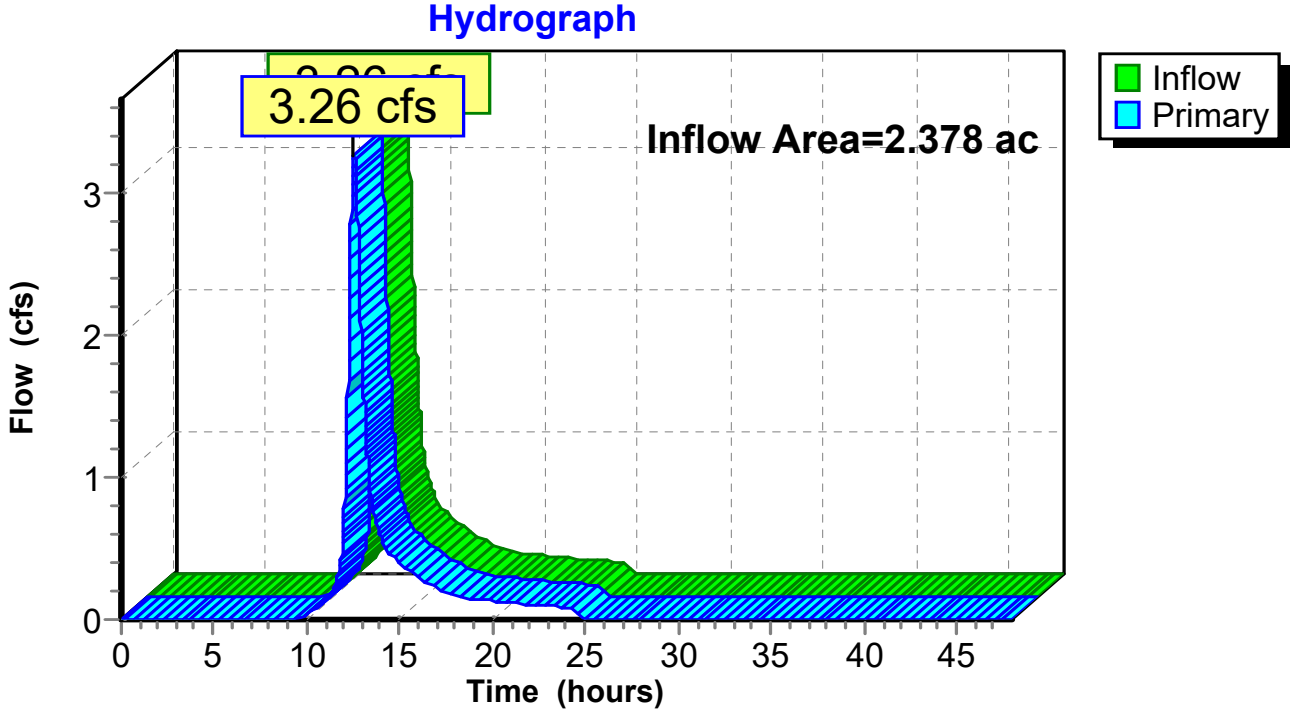


Summary for Link POA2:

Inflow Area = 2.378 ac, 0.00% Impervious, Inflow Depth = 2.37" for 10-Yr Storm event
Inflow = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af
Primary = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



Summary for Subcatchment 1S:

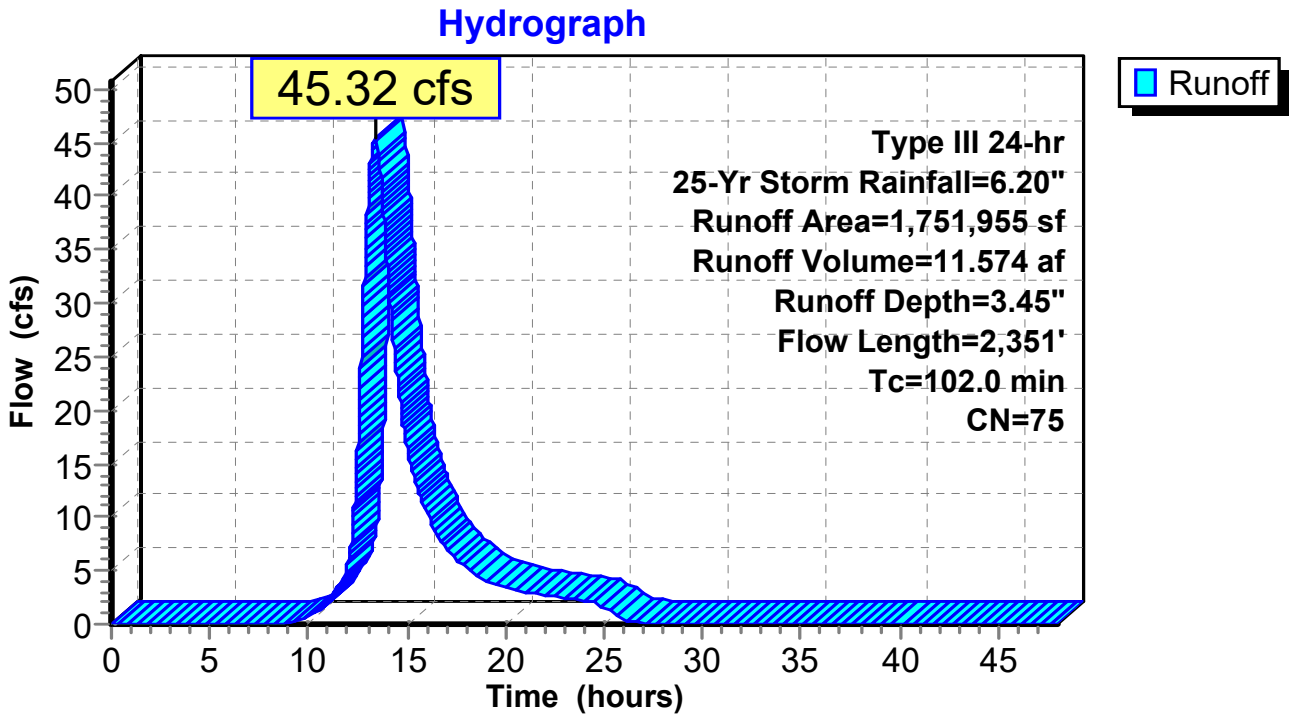
Runoff = 45.32 cfs @ 13.37 hrs, Volume= 11.574 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	556,845	70	Woods, Good, HSG C
*	1,174,610	77	Woods, Good, HSG D
*	20,500	96	Gravel Roads
	1,751,955	75	Weighted Average
	1,751,955		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.5	1,277	0.0050	0.80	32.08	**Channel Flow, E-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.100 Earth, dense brush, high stage
102.0	2,351	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

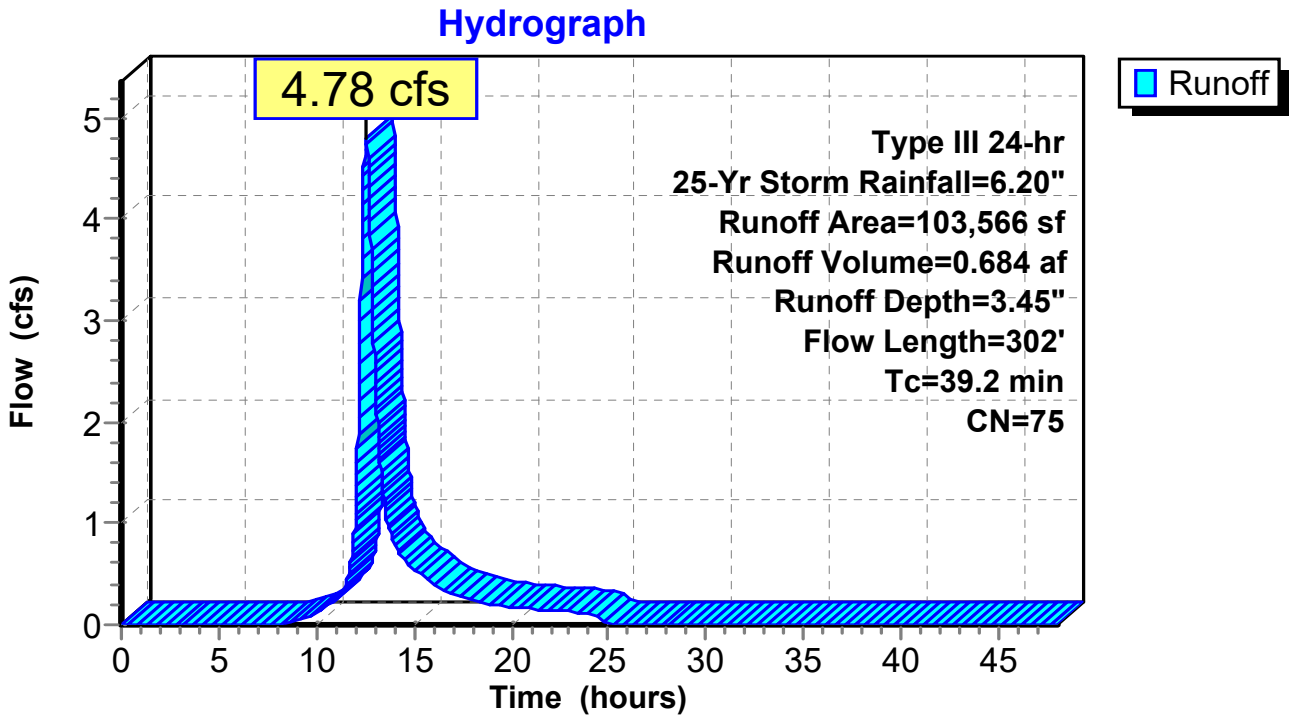
Runoff = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
30,010	77	Woods, Good, HSG D
36,778	77	Woods, Good, HSG D
36,778	70	Woods, Good, HSG C
103,566	75	Weighted Average
103,566		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 2S:



Summary for Subcatchment OS: Off-site

Runoff = 60.55 cfs @ 13.52 hrs, Volume= 16.230 af, Depth= 3.16"

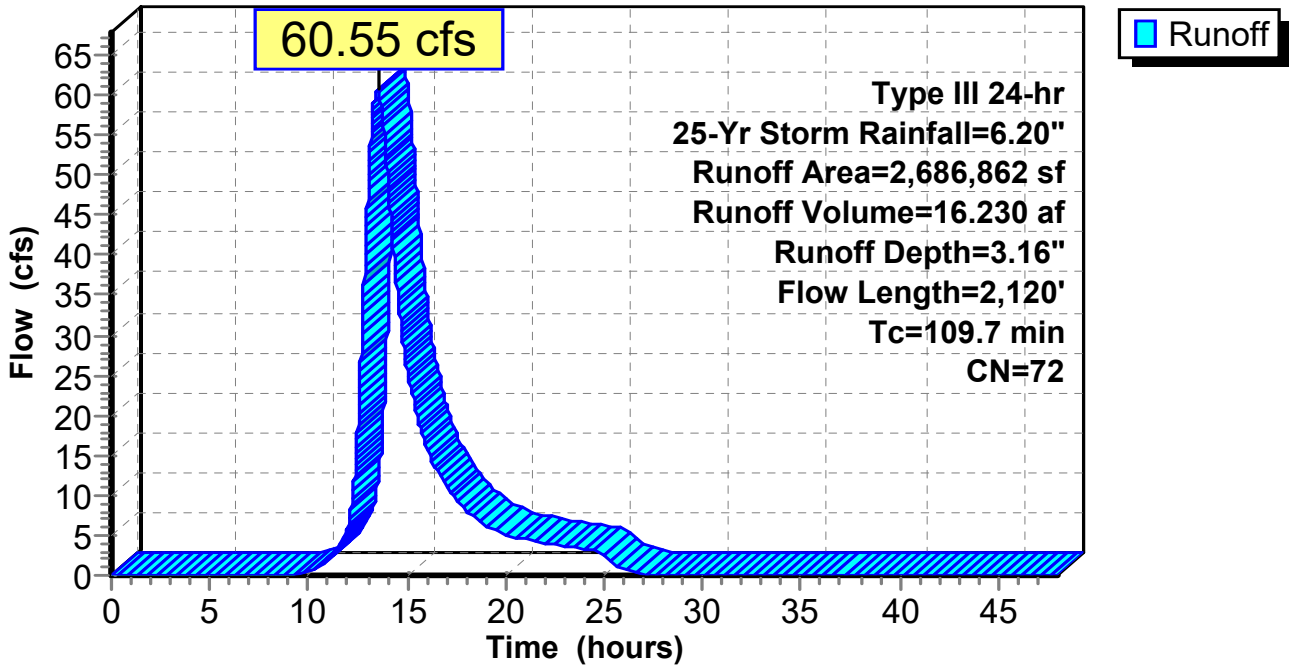
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
679,543	79	Woods, Fair, HSG D
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	72	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site

Hydrograph



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 3.16" for 25-Yr Storm event
Inflow = 60.55 cfs @ 13.52 hrs, Volume= 16.230 af
Outflow = 47.49 cfs @ 14.89 hrs, Volume= 16.222 af, Atten= 22%, Lag= 82.5 min

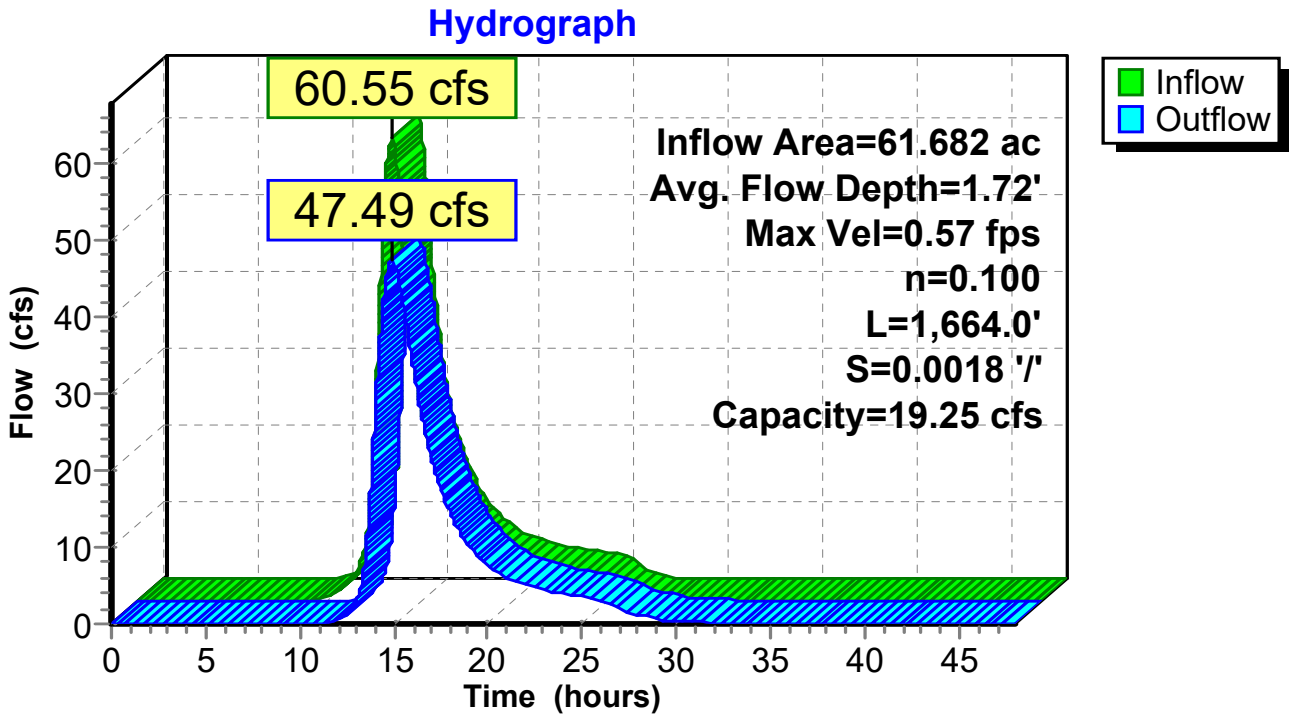
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.57 fps, Min. Travel Time= 48.4 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 142.6 min

Peak Storage= 138,025 cf @ 14.09 hrs
Average Depth at Peak Storage= 1.72'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 3.27" for 25-Yr Storm event
Inflow = 66.66 cfs @ 14.64 hrs, Volume= 27.795 af
Outflow = 70.25 cfs @ 14.66 hrs, Volume= 27.795 af, Atten= 0%, Lag= 1.0 min
Primary = 28.96 cfs @ 14.66 hrs, Volume= 19.741 af
Secondary = 41.30 cfs @ 14.66 hrs, Volume= 8.054 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 19.20' @ 14.66 hrs Surf.Area= 25,000 sf Storage= 18,125 cf

Plug-Flow detention time= 6.9 min calculated for 27.783 af (100% of inflow)
Center-of-Mass det. time= 6.9 min (993.7 - 986.8)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,125 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	1,250	0	0
16.00	2,500	1,875	1,875
17.00	5,000	3,750	5,625
17.50	10,000	3,750	9,375
18.00	25,000	8,750	18,125

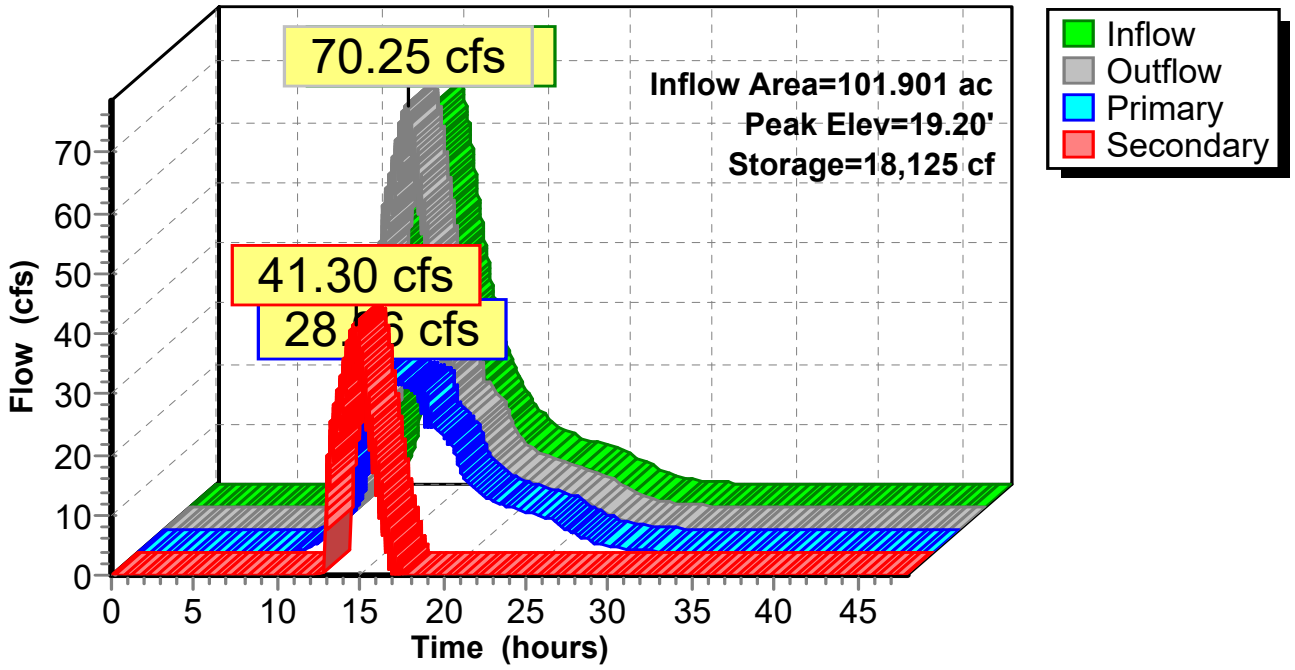
Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=28.96 cfs @ 14.66 hrs HW=19.20' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 28.96 cfs @ 6.88 fps)

Secondary OutFlow Max=41.28 cfs @ 14.66 hrs HW=19.20' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 41.28 cfs @ 1.82 fps)

Pond C: 30" CULVERT

Hydrograph

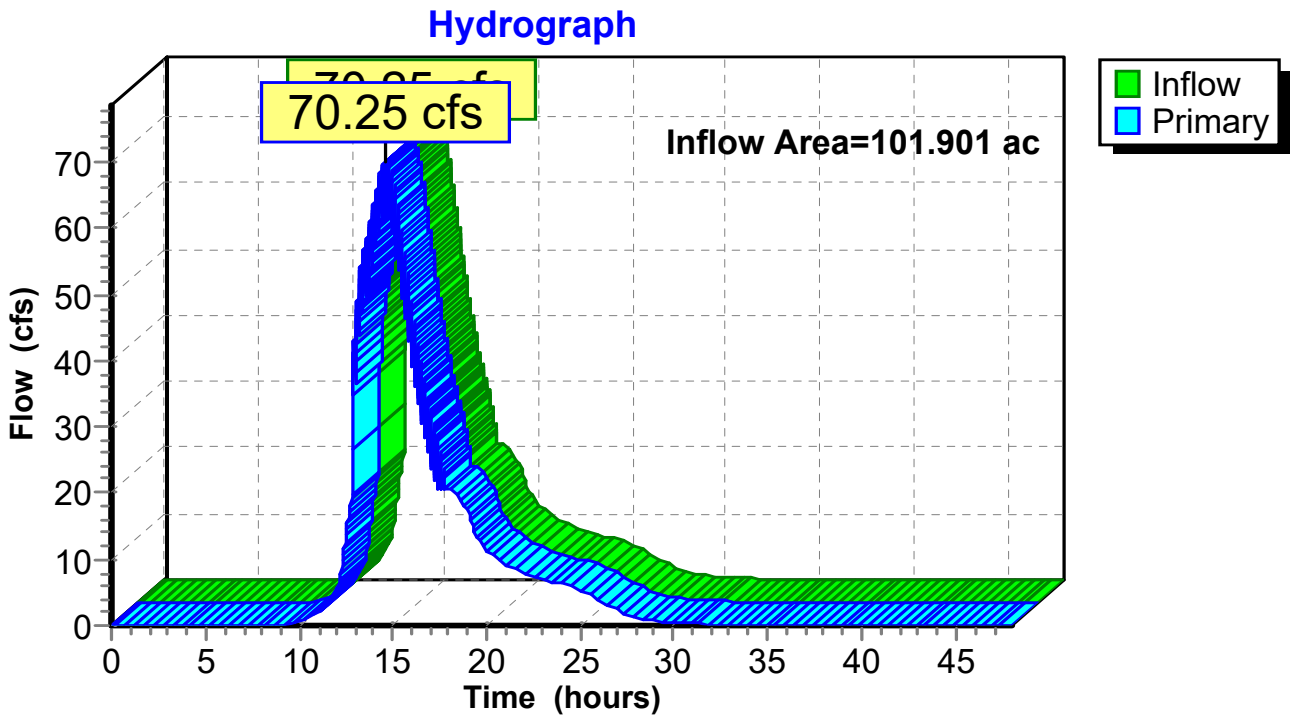


Summary for Link POA1:

Inflow Area = 101.901 ac, 0.00% Impervious, Inflow Depth > 3.27" for 25-Yr Storm event
Inflow = 70.25 cfs @ 14.66 hrs, Volume= 27.795 af
Primary = 70.25 cfs @ 14.66 hrs, Volume= 27.795 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

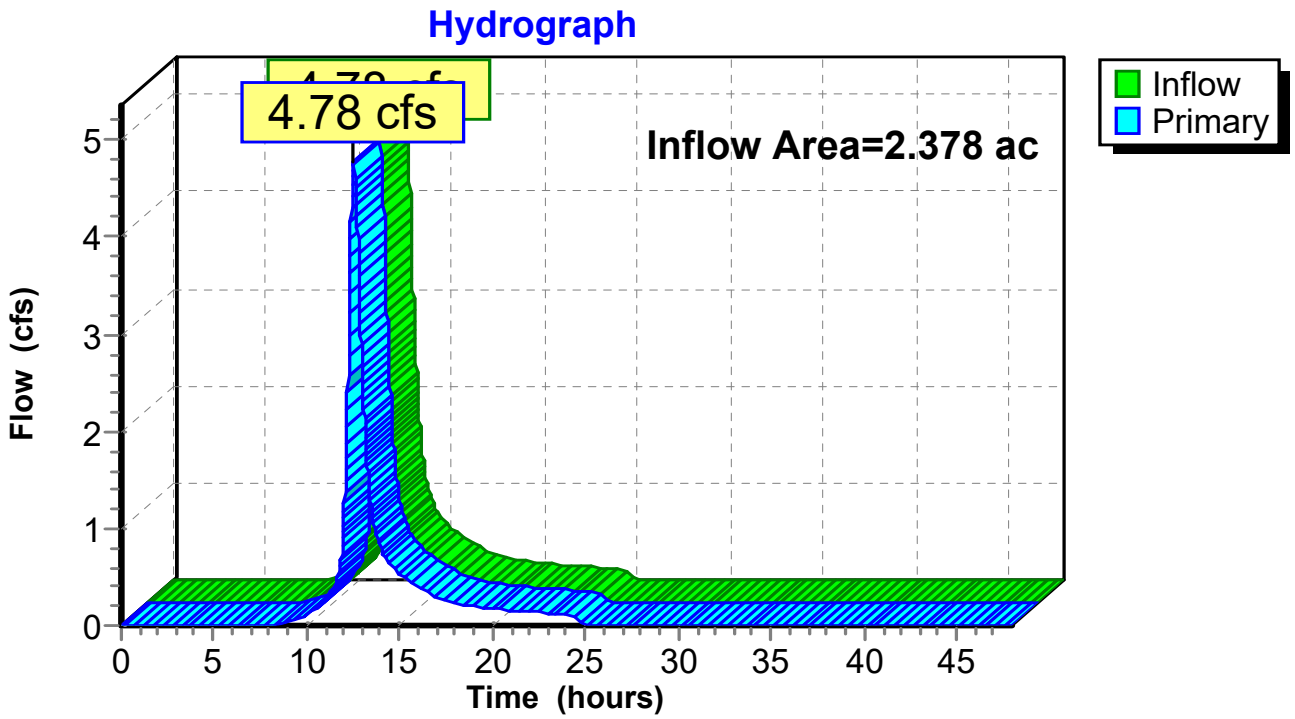


Summary for Link POA2:

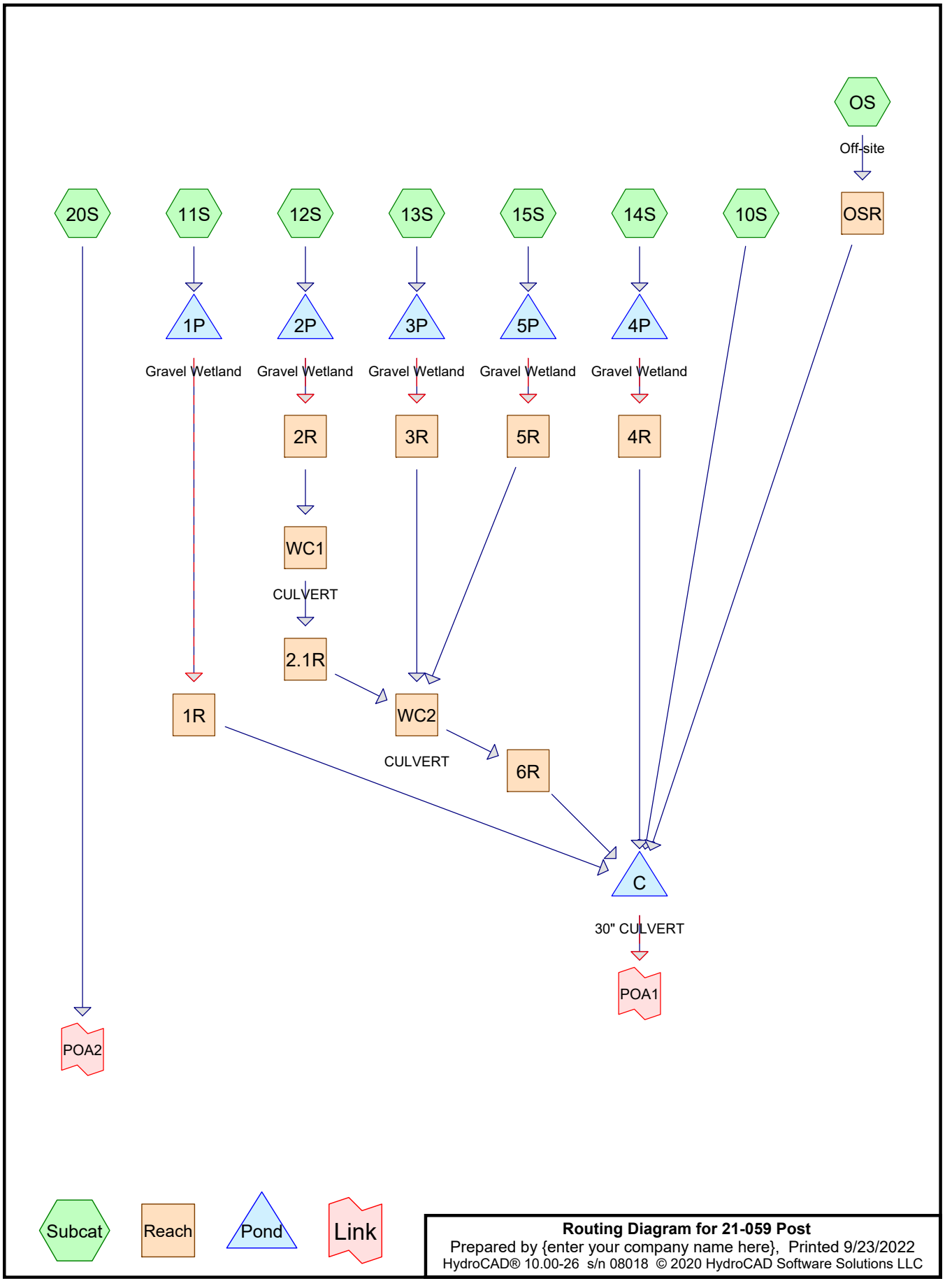
Inflow Area = 2.378 ac, 0.00% Impervious, Inflow Depth = 3.45" for 25-Yr Storm event
Inflow = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af
Primary = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



ATTACHMENT C (II) – POST-DEVELOPMENT MODEL



Routing Diagram for 21-059 Post

Prepared by {enter your company name here}, Printed 9/23/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.332	74	>75% Grass cover, Good, HSG C (10S, 11S, 12S, 13S, 14S, 15S, 20S)
0.768	80	>75% Grass cover, Good, HSG D (10S, 11S, 12S, 13S, 14S, 15S)
0.057	98	Lot (20S)
0.266	98	New Impervious Road (10S)
0.935	98	New Road (10S, 11S, 12S, 13S, 14S, 15S)
1.469	98	Roof and driveway (10S)
15.600	73	Woods, Fair, HSG C (OS)
63.396	70	Woods, Good, HSG C (10S, 20S, OS)
9.926	77	Woods, Good, HSG D (10S, 20S, OS)
0.689	77	Woods, Good, HSG D (Wetlands) (20S)
6.839	77	Woods, Good, HSG D (wetlands) (10S)

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Runoff Area=1,670,972 sf 4.73% Impervious Runoff Depth=1.10"
Flow Length=2,347' Tc=69.6 min CN=74 Runoff=16.77 cfs 3.529 af

Subcatchment 11S: Runoff Area=40,002 sf 46.97% Impervious Runoff Depth=2.00"
Tc=6.0 min CN=87 Runoff=2.15 cfs 0.153 af

Subcatchment 12S: Runoff Area=8,366 sf 42.82% Impervious Runoff Depth=1.84"
Tc=6.0 min CN=85 Runoff=0.41 cfs 0.030 af

Subcatchment 13S: Runoff Area=6,654 sf 40.29% Impervious Runoff Depth=1.84"
Tc=6.0 min CN=85 Runoff=0.33 cfs 0.023 af

Subcatchment 14S: Runoff Area=18,542 sf 48.46% Impervious Runoff Depth=2.00"
Tc=6.0 min CN=87 Runoff=1.00 cfs 0.071 af

Subcatchment 15S: Runoff Area=7,430 sf 45.21% Impervious Runoff Depth=1.92"
Tc=6.0 min CN=86 Runoff=0.38 cfs 0.027 af

Subcatchment 20S: Runoff Area=103,566 sf 2.41% Impervious Runoff Depth=1.16"
Flow Length=302' Tc=39.2 min CN=75 Runoff=1.55 cfs 0.230 af

Subcatchment OS: Off-site Runoff Area=2,686,862 sf 0.00% Impervious Runoff Depth=0.94"
Flow Length=2,120' Tc=109.7 min CN=71 Runoff=16.34 cfs 4.826 af

Reach 1R: Avg. Flow Depth=0.06' Max Vel=0.34 fps Inflow=0.44 cfs 0.153 af
n=0.035 L=500.0' S=0.0031 '/' Capacity=72.58 cfs Outflow=0.42 cfs 0.153 af

Reach 2.1R: Avg. Flow Depth=0.03' Max Vel=0.14 fps Inflow=0.21 cfs 0.030 af
n=0.035 L=829.0' S=0.0015 '/' Capacity=49.69 cfs Outflow=0.08 cfs 0.029 af

Reach 2R: Avg. Flow Depth=0.07' Max Vel=0.14 fps Inflow=0.33 cfs 0.030 af
n=0.035 L=170.0' S=0.0004 '/' Capacity=26.28 cfs Outflow=0.21 cfs 0.030 af

Reach 3R: Avg. Flow Depth=0.02' Max Vel=0.20 fps Inflow=0.26 cfs 0.023 af
n=0.035 L=744.0' S=0.0036 '/' Capacity=77.31 cfs Outflow=0.09 cfs 0.023 af

Reach 4R: Avg. Flow Depth=0.05' Max Vel=0.46 fps Inflow=0.56 cfs 0.071 af
n=0.035 L=614.0' S=0.0073 '/' Capacity=110.89 cfs Outflow=0.44 cfs 0.071 af

Reach 5R: Avg. Flow Depth=0.02' Max Vel=0.66 fps Inflow=0.33 cfs 0.027 af
n=0.035 L=77.0' S=0.0344 '/' Capacity=240.30 cfs Outflow=0.32 cfs 0.027 af

Reach 6R: Avg. Flow Depth=0.03' Max Vel=0.24 fps Inflow=0.32 cfs 0.080 af
n=0.035 L=783.0' S=0.0040 '/' Capacity=82.42 cfs Outflow=0.13 cfs 0.080 af

Reach OSR: Avg. Flow Depth=0.78' Max Vel=0.42 fps Inflow=16.34 cfs 4.826 af
n=0.100 L=1,664.0' S=0.0018 '/' Capacity=19.25 cfs Outflow=11.56 cfs 4.818 af

Reach WC1: CULVERT Avg. Flow Depth=0.06' Max Vel=1.22 fps Inflow=0.21 cfs 0.030 af
36.0" Round Pipe w/ 12.0" inside fill n=0.012 L=45.0' S=0.0040 '/' Capacity=27.42 cfs Outflow=0.21 cfs 0.030 af

Reach WC2: CULVERT Avg. Flow Depth=0.05' Max Vel=1.34 fps Inflow=0.32 cfs 0.080 af
60.0" Round Pipe w/ 20.0" inside fill n=0.012 L=35.0' S=0.0051 '/' Capacity=121.39 cfs Outflow=0.32 cfs 0.080 af

Pond 1P: Gravel Wetland Peak Elev=20.96' Storage=4,040 cf Inflow=2.15 cfs 0.153 af
Primary=0.44 cfs 0.153 af Secondary=0.00 cfs 0.000 af Outflow=0.44 cfs 0.153 af

Pond 2P: Gravel Wetland Peak Elev=22.55' Storage=559 cf Inflow=0.41 cfs 0.030 af
Primary=0.33 cfs 0.030 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.030 af

Pond 3P: Gravel Wetland Peak Elev=22.49' Storage=537 cf Inflow=0.33 cfs 0.023 af
Primary=0.26 cfs 0.023 af Secondary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.023 af

Pond 4P: Gravel Wetland Peak Elev=20.27' Storage=1,484 cf Inflow=1.00 cfs 0.071 af
Primary=0.56 cfs 0.071 af Secondary=0.00 cfs 0.000 af Outflow=0.56 cfs 0.071 af

Pond 5P: Gravel Wetland Peak Elev=21.54' Storage=868 cf Inflow=0.38 cfs 0.027 af
Primary=0.33 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.027 af

Pond C: 30" CULVERT Peak Elev=17.30' Storage=8,220 cf Inflow=17.60 cfs 8.651 af
Primary=16.49 cfs 8.651 af Secondary=0.00 cfs 0.000 af Outflow=16.49 cfs 8.651 af

Link POA1: Inflow=16.49 cfs 8.651 af
Primary=16.49 cfs 8.651 af

Link POA2: Inflow=1.55 cfs 0.230 af
Primary=1.55 cfs 0.230 af

Summary for Subcatchment 10S:

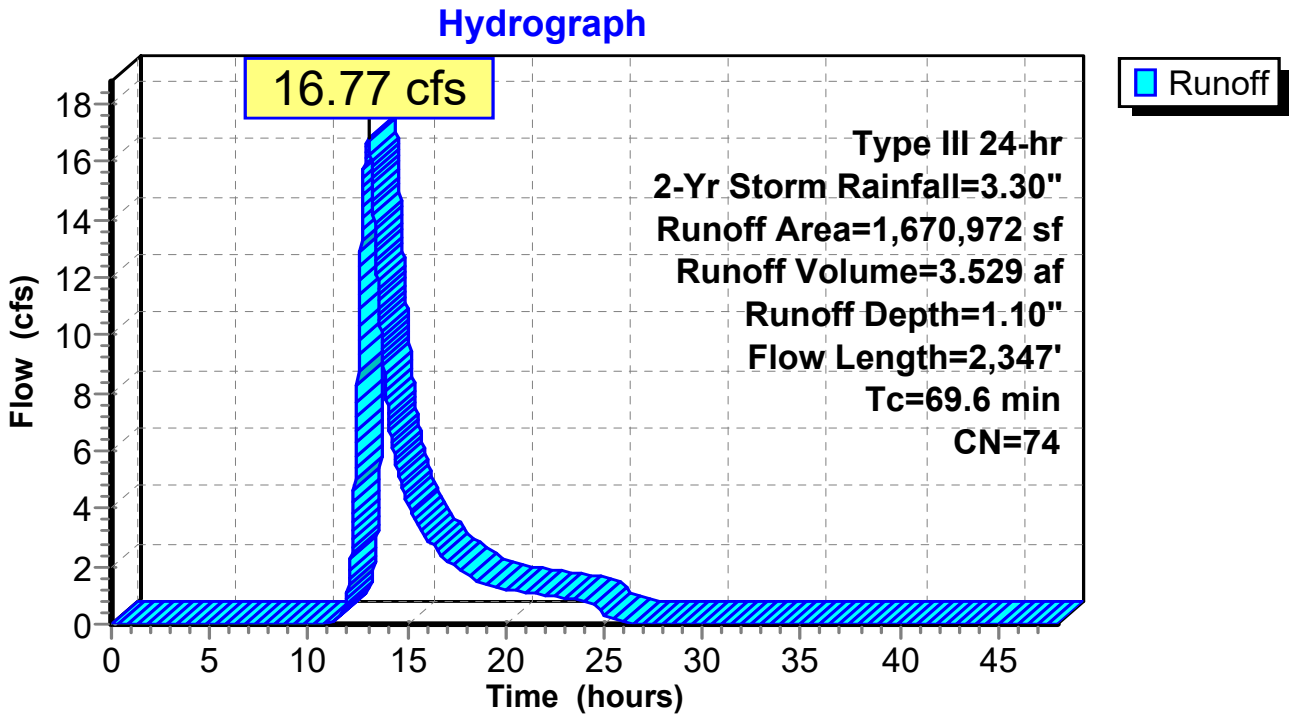
Runoff = 16.77 cfs @ 12.99 hrs, Volume= 3.529 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	297,901	77	Woods, Good, HSG D (wetlands)
	119,137	70	Woods, Good, HSG C
	555,742	70	Woods, Good, HSG C
	315,854	77	Woods, Good, HSG D
*	11,606	98	New Impervious Road
	10,685	74	>75% Grass cover, Good, HSG C
	10,685	80	>75% Grass cover, Good, HSG D
	2,189	80	>75% Grass cover, Good, HSG D
	125,624	70	Woods, Good, HSG C
*	3,349	98	New Road
	2,100	70	Woods, Good, HSG C
	2,100	77	Woods, Good, HSG D
*	64,000	98	Roof and driveway
	150,000	74	>75% Grass cover, Good, HSG C
	1,670,972	74	Weighted Average
	1,592,017		95.27% Pervious Area
	78,955		4.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	60	0.0080	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
3.3	450	0.0050	2.29	91.64	**Channel Flow, E-F** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
0.1	40	0.0050	7.50	92.26	**Pipe Channel, F-G** 60.0" Round w/ 24.0" inside fill Area= 12.3 sf Perim= 13.8' r= 0.89 n= 0.013 Corrugated PE, smooth interior
5.7	783	0.0050	2.29	91.64	**Channel Flow, F-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
69.6	2,347	Total			

Subcatchment 10S:



Summary for Subcatchment 11S:

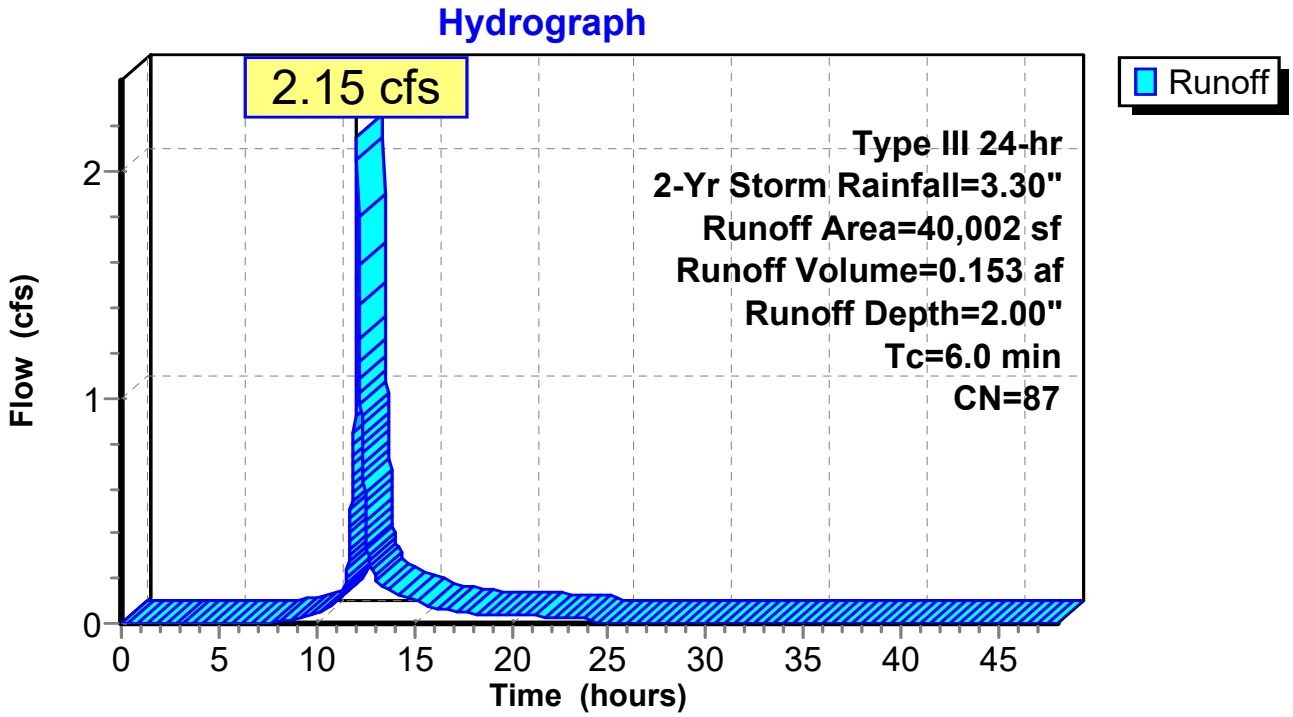
Runoff = 2.15 cfs @ 12.09 hrs, Volume= 0.153 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	18,790	98	New Road
	10,606	74	>75% Grass cover, Good, HSG C
	10,606	80	>75% Grass cover, Good, HSG D
	40,002	87	Weighted Average
	21,212		53.03% Pervious Area
	18,790		46.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 11S:



Summary for Subcatchment 12S:

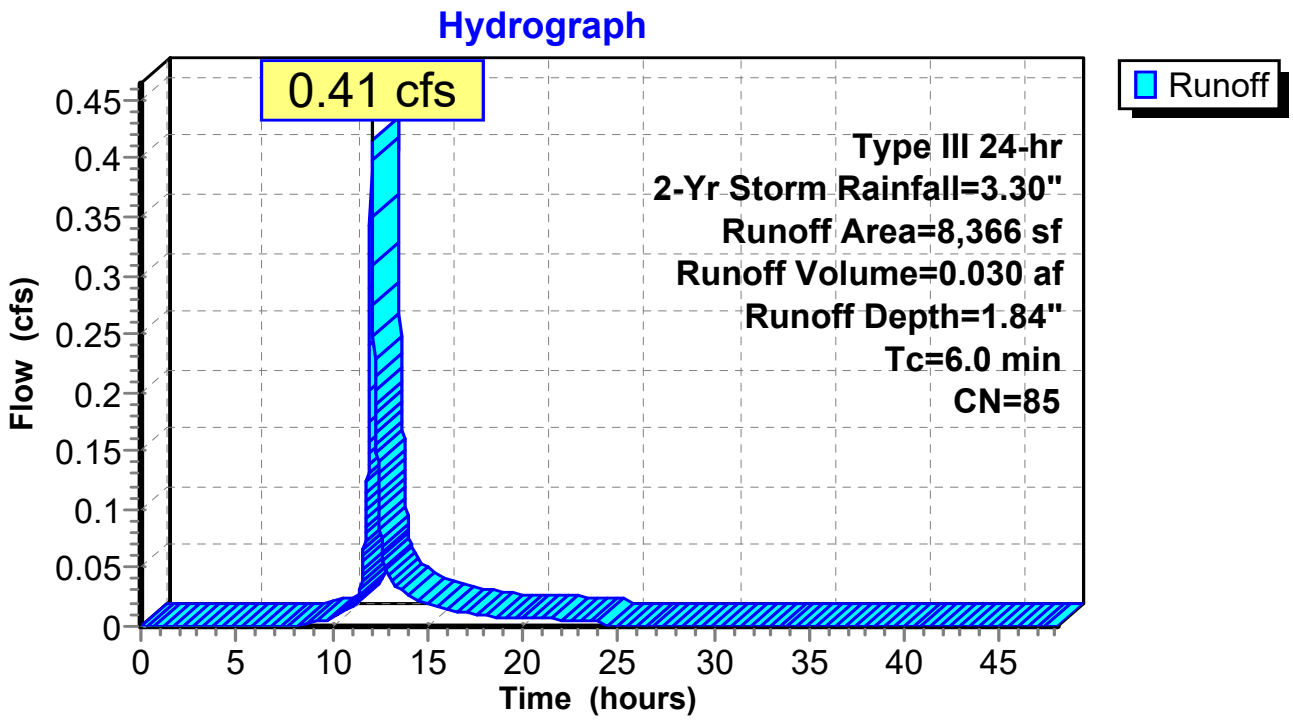
Runoff = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	1,367	80	>75% Grass cover, Good, HSG D
	3,417	74	>75% Grass cover, Good, HSG C
*	3,582	98	New Road
	8,366	85	Weighted Average
	4,784		57.18% Pervious Area
	3,582		42.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 12S:



Summary for Subcatchment 13S:

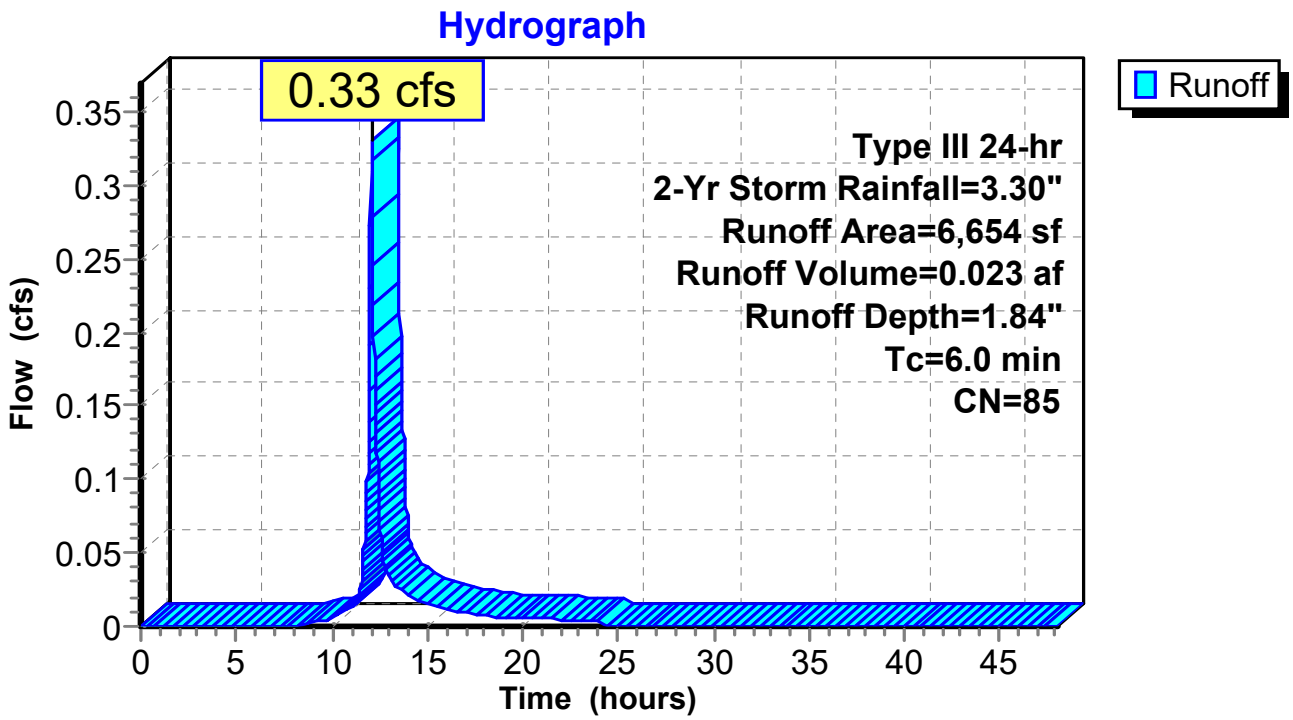
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	1,800	80	>75% Grass cover, Good, HSG D
	2,173	74	>75% Grass cover, Good, HSG C
*	2,681	98	New Road
	6,654	85	Weighted Average
	3,973		59.71% Pervious Area
	2,681		40.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 13S:



Summary for Subcatchment 14S:

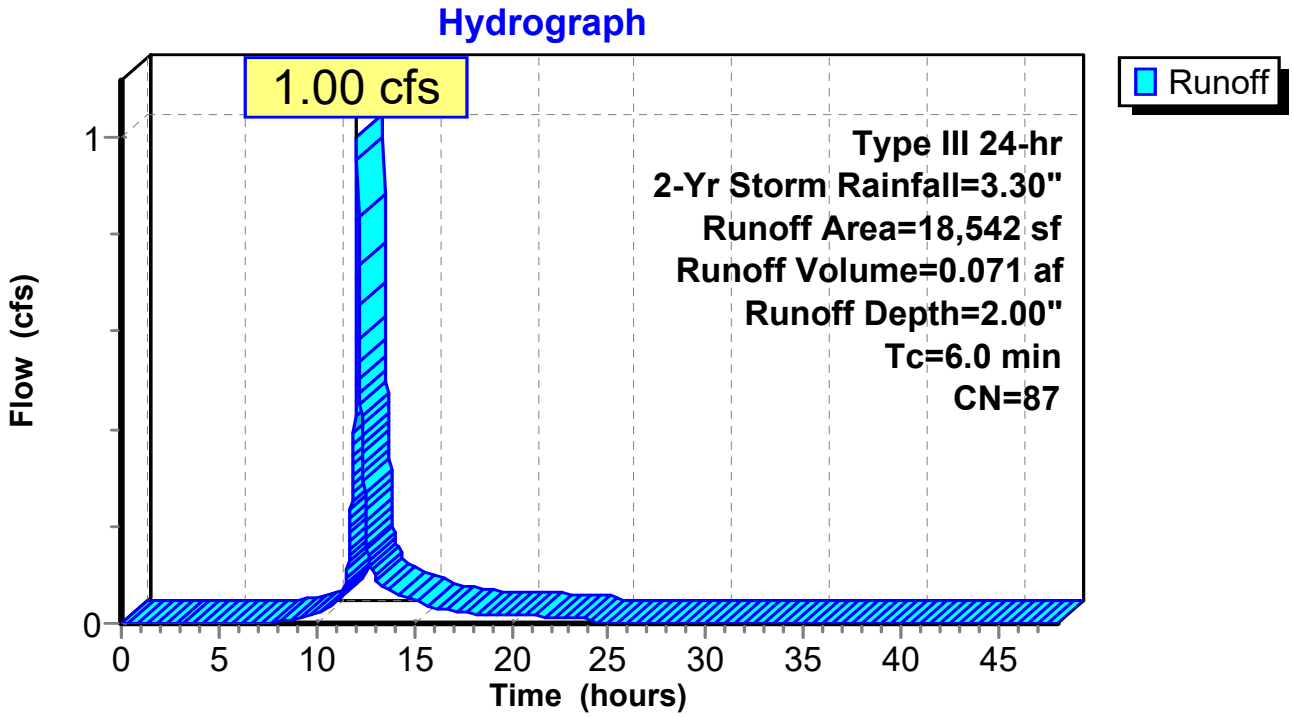
Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	4,779	74	>75% Grass cover, Good, HSG C
	4,778	80	>75% Grass cover, Good, HSG D
*	8,985	98	New Road
	18,542	87	Weighted Average
	9,557		51.54% Pervious Area
	8,985		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 14S:



Summary for Subcatchment 15S:

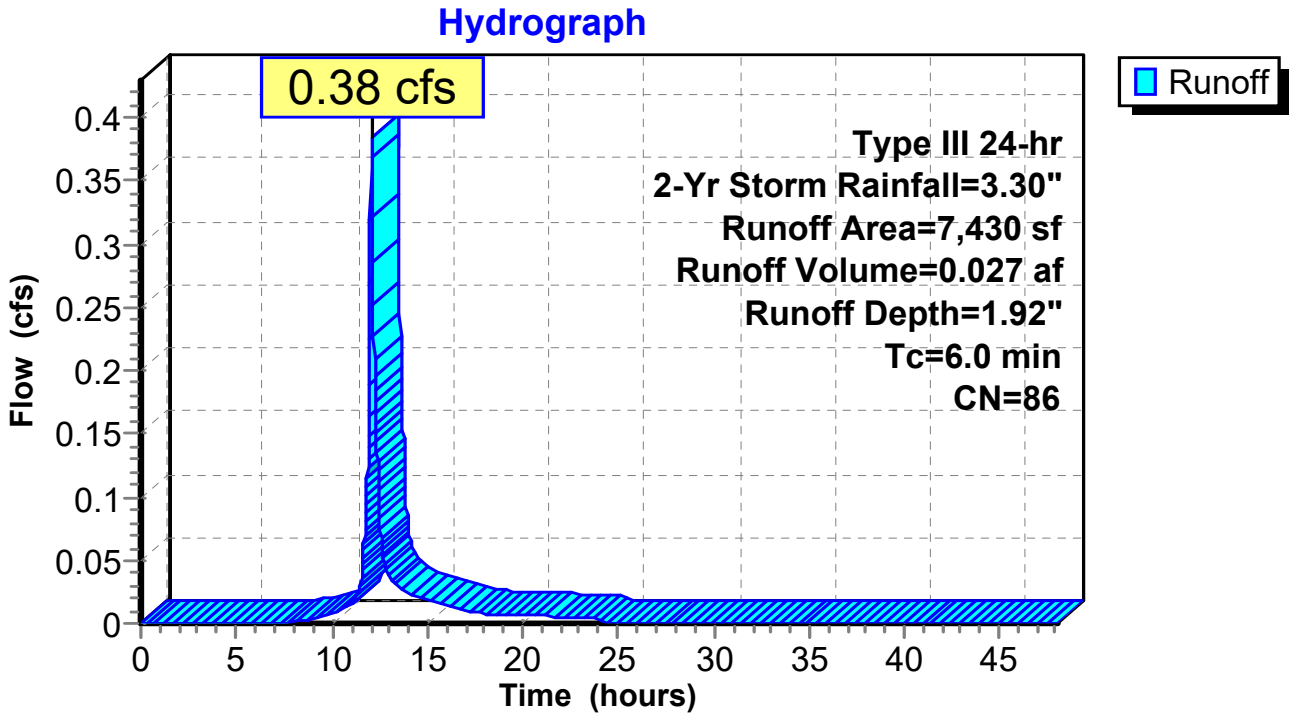
Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	2,036	74	>75% Grass cover, Good, HSG C
	2,035	80	>75% Grass cover, Good, HSG D
*	3,359	98	New Road
	7,430	86	Weighted Average
	4,071		54.79% Pervious Area
	3,359		45.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 15S:



Summary for Subcatchment 20S:

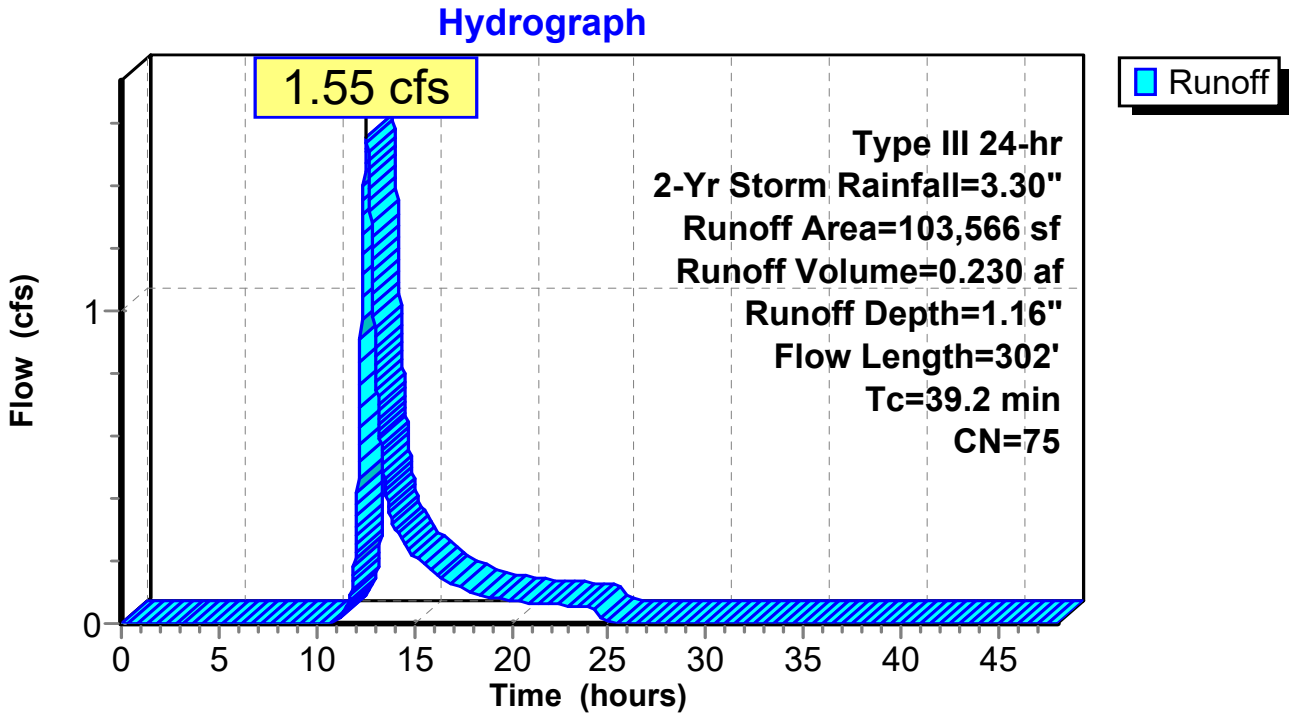
Runoff = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	30,010	77	Woods, Good, HSG D (Wetlands)
	36,778	77	Woods, Good, HSG D
	29,278	70	Woods, Good, HSG C
*	2,500	98	Lot
	5,000	74	>75% Grass cover, Good, HSG C
	103,566	75	Weighted Average
	101,066		97.59% Pervious Area
	2,500		2.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 20S:



Summary for Subcatchment OS: Off-site

Runoff = 16.34 cfs @ 13.55 hrs, Volume= 4.826 af, Depth= 0.94"

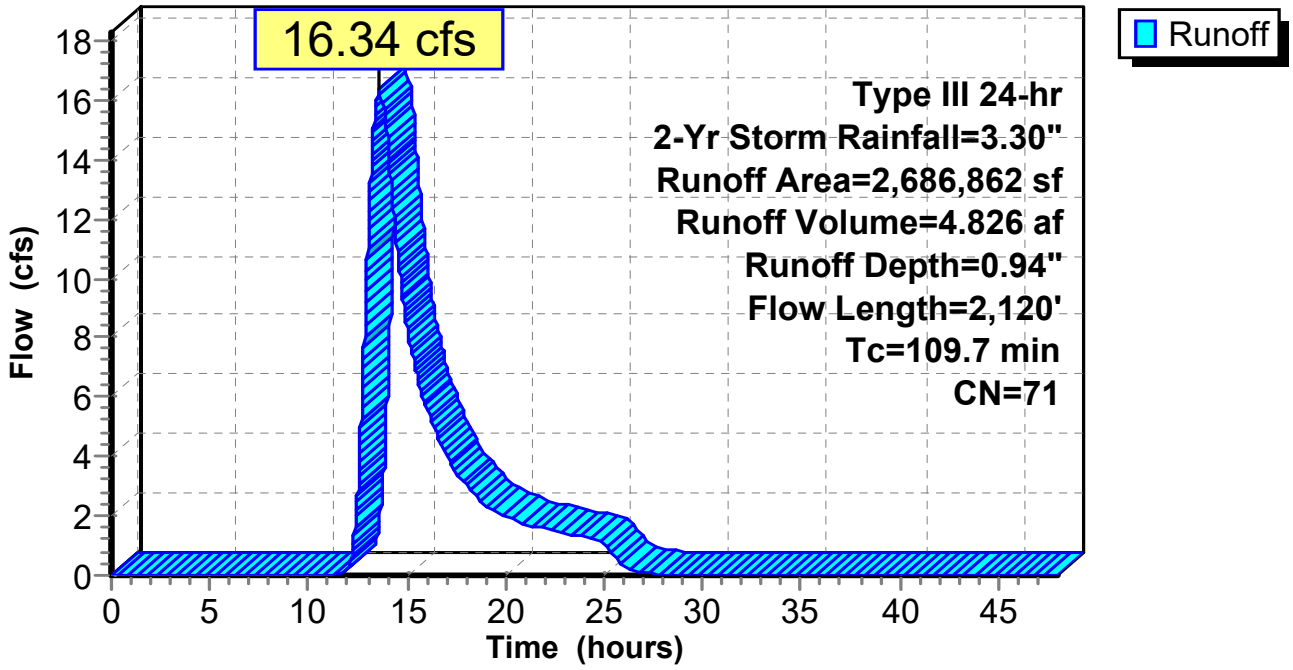
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
679,543	73	Woods, Fair, HSG C
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	71	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site

Hydrograph



Summary for Reach 1R:

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 2.00" for 2-Yr Storm event
Inflow = 0.44 cfs @ 12.53 hrs, Volume= 0.153 af
Outflow = 0.42 cfs @ 13.38 hrs, Volume= 0.153 af, Atten= 5%, Lag= 51.5 min

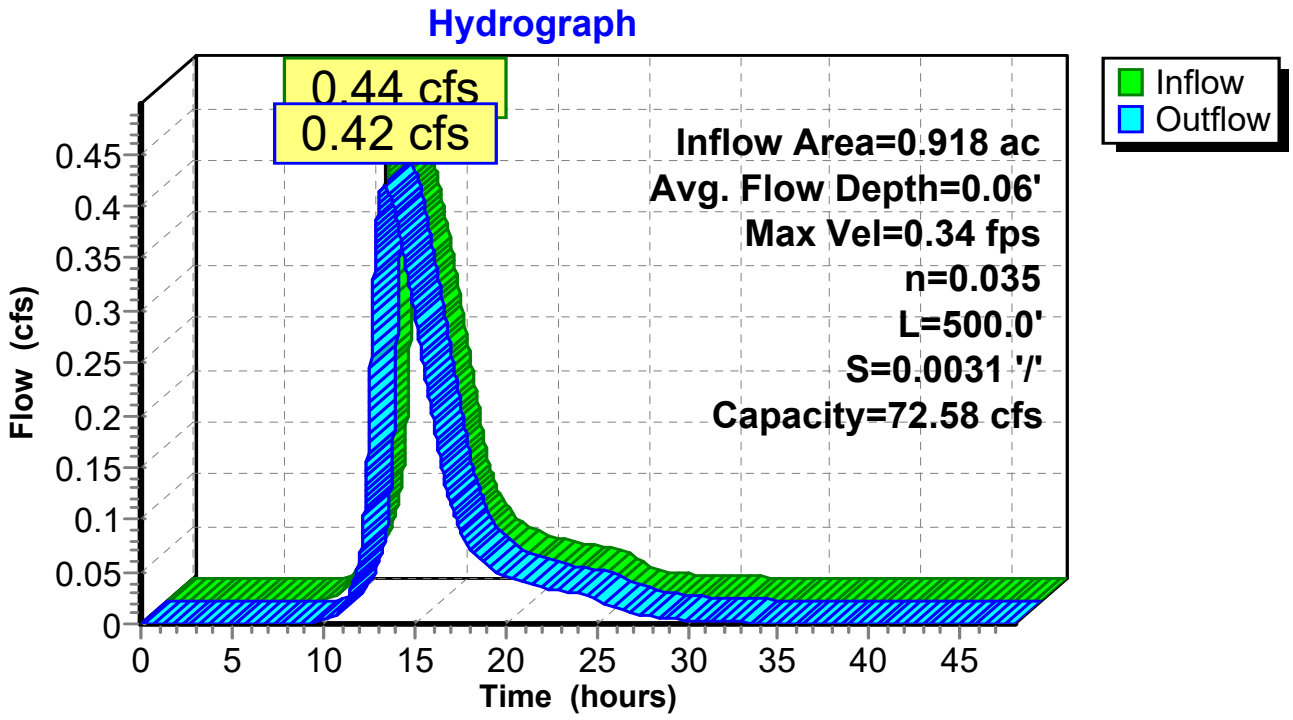
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.34 fps, Min. Travel Time= 24.2 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 59.6 min

Peak Storage= 612 cf @ 12.98 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 72.58 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 500.0' Slope= 0.0031 '/'
Inlet Invert= 19.57', Outlet Invert= 18.00'

‡

Reach 1R:



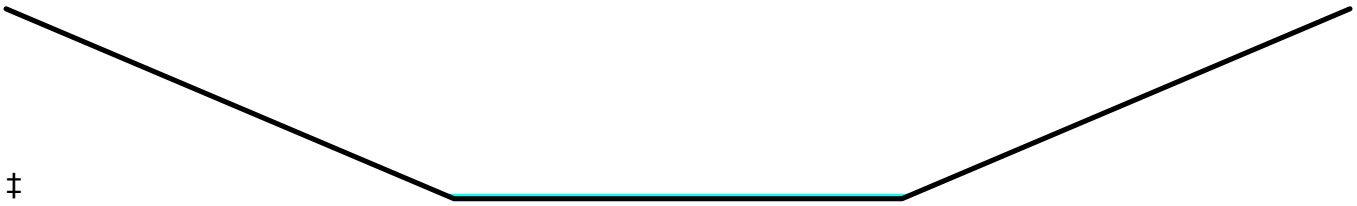
Summary for Reach 2.1R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.21 cfs @ 12.70 hrs, Volume= 0.030 af
Outflow = 0.08 cfs @ 15.06 hrs, Volume= 0.029 af, Atten= 64%, Lag= 142.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 97.1 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 171.2 min

Peak Storage= 437 cf @ 13.45 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 49.69 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 829.0' Slope= 0.0015 '/'
Inlet Invert= 19.57', Outlet Invert= 18.35'



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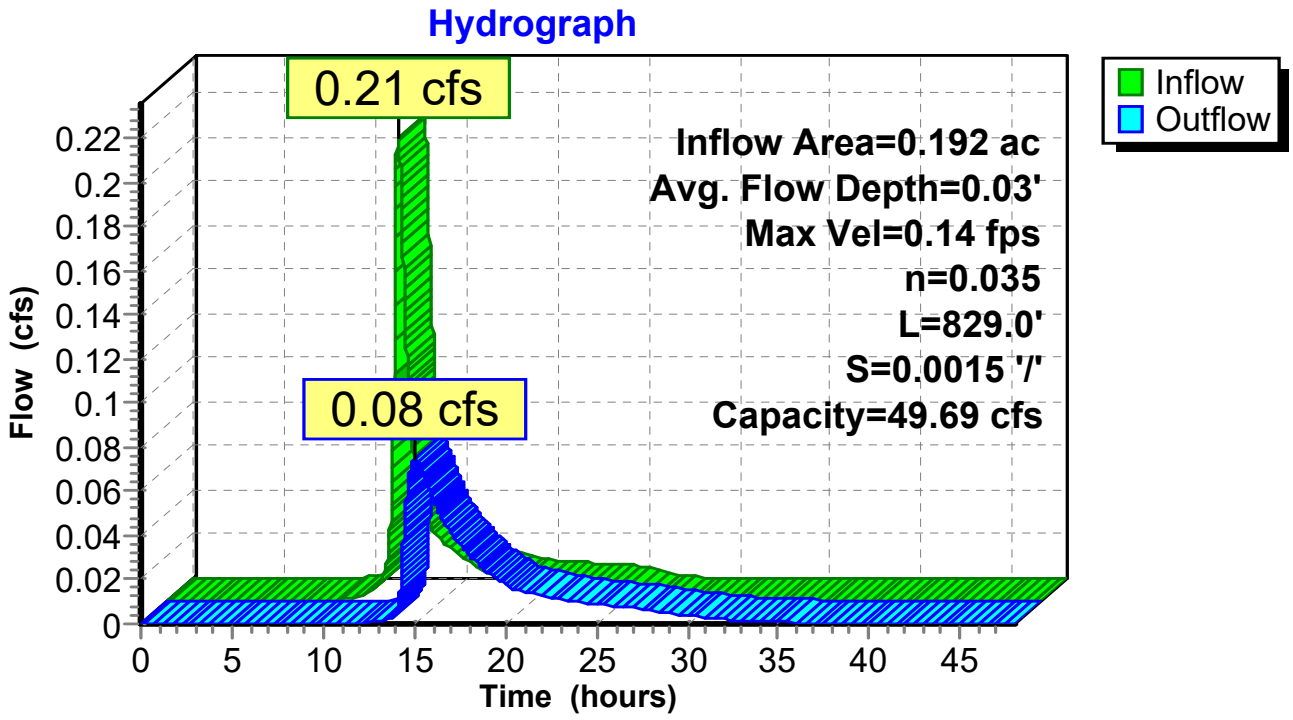
Reach 2.1R:



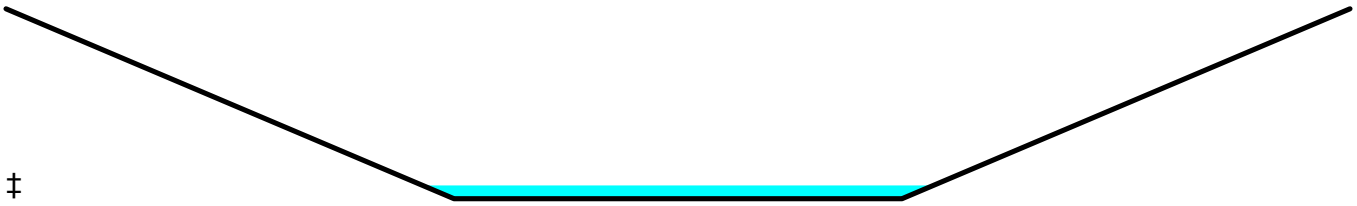
Summary for Reach 2R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.33 cfs @ 12.15 hrs, Volume= 0.030 af
Outflow = 0.21 cfs @ 12.68 hrs, Volume= 0.030 af, Atten= 36%, Lag= 31.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 20.2 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 59.1 min

Peak Storage= 255 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 26.28 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 170.0' Slope= 0.0004 '/'
Inlet Invert= 19.57', Outlet Invert= 19.50'



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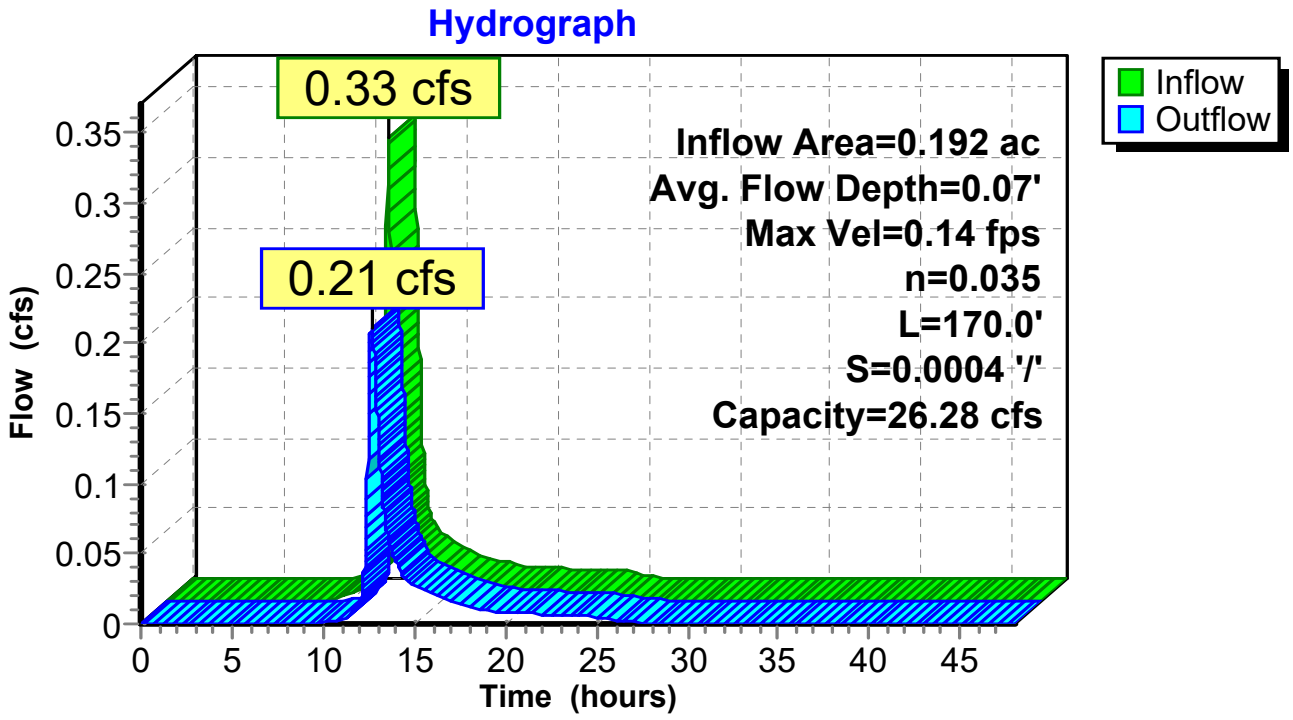
Reach 2R:



Summary for Reach 3R:

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.26 cfs @ 12.15 hrs, Volume= 0.023 af
Outflow = 0.09 cfs @ 13.60 hrs, Volume= 0.023 af, Atten= 65%, Lag= 86.7 min

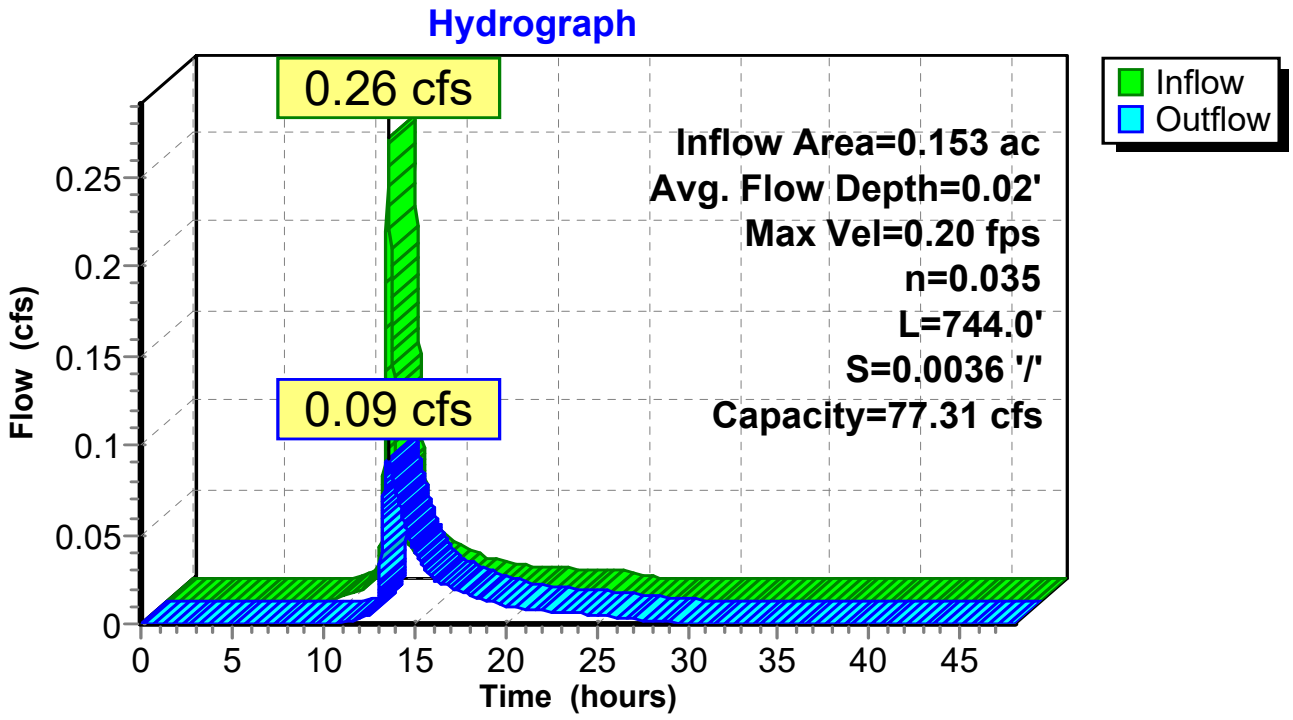
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.20 fps, Min. Travel Time= 61.6 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 101.9 min

Peak Storage= 338 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 77.31 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 744.0' Slope= 0.0036 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 3R:



Summary for Reach 4R:

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 2.00" for 2-Yr Storm event
Inflow = 0.56 cfs @ 12.21 hrs, Volume= 0.071 af
Outflow = 0.44 cfs @ 12.87 hrs, Volume= 0.071 af, Atten= 22%, Lag= 39.8 min

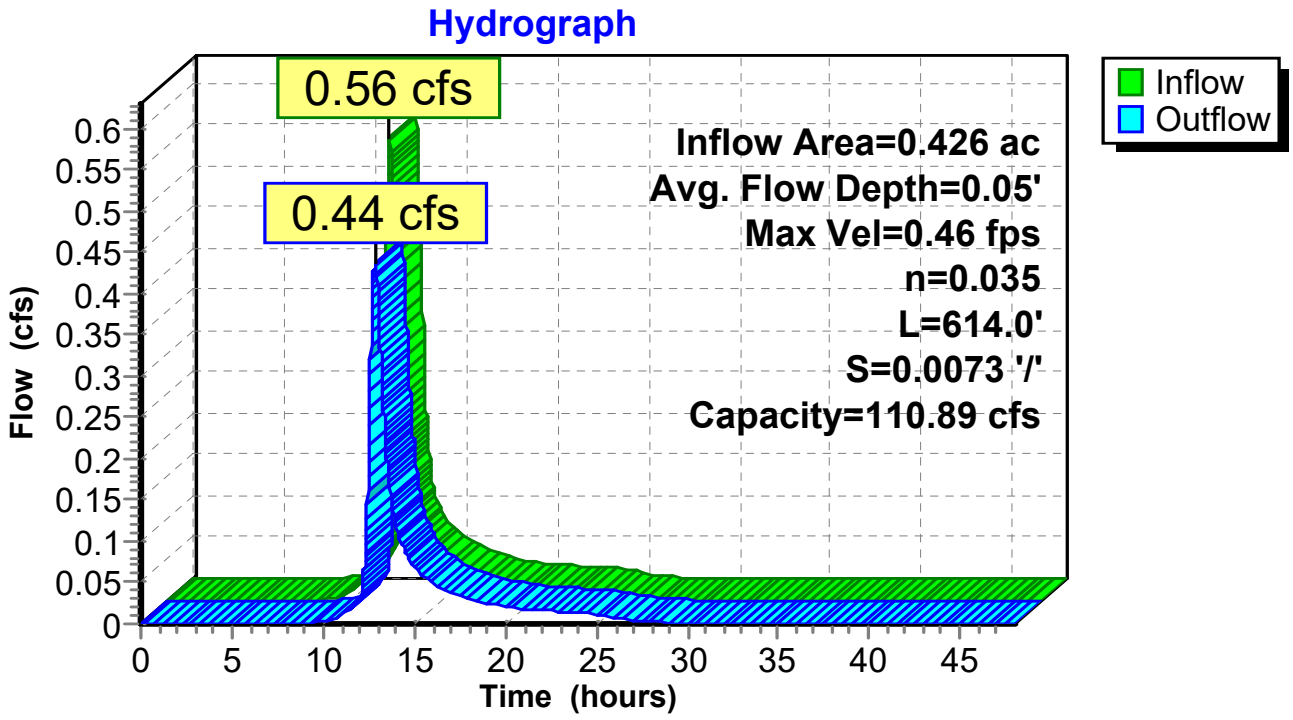
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.46 fps, Min. Travel Time= 22.5 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 55.2 min

Peak Storage= 590 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 110.89 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 614.0' Slope= 0.0073 '/'
Inlet Invert= 19.50', Outlet Invert= 15.00'

‡

Reach 4R:



Summary for Reach 5R:

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 1.92" for 2-Yr Storm event
Inflow = 0.33 cfs @ 12.14 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.19 hrs, Volume= 0.027 af, Atten= 2%, Lag= 3.2 min

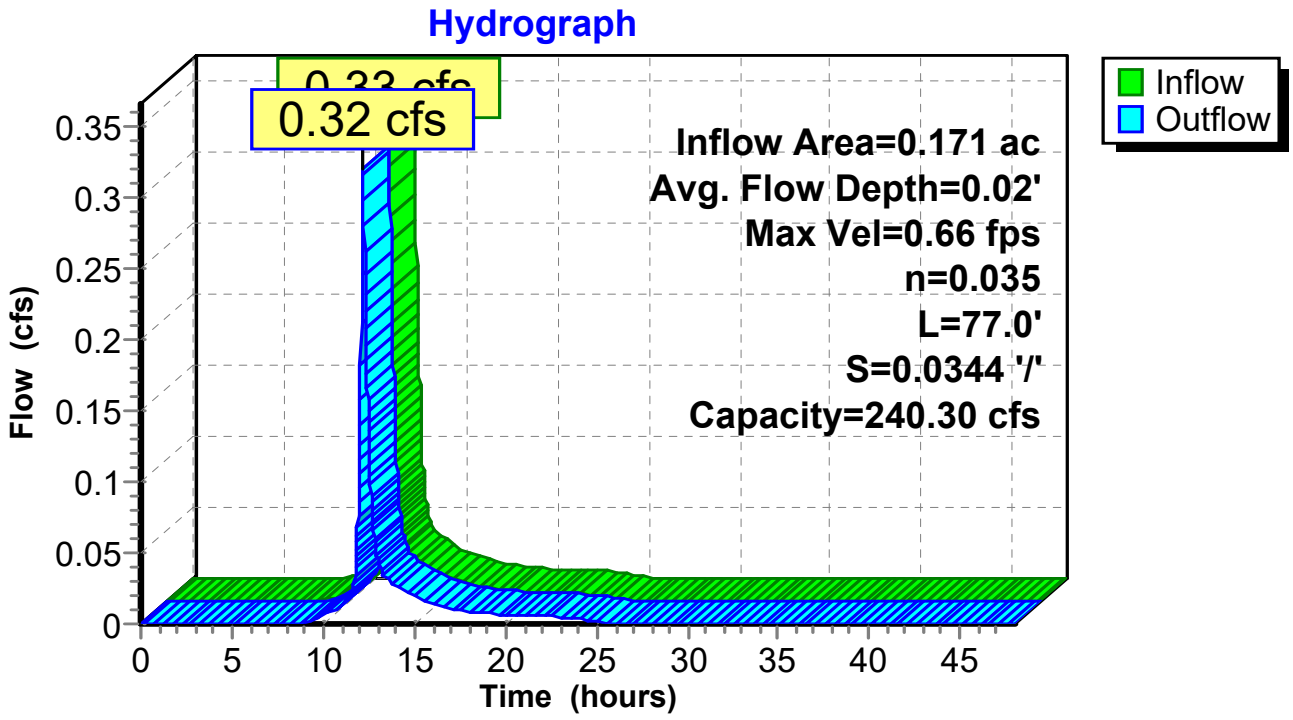
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.66 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 3.5 min

Peak Storage= 38 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 240.30 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 77.0' Slope= 0.0344 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 5R:



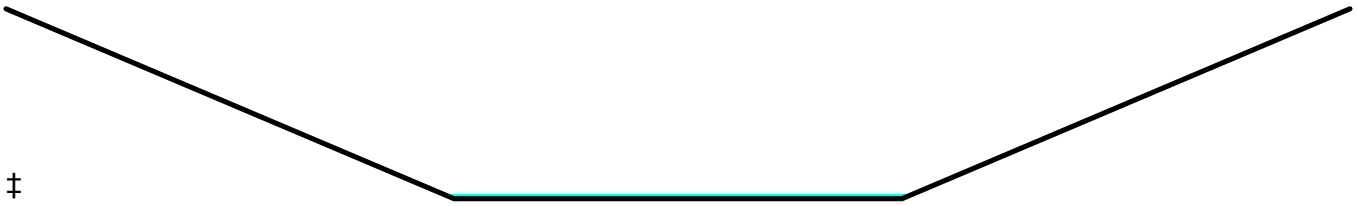
Summary for Reach 6R:

Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 1.87" for 2-Yr Storm event
Inflow = 0.32 cfs @ 12.21 hrs, Volume= 0.080 af
Outflow = 0.13 cfs @ 16.21 hrs, Volume= 0.080 af, Atten= 60%, Lag= 240.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.24 fps, Min. Travel Time= 54.7 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 91.8 min

Peak Storage= 421 cf @ 15.30 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 82.42 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 783.0' Slope= 0.0040 '/'
Inlet Invert= 18.17', Outlet Invert= 15.00'



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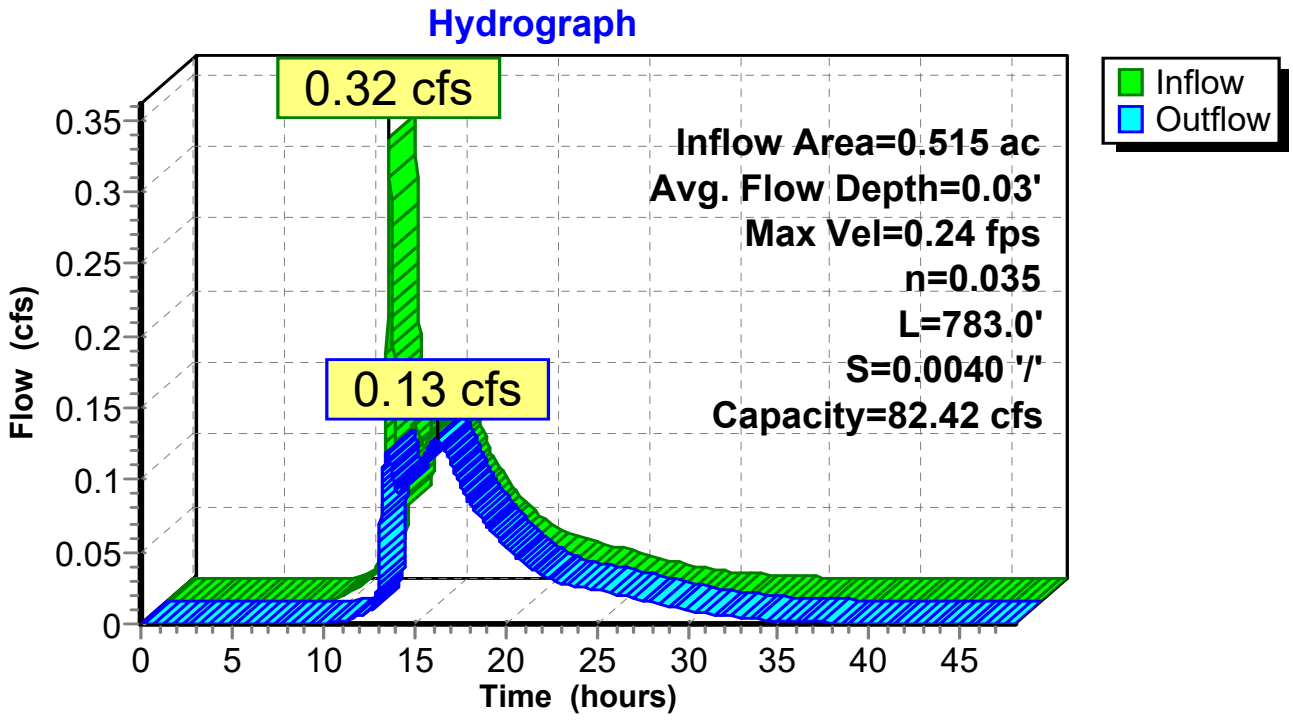
Reach 6R:



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 0.94" for 2-Yr Storm event
Inflow = 16.34 cfs @ 13.55 hrs, Volume= 4.826 af
Outflow = 11.56 cfs @ 15.50 hrs, Volume= 4.818 af, Atten= 29%, Lag= 117.3 min

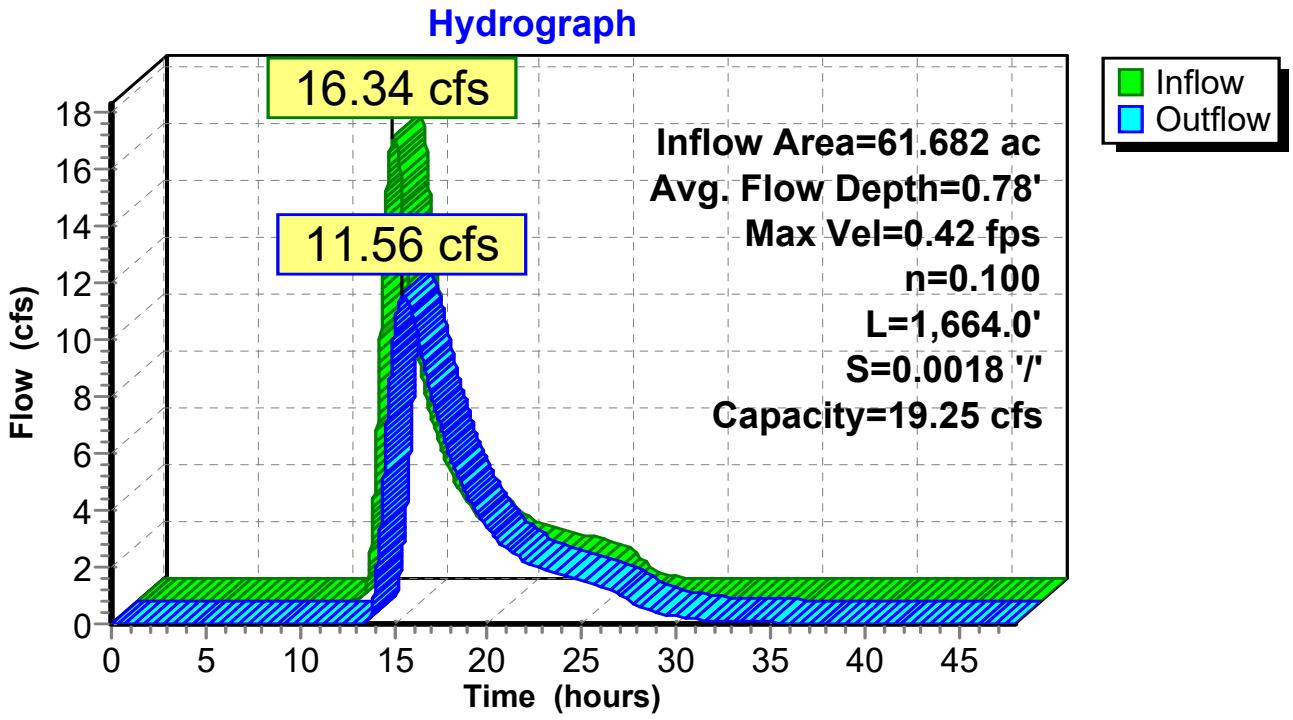
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 66.3 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 184.7 min

Peak Storage= 45,964 cf @ 14.40 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



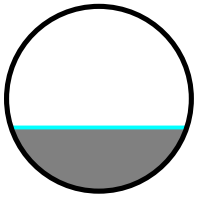
Summary for Reach WC1: CULVERT

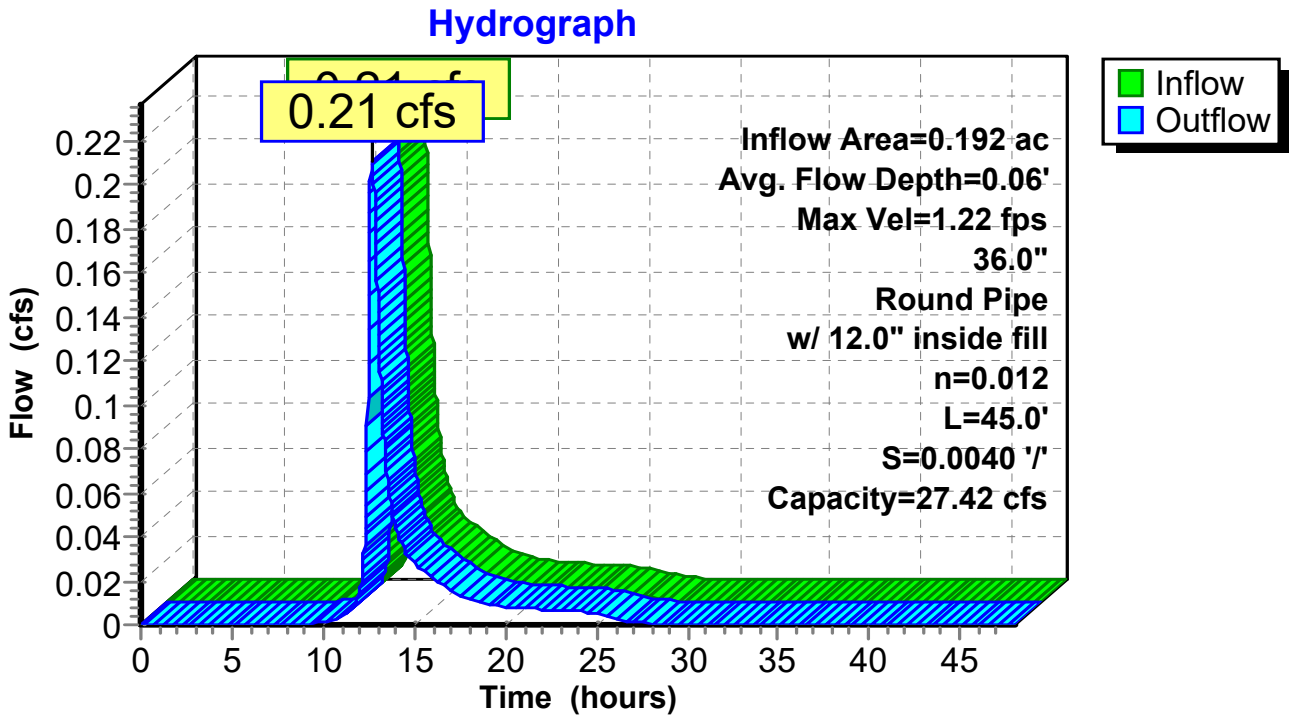
Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.21 cfs @ 12.68 hrs, Volume= 0.030 af
Outflow = 0.21 cfs @ 12.70 hrs, Volume= 0.030 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.22 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 1.2 min

Peak Storage= 8 cf @ 12.69 hrs
Average Depth at Peak Storage= 1.06' above invert (0.06' above fill)
Bank-Full Depth= 3.00' above invert (2.00' above fill) Flow Area= 5.0 sf, Capacity= 27.42 cfs

36.0" Round Pipe w/ 12.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 45.0' Slope= 0.0040 '/' (101 Elevation Intervals)
Inlet Invert= 19.50', Outlet Invert= 19.32'





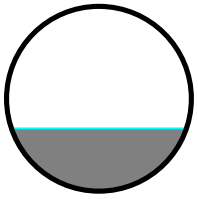
Summary for Reach WC2: CULVERT

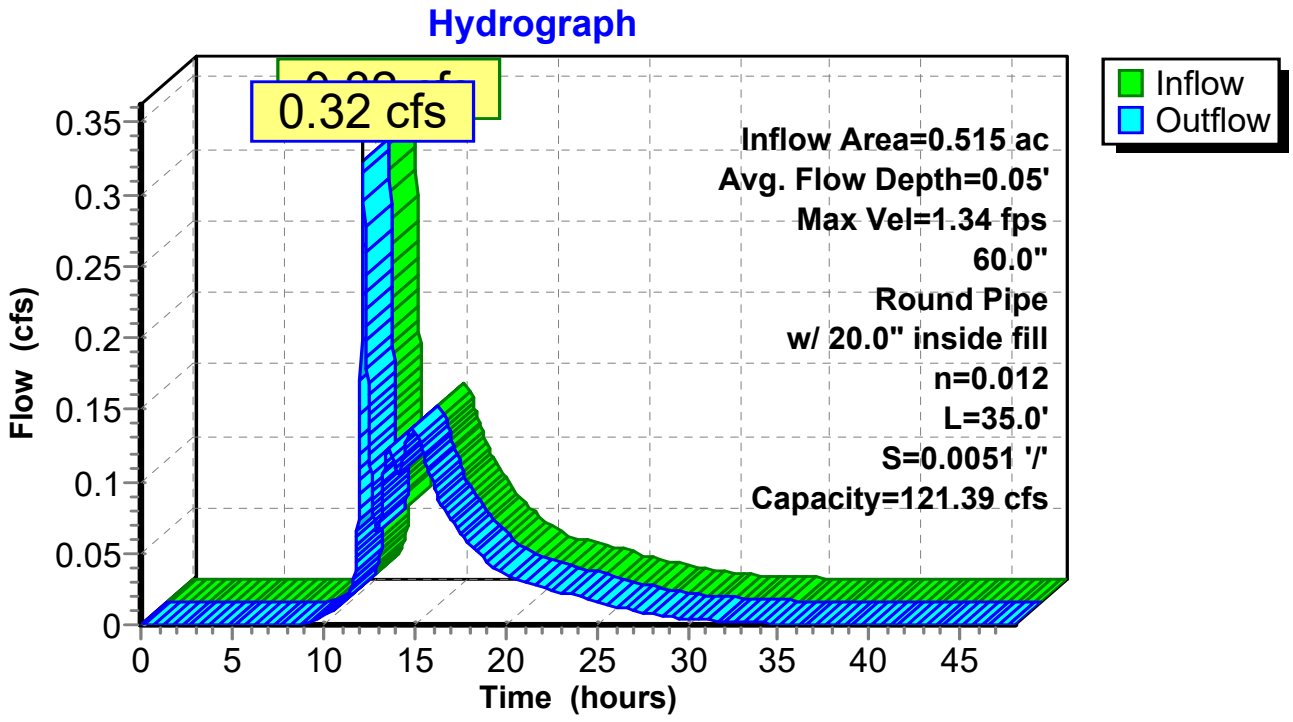
Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 1.87" for 2-Yr Storm event
Inflow = 0.32 cfs @ 12.19 hrs, Volume= 0.080 af
Outflow = 0.32 cfs @ 12.21 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.34 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.6 min

Peak Storage= 8 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.72' above invert (0.05' above fill)
Bank-Full Depth= 5.00' above invert (3.33' above fill) Flow Area= 13.9 sf, Capacity= 121.39 cfs

60.0" Round Pipe w/ 20.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 35.0' Slope= 0.0051 '/' (101 Elevation Intervals)
Inlet Invert= 18.35', Outlet Invert= 18.17'





Summary for Pond 1P: Gravel Wetland

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 2.00" for 2-Yr Storm event
Inflow = 2.15 cfs @ 12.09 hrs, Volume= 0.153 af
Outflow = 0.44 cfs @ 12.53 hrs, Volume= 0.153 af, Atten= 79%, Lag= 26.2 min
Primary = 0.44 cfs @ 12.53 hrs, Volume= 0.153 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 1,600 sf Storage= 1,630 cf
Peak Elev= 20.96' @ 12.53 hrs Surf.Area= 2,332 sf Storage= 4,040 cf (2,410 cf above start)

Plug-Flow detention time= 219.6 min calculated for 0.116 af (76% of inflow)
Center-of-Mass det. time= 76.5 min (894.1 - 817.6)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,938 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

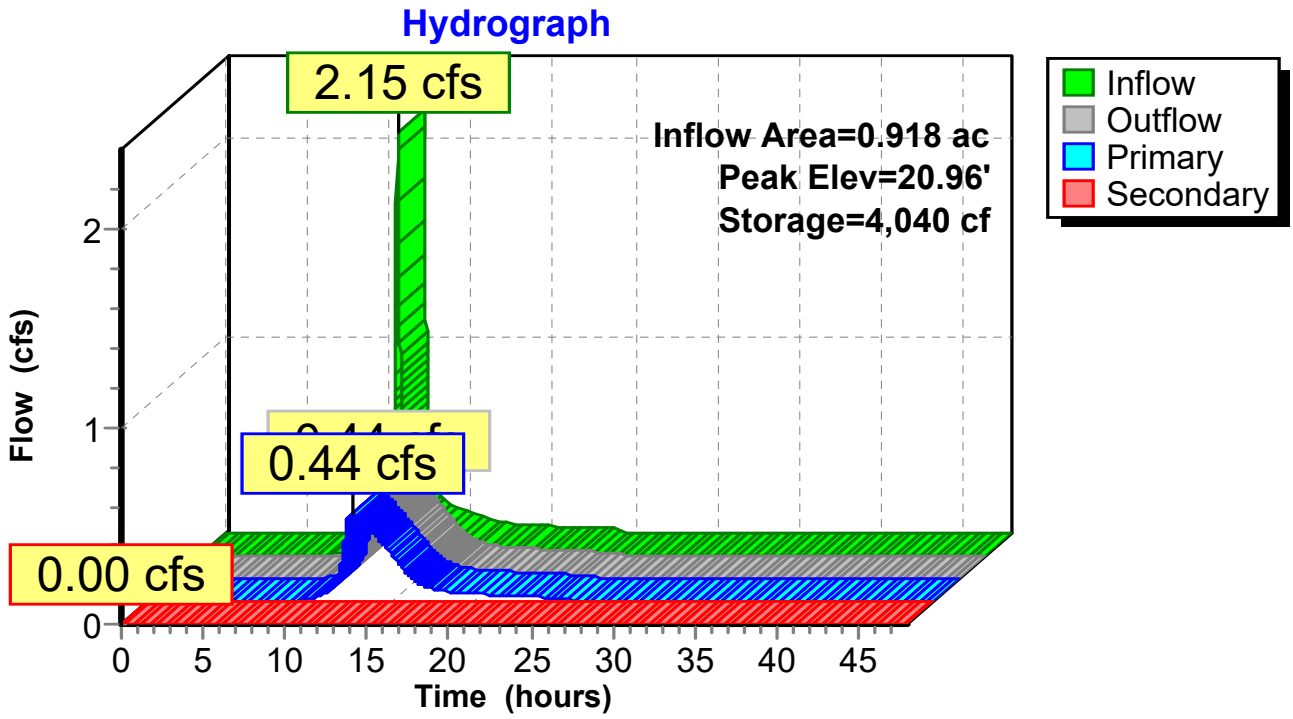
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	1,600	0.0	0	0
16.83	1,600	40.0	6	6
18.83	1,600	30.0	960	966
19.33	1,600	15.0	120	1,086
20.00	1,600	100.0	1,072	2,158
21.00	2,365	100.0	1,983	4,141
21.50	2,790	100.0	1,289	5,430
22.00	3,244	100.0	1,509	6,938

Device	Routing	Invert	Outlet Devices
#1	Primary	19.67'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.67' / 19.57' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	21.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Device 1	19.67'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.44 cfs @ 12.53 hrs HW=20.96' (Free Discharge)
↑**1=Culvert** (Passes 0.44 cfs of 2.65 cfs potential flow)
↑**3=Orifice/Grate** (Orifice Controls 0.44 cfs @ 5.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.67' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Gravel Wetland



Summary for Pond 2P: Gravel Wetland

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.33 cfs @ 12.15 hrs, Volume= 0.030 af, Atten= 20%, Lag= 3.7 min
Primary = 0.33 cfs @ 12.15 hrs, Volume= 0.030 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.55' @ 12.15 hrs Surf.Area= 417 sf Storage= 559 cf (151 cf above start)

Plug-Flow detention time= 182.5 min calculated for 0.020 af (68% of inflow)
Center-of-Mass det. time= 20.4 min (845.1 - 824.7)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

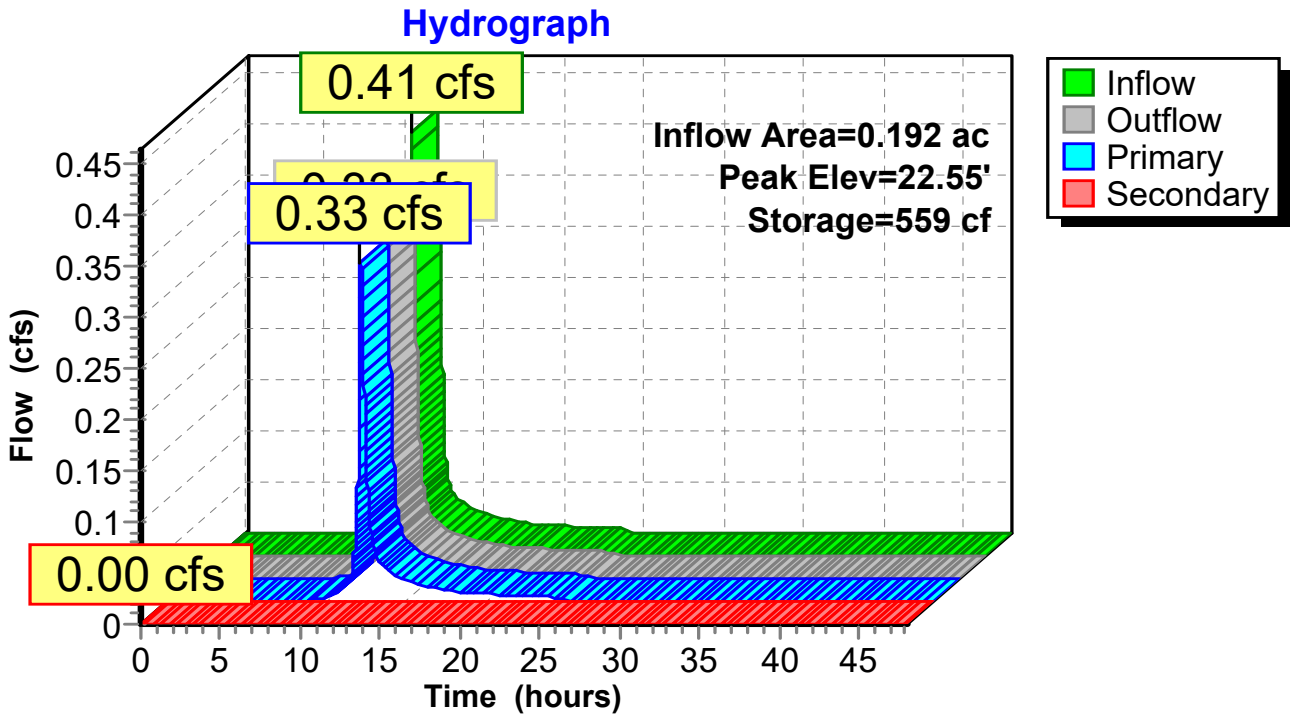
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.33 cfs @ 12.15 hrs HW=22.55' (Free Discharge)
↑—**2=Culvert** (Passes 0.33 cfs of 0.46 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.33 cfs @ 2.09 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Gravel Wetland



Summary for Pond 3P: Gravel Wetland

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.26 cfs @ 12.15 hrs, Volume= 0.023 af, Atten= 21%, Lag= 3.8 min
Primary = 0.26 cfs @ 12.15 hrs, Volume= 0.023 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.49' @ 12.15 hrs Surf.Area= 400 sf Storage= 537 cf (129 cf above start)

Plug-Flow detention time= 218.0 min calculated for 0.014 af (60% of inflow)
Center-of-Mass det. time= 22.2 min (847.0 - 824.7)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

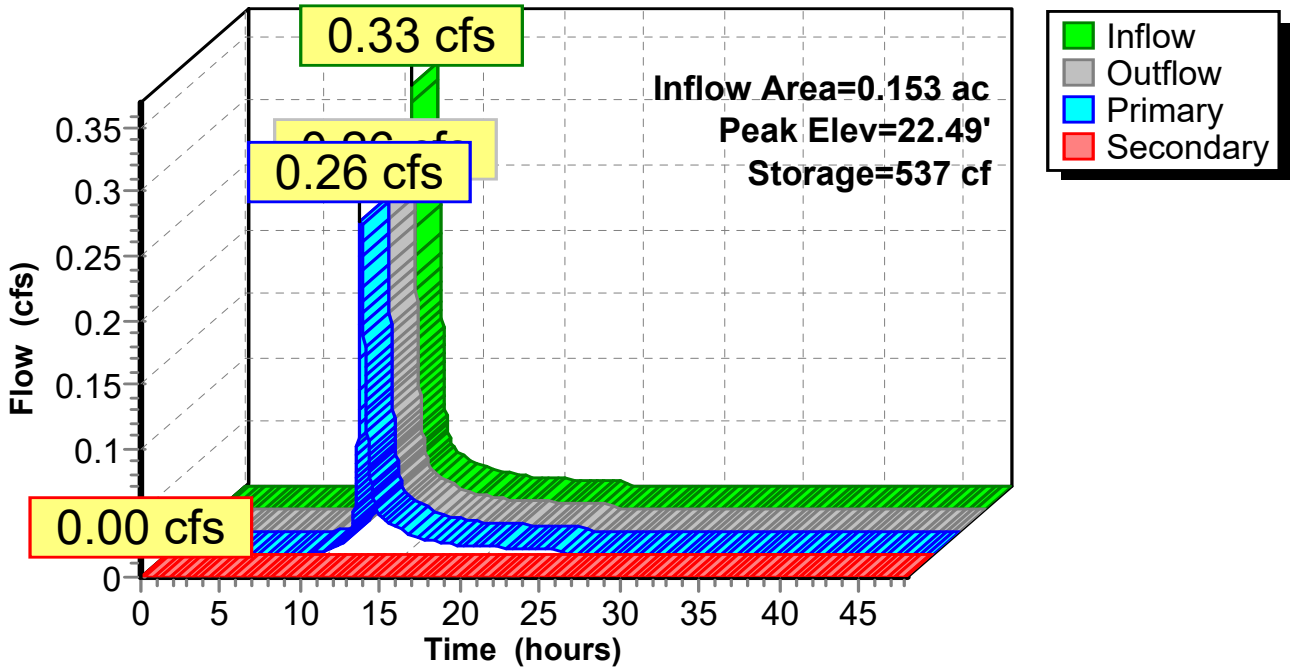
Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0113 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.26 cfs @ 12.15 hrs HW=22.49' (Free Discharge)
└**2=Culvert** (Passes 0.26 cfs of 0.38 cfs potential flow)
└**1=Orifice/Grate** (Orifice Controls 0.26 cfs @ 1.93 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Gravel Wetland

Hydrograph



Summary for Pond 4P: Gravel Wetland

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 2.00" for 2-Yr Storm event
Inflow = 1.00 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.56 cfs @ 12.21 hrs, Volume= 0.071 af, Atten= 44%, Lag= 7.4 min
Primary = 0.56 cfs @ 12.21 hrs, Volume= 0.071 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 900 sf Storage= 917 cf
Peak Elev= 20.27' @ 12.21 hrs Surf.Area= 1,068 sf Storage= 1,484 cf (567 cf above start)

Plug-Flow detention time= 187.0 min calculated for 0.050 af (70% of inflow)
Center-of-Mass det. time= 32.4 min (850.0 - 817.6)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,956 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

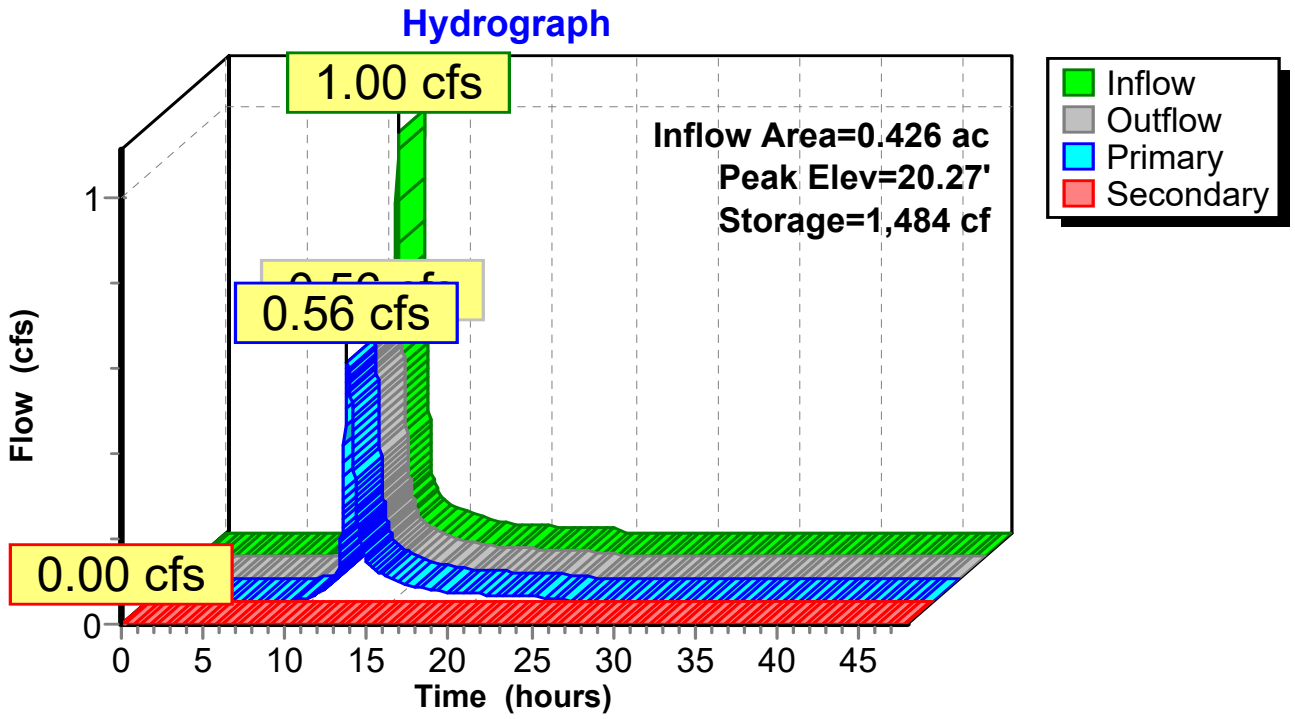
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	900	0.0	0	0
16.83	900	40.0	4	4
18.83	900	30.0	540	544
19.33	900	15.0	68	611
20.00	900	100.0	603	1,214
21.00	1,510	100.0	1,205	2,419
22.00	2,240	100.0	1,875	4,294
23.00	3,084	100.0	2,662	6,956

Device	Routing	Invert	Outlet Devices
#1	Device 2	19.67'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.67'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 19.67' / 19.40' S= 0.0135 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	22.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.56 cfs @ 12.21 hrs HW=20.27' (Free Discharge)
↑—**2=Culvert** (Passes 0.56 cfs of 1.25 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.56 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.67' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Gravel Wetland



Summary for Pond 5P: Gravel Wetland

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 1.92" for 2-Yr Storm event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.33 cfs @ 12.14 hrs, Volume= 0.027 af, Atten= 15%, Lag= 3.0 min
Primary = 0.33 cfs @ 12.14 hrs, Volume= 0.027 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 21.17' Surf.Area= 300 sf Storage= 756 cf
Peak Elev= 21.54' @ 12.14 hrs Surf.Area= 314 sf Storage= 868 cf (112 cf above start)

Plug-Flow detention time= 329.7 min calculated for 0.010 af (36% of inflow)
Center-of-Mass det. time= 15.4 min (836.6 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	2,871 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

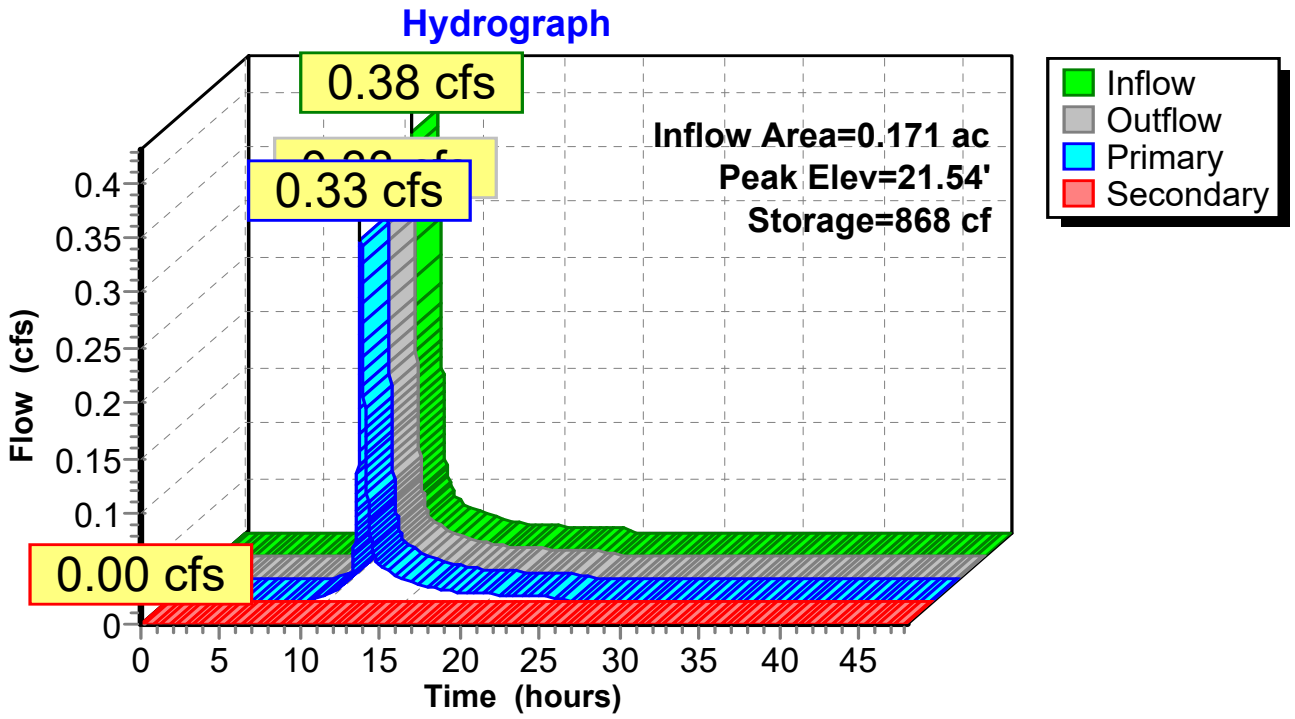
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	300	0.0	0	0
16.83	300	40.0	1	1
18.83	300	30.0	180	181
19.33	300	15.0	23	204
21.50	300	100.0	651	855
22.00	466	100.0	192	1,046
23.00	884	100.0	675	1,721
24.00	1,415	100.0	1,150	2,871

Device	Routing	Invert	Outlet Devices
#1	Device 2	21.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	21.17'	**12.0" Round Culvert** L= 23.0' Ke= 0.500 Inlet / Outlet Invert= 21.17' / 21.00' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	23.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.33 cfs @ 12.14 hrs HW=21.54' (Free Discharge)
↑—**2=Culvert** (Passes 0.33 cfs of 0.46 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.33 cfs @ 2.08 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: Gravel Wetland



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 1.02" for 2-Yr Storm event
Inflow = 17.60 cfs @ 12.99 hrs, Volume= 8.651 af
Outflow = 16.49 cfs @ 13.20 hrs, Volume= 8.651 af, Atten= 6%, Lag= 12.2 min
Primary = 16.49 cfs @ 13.20 hrs, Volume= 8.651 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 17.30' @ 13.20 hrs Surf.Area= 8,025 sf Storage= 8,220 cf

Plug-Flow detention time= 8.3 min calculated for 8.647 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (1,041.9 - 1,033.7)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,750 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

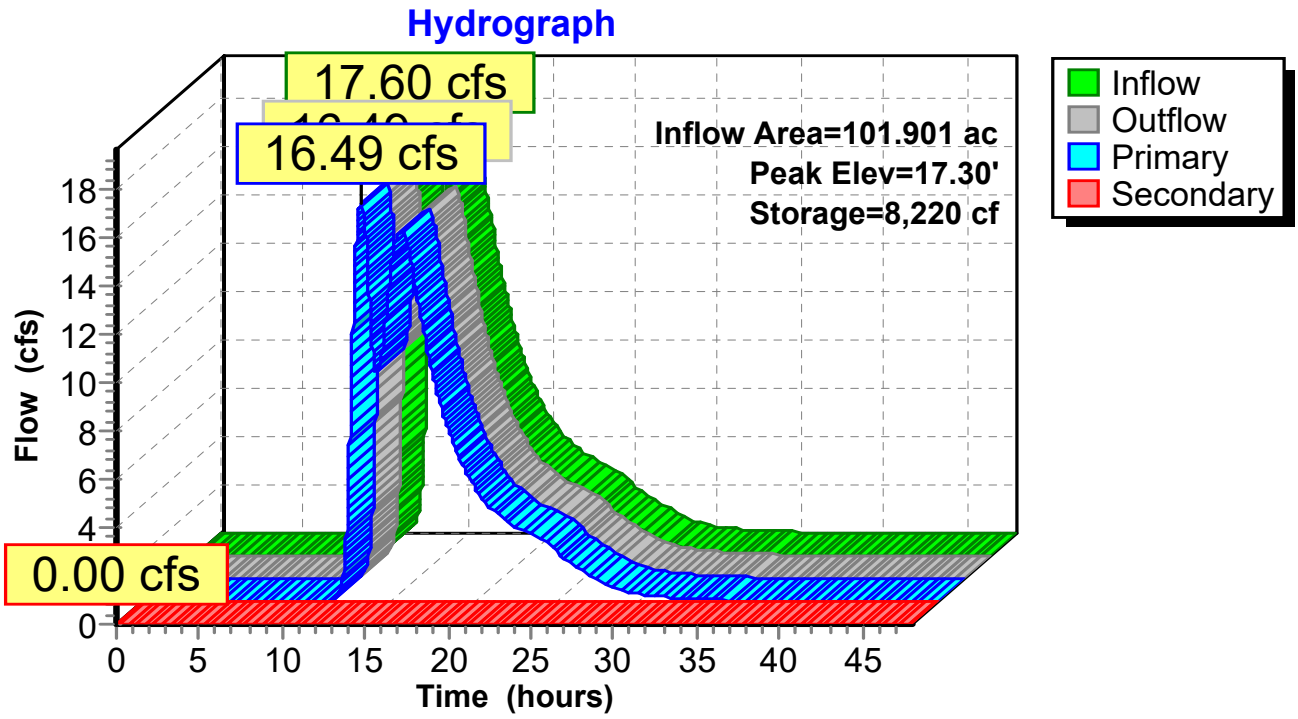
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	2,500	0	0
16.00	2,500	2,500	2,500
17.00	5,000	3,750	6,250
17.50	10,000	3,750	10,000
18.00	25,000	8,750	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=16.49 cfs @ 13.20 hrs HW=17.30' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 16.49 cfs @ 4.21 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond C: 30" CULVERT

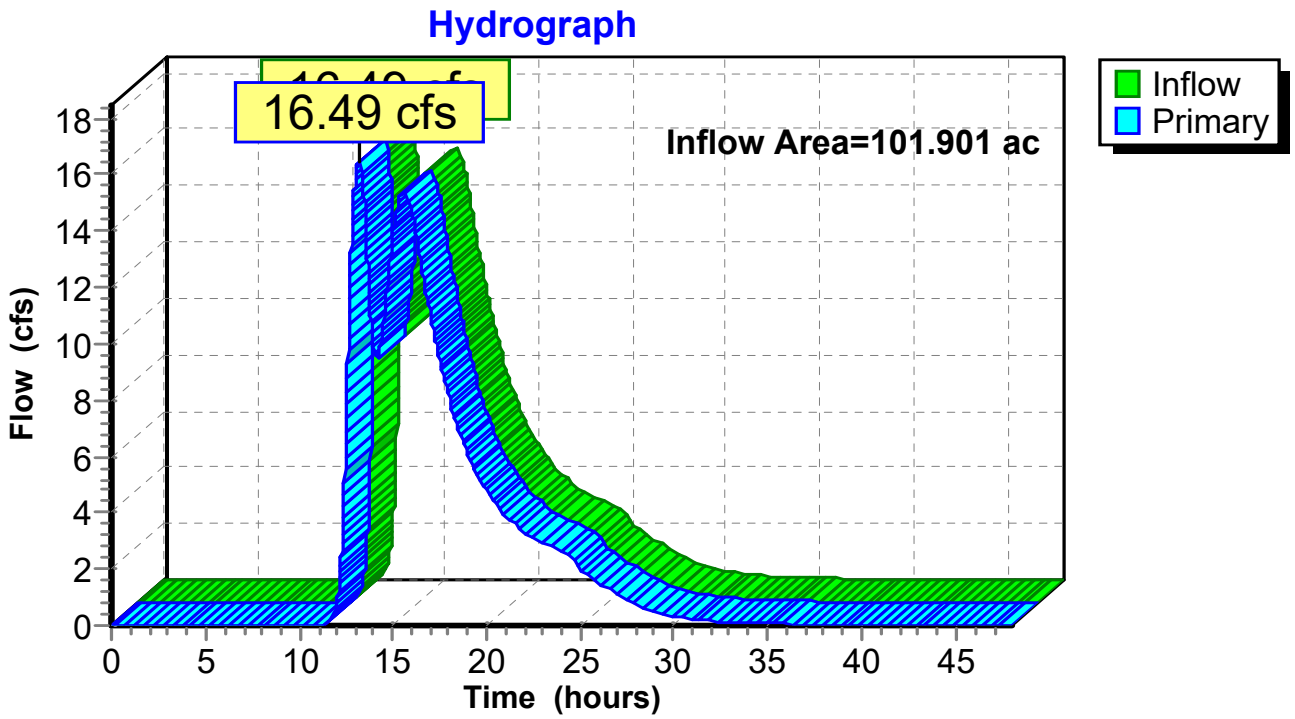


Summary for Link POA1:

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 1.02" for 2-Yr Storm event
Inflow = 16.49 cfs @ 13.20 hrs, Volume= 8.651 af
Primary = 16.49 cfs @ 13.20 hrs, Volume= 8.651 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

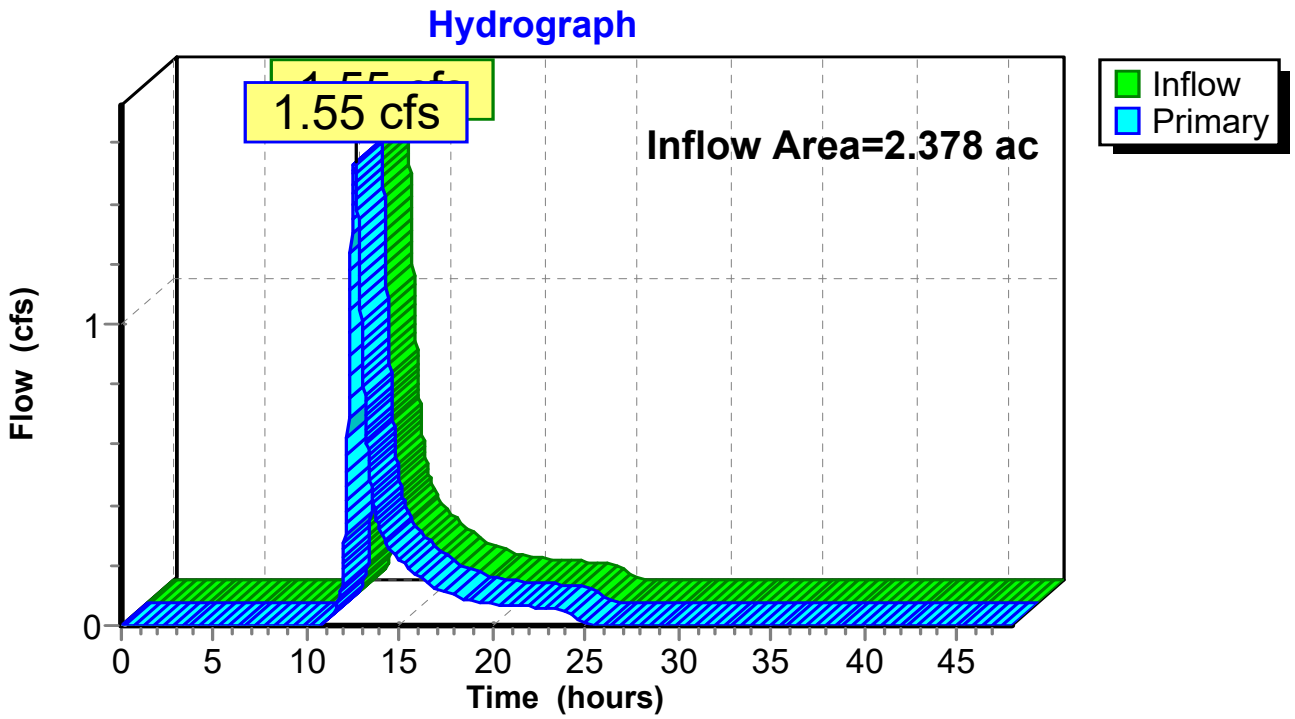


Summary for Link POA2:

Inflow Area = 2.378 ac, 2.41% Impervious, Inflow Depth = 1.16" for 2-Yr Storm event
Inflow = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af
Primary = 1.55 cfs @ 12.58 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



Summary for Subcatchment 10S:

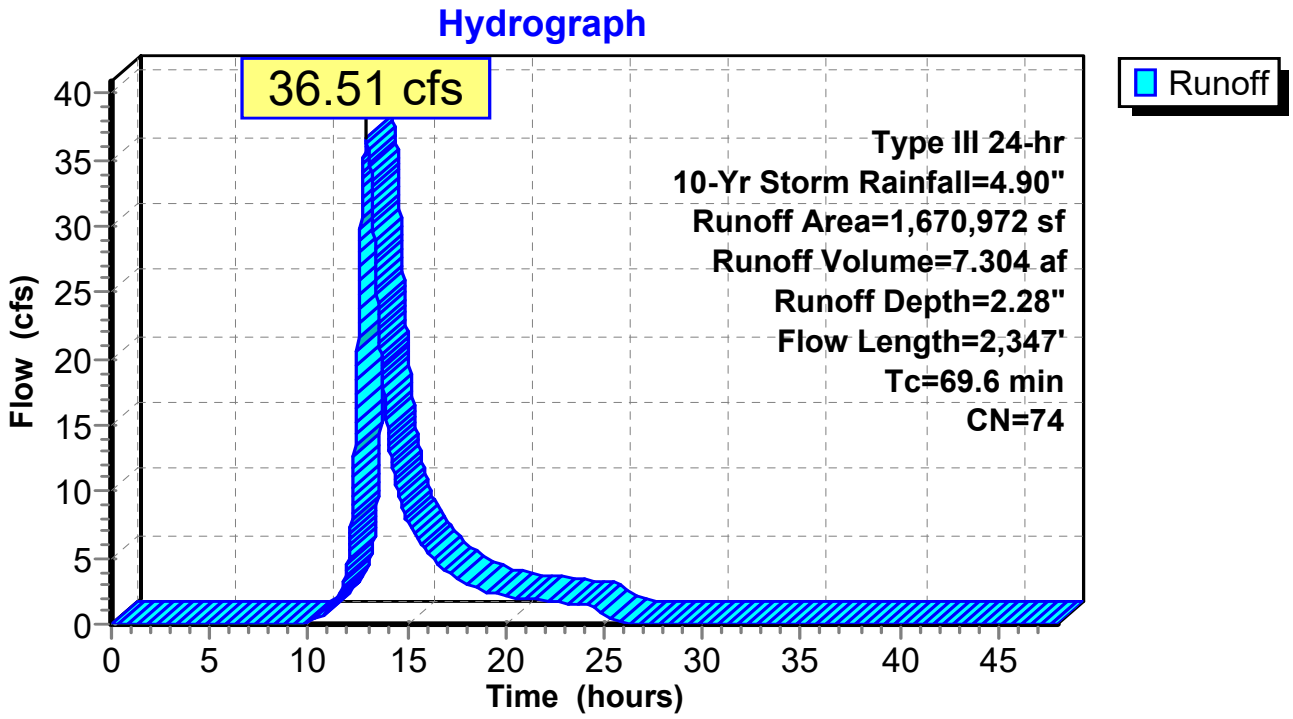
Runoff = 36.51 cfs @ 12.93 hrs, Volume= 7.304 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	297,901	77	Woods, Good, HSG D (wetlands)
	119,137	70	Woods, Good, HSG C
	555,742	70	Woods, Good, HSG C
	315,854	77	Woods, Good, HSG D
*	11,606	98	New Impervious Road
	10,685	74	>75% Grass cover, Good, HSG C
	10,685	80	>75% Grass cover, Good, HSG D
	2,189	80	>75% Grass cover, Good, HSG D
	125,624	70	Woods, Good, HSG C
*	3,349	98	New Road
	2,100	70	Woods, Good, HSG C
	2,100	77	Woods, Good, HSG D
*	64,000	98	Roof and driveway
	150,000	74	>75% Grass cover, Good, HSG C
	1,670,972	74	Weighted Average
	1,592,017		95.27% Pervious Area
	78,955		4.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	60	0.0080	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
3.3	450	0.0050	2.29	91.64	**Channel Flow, E-F** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
0.1	40	0.0050	7.50	92.26	**Pipe Channel, F-G** 60.0" Round w/ 24.0" inside fill Area= 12.3 sf Perim= 13.8' r= 0.89 n= 0.013 Corrugated PE, smooth interior
5.7	783	0.0050	2.29	91.64	**Channel Flow, F-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
69.6	2,347	Total			

Subcatchment 10S:



Summary for Subcatchment 11S:

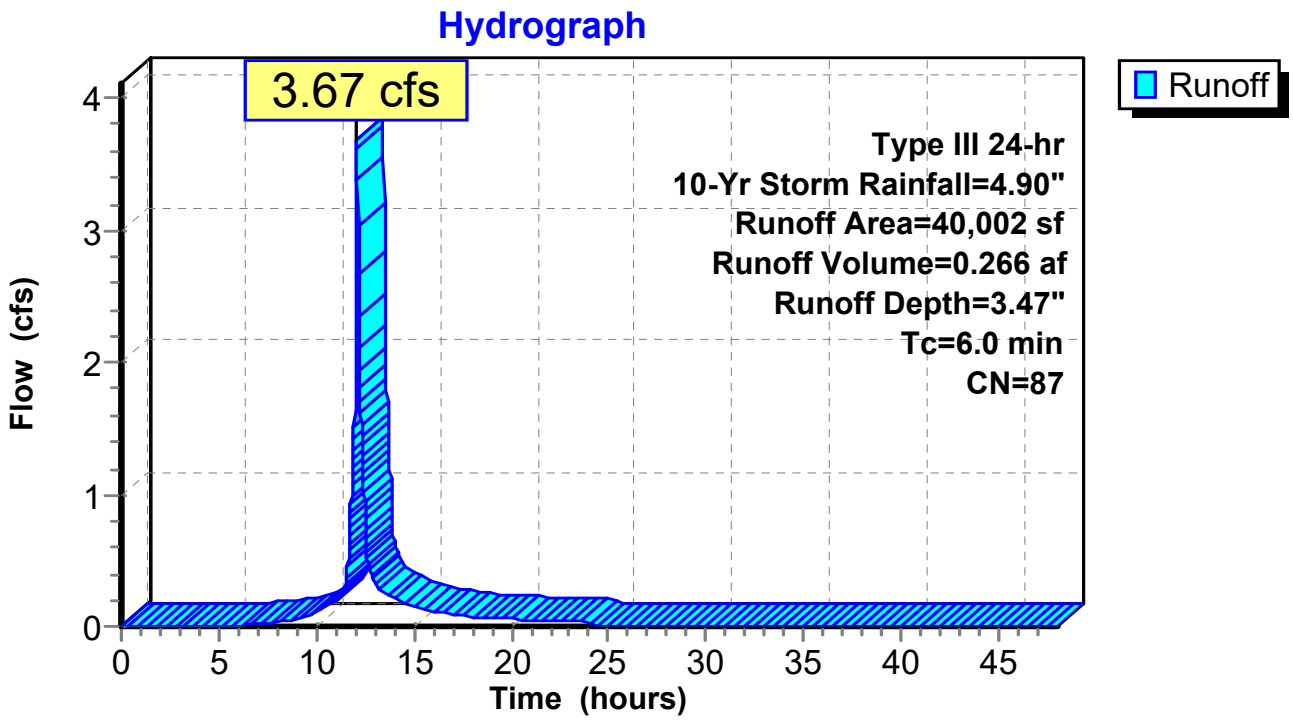
Runoff = 3.67 cfs @ 12.09 hrs, Volume= 0.266 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	18,790	98	New Road
	10,606	74	>75% Grass cover, Good, HSG C
	10,606	80	>75% Grass cover, Good, HSG D
	40,002	87	Weighted Average
	21,212		53.03% Pervious Area
	18,790		46.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 11S:



Summary for Subcatchment 12S:

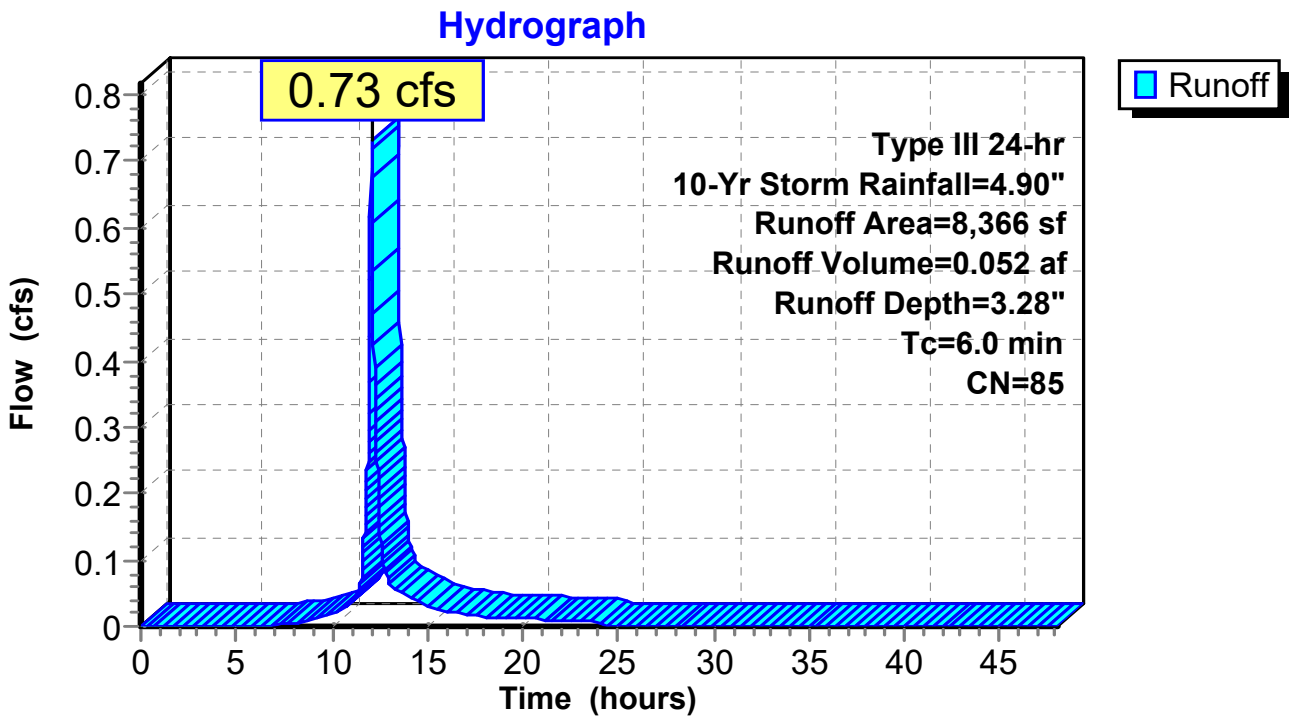
Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	1,367	80	>75% Grass cover, Good, HSG D
	3,417	74	>75% Grass cover, Good, HSG C
*	3,582	98	New Road
	8,366	85	Weighted Average
	4,784		57.18% Pervious Area
	3,582		42.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 12S:



Summary for Subcatchment 13S:

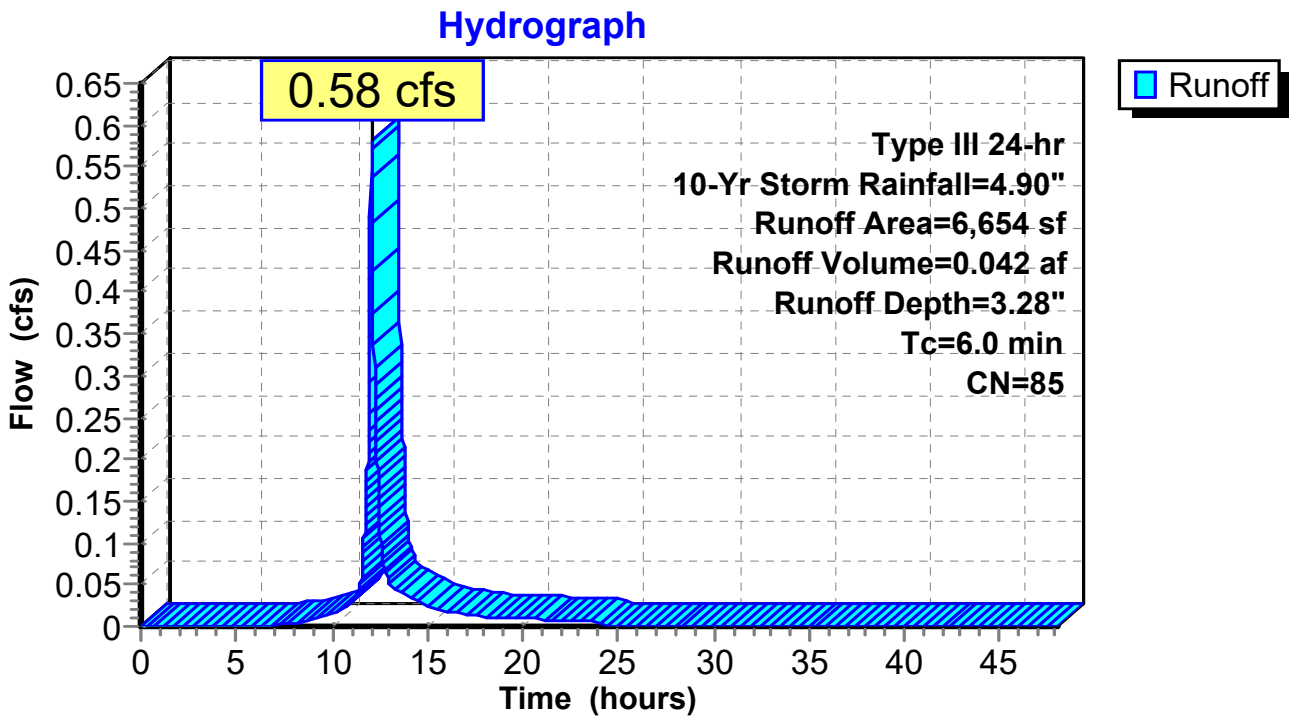
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	1,800	80	>75% Grass cover, Good, HSG D
	2,173	74	>75% Grass cover, Good, HSG C
*	2,681	98	New Road
	6,654	85	Weighted Average
	3,973		59.71% Pervious Area
	2,681		40.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 13S:



Summary for Subcatchment 14S:

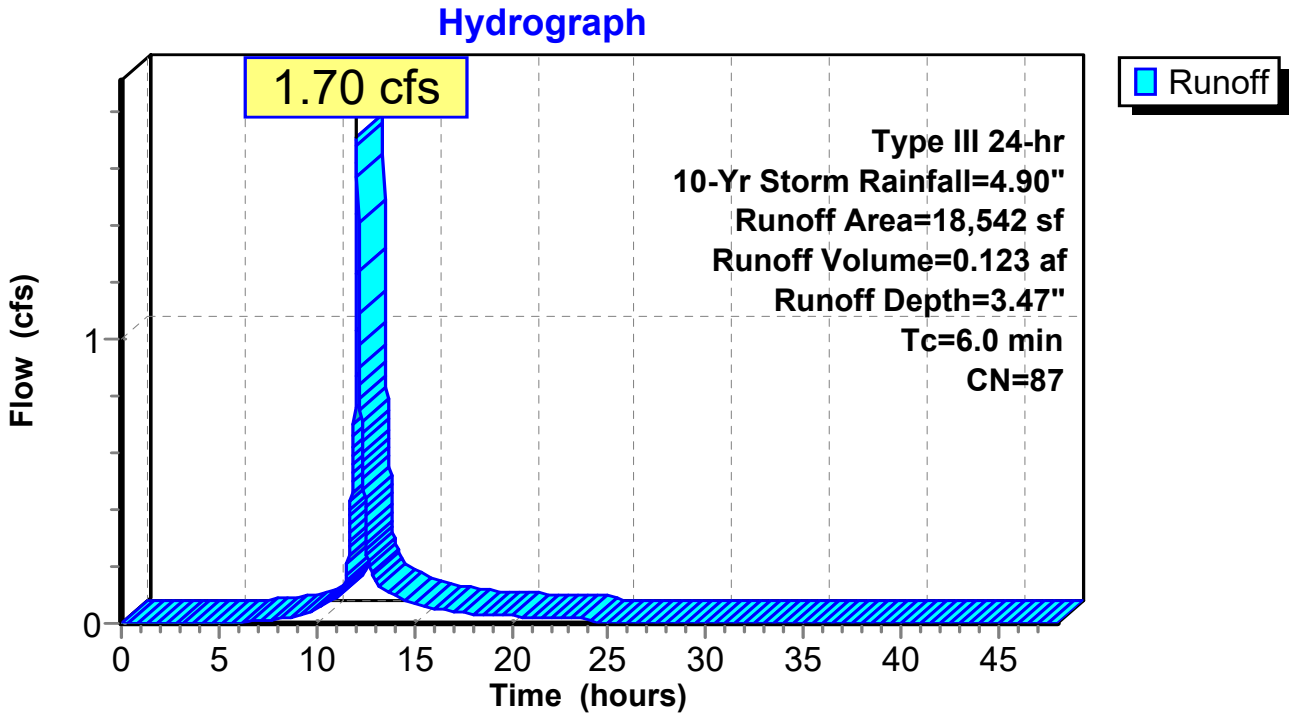
Runoff = 1.70 cfs @ 12.09 hrs, Volume= 0.123 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	4,779	74	>75% Grass cover, Good, HSG C
	4,778	80	>75% Grass cover, Good, HSG D
*	8,985	98	New Road
	18,542	87	Weighted Average
	9,557		51.54% Pervious Area
	8,985		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 14S:



Summary for Subcatchment 15S:

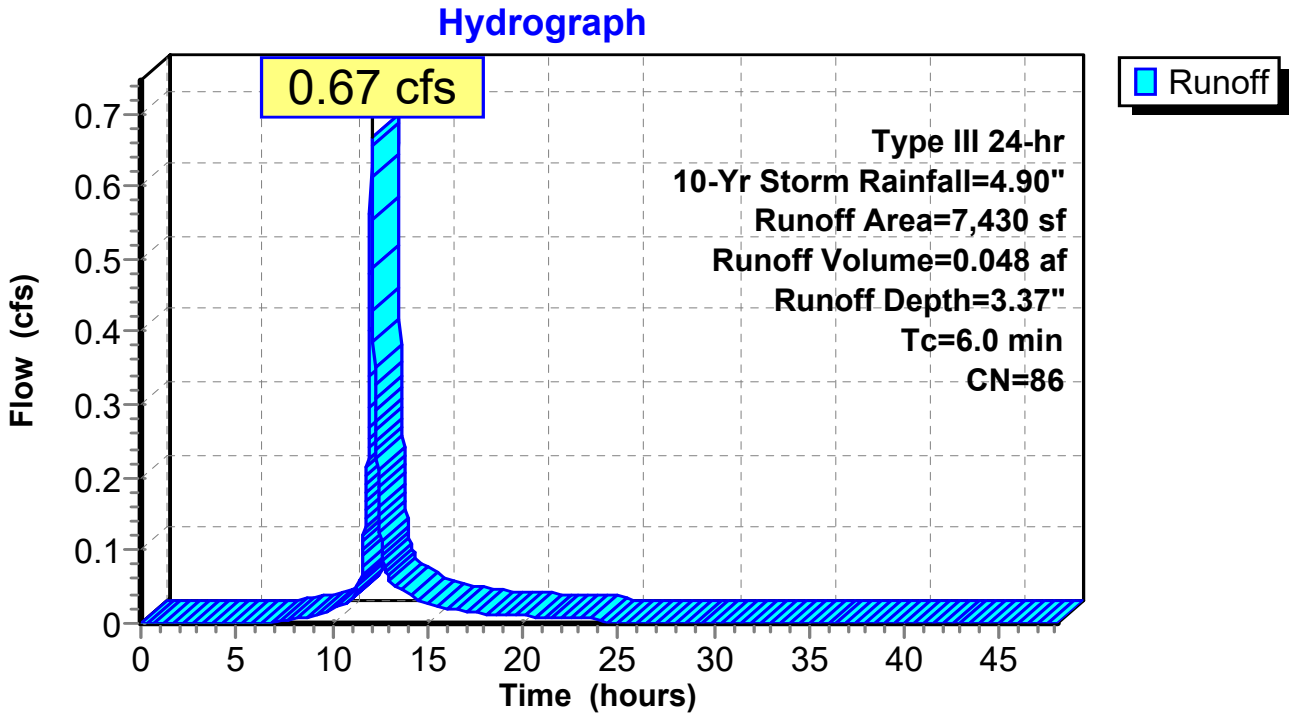
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	2,036	74	>75% Grass cover, Good, HSG C
	2,035	80	>75% Grass cover, Good, HSG D
*	3,359	98	New Road
	7,430	86	Weighted Average
	4,071		54.79% Pervious Area
	3,359		45.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 15S:



Summary for Subcatchment 20S:

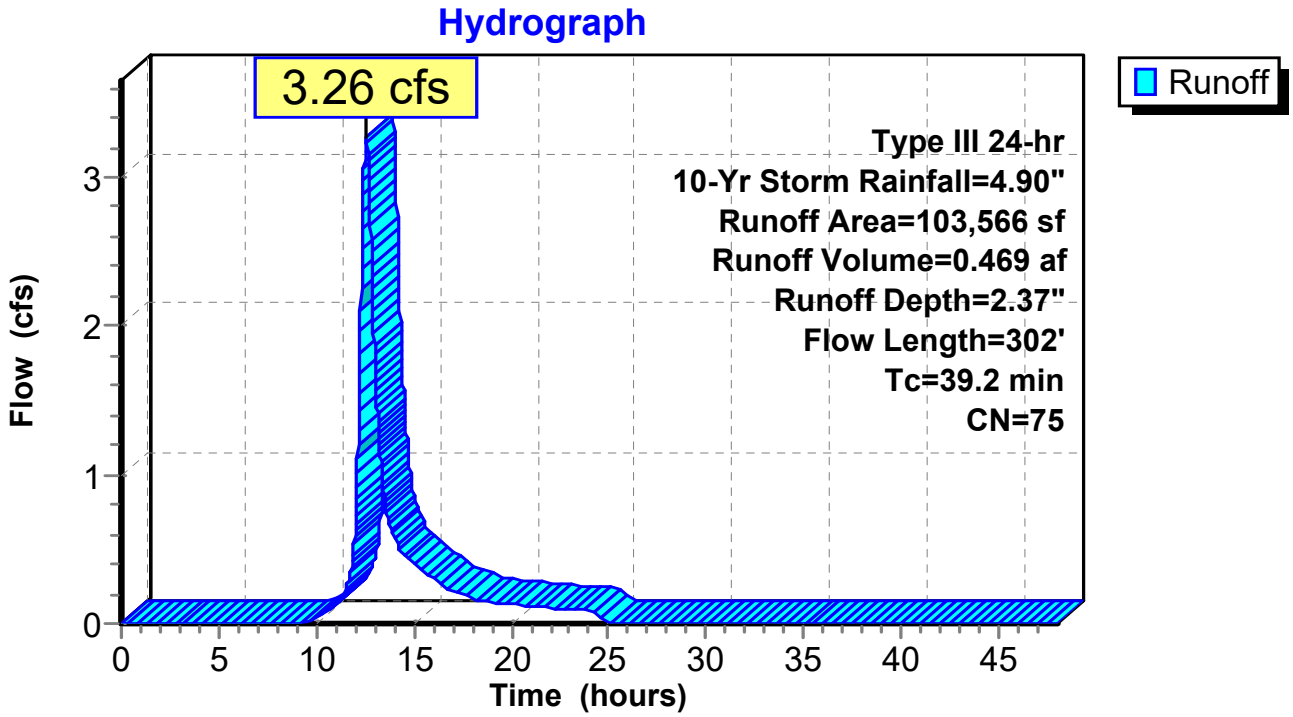
Runoff = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	30,010	77	Woods, Good, HSG D (Wetlands)
	36,778	77	Woods, Good, HSG D
	29,278	70	Woods, Good, HSG C
*	2,500	98	Lot
	5,000	74	>75% Grass cover, Good, HSG C
	103,566	75	Weighted Average
	101,066		97.59% Pervious Area
	2,500		2.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 20S:



Summary for Subcatchment OS: Off-site

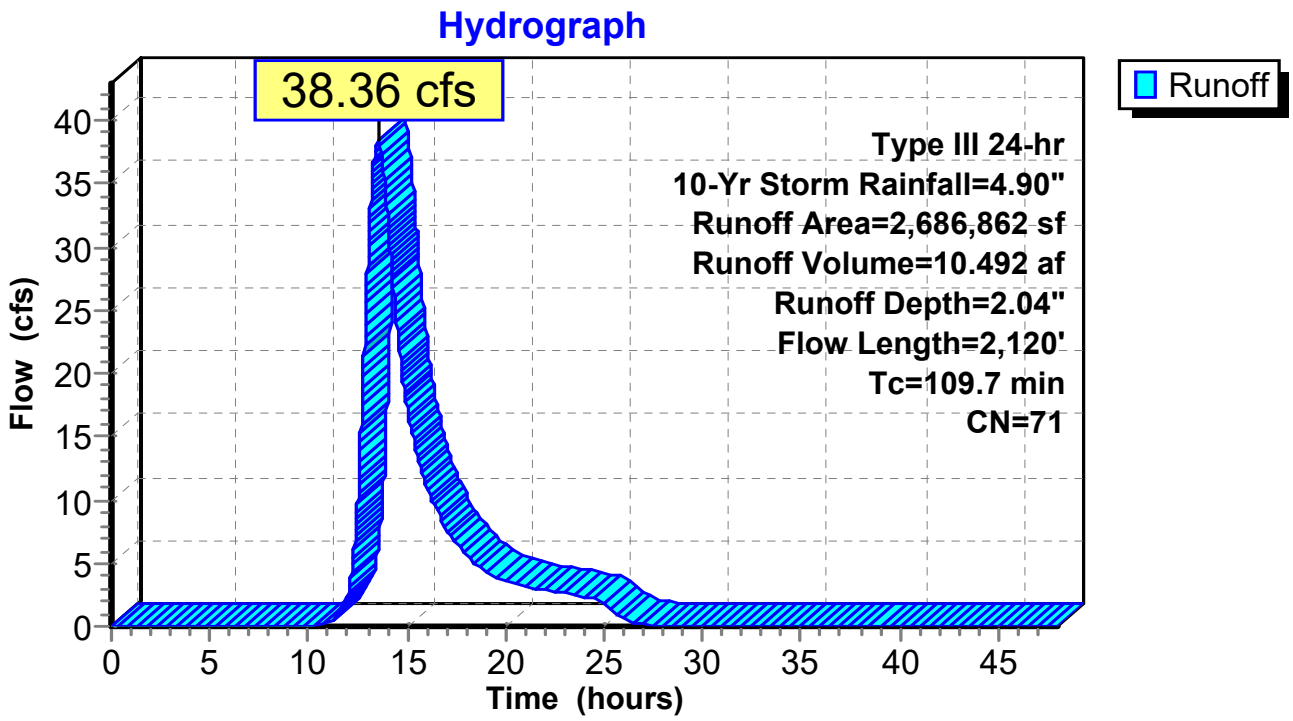
Runoff = 38.36 cfs @ 13.53 hrs, Volume= 10.492 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
679,543	73	Woods, Fair, HSG C
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	71	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site



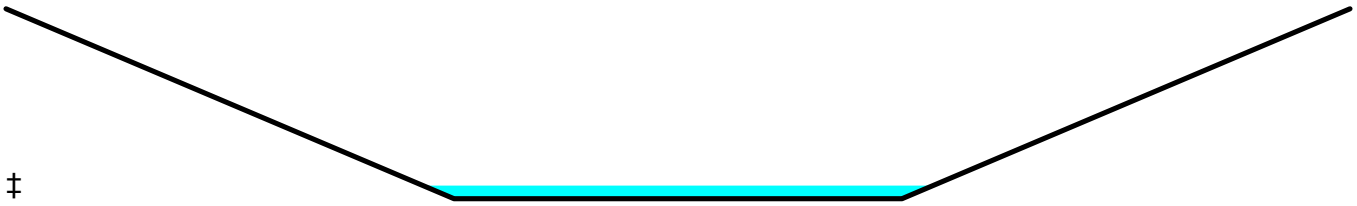
Summary for Reach 1R:

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 3.47" for 10-Yr Storm event
Inflow = 0.58 cfs @ 12.57 hrs, Volume= 0.266 af
Outflow = 0.57 cfs @ 13.40 hrs, Volume= 0.266 af, Atten= 2%, Lag= 49.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.38 fps, Min. Travel Time= 21.7 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 53.4 min

Peak Storage= 737 cf @ 13.04 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 72.58 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 500.0' Slope= 0.0031 '/'
Inlet Invert= 19.57', Outlet Invert= 18.00'



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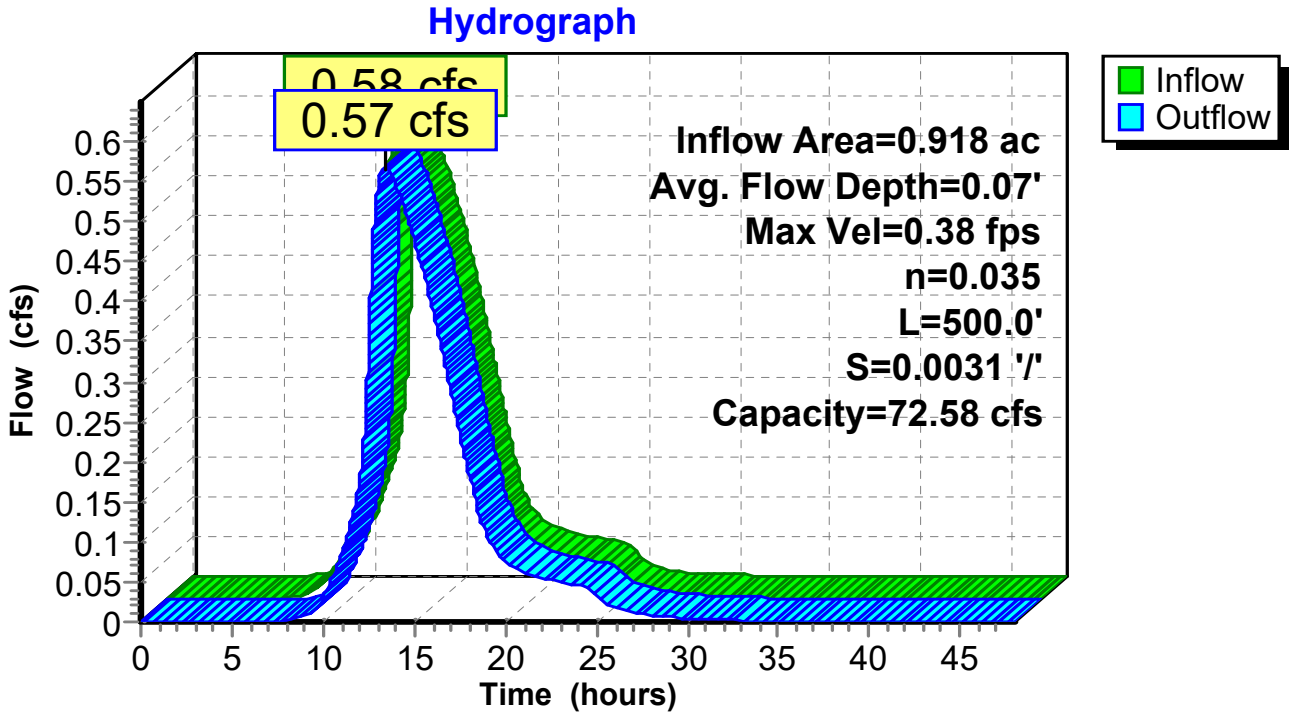
Reach 1R:



Summary for Reach 2.1R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.42 cfs @ 12.60 hrs, Volume= 0.052 af
Outflow = 0.18 cfs @ 14.24 hrs, Volume= 0.052 af, Atten= 57%, Lag= 98.9 min

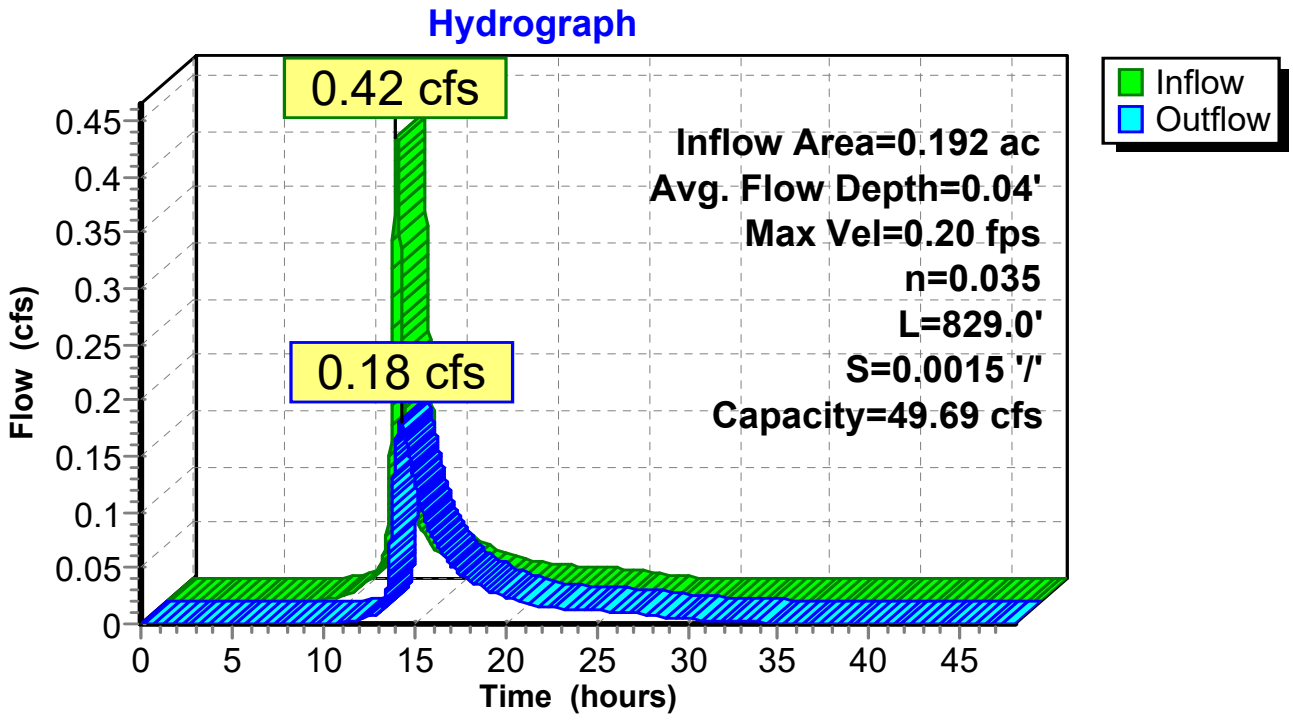
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.20 fps, Min. Travel Time= 69.8 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 162.2 min

Peak Storage= 756 cf @ 13.08 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 49.69 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 829.0' Slope= 0.0015 '/'
Inlet Invert= 19.57', Outlet Invert= 18.35'

‡

Reach 2.1R:



Summary for Reach 2R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.54 cfs @ 12.16 hrs, Volume= 0.052 af
Outflow = 0.42 cfs @ 12.58 hrs, Volume= 0.052 af, Atten= 23%, Lag= 25.4 min

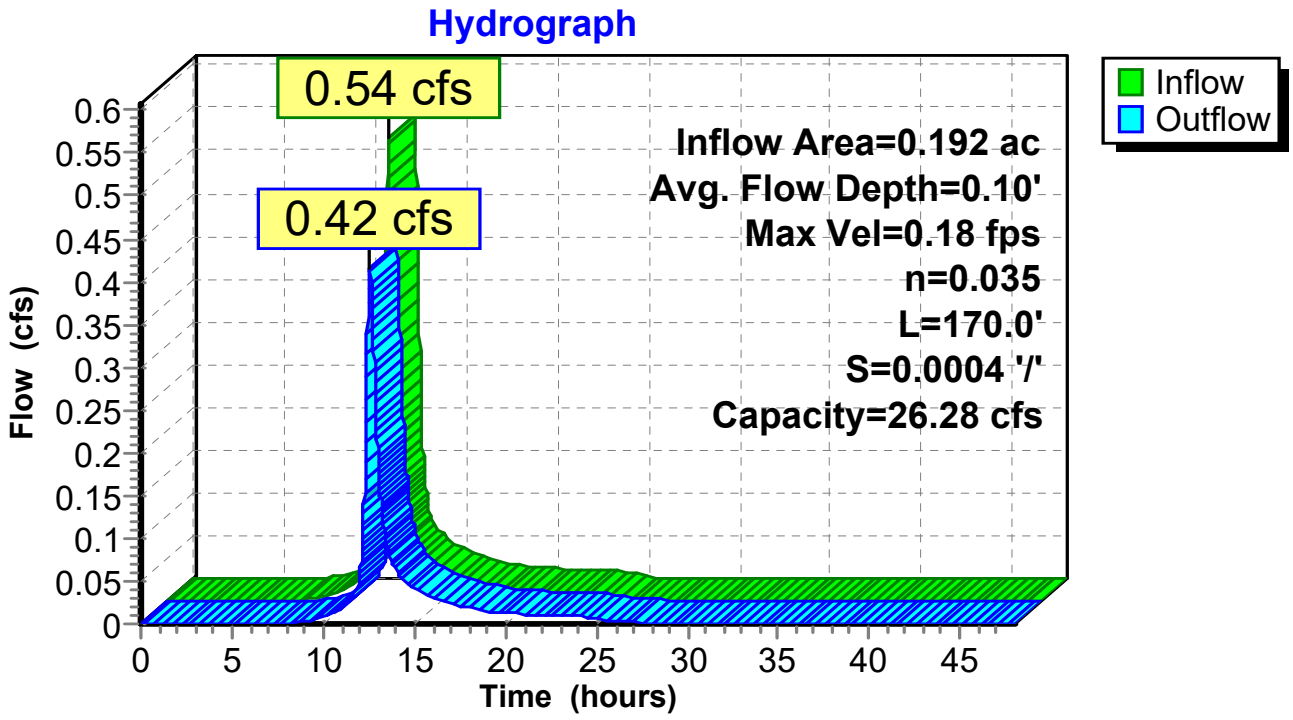
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.18 fps, Min. Travel Time= 15.7 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 53.2 min

Peak Storage= 392 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 26.28 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 170.0' Slope= 0.0004 '/'
Inlet Invert= 19.57', Outlet Invert= 19.50'

‡

Reach 2R:



Summary for Reach 3R:

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.45 cfs @ 12.15 hrs, Volume= 0.042 af
Outflow = 0.21 cfs @ 13.21 hrs, Volume= 0.042 af, Atten= 54%, Lag= 63.7 min

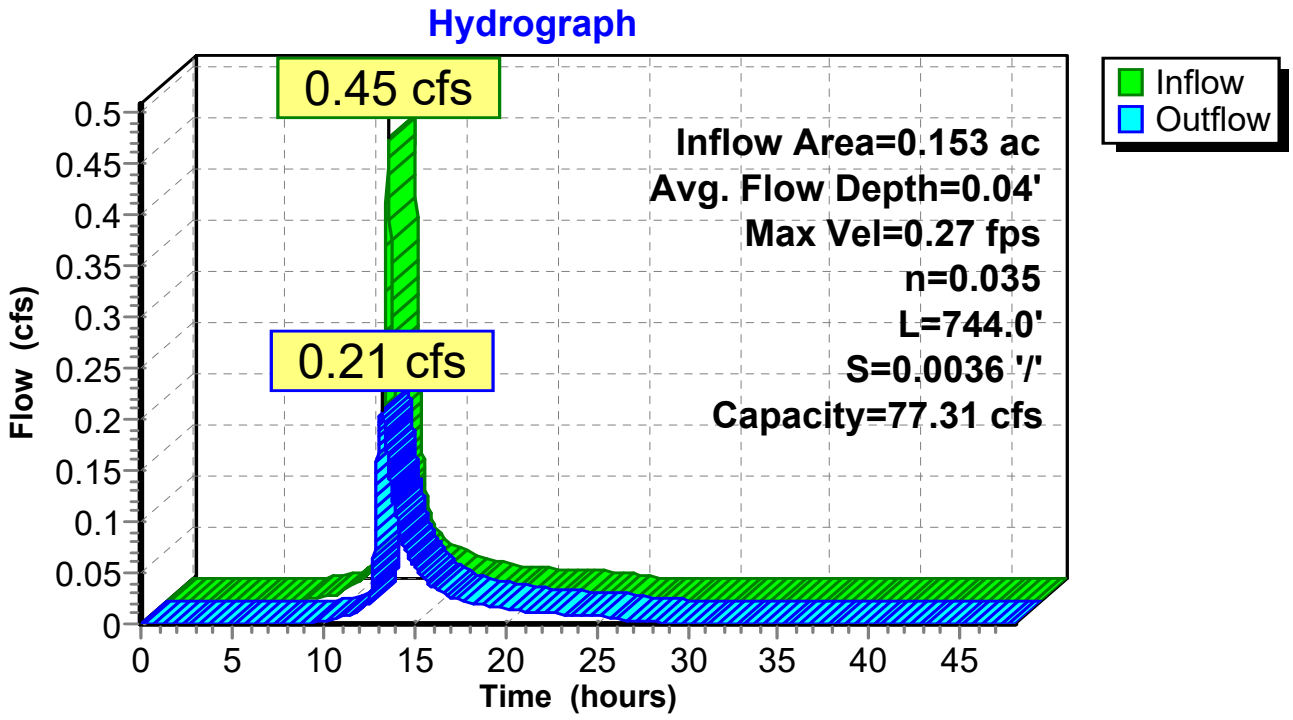
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.27 fps, Min. Travel Time= 45.2 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 98.0 min

Peak Storage= 562 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 77.31 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 744.0' Slope= 0.0036 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 3R:



Summary for Reach 4R:

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 3.47" for 10-Yr Storm event
Inflow = 0.81 cfs @ 12.25 hrs, Volume= 0.123 af
Outflow = 0.71 cfs @ 12.83 hrs, Volume= 0.123 af, Atten= 12%, Lag= 34.8 min

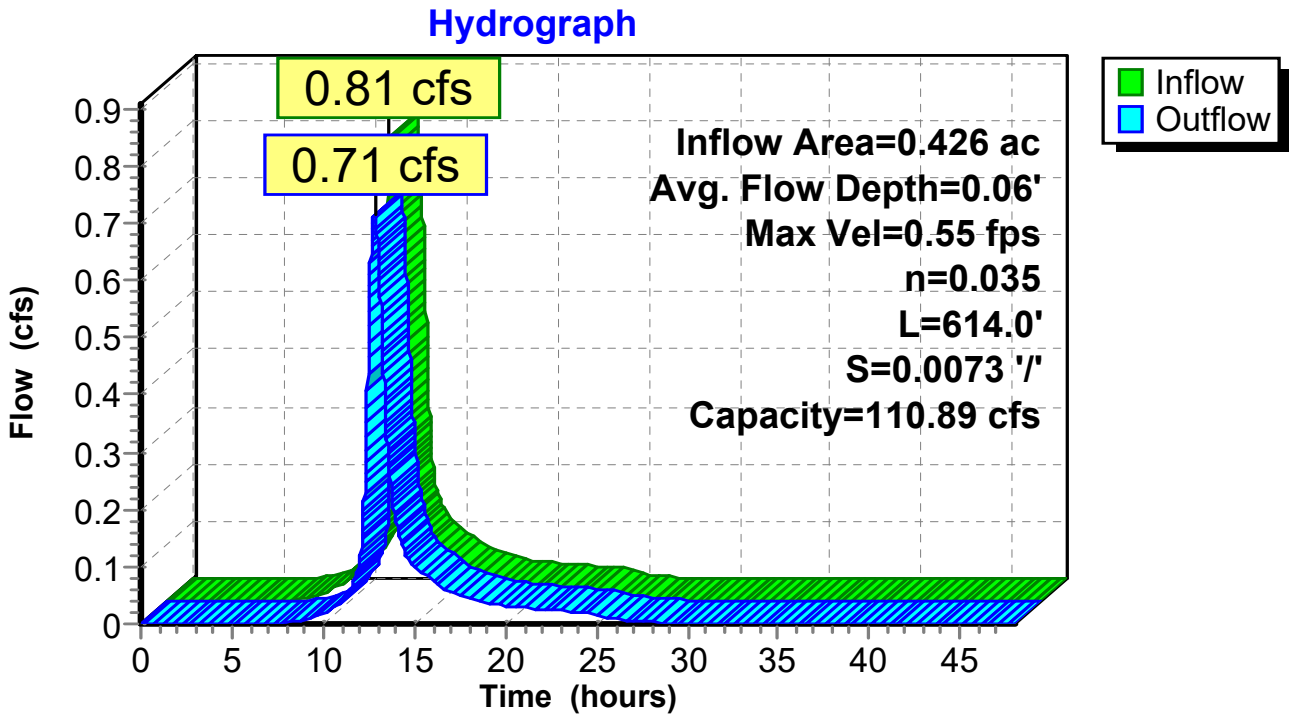
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 18.7 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 51.8 min

Peak Storage= 803 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 110.89 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 614.0' Slope= 0.0073 '/'
Inlet Invert= 19.50', Outlet Invert= 15.00'

‡

Reach 4R:



Summary for Reach 5R:

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 3.37" for 10-Yr Storm event
Inflow = 0.53 cfs @ 12.15 hrs, Volume= 0.048 af
Outflow = 0.53 cfs @ 12.19 hrs, Volume= 0.048 af, Atten= 1%, Lag= 2.7 min

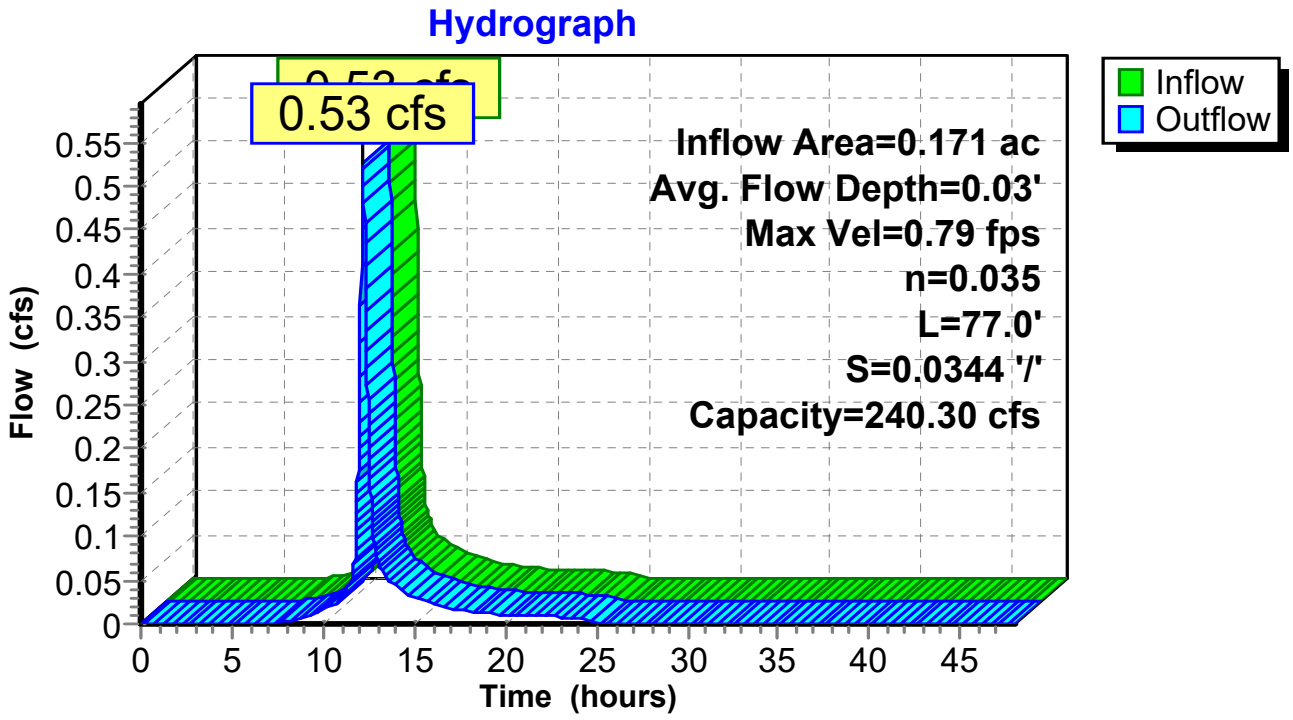
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 3.4 min

Peak Storage= 51 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 240.30 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 77.0' Slope= 0.0344 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 5R:



Summary for Reach 6R:

Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 3.31" for 10-Yr Storm event
Inflow = 0.54 cfs @ 12.20 hrs, Volume= 0.142 af
Outflow = 0.29 cfs @ 15.06 hrs, Volume= 0.142 af, Atten= 46%, Lag= 171.3 min

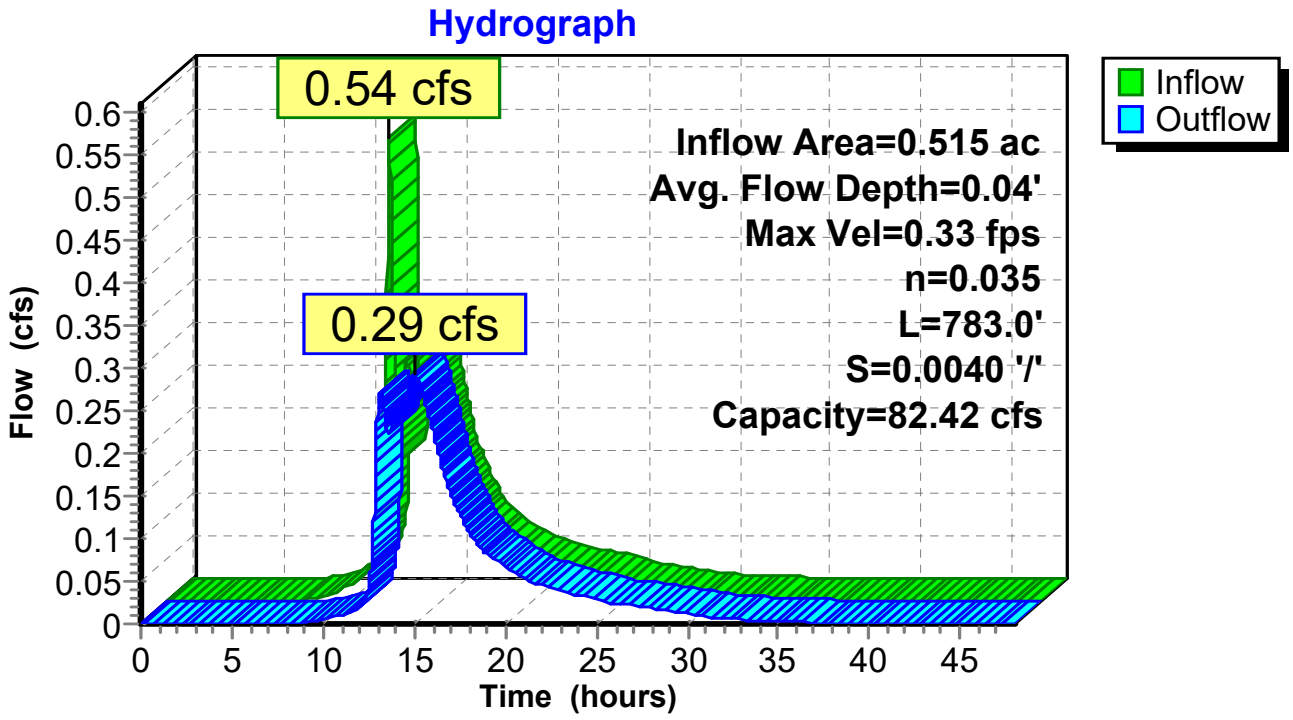
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 40.1 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 85.0 min

Peak Storage= 704 cf @ 14.39 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 82.42 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 783.0' Slope= 0.0040 '/'
Inlet Invert= 18.17', Outlet Invert= 15.00'

‡

Reach 6R:



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 2.04" for 10-Yr Storm event
Inflow = 38.36 cfs @ 13.53 hrs, Volume= 10.492 af
Outflow = 29.45 cfs @ 15.03 hrs, Volume= 10.484 af, Atten= 23%, Lag= 90.0 min

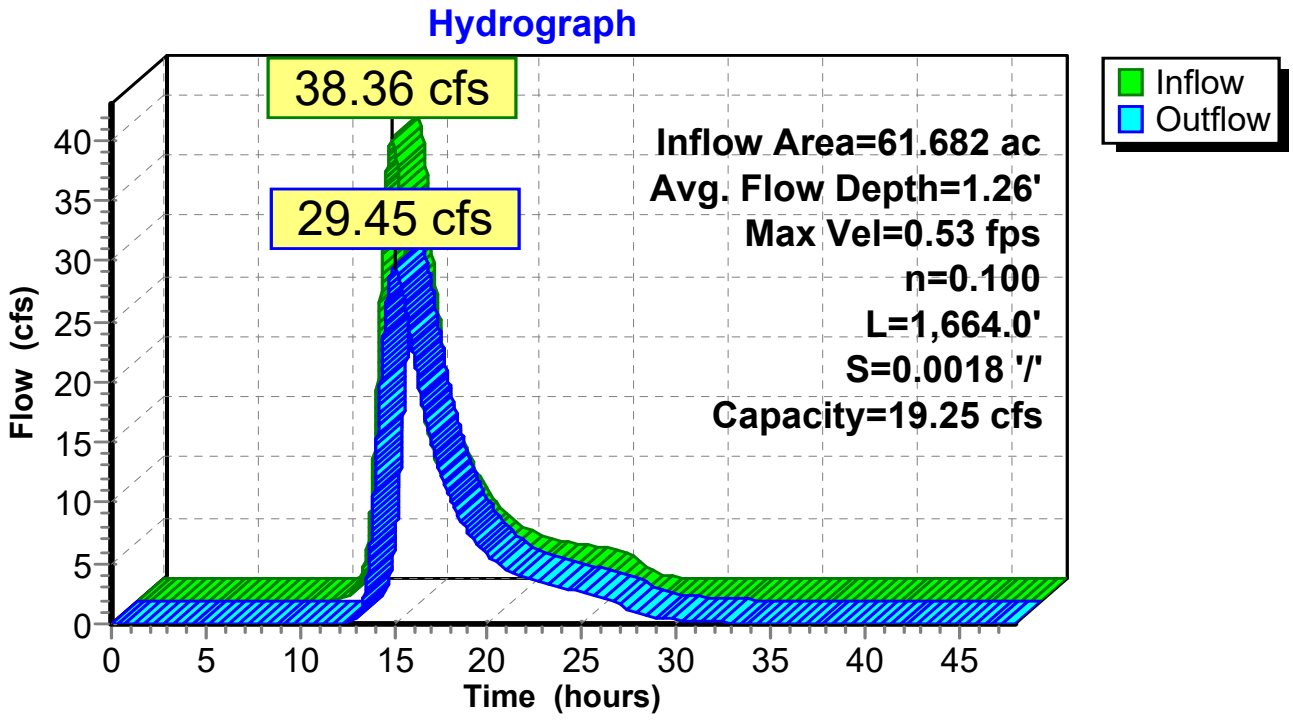
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.53 fps, Min. Travel Time= 52.3 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 156.3 min

Peak Storage= 92,371 cf @ 14.16 hrs
Average Depth at Peak Storage= 1.26'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



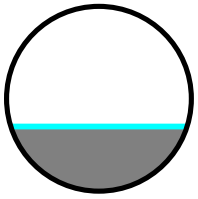
Summary for Reach WC1: CULVERT

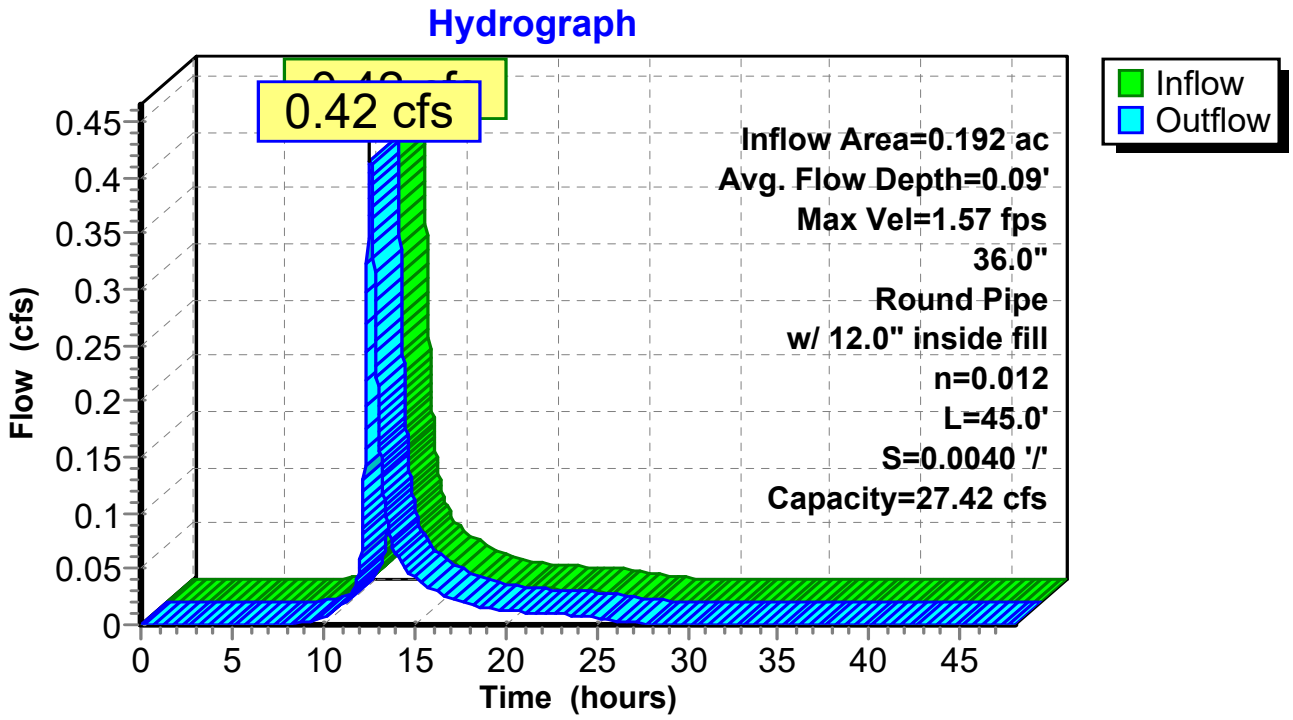
Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.42 cfs @ 12.58 hrs, Volume= 0.052 af
Outflow = 0.42 cfs @ 12.60 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.57 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 1.2 min

Peak Storage= 12 cf @ 12.59 hrs
Average Depth at Peak Storage= 1.09' above invert (0.09' above fill)
Bank-Full Depth= 3.00' above invert (2.00' above fill) Flow Area= 5.0 sf, Capacity= 27.42 cfs

36.0" Round Pipe w/ 12.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 45.0' Slope= 0.0040 '/' (101 Elevation Intervals)
Inlet Invert= 19.50', Outlet Invert= 19.32'





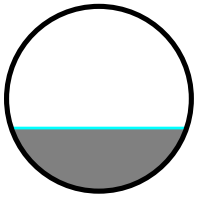
Summary for Reach WC2: CULVERT

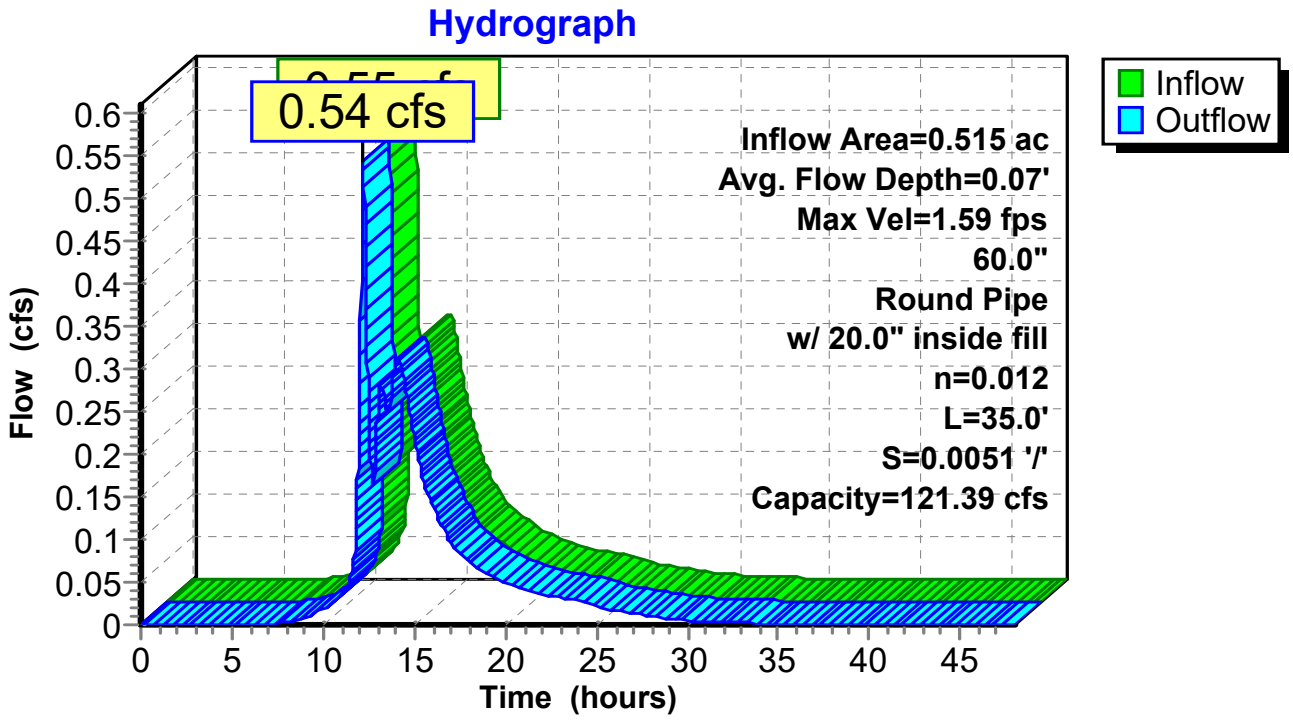
Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 3.31" for 10-Yr Storm event
Inflow = 0.55 cfs @ 12.19 hrs, Volume= 0.142 af
Outflow = 0.54 cfs @ 12.20 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.59 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 0.6 min

Peak Storage= 12 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.74' above invert (0.07' above fill)
Bank-Full Depth= 5.00' above invert (3.33' above fill) Flow Area= 13.9 sf, Capacity= 121.39 cfs

60.0" Round Pipe w/ 20.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 35.0' Slope= 0.0051 '/' (101 Elevation Intervals)
Inlet Invert= 18.35', Outlet Invert= 18.17'





Summary for Pond 1P: Gravel Wetland

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 3.47" for 10-Yr Storm event
Inflow = 3.67 cfs @ 12.09 hrs, Volume= 0.266 af
Outflow = 0.58 cfs @ 12.57 hrs, Volume= 0.266 af, Atten= 84%, Lag= 29.2 min
Primary = 0.58 cfs @ 12.57 hrs, Volume= 0.266 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 1,600 sf Storage= 1,630 cf
Peak Elev= 21.74' @ 12.57 hrs Surf.Area= 3,012 sf Storage= 6,138 cf (4,507 cf above start)

Plug-Flow detention time= 191.2 min calculated for 0.228 af (86% of inflow)
Center-of-Mass det. time= 91.1 min (893.1 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,938 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

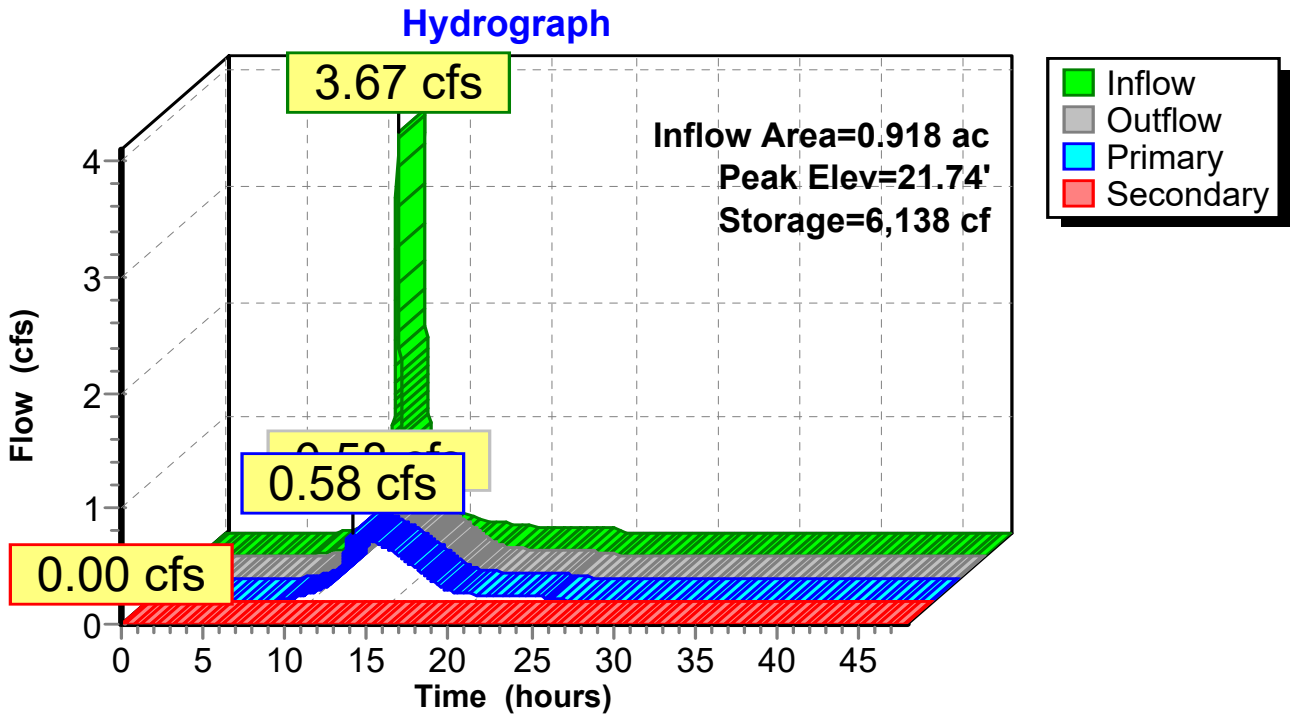
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	1,600	0.0	0	0
16.83	1,600	40.0	6	6
18.83	1,600	30.0	960	966
19.33	1,600	15.0	120	1,086
20.00	1,600	100.0	1,072	2,158
21.00	2,365	100.0	1,983	4,141
21.50	2,790	100.0	1,289	5,430
22.00	3,244	100.0	1,509	6,938

Device	Routing	Invert	Outlet Devices
#1	Primary	19.67'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.67' / 19.57' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	21.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Device 1	19.67'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.58 cfs @ 12.57 hrs HW=21.74' (Free Discharge)
└**1=Culvert** (Passes 0.58 cfs of 3.75 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.58 cfs @ 6.65 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.67' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Gravel Wetland



Summary for Pond 2P: Gravel Wetland

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.54 cfs @ 12.16 hrs, Volume= 0.052 af, Atten= 26%, Lag= 4.3 min
Primary = 0.54 cfs @ 12.16 hrs, Volume= 0.052 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.75' @ 12.16 hrs Surf.Area= 494 sf Storage= 651 cf (244 cf above start)

Plug-Flow detention time= 123.6 min calculated for 0.043 af (82% of inflow)
Center-of-Mass det. time= 16.4 min (824.7 - 808.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

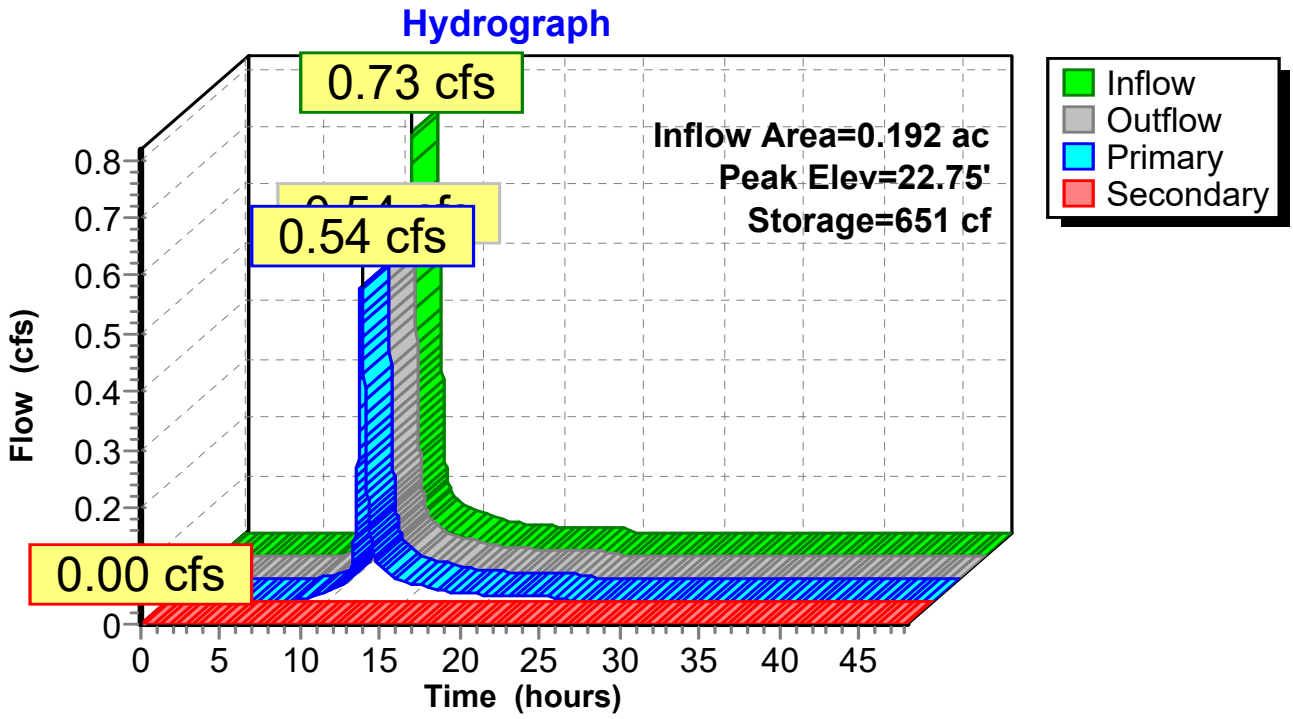
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.54 cfs @ 12.16 hrs HW=22.75' (Free Discharge)
↑—**2=Culvert** (Passes 0.54 cfs of 0.98 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 2.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Gravel Wetland



Summary for Pond 3P: Gravel Wetland

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 3.28" for 10-Yr Storm event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.45 cfs @ 12.15 hrs, Volume= 0.042 af, Atten= 22%, Lag= 3.9 min
Primary = 0.45 cfs @ 12.15 hrs, Volume= 0.042 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.65' @ 12.15 hrs Surf.Area= 456 sf Storage= 604 cf (196 cf above start)

Plug-Flow detention time= 143.5 min calculated for 0.032 af (78% of inflow)
Center-of-Mass det. time= 18.0 min (826.4 - 808.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

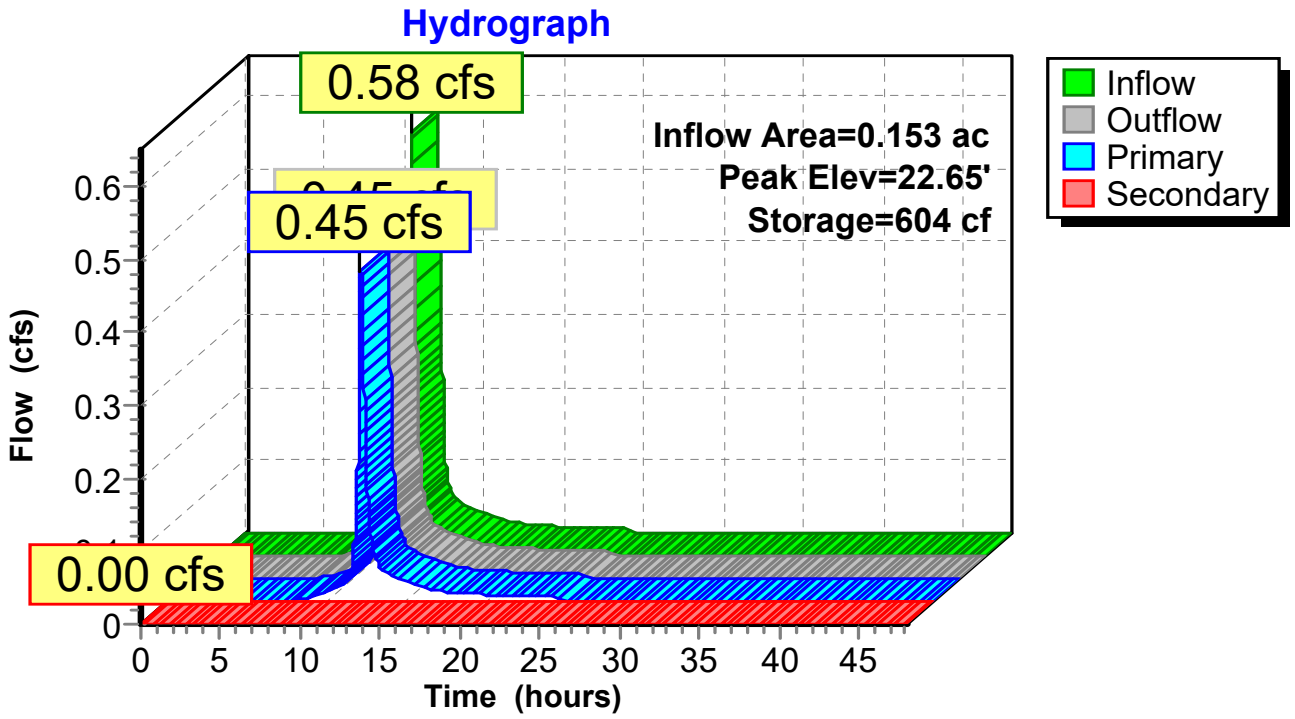
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0113 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.46 cfs @ 12.15 hrs HW=22.65' (Free Discharge)
↑—**2=Culvert** (Passes 0.46 cfs of 0.77 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.46 cfs @ 2.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Gravel Wetland



Summary for Pond 4P: Gravel Wetland

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 3.47" for 10-Yr Storm event
Inflow = 1.70 cfs @ 12.09 hrs, Volume= 0.123 af
Outflow = 0.81 cfs @ 12.25 hrs, Volume= 0.123 af, Atten= 52%, Lag= 9.9 min
Primary = 0.81 cfs @ 12.25 hrs, Volume= 0.123 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 900 sf Storage= 917 cf
Peak Elev= 20.65' @ 12.25 hrs Surf.Area= 1,299 sf Storage= 1,934 cf (1,017 cf above start)

Plug-Flow detention time= 133.4 min calculated for 0.102 af (83% of inflow)
Center-of-Mass det. time= 28.2 min (830.2 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,956 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

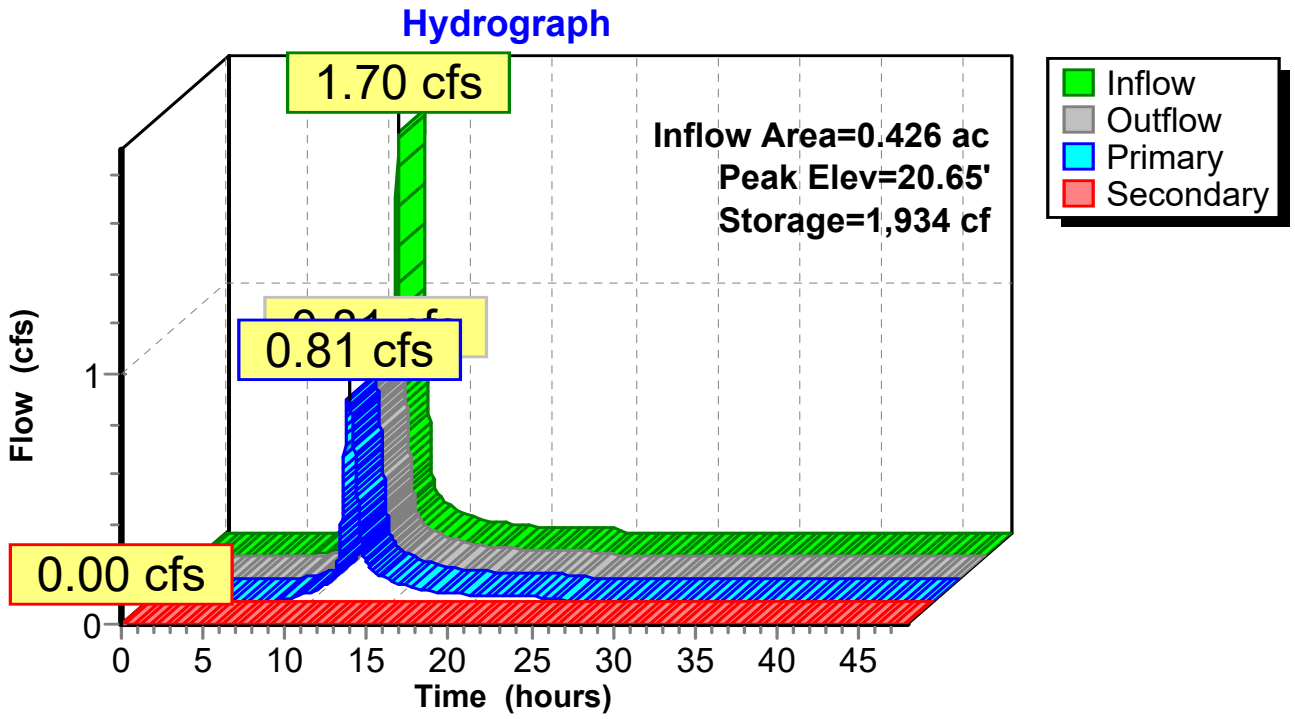
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	900	0.0	0	0
16.83	900	40.0	4	4
18.83	900	30.0	540	544
19.33	900	15.0	68	611
20.00	900	100.0	603	1,214
21.00	1,510	100.0	1,205	2,419
22.00	2,240	100.0	1,875	4,294
23.00	3,084	100.0	2,662	6,956

Device	Routing	Invert	Outlet Devices
#1	Device 2	19.67'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.67'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 19.67' / 19.40' S= 0.0135 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	22.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.81 cfs @ 12.25 hrs HW=20.65' (Free Discharge)
↑—**2=Culvert** (Passes 0.81 cfs of 2.59 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.81 cfs @ 4.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.67' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Gravel Wetland



Summary for Pond 5P: Gravel Wetland

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 3.37" for 10-Yr Storm event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.53 cfs @ 12.15 hrs, Volume= 0.048 af, Atten= 20%, Lag= 3.6 min
Primary = 0.53 cfs @ 12.15 hrs, Volume= 0.048 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 21.17' Surf.Area= 300 sf Storage= 756 cf
Peak Elev= 21.74' @ 12.15 hrs Surf.Area= 378 sf Storage= 935 cf (179 cf above start)

Plug-Flow detention time= 186.3 min calculated for 0.031 af (64% of inflow)
Center-of-Mass det. time= 12.5 min (817.7 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	2,871 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

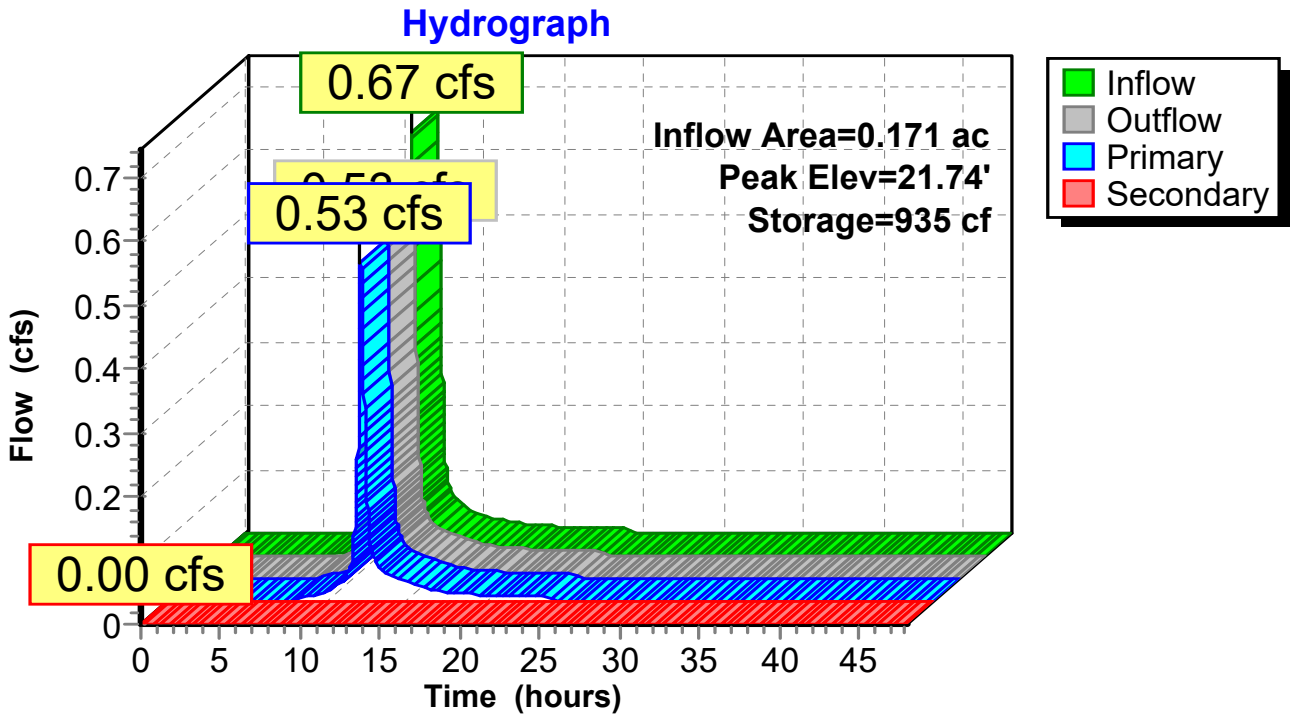
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	300	0.0	0	0
16.83	300	40.0	1	1
18.83	300	30.0	180	181
19.33	300	15.0	23	204
21.50	300	100.0	651	855
22.00	466	100.0	192	1,046
23.00	884	100.0	675	1,721
24.00	1,415	100.0	1,150	2,871

Device	Routing	Invert	Outlet Devices
#1	Device 2	21.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	21.17'	**12.0" Round Culvert** L= 23.0' Ke= 0.500 Inlet / Outlet Invert= 21.17' / 21.00' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	23.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.53 cfs @ 12.15 hrs HW=21.73' (Free Discharge)
↑—**2=Culvert** (Passes 0.53 cfs of 0.95 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.70 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: Gravel Wetland



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 2.16" for 10-Yr Storm event
Inflow = 38.33 cfs @ 12.94 hrs, Volume= 18.318 af
Outflow = 46.39 cfs @ 12.96 hrs, Volume= 18.318 af, Atten= 0%, Lag= 1.2 min
Primary = 27.98 cfs @ 12.96 hrs, Volume= 16.400 af
Secondary = 18.41 cfs @ 12.96 hrs, Volume= 1.917 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 19.02' @ 12.96 hrs Surf.Area= 25,000 sf Storage= 18,750 cf

Plug-Flow detention time= 9.9 min calculated for 18.318 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (1,004.3 - 994.5)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,750 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	2,500	0	0
16.00	2,500	2,500	2,500
17.00	5,000	3,750	6,250
17.50	10,000	3,750	10,000
18.00	25,000	8,750	18,750

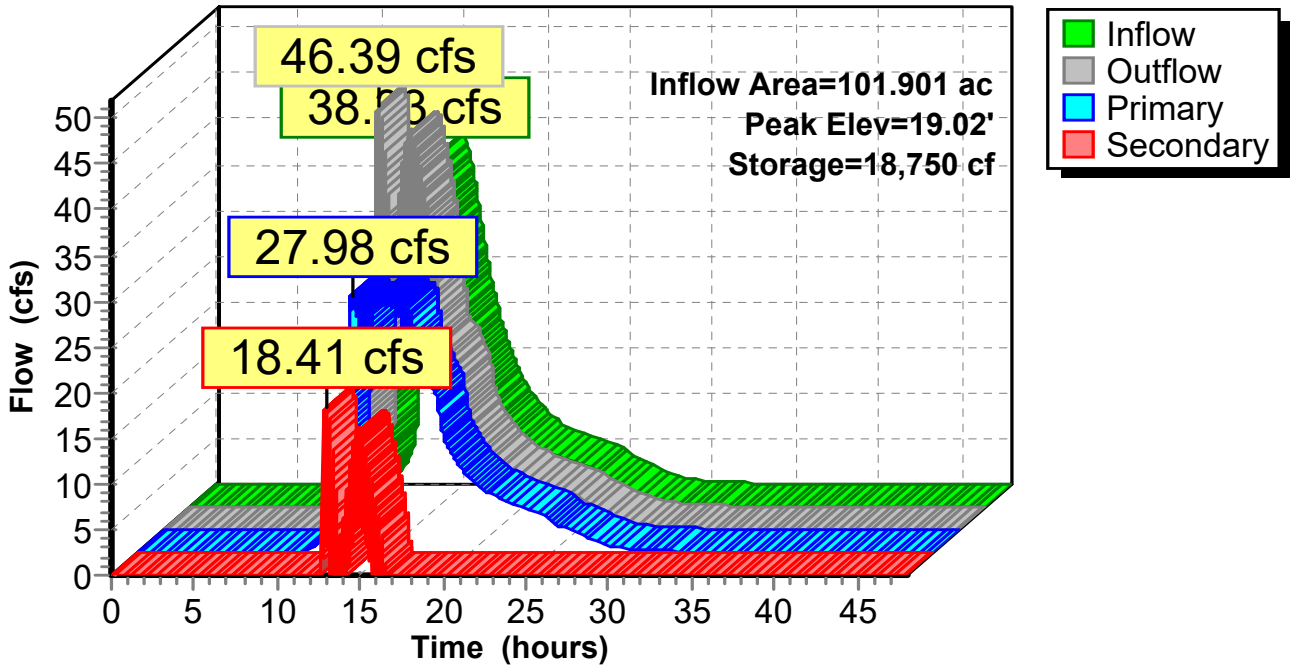
Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=27.98 cfs @ 12.96 hrs HW=19.02' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 27.98 cfs @ 6.65 fps)

Secondary OutFlow Max=18.40 cfs @ 12.96 hrs HW=19.02' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 18.40 cfs @ 1.38 fps)

Pond C: 30" CULVERT

Hydrograph

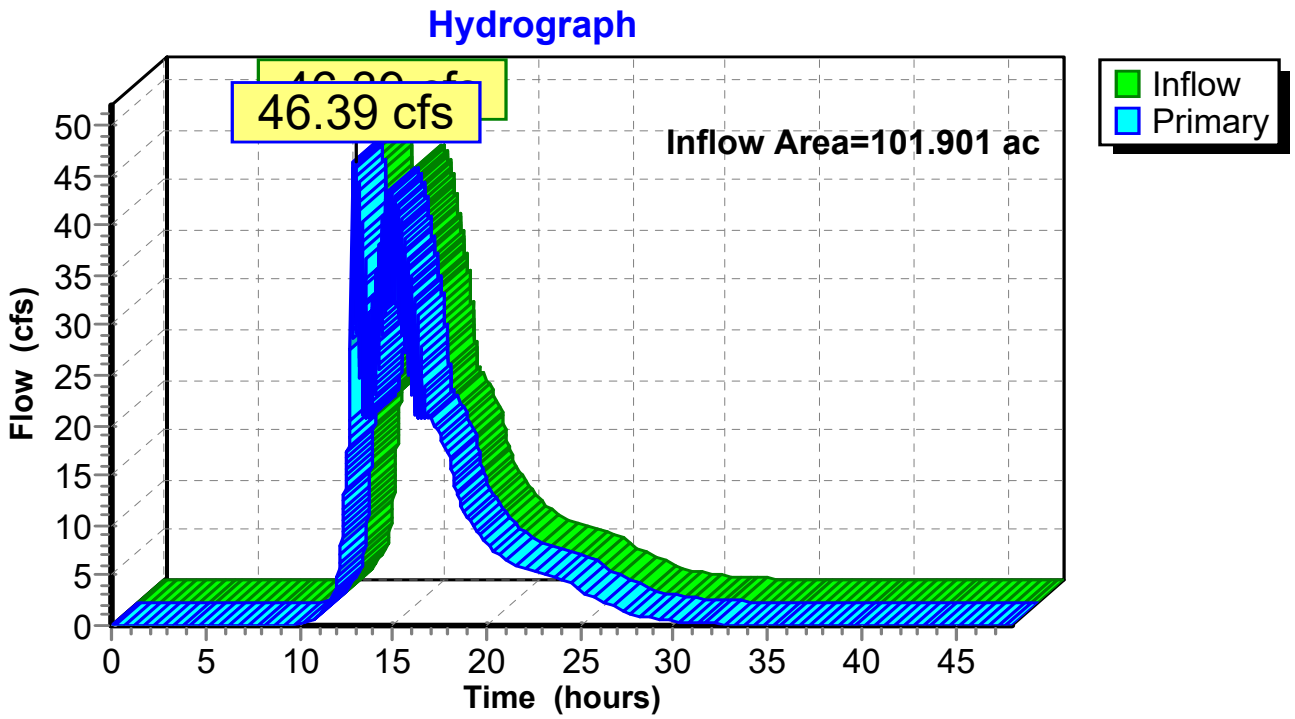


Summary for Link POA1:

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 2.16" for 10-Yr Storm event
Inflow = 46.39 cfs @ 12.96 hrs, Volume= 18.318 af
Primary = 46.39 cfs @ 12.96 hrs, Volume= 18.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

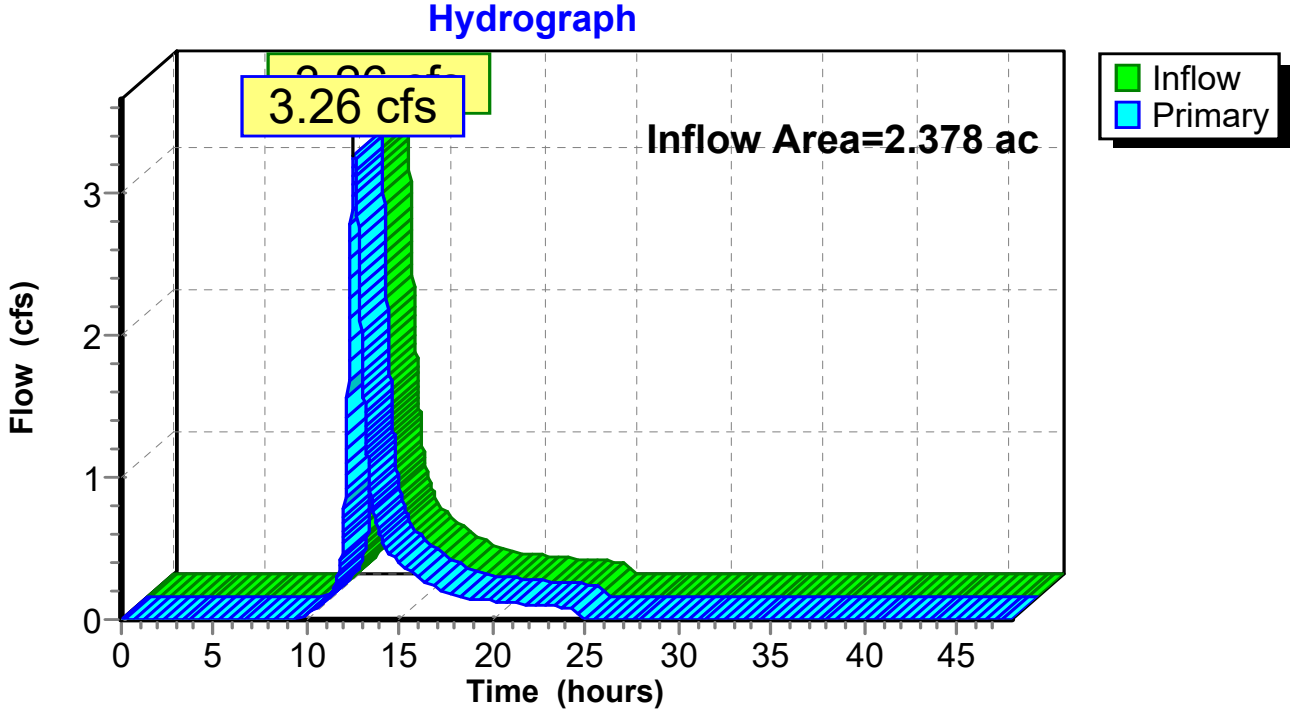


Summary for Link POA2:

Inflow Area = 2.378 ac, 2.41% Impervious, Inflow Depth = 2.37" for 10-Yr Storm event
Inflow = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af
Primary = 3.26 cfs @ 12.56 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



Summary for Subcatchment 10S:

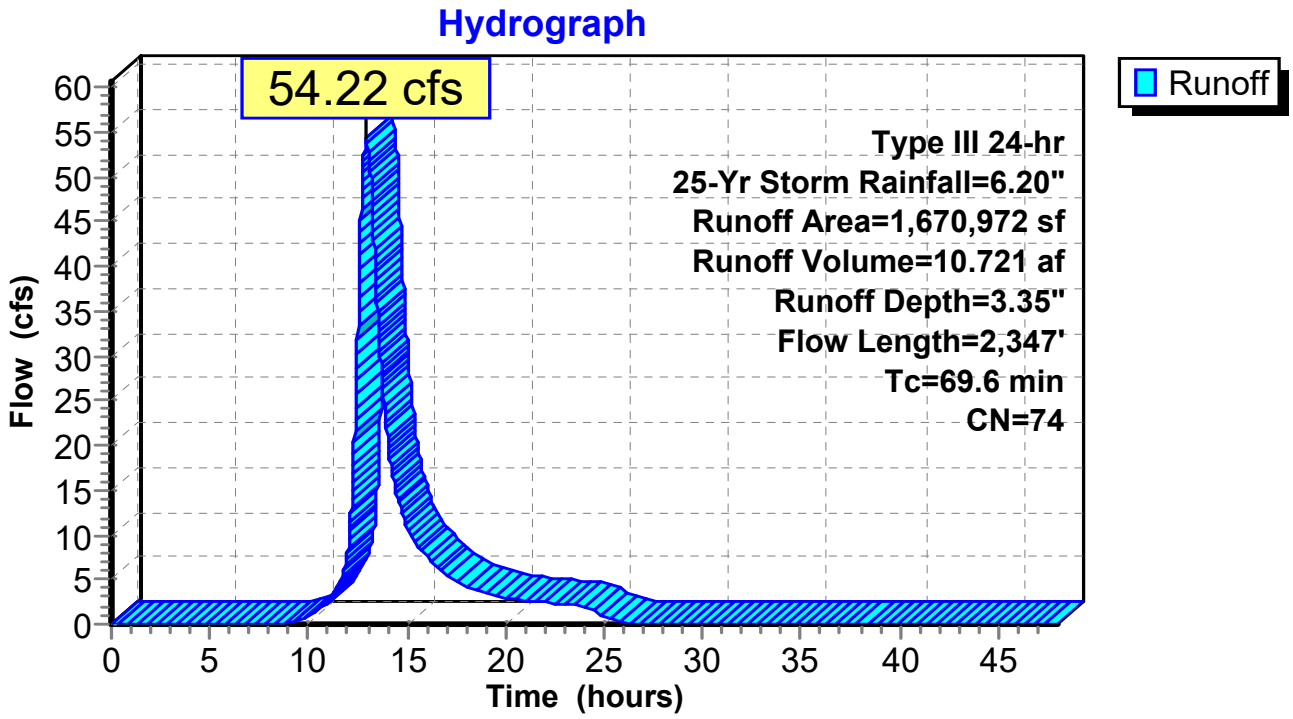
Runoff = 54.22 cfs @ 12.92 hrs, Volume= 10.721 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	297,901	77	Woods, Good, HSG D (wetlands)
	119,137	70	Woods, Good, HSG C
	555,742	70	Woods, Good, HSG C
	315,854	77	Woods, Good, HSG D
*	11,606	98	New Impervious Road
	10,685	74	>75% Grass cover, Good, HSG C
	10,685	80	>75% Grass cover, Good, HSG D
	2,189	80	>75% Grass cover, Good, HSG D
	125,624	70	Woods, Good, HSG C
*	3,349	98	New Road
	2,100	70	Woods, Good, HSG C
	2,100	77	Woods, Good, HSG D
*	64,000	98	Roof and driveway
	150,000	74	>75% Grass cover, Good, HSG C
	1,670,972	74	Weighted Average
	1,592,017		95.27% Pervious Area
	78,955		4.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	60	0.0080	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
17.6	410	0.0060	0.39		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.2	130	0.0380	0.97		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
20.4	474	0.0060	0.39		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
3.3	450	0.0050	2.29	91.64	**Channel Flow, E-F** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
0.1	40	0.0050	7.50	92.26	**Pipe Channel, F-G** 60.0" Round w/ 24.0" inside fill Area= 12.3 sf Perim= 13.8' r= 0.89 n= 0.013 Corrugated PE, smooth interior
5.7	783	0.0050	2.29	91.64	**Channel Flow, F-POA1** Area= 40.0 sf Perim= 60.0' r= 0.67' n= 0.035 Earth, dense weeds
69.6	2,347	Total			

Subcatchment 10S:



Summary for Subcatchment 11S:

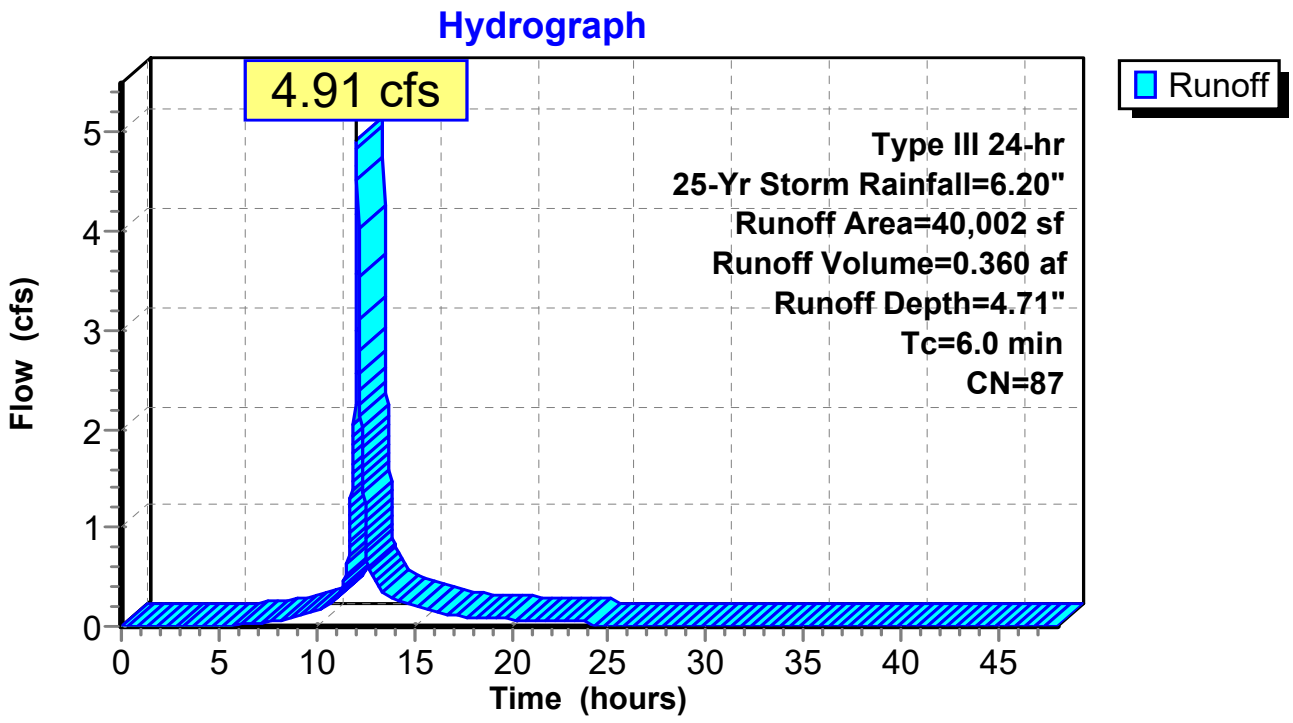
Runoff = 4.91 cfs @ 12.09 hrs, Volume= 0.360 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	18,790	98	New Road
	10,606	74	>75% Grass cover, Good, HSG C
	10,606	80	>75% Grass cover, Good, HSG D
	40,002	87	Weighted Average
	21,212		53.03% Pervious Area
	18,790		46.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 11S:



Summary for Subcatchment 12S:

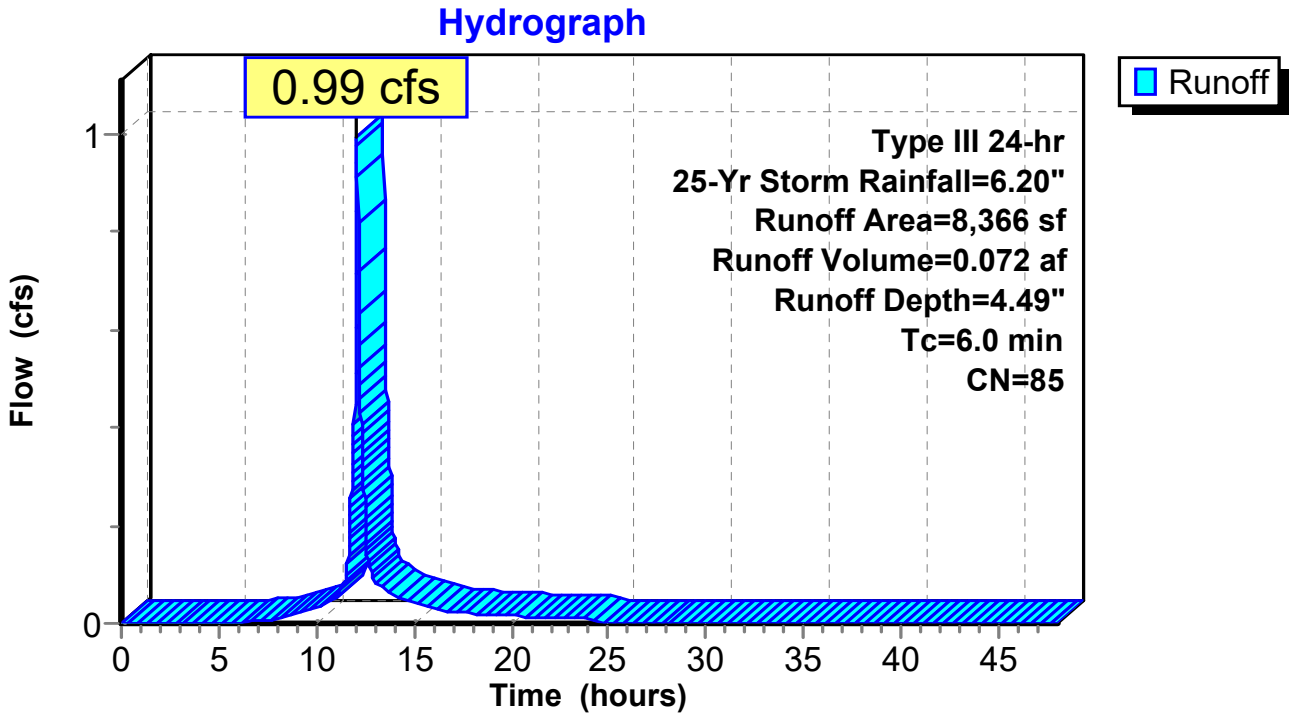
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	1,367	80	>75% Grass cover, Good, HSG D
	3,417	74	>75% Grass cover, Good, HSG C
*	3,582	98	New Road
	8,366	85	Weighted Average
	4,784		57.18% Pervious Area
	3,582		42.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 12S:



Summary for Subcatchment 13S:

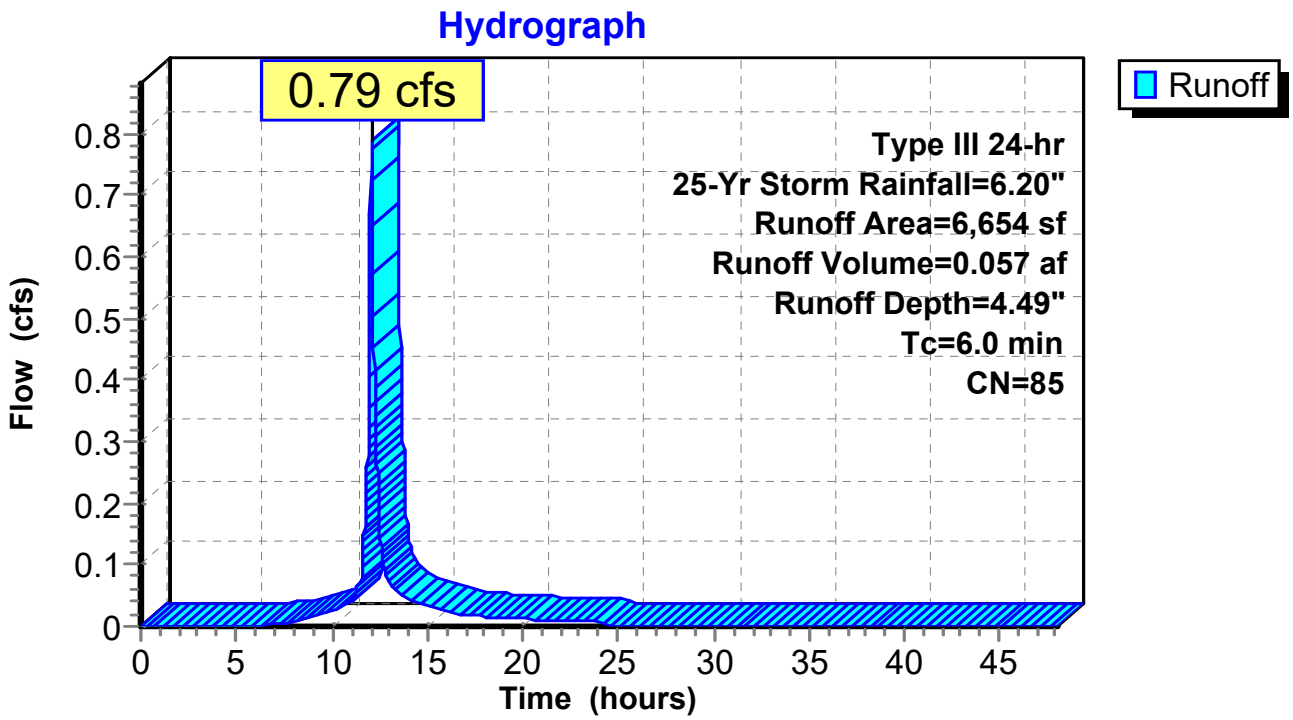
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	1,800	80	>75% Grass cover, Good, HSG D
	2,173	74	>75% Grass cover, Good, HSG C
*	2,681	98	New Road
	6,654	85	Weighted Average
	3,973		59.71% Pervious Area
	2,681		40.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 13S:



Summary for Subcatchment 14S:

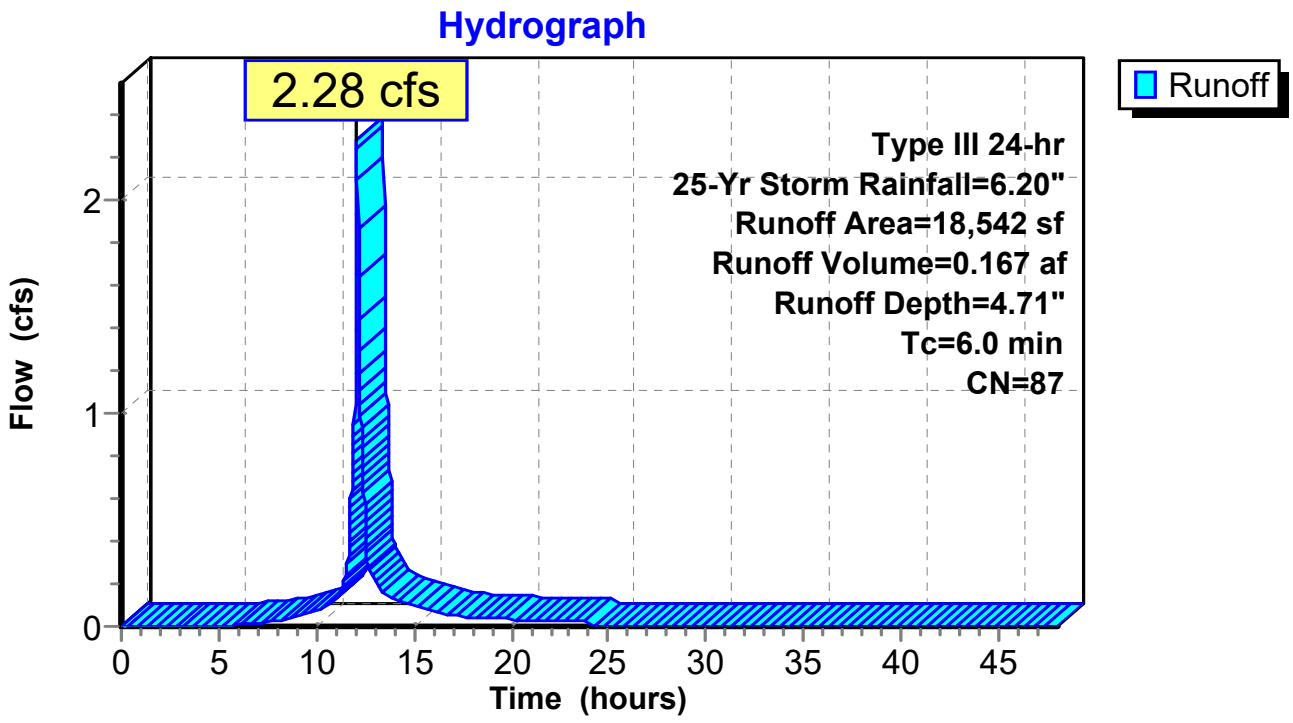
Runoff = 2.28 cfs @ 12.09 hrs, Volume= 0.167 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	4,779	74	>75% Grass cover, Good, HSG C
	4,778	80	>75% Grass cover, Good, HSG D
*	8,985	98	New Road
	18,542	87	Weighted Average
	9,557		51.54% Pervious Area
	8,985		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 14S:



Summary for Subcatchment 15S:

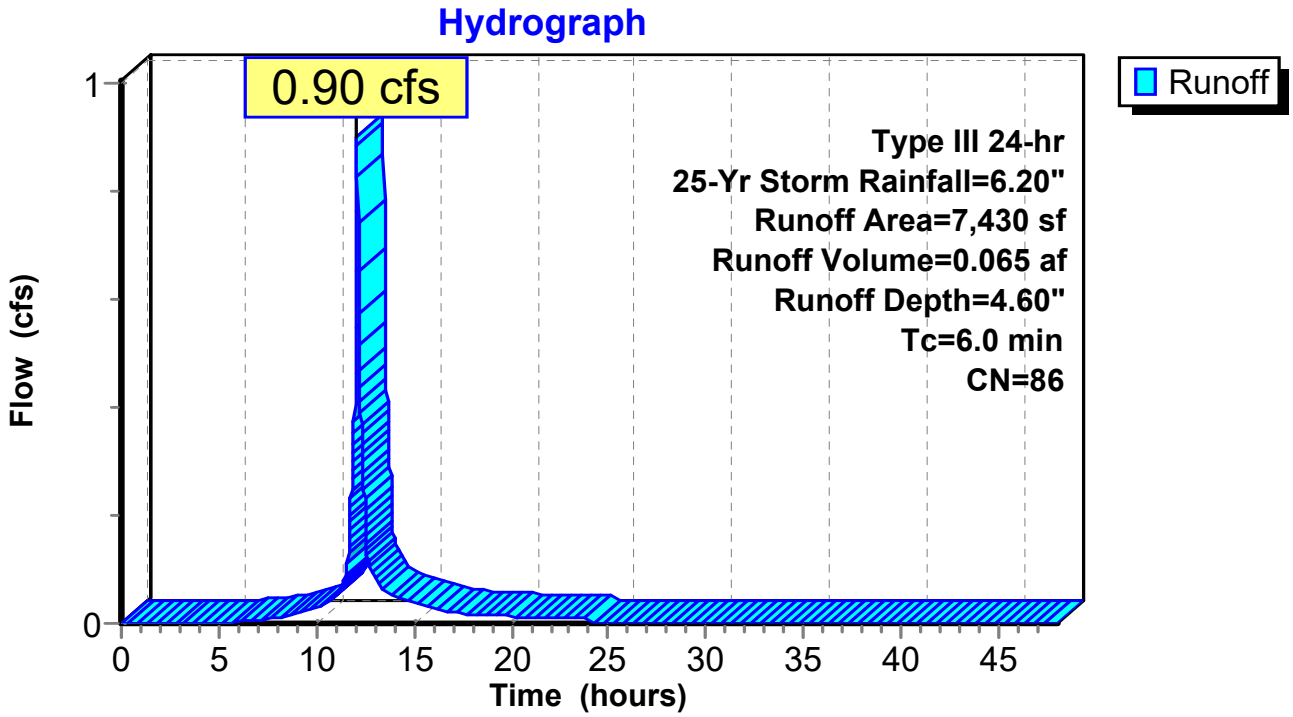
Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	2,036	74	>75% Grass cover, Good, HSG C
	2,035	80	>75% Grass cover, Good, HSG D
*	3,359	98	New Road
	7,430	86	Weighted Average
	4,071		54.79% Pervious Area
	3,359		45.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 15S:



Summary for Subcatchment 20S:

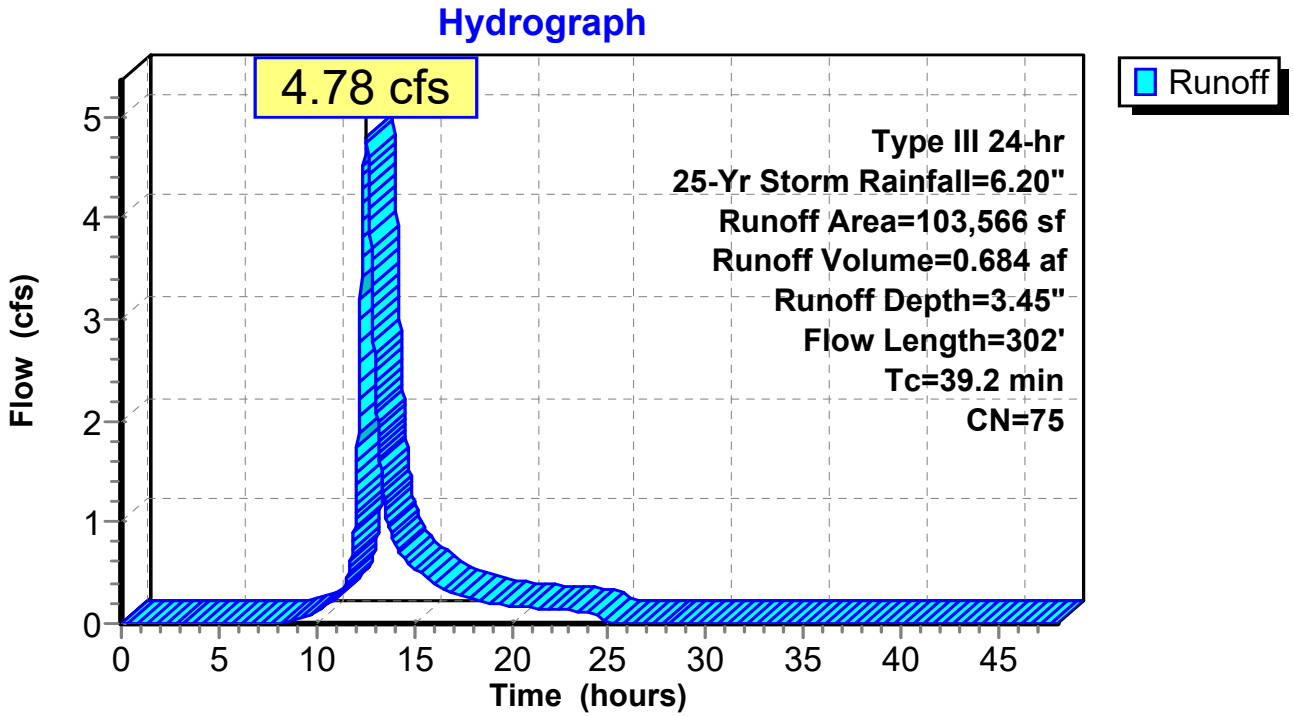
Runoff = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	30,010	77	Woods, Good, HSG D (Wetlands)
	36,778	77	Woods, Good, HSG D
	29,278	70	Woods, Good, HSG C
*	2,500	98	Lot
	5,000	74	>75% Grass cover, Good, HSG C
	103,566	75	Weighted Average
	101,066		97.59% Pervious Area
	2,500		2.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	60	0.0050	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
14.7	242	0.0030	0.27		**Shallow Concentrated Flow, B-POA2** Woodland Kv= 5.0 fps
39.2	302	Total			

Subcatchment 20S:



Summary for Subcatchment OS: Off-site

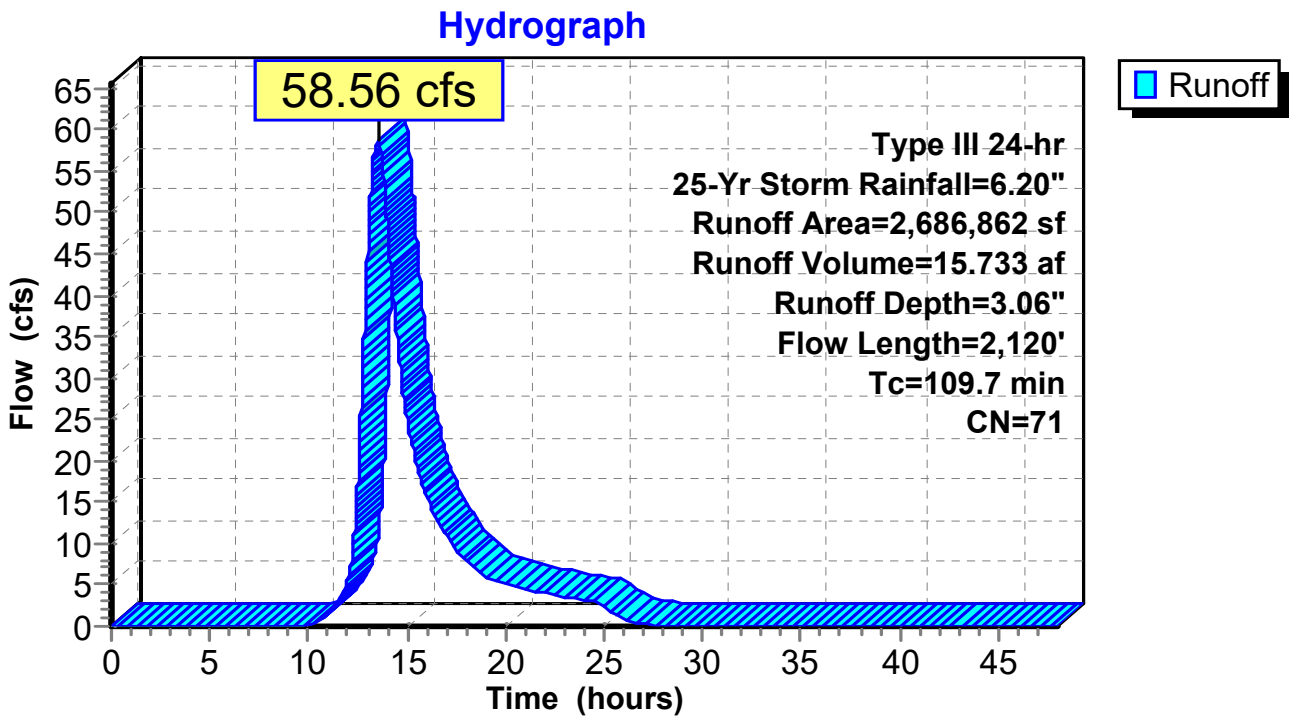
Runoff = 58.56 cfs @ 13.52 hrs, Volume= 15.733 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
679,543	73	Woods, Fair, HSG C
1,929,660	70	Woods, Good, HSG C
77,659	77	Woods, Good, HSG D
2,686,862	71	Weighted Average
2,686,862		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.3	60	0.0080	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
54.6	1,639	0.0100	0.50		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
19.8	421	0.0050	0.35		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
109.7	2,120	Total			

Subcatchment OS: Off-site



Summary for Reach 1R:

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 4.71" for 25-Yr Storm event
Inflow = 1.98 cfs @ 12.31 hrs, Volume= 0.360 af
Outflow = 1.51 cfs @ 12.74 hrs, Volume= 0.360 af, Atten= 24%, Lag= 26.0 min

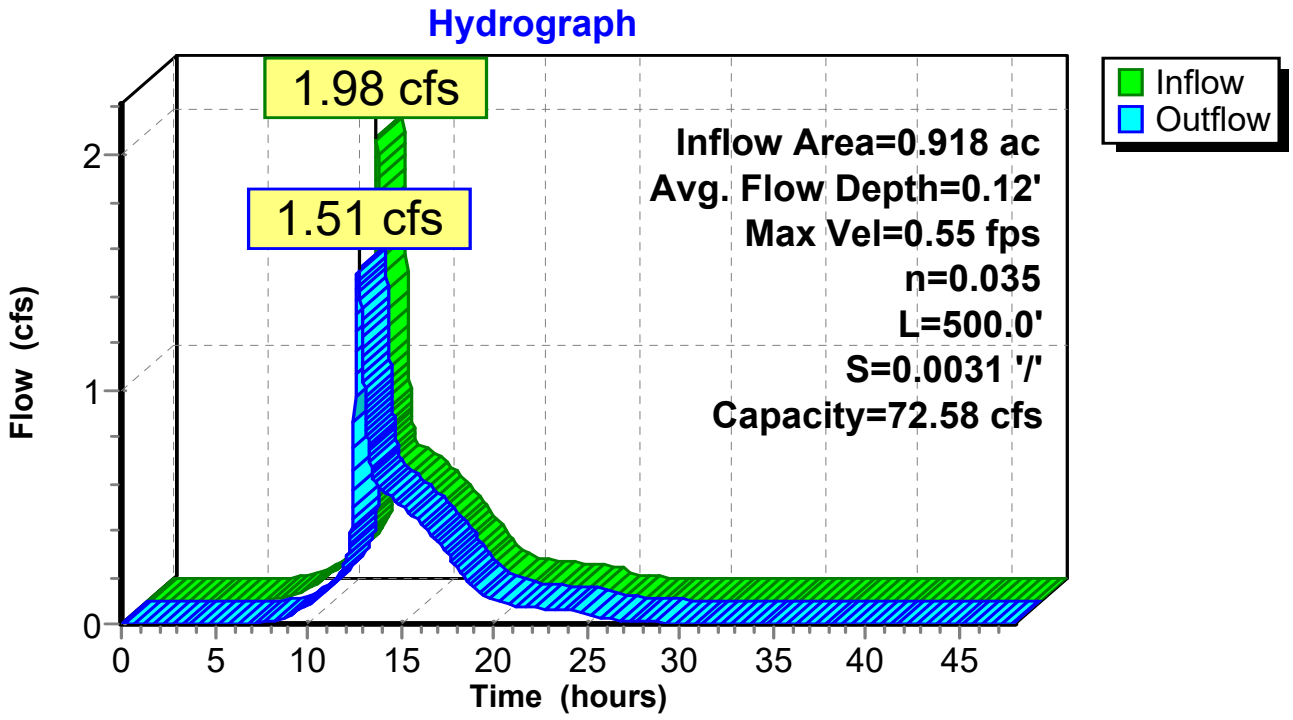
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 15.2 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 50.3 min

Peak Storage= 1,377 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 72.58 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 500.0' Slope= 0.0031 '/'
Inlet Invert= 19.57', Outlet Invert= 18.00'

‡

Reach 1R:



Summary for Reach 2.1R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.56 cfs @ 12.58 hrs, Volume= 0.072 af
Outflow = 0.28 cfs @ 13.96 hrs, Volume= 0.072 af, Atten= 49%, Lag= 82.6 min

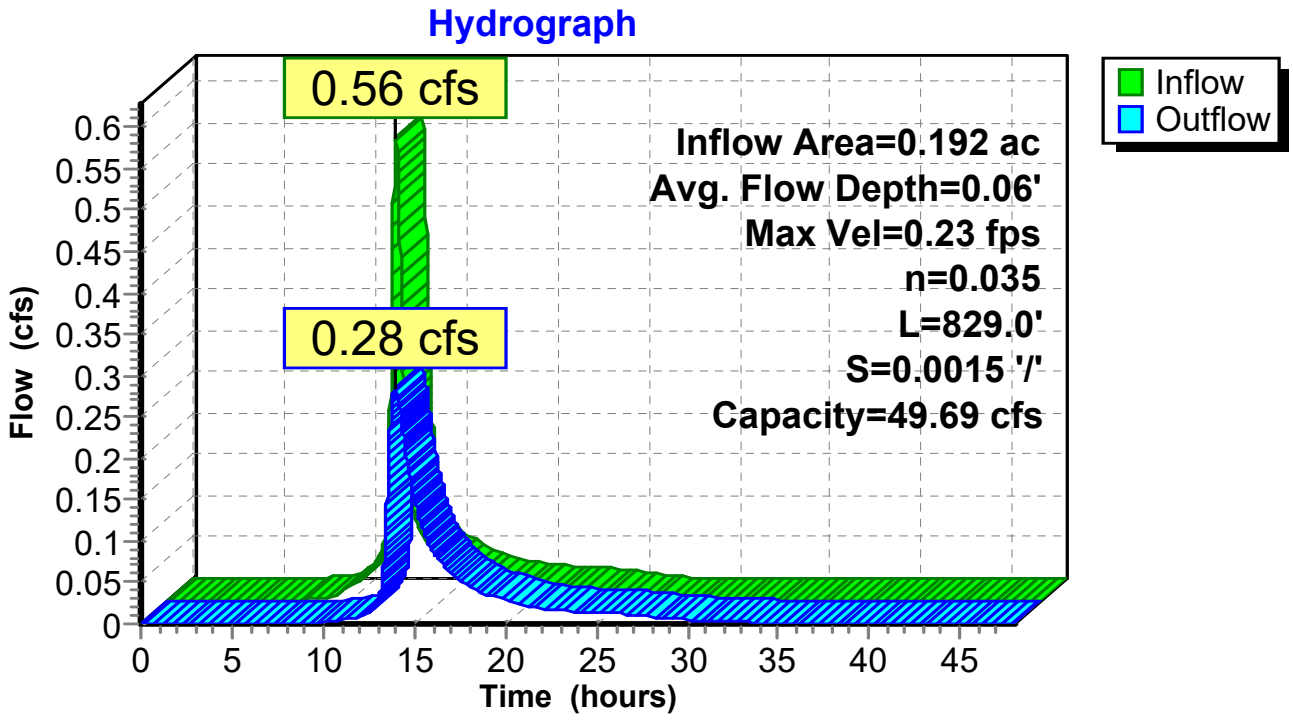
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 59.0 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 156.3 min

Peak Storage= 1,004 cf @ 12.97 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 49.69 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 829.0' Slope= 0.0015 '/'
Inlet Invert= 19.57', Outlet Invert= 18.35'

‡

Reach 2.1R:



Summary for Reach 2R:

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.68 cfs @ 12.17 hrs, Volume= 0.072 af
Outflow = 0.56 cfs @ 12.57 hrs, Volume= 0.072 af, Atten= 17%, Lag= 23.9 min

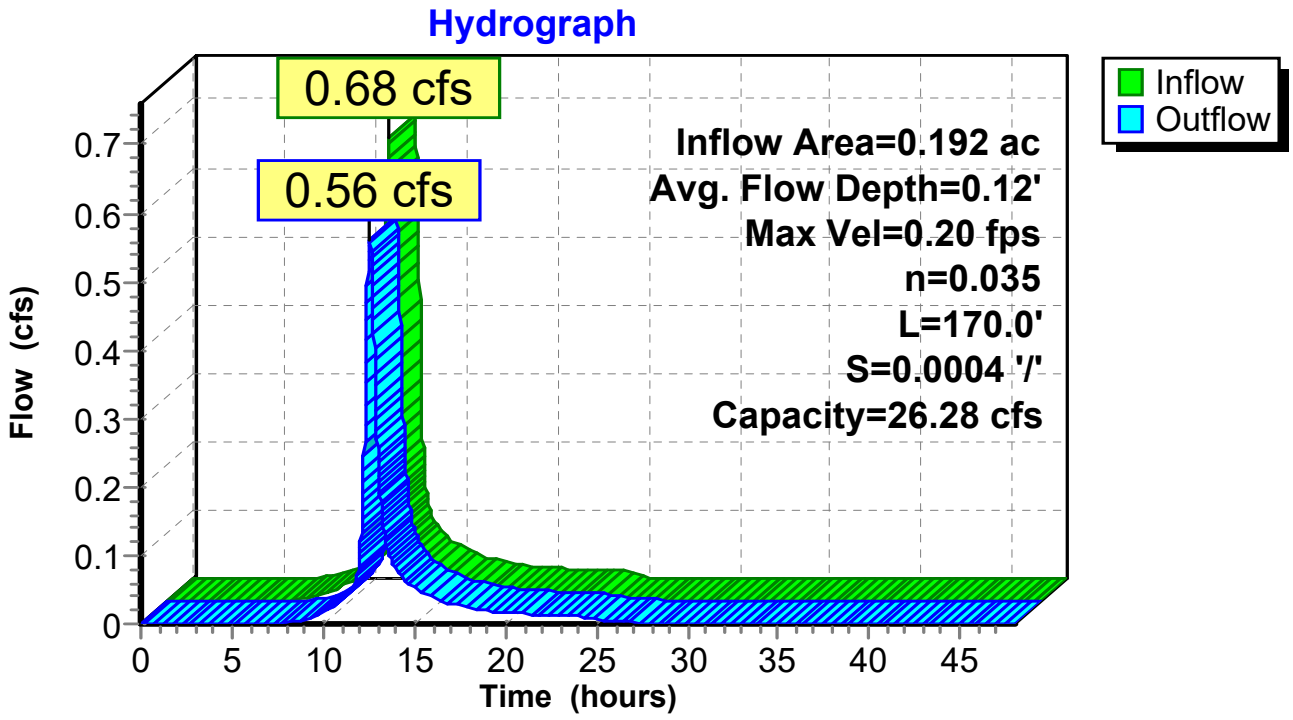
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.20 fps, Min. Travel Time= 14.1 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 49.6 min

Peak Storage= 476 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 26.28 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 170.0' Slope= 0.0004 '/'
Inlet Invert= 19.57', Outlet Invert= 19.50'

‡

Reach 2R:



Summary for Reach 3R:

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.58 cfs @ 12.16 hrs, Volume= 0.057 af
Outflow = 0.31 cfs @ 13.08 hrs, Volume= 0.057 af, Atten= 45%, Lag= 55.1 min

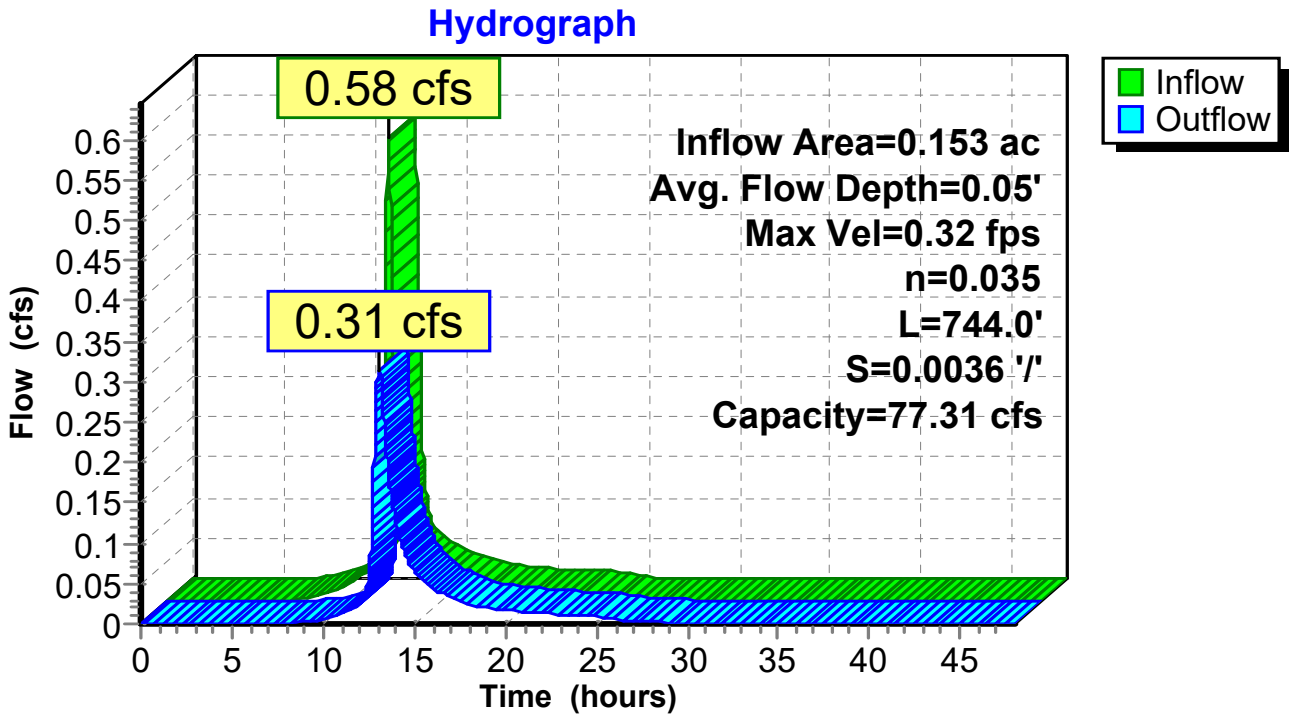
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 38.6 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 95.5 min

Peak Storage= 729 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 77.31 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 744.0' Slope= 0.0036 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 3R:



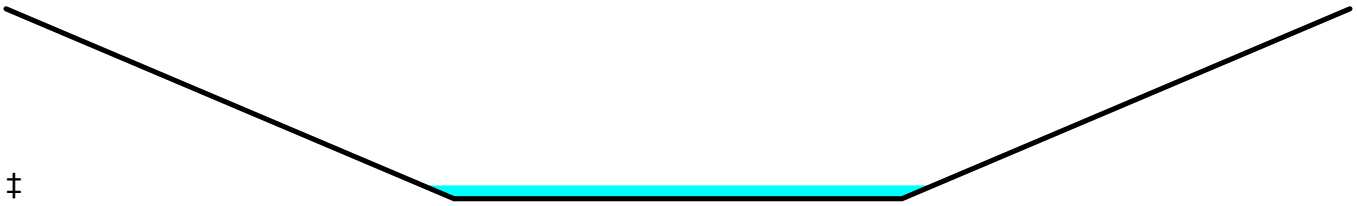
Summary for Reach 4R:

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 4.71" for 25-Yr Storm event
Inflow = 0.97 cfs @ 12.29 hrs, Volume= 0.167 af
Outflow = 0.89 cfs @ 12.83 hrs, Volume= 0.167 af, Atten= 8%, Lag= 32.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.59 fps, Min. Travel Time= 17.3 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 49.4 min

Peak Storage= 921 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 110.89 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 614.0' Slope= 0.0073 '/'
Inlet Invert= 19.50', Outlet Invert= 15.00'



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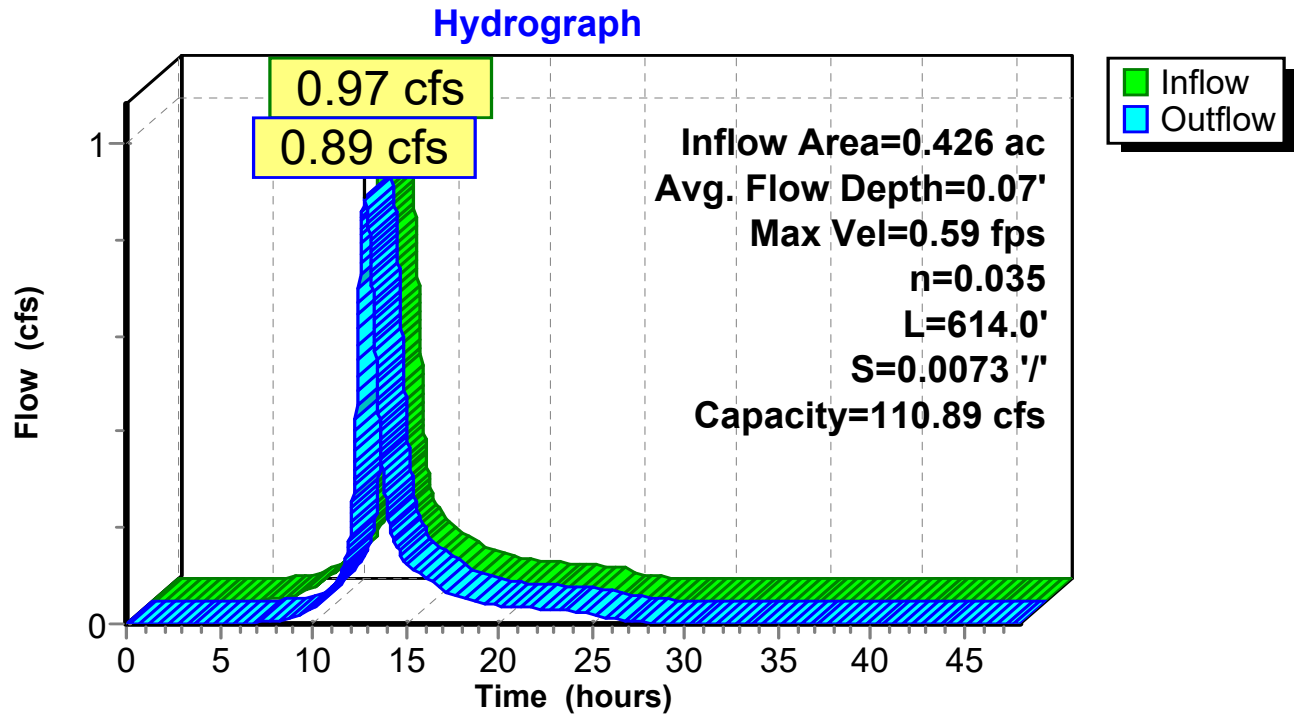
Reach 4R:



Summary for Reach 5R:

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 4.60" for 25-Yr Storm event
Inflow = 0.66 cfs @ 12.16 hrs, Volume= 0.065 af
Outflow = 0.66 cfs @ 12.20 hrs, Volume= 0.065 af, Atten= 1%, Lag= 2.5 min

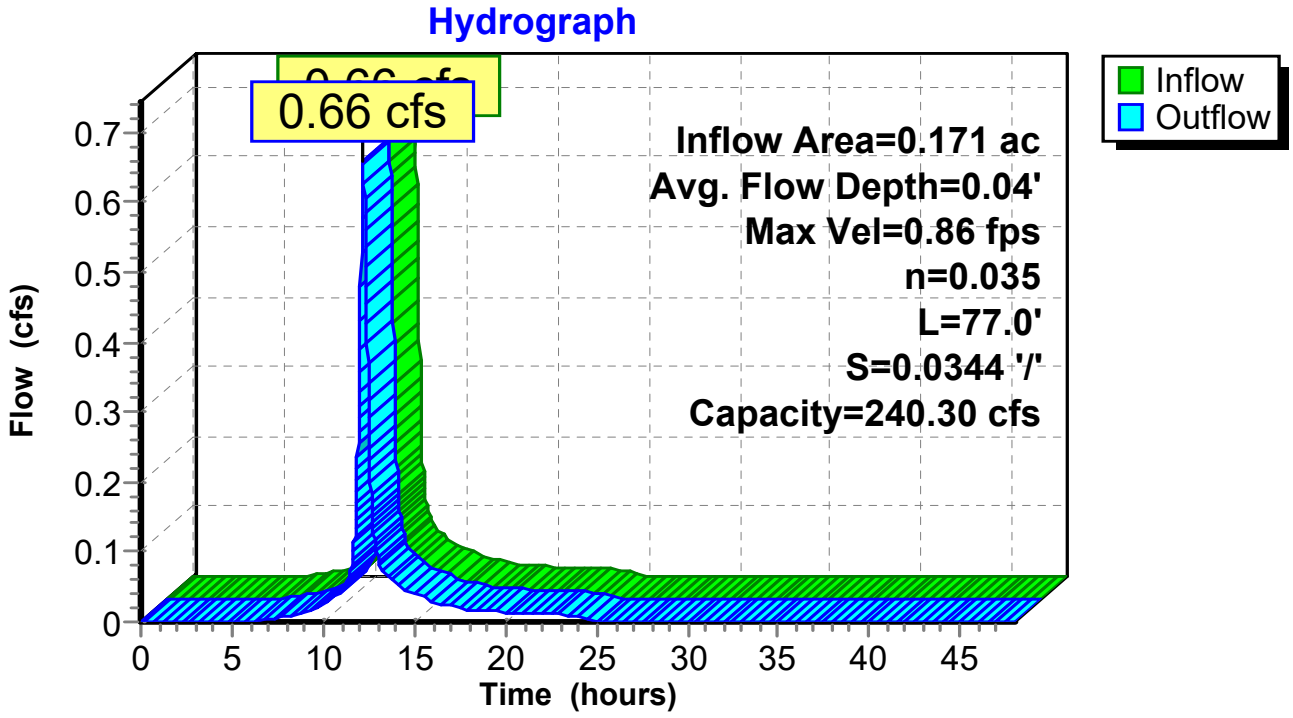
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.86 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 3.4 min

Peak Storage= 59 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 240.30 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 77.0' Slope= 0.0344 '/'
Inlet Invert= 21.00', Outlet Invert= 18.35'

‡

Reach 5R:



Summary for Reach 6R:

Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 4.53" for 25-Yr Storm event
Inflow = 0.70 cfs @ 12.21 hrs, Volume= 0.194 af
Outflow = 0.45 cfs @ 14.64 hrs, Volume= 0.194 af, Atten= 36%, Lag= 146.0 min

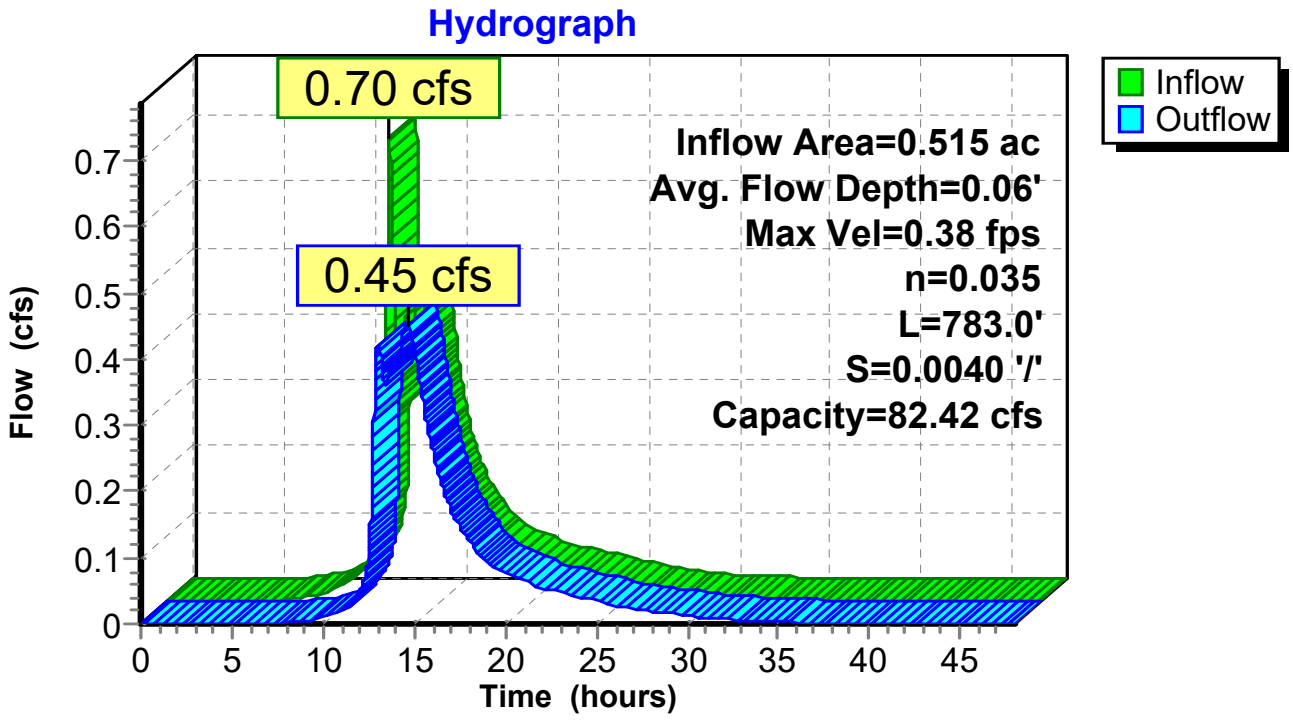
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.38 fps, Min. Travel Time= 34.1 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 81.0 min

Peak Storage= 924 cf @ 14.08 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 82.42 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 783.0' Slope= 0.0040 '/'
Inlet Invert= 18.17', Outlet Invert= 15.00'

‡

Reach 6R:



Summary for Reach OSR:

Inflow Area = 61.682 ac, 0.00% Impervious, Inflow Depth = 3.06" for 25-Yr Storm event
Inflow = 58.56 cfs @ 13.52 hrs, Volume= 15.733 af
Outflow = 45.85 cfs @ 14.91 hrs, Volume= 15.724 af, Atten= 22%, Lag= 83.1 min

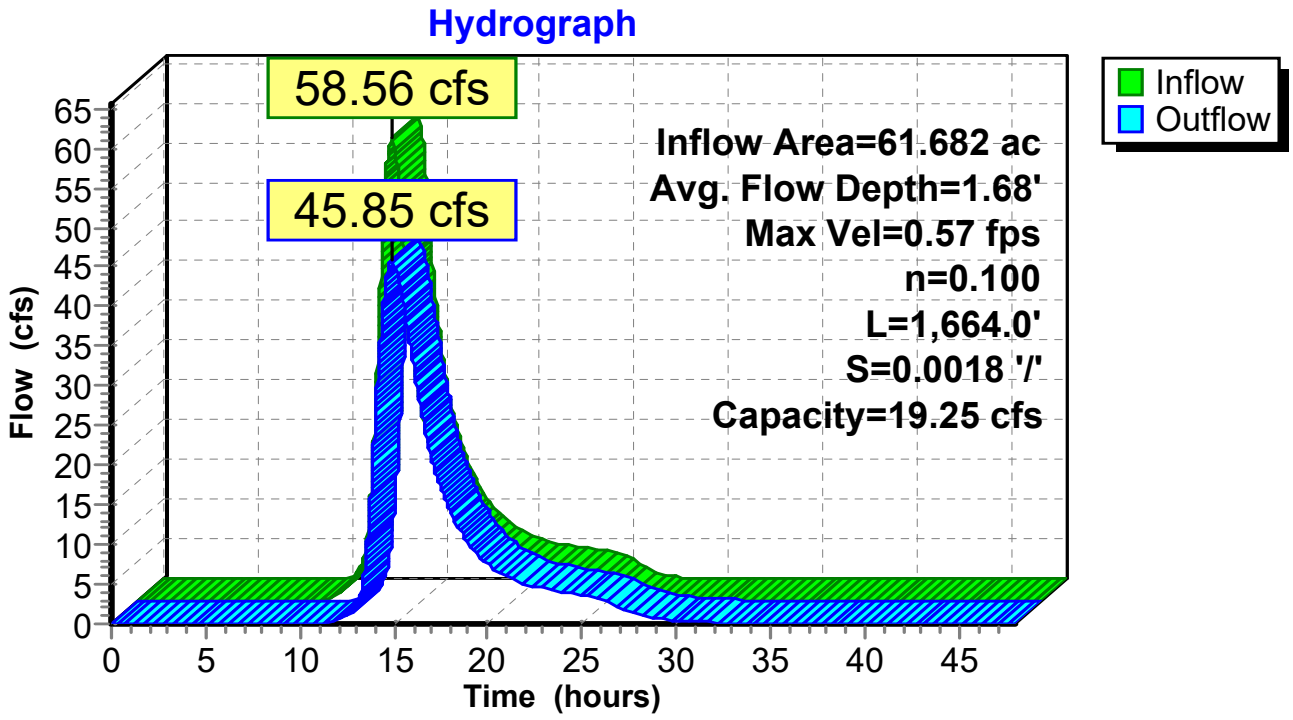
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.57 fps, Min. Travel Time= 48.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 143.4 min

Peak Storage= 133,860 cf @ 14.10 hrs
Average Depth at Peak Storage= 1.68'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 19.25 cfs

20.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 60.00'
Length= 1,664.0' Slope= 0.0018 '/'
Inlet Invert= 21.00', Outlet Invert= 18.00'

‡

Reach OSR:



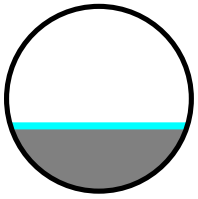
Summary for Reach WC1: CULVERT

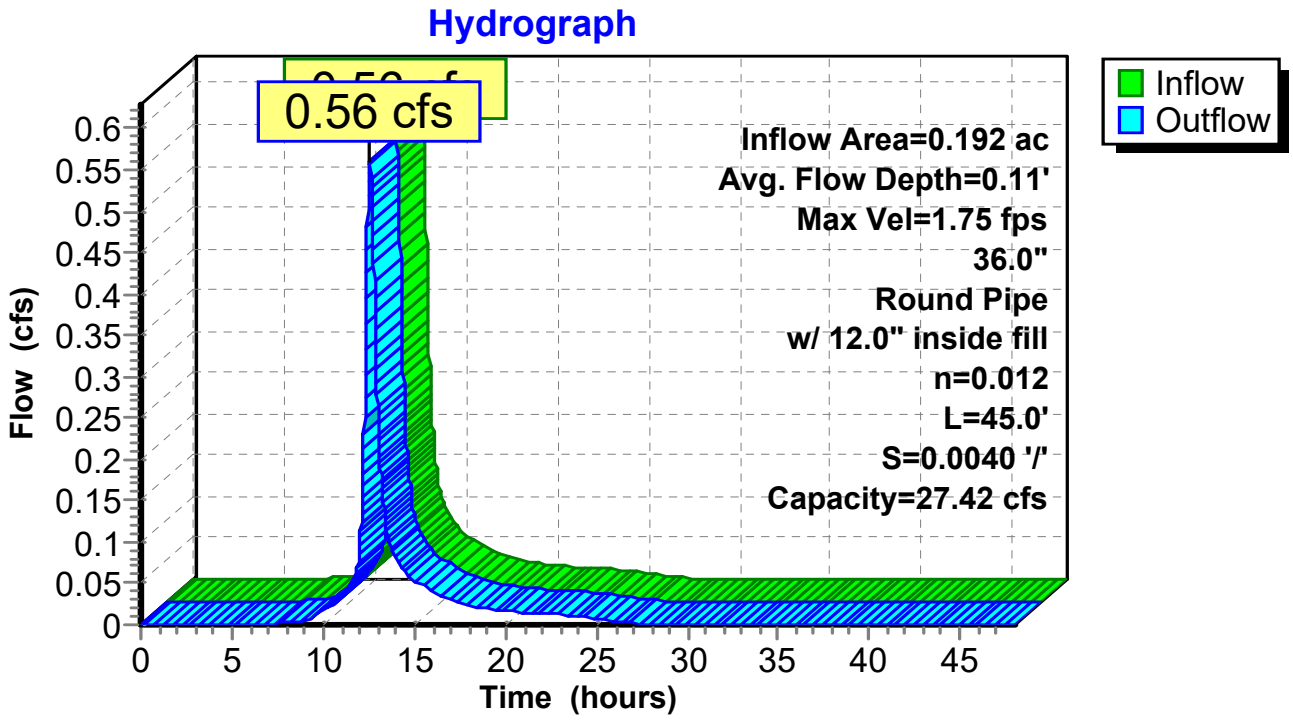
Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.56 cfs @ 12.57 hrs, Volume= 0.072 af
Outflow = 0.56 cfs @ 12.58 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.75 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 1.2 min

Peak Storage= 14 cf @ 12.57 hrs
Average Depth at Peak Storage= 1.11' above invert (0.11' above fill)
Bank-Full Depth= 3.00' above invert (2.00' above fill) Flow Area= 5.0 sf, Capacity= 27.42 cfs

36.0" Round Pipe w/ 12.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 45.0' Slope= 0.0040 '/' (101 Elevation Intervals)
Inlet Invert= 19.50', Outlet Invert= 19.32'





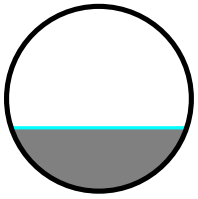
Summary for Reach WC2: CULVERT

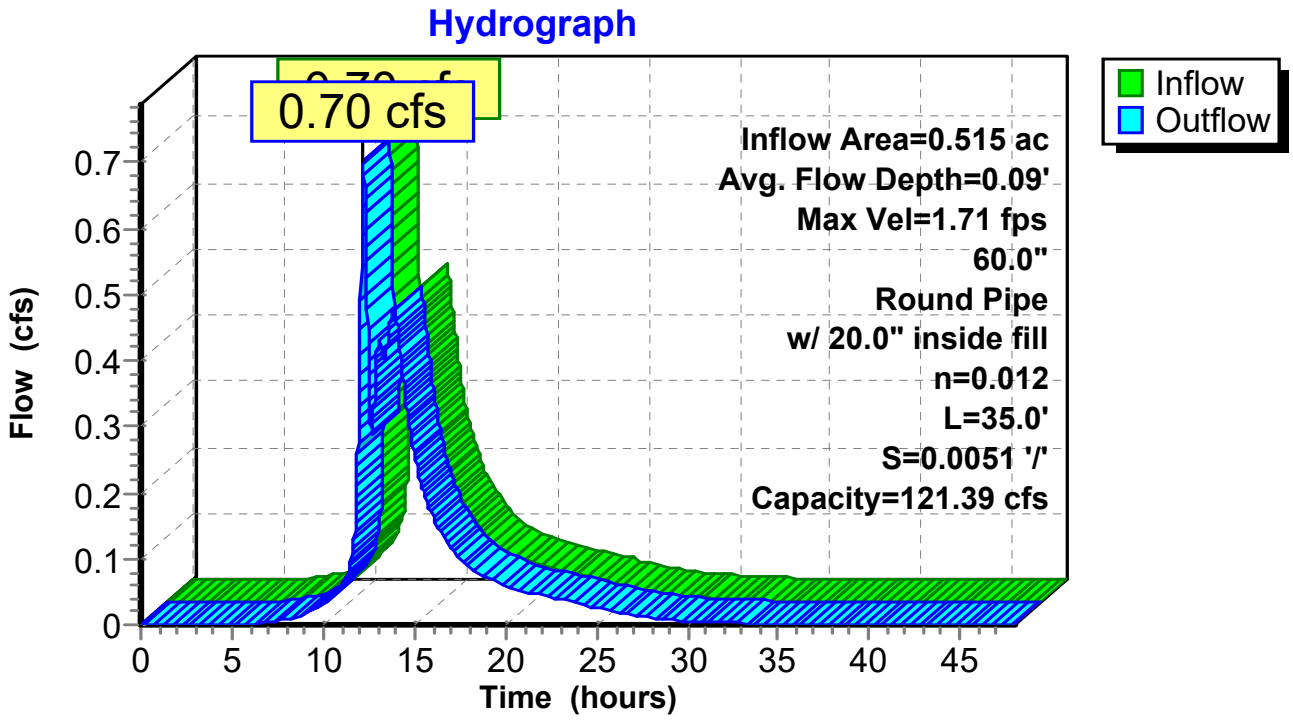
Inflow Area = 0.515 ac, 42.86% Impervious, Inflow Depth = 4.53" for 25-Yr Storm event
Inflow = 0.70 cfs @ 12.20 hrs, Volume= 0.194 af
Outflow = 0.70 cfs @ 12.21 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 0.6 min

Peak Storage= 14 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.75' above invert (0.09' above fill)
Bank-Full Depth= 5.00' above invert (3.33' above fill) Flow Area= 13.9 sf, Capacity= 121.39 cfs

60.0" Round Pipe w/ 20.0" inside fill
n= 0.012 Corrugated PP, smooth interior
Length= 35.0' Slope= 0.0051 '/' (101 Elevation Intervals)
Inlet Invert= 18.35', Outlet Invert= 18.17'





Summary for Pond 1P: Gravel Wetland

Inflow Area = 0.918 ac, 46.97% Impervious, Inflow Depth = 4.71" for 25-Yr Storm event
Inflow = 4.91 cfs @ 12.09 hrs, Volume= 0.360 af
Outflow = 1.98 cfs @ 12.31 hrs, Volume= 0.360 af, Atten= 60%, Lag= 13.3 min
Primary = 0.61 cfs @ 12.31 hrs, Volume= 0.318 af
Secondary = 1.37 cfs @ 12.31 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 1,600 sf Storage= 1,630 cf
Peak Elev= 21.96' @ 12.31 hrs Surf.Area= 3,206 sf Storage= 6,804 cf (5,174 cf above start)

Plug-Flow detention time= 163.5 min calculated for 0.323 af (90% of inflow)
Center-of-Mass det. time= 82.4 min (875.9 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,938 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

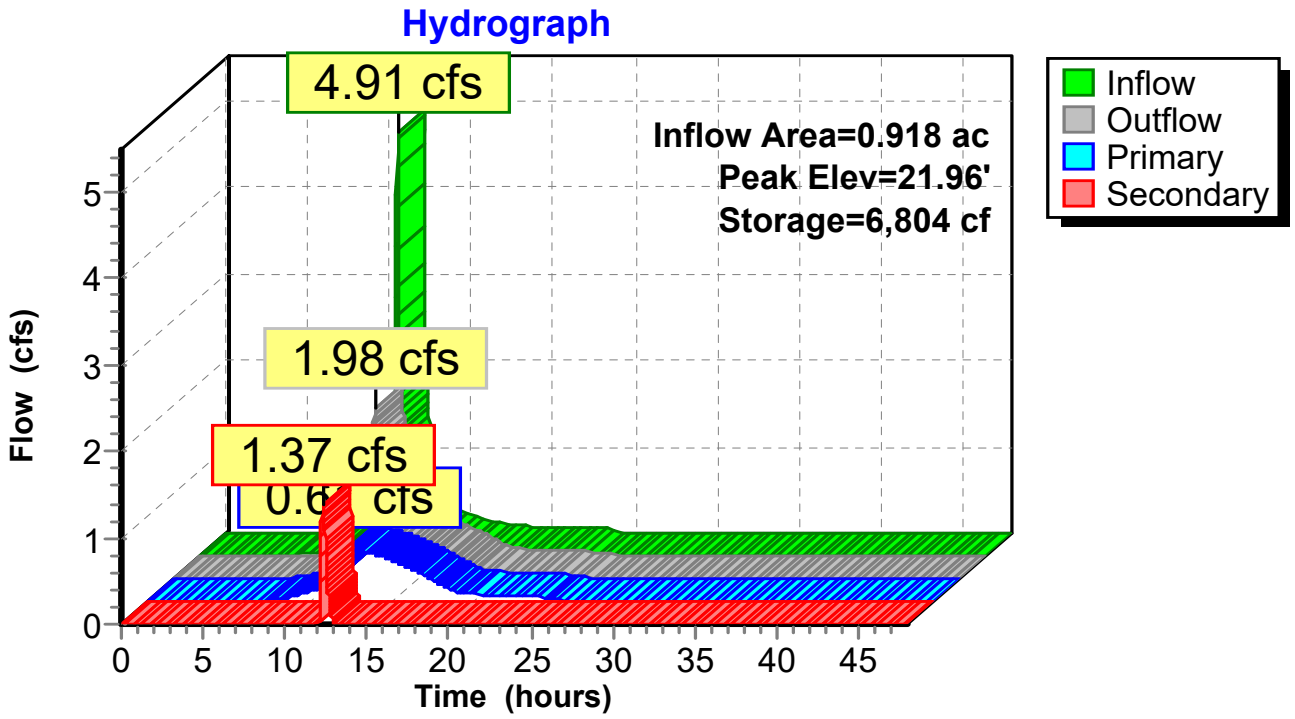
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	1,600	0.0	0	0
16.83	1,600	40.0	6	6
18.83	1,600	30.0	960	966
19.33	1,600	15.0	120	1,086
20.00	1,600	100.0	1,072	2,158
21.00	2,365	100.0	1,983	4,141
21.50	2,790	100.0	1,289	5,430
22.00	3,244	100.0	1,509	6,938

Device	Routing	Invert	Outlet Devices
#1	Primary	19.67'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.67' / 19.57' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	21.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Device 1	19.67'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.61 cfs @ 12.31 hrs HW=21.96' (Free Discharge)
↑**1=Culvert** (Passes 0.61 cfs of 3.99 cfs potential flow)
↑**3=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.01 fps)

Secondary OutFlow Max=1.36 cfs @ 12.31 hrs HW=21.96' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.36 cfs @ 1.09 fps)

Pond 1P: Gravel Wetland



Summary for Pond 2P: Gravel Wetland

Inflow Area = 0.192 ac, 42.82% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.072 af
Outflow = 0.68 cfs @ 12.17 hrs, Volume= 0.072 af, Atten= 31%, Lag= 5.0 min
Primary = 0.68 cfs @ 12.17 hrs, Volume= 0.072 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.94' @ 12.17 hrs Surf.Area= 564 sf Storage= 749 cf (342 cf above start)

Plug-Flow detention time= 102.6 min calculated for 0.063 af (87% of inflow)
Center-of-Mass det. time= 14.9 min (814.3 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

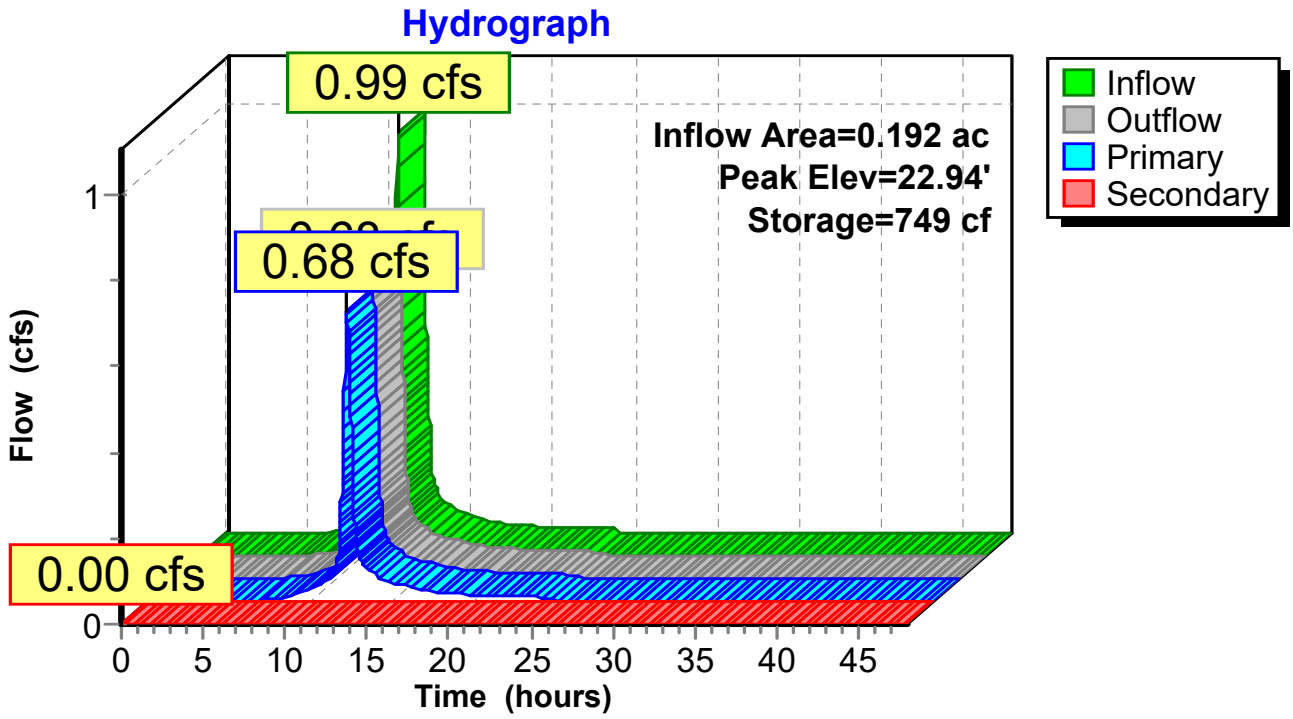
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.68 cfs @ 12.17 hrs HW=22.93' (Free Discharge)
└**2=Culvert** (Passes 0.68 cfs of 1.55 cfs potential flow)
└**1=Orifice/Grate** (Orifice Controls 0.68 cfs @ 3.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Gravel Wetland



Summary for Pond 3P: Gravel Wetland

Inflow Area = 0.153 ac, 40.29% Impervious, Inflow Depth = 4.49" for 25-Yr Storm event
Inflow = 0.79 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.58 cfs @ 12.16 hrs, Volume= 0.057 af, Atten= 27%, Lag= 4.5 min
Primary = 0.58 cfs @ 12.16 hrs, Volume= 0.057 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 22.17' Surf.Area= 400 sf Storage= 408 cf
Peak Elev= 22.79' @ 12.16 hrs Surf.Area= 509 sf Storage= 672 cf (264 cf above start)

Plug-Flow detention time= 119.0 min calculated for 0.048 af (84% of inflow)
Center-of-Mass det. time= 16.1 min (815.5 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	19.32'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

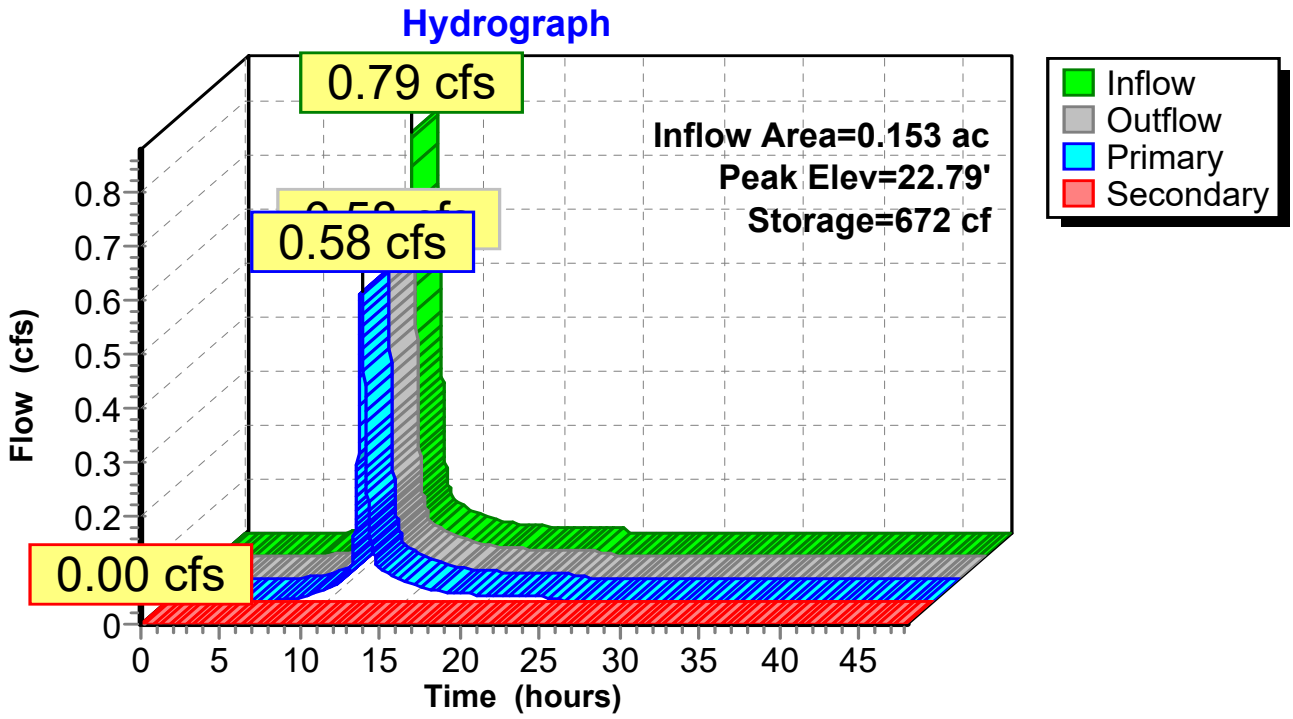
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.32	400	0.0	0	0
19.33	400	40.0	2	2
21.33	400	30.0	240	242
21.83	400	15.0	30	272
22.50	400	100.0	268	540
23.00	588	100.0	247	787
24.00	1,050	100.0	819	1,606
25.00	1,626	100.0	1,338	2,944

Device	Routing	Invert	Outlet Devices
#1	Device 2	22.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	22.17'	**12.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 22.17' / 22.00' S= 0.0113 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	24.75'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.58 cfs @ 12.16 hrs HW=22.79' (Free Discharge)
↑—**2=Culvert** (Passes 0.58 cfs of 1.18 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.58 cfs @ 2.93 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Gravel Wetland



Summary for Pond 4P: Gravel Wetland

Inflow Area = 0.426 ac, 48.46% Impervious, Inflow Depth = 4.71" for 25-Yr Storm event
Inflow = 2.28 cfs @ 12.09 hrs, Volume= 0.167 af
Outflow = 0.97 cfs @ 12.29 hrs, Volume= 0.167 af, Atten= 57%, Lag= 12.0 min
Primary = 0.97 cfs @ 12.29 hrs, Volume= 0.167 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 19.67' Surf.Area= 900 sf Storage= 917 cf
Peak Elev= 20.97' @ 12.29 hrs Surf.Area= 1,491 sf Storage= 2,371 cf (1,454 cf above start)

Plug-Flow detention time= 114.8 min calculated for 0.146 af (87% of inflow)
Center-of-Mass det. time= 27.3 min (820.8 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	6,956 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

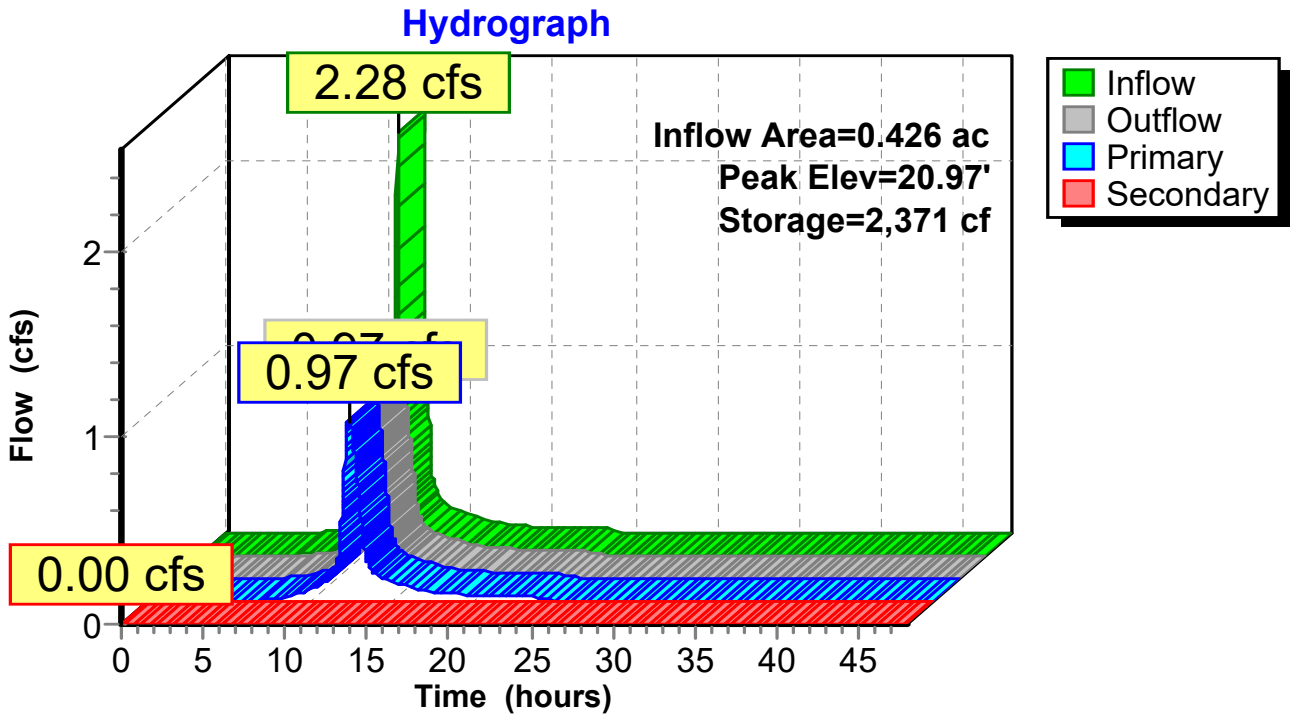
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	900	0.0	0	0
16.83	900	40.0	4	4
18.83	900	30.0	540	544
19.33	900	15.0	68	611
20.00	900	100.0	603	1,214
21.00	1,510	100.0	1,205	2,419
22.00	2,240	100.0	1,875	4,294
23.00	3,084	100.0	2,662	6,956

Device	Routing	Invert	Outlet Devices
#1	Device 2	19.67'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.67'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 19.67' / 19.40' S= 0.0135 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	22.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.97 cfs @ 12.29 hrs HW=20.97' (Free Discharge)
↑—**2=Culvert** (Passes 0.97 cfs of 3.38 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.97 cfs @ 4.93 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.67' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Gravel Wetland



Summary for Pond 5P: Gravel Wetland

Inflow Area = 0.171 ac, 45.21% Impervious, Inflow Depth = 4.60" for 25-Yr Storm event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.065 af
Outflow = 0.66 cfs @ 12.16 hrs, Volume= 0.065 af, Atten= 26%, Lag= 4.3 min
Primary = 0.66 cfs @ 12.16 hrs, Volume= 0.065 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Starting Elev= 21.17' Surf.Area= 300 sf Storage= 756 cf
Peak Elev= 21.91' @ 12.16 hrs Surf.Area= 437 sf Storage= 1,007 cf (252 cf above start)

Plug-Flow detention time= 153.2 min calculated for 0.048 af (73% of inflow)
Center-of-Mass det. time= 11.4 min (807.9 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	16.82'	2,871 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.82	300	0.0	0	0
16.83	300	40.0	1	1
18.83	300	30.0	180	181
19.33	300	15.0	23	204
21.50	300	100.0	651	855
22.00	466	100.0	192	1,046
23.00	884	100.0	675	1,721
24.00	1,415	100.0	1,150	2,871

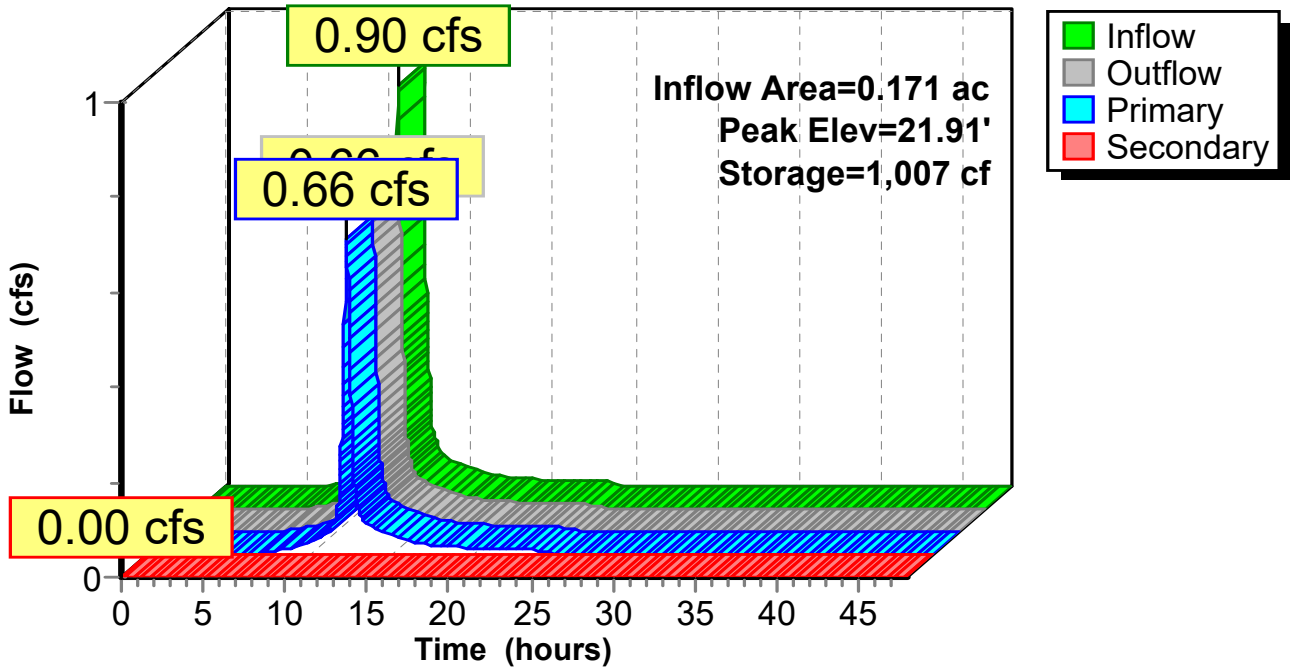
Device	Routing	Invert	Outlet Devices
#1	Device 2	21.17'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	21.17'	**12.0" Round Culvert** L= 23.0' Ke= 0.500 Inlet / Outlet Invert= 21.17' / 21.00' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Secondary	23.50'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.66 cfs @ 12.16 hrs HW=21.91' (Free Discharge)
↑—**2=Culvert** (Passes 0.66 cfs of 1.50 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.66 cfs @ 3.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.17' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: Gravel Wetland

Hydrograph



Summary for Pond C: 30" CULVERT

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 3.20" for 25-Yr Storm event
Inflow = 58.82 cfs @ 12.93 hrs, Volume= 27.167 af
Outflow = 68.54 cfs @ 12.94 hrs, Volume= 27.166 af, Atten= 0%, Lag= 0.8 min
Primary = 28.90 cfs @ 12.94 hrs, Volume= 19.830 af
Secondary = 39.64 cfs @ 12.94 hrs, Volume= 7.336 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 19.19' @ 12.94 hrs Surf.Area= 25,000 sf Storage= 18,750 cf

Plug-Flow detention time= 7.8 min calculated for 27.155 af (100% of inflow)
Center-of-Mass det. time= 7.8 min (985.3 - 977.5)

Volume	Invert	Avail.Storage	Storage Description
#1	15.00'	18,750 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
15.00	2,500	0	0
16.00	2,500	2,500	2,500
17.00	5,000	3,750	6,250
17.50	10,000	3,750	10,000
18.00	25,000	8,750	18,750

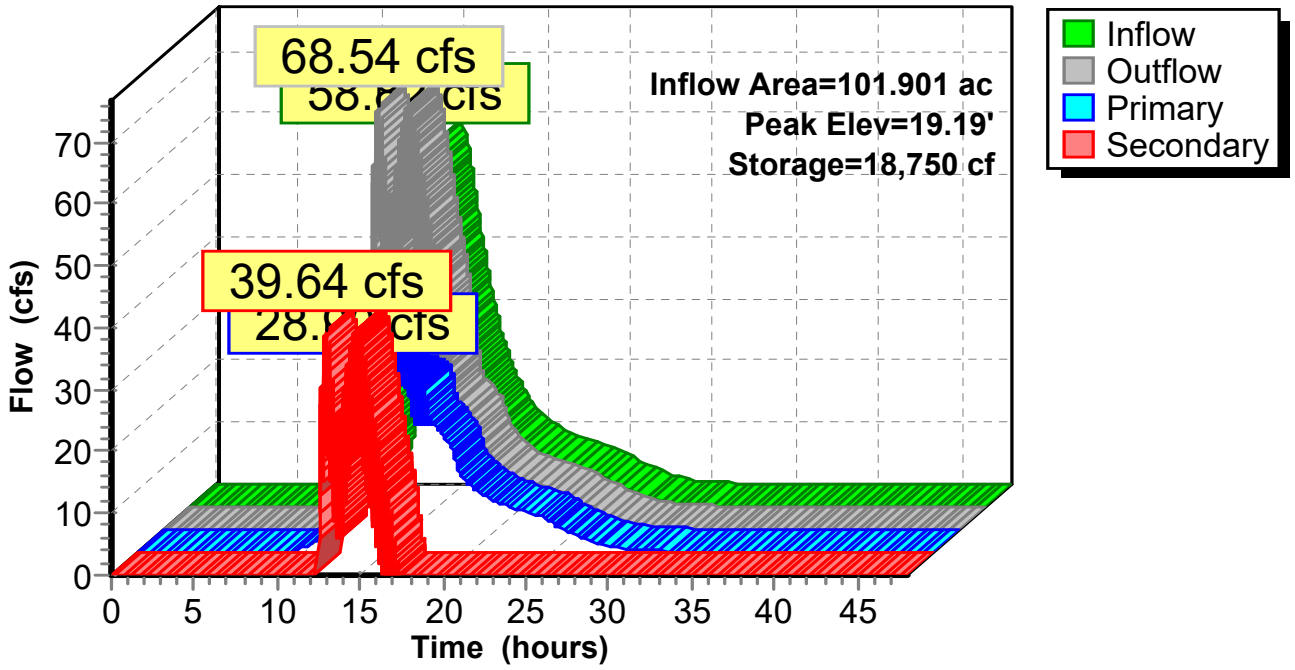
Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**30.0" Round Culvert w/ 6.0" inside fill** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.50' / 14.25' S= 0.0050 '/' Cc= 0.900 n= 0.021 Corrugated metal, Flow Area= 4.21 sf
#2	Secondary	18.75'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=28.90 cfs @ 12.94 hrs HW=19.19' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 28.90 cfs @ 6.86 fps)

Secondary OutFlow Max=39.59 cfs @ 12.94 hrs HW=19.19' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 39.59 cfs @ 1.79 fps)

Pond C: 30" CULVERT

Hydrograph

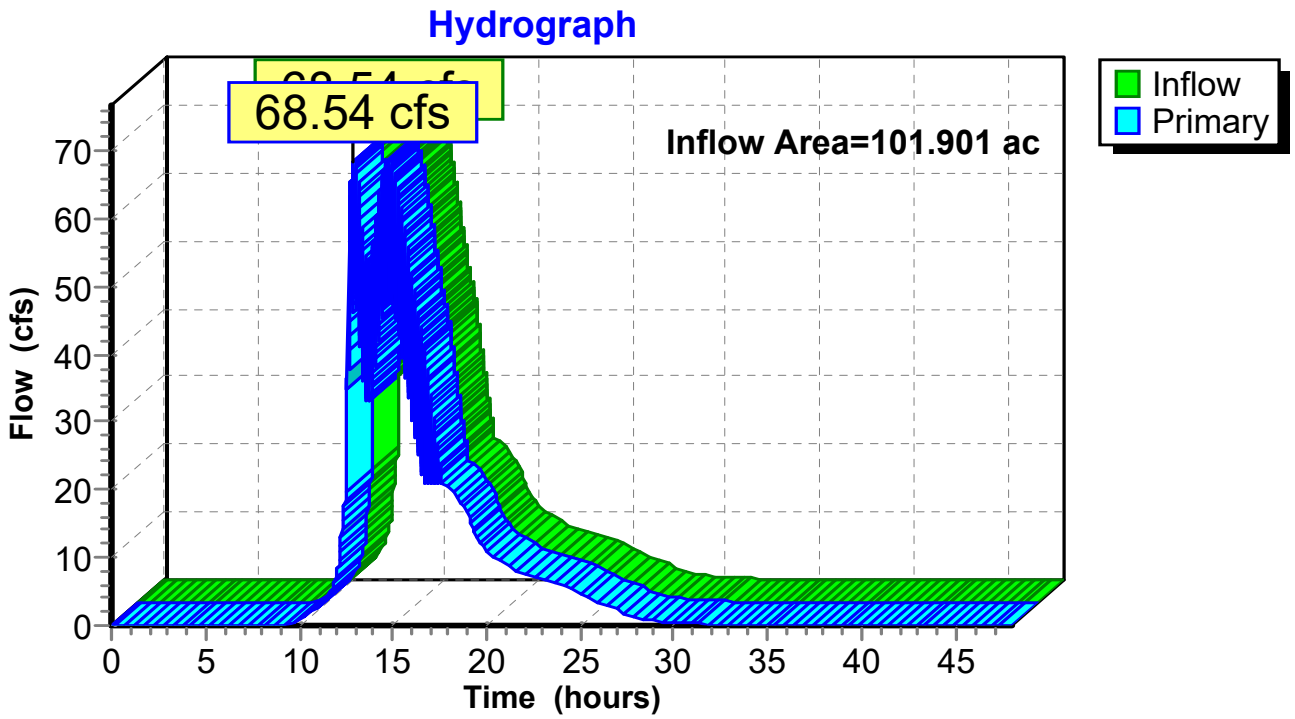


Summary for Link POA1:

Inflow Area = 101.901 ac, 2.62% Impervious, Inflow Depth > 3.20" for 25-Yr Storm event
Inflow = 68.54 cfs @ 12.94 hrs, Volume= 27.166 af
Primary = 68.54 cfs @ 12.94 hrs, Volume= 27.166 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA1:

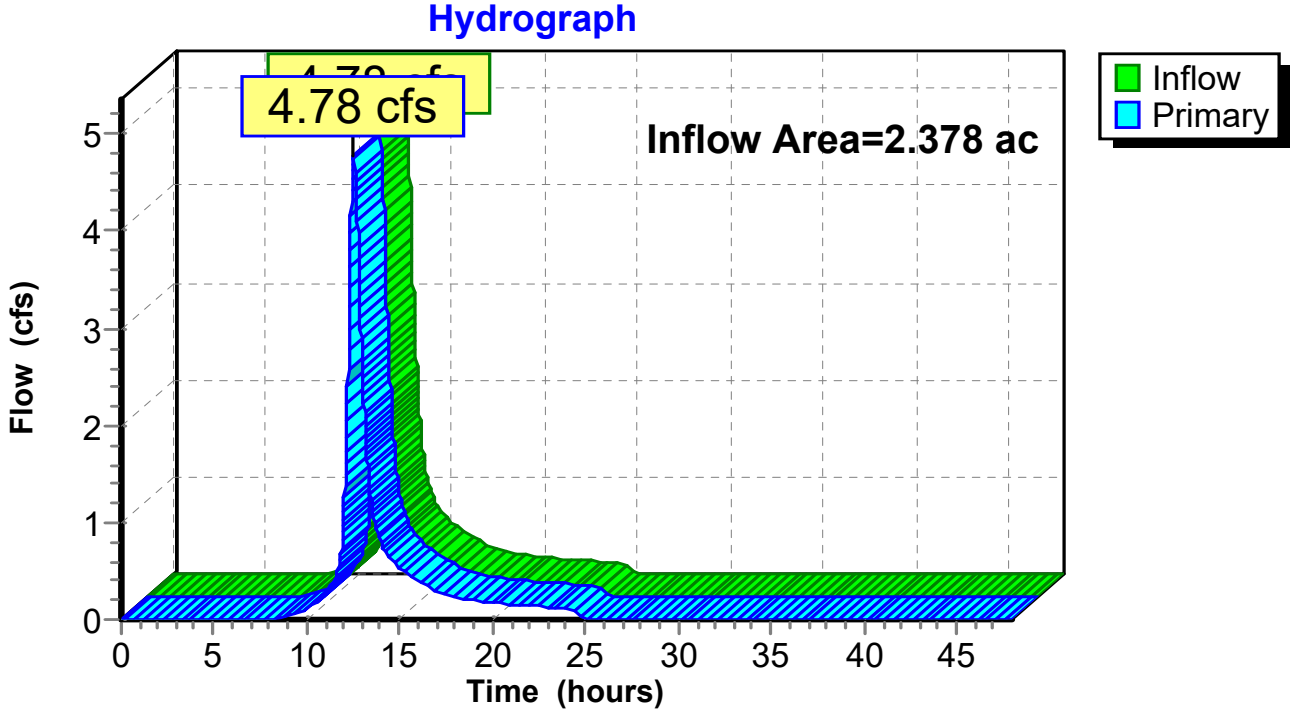


Summary for Link POA2:

Inflow Area = 2.378 ac, 2.41% Impervious, Inflow Depth = 3.45" for 25-Yr Storm event
Inflow = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af
Primary = 4.78 cfs @ 12.54 hrs, Volume= 0.684 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POA2:



ATTACHMENT D – STORMWATER OPERATIONS AND MAINTENANCE MANUAL

Atlantic Resource Consultants
Engineering Strategies and Solutions

THE GLEN AT GOOSE ROCKS
KENNEBUNKPORT, MAINE
STORMWATER MAINTENANCE PLAN

Maintenance Responsibilities

During construction activities, the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book will be the responsibility of the Owner.

Regular inspection and maintenance of stormwater management BMPs shall be undertaken as follows:

Ditches, Swales, and Riprap Aprons

Open swales and ditches shall be inspected on a monthly basis or after a major rainfall event to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal vegetation in the ditches as required to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.
Vegetated ditches should be mowed at least three times during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.
Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap and accumulated sediments and debris should be removed on a bi-annual basis.

Drainage Pipes and Culverts

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the detention/infiltration pond areas as this will reduce the ponds capacity and ability to infiltrate runoff and will hasten the time when the pond must be cleaned/rehabilitated.

Roadways, Driveways, Walkways and Parking Lots

Accumulations of winter sand along paved surfaces shall be cleared at least once a year, preferably in the spring, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder.

Gravel Wetlands

Inspections of the gravel wetlands shall be conducted on a semi-annual basis and following significant rainfall events. Delayed or poor maintenance practices can result in loss of treatment capacity. Records should be kept of all maintenance operations to help plan future work and identify problem areas.

The basin embankments should be maintained to preserve their integrity including, but not limited to, vegetation maintenance (mowing, control of woody vegetation), rodent control, erosion control and repair, and outlet control structure maintenance and repair. The embankment should be inspected annually for erosion or destabilization of side slopes, embankment settling and other signs of overtop structural failure.

Basin plantings, and vegetation should be maintained on a quarterly basis. Regular maintenance activities should include cutting back shrub plantings where necessary to prevent excessive woody growth, removal of dead vegetation and re-planting to maintain good cover and root spread. Shrub or grass clippings should be removed to minimize the amount of organic material accumulation in the basin.
Sediment and debris should be removed from the sediment forebay at least annually, where applicable.
Bioretention cells and underdrained filters shall not be used for snow storage area. Snow storage should be sited so that snow melt flows to a pretreatment BMP before reaching the infiltration area.
Vehicular equipment used to maintain or rehabilitate the basins should work from the cell perimeter and not enter the basin floor area, as this would compact the soil surface and reduce infiltration.
The surface of the basins may clog with fine sediments over time. Maintenance of good plant or grass cover should minimize this; however, if ponded runoff does not infiltrate within 48 hours, rototilling the top of the soil bed may be required to reestablish the soils infiltration capacity.

ATTACHMENT E – CLASS-A HIGH INTENSITY SOIL SURVEY

LONGVIEW PARTNERS, LLC

ENVIRONMENTAL PERMITTING SPECIALISTS

Soil Narrative Report

Prepared for

Creative Coast Construction

(Atlantic Resource Consultants)

Goose Rocks Road

Kennebunkport, Maine

April, 2022

Map prepared for a proposed residential subdivision

Maps scaled 1" = 100', base map provided by Atlantic resource Consultants

Mapping meets Maine Association of Professional Soil Scientists Class A High-Intensity mapping standards with minimum mapping units of 1/8 acre

SOILS MAP LEGEND:

- TP — SOIL TEST PIT (LOCATED BY SUBMETER GPS)
- SOIL BOUNDARY LINE
- LIMITS OF HIGH-INTENSITY SOIL SURVEY
- SURFACE WATER RUNOFF (LOCATED BY SUBMETER GPS)
- WETLAND BOUNDARY (LOCATED BY SUBMETER GPS)

SLOPE DESIGNATION

A	0 – 3%
B	3 – 8%
C	8 – 20%
D	20%+

NOTES: SEE ACCOMPANYING SOIL NARRATIVE REPORT, DATED APRIL, 2022
ALL SOIL TEST PITS EXCAVATED BY BACKHOE

THE ACCOMPANYING SOILS SURVEY WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, FEBRUARY 1995, AS AMENDED.

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

STATE OF MAINE
JAMES LOGAN #213
CERTIFIED SOIL SCIENTIST

CLASS A HIGH-INTENSITY SOIL SURVEY

PREPARED FOR
CREATIVE COAST CONSTRUCTION
GOOSE ROCKS ROAD
(MAP 15, BLK 1, P/O LOT 1)
KENNEBUNKPORT, MAINE

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT:	SCALE:	CHECKED:	PLAN DATE:
BO	1" = 100'	JL	4/14/22

BIDDEFORD
(Histic Humaquept)

SETTING

Parent Material: Derived from marine & lacustrine sediments.

Landform: Nearly level lowlands.

Position in Landscape: Usually occupies the lowest position within the landscape.

Slope Gradient Ranges: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Biddeford soil is very poorly drained with a perched water table within 0.5 feet of the soil surface, and may be ponded at the surface for some portion of the year.

Typical Profile Description:
Surface layer: Very dark brown mucky peat, 0-12"
Subsurface layer: Gray silt loam, 12-16"
Subsoil layer: Olive gray/dark gray silty clay, 16-35"
Substratum: Gray silty clay & silty clay loam, 35-65"

Hydrologic Group: Group D

Surface Run Off: Very slow

Permeability: Moderate or moderately slow in upper horizons, slow or very slow in substratum.

Depth to Bedrock: Deep, more than 40 inches.

Hazard to Flooding: This soil is intermittently ponded, and may rarely flood in areas adjacent to streams and rivers during periods of prolonged wetness.

INCLUSIONS
(Within Mapping Unit)

Similar: Scantic, Whately, Roundabout, Bucksport
Dissimilar: Sebago, Chocorua, Wonsqueak

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to a high water table throughout the year. Biddeford soil has very low potential for dwellings with foundations and road construction due to ponding and low strength. Biddeford soil is unsuitable for subsurface wastewater disposal as defined by the State of Maine Subsurface Wastewater Disposal Rules. Biddeford soil is usually classified a wetland, based on the combined consideration of hydric conditions, hydrology, and vegetation.

LYMAN-TUNBRIDGE COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, or only inches from the bedrock surface during spring and periods of heavy precipitation.

Typical Profile Description:

Surface layer: Black & reddish brown loam & fine sandy loam, 0-4"
Subsurface layer: Very dusky red loam, 4-6"
Subsoil layer: Dark red loam, 6-10"
Substratum layer: Dark brown to brown loam, 10-20"

Hydrologic Group: Group C/D

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid.

Depth to Bedrock: Shallow (Lyman, 10-20") to moderately deep (Tunbridge, 20-40").

Hazard to Flooding: None

Erosion Factors: K: .20 - .32

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield, Skerry (deeper than 40" to bedrock)

Dissimilar: Naskeag (in depressional areas), Colonel, Brayton

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factors for building site development is shallow to bedrock. Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation. Portions of these map units are suitable for subsurface wastewater disposal, where the depth to limiting factor is greater than 15" from the mineral soil surface within Shoreland Zoned areas, and 9"-15" in non-Shoreland Zoned areas. This soil requires a 24-inch separation distance between the bottom of any disposal area and the bedrock surface , and 3.3 sq.ft/gpd and 1.7 sq.ft/gpd for bed disposal area and chamber area, respectively.

For stormwater design: Limiting factor for stormwater design is bedrock, which is generally less than 20". These soils are generally well drained, with no seasonal water table except for short durations on the bedrock surface. Permeabilities are 2-6 inches per hour in all horizons.

LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Uppermost locations on landform; sideslopes, shoulders, and crests of ridges.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained (Lyman) to well drained (Tunbridge) with no apparent water table other than run off across the bedrock surface occasionally, during spring and periods of heavy precipitation. These soils occur in a non-repeating pattern with exposed bedrock outcrop, and cannot be separated in mapping.

Typical Profile Description:

Surface layer:	Black & reddish brown loam & fine sandy loam, 0-4"
Subsurface layer:	Very dusky red loam, 4-6"
Subsoil layer:	Dark red loam, 6-10"
Substratum layer:	Dark brown to brown loam, 10-20"

Hydrologic Group: Group C/D

Surface Run Off: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow (Lyman 10-20") to moderately deep (Tunbridge 20-40").

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield, Skerry (deeper than 40" to bedrock)

Dissimilar: Colonel (greater than 40" to bedrock), Naskeag (in microdepressions)

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is depth to bedrock, which ranges from 0" to 40" within this complex. Blasting or ripping of the more fractured bedrock is necessary for deep excavation. Tunbridge and Lyman (9"-15" deep to bedrock outside shoreland zone areas) soils are suitable for subsurface wastewater disposal in accordance with State of Maine Subsurface Wastewater Disposal Rules. These soils require a 24-inch separation distance between the bedrock surface and the bottom of any disposal system. These soils also require 3.3 and 1.7 sq.ft/gpd for disposal beds and chamber area, respectively.

Development with public sewer and water: The limiting factor for building site development is depth to bedrock, which is 0-40" within this complex. Blasting or ripping of the more fractured bedrock is necessary for deep excavation. Proper foundation drainage or other site modification is recommended for construction.

NASKEAG
(Aeric Haplaquods)

SETTING

Parent Material: Loamy and sandy glacial till.

Landform: Depressions of glaciated bedrock ridges.

Position in Landscape: Lowest positions in depressions or concavities in landform.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained, with a perched water table 0-1.5 feet beneath the soil surface.

Typical Profile Description:

Surface layer: Very dusky red muck, 0-5"
Subsurface layer: Light brownish gray and brown sandy loam or loamy sand, 5-16"
Subsoil layer: Dusky red loamy sand, 10-26"
Substratum: Light yellowish brown gravelly sandy loam to loamy sand, 26-38"

Hydrologic Group: Group C

Surface Run Off: Moderate or moderately rapid (across bedrock surface)

Permeability: Rapid

Depth to Bedrock: Moderately deep, 20-40" to bedrock surface.

Hazard to Flooding: None, but may be ponded for short duration in spring and during periods of excessive rainfall.

Erosion Factors: .10

INCLUSIONS
(Within Mapping Unit)

Similar: Lyman, Tunbridge, Colonel, Brayton, Swanton,Pillsbury

Dissimilar: Rock Outcrop, Peacham, Naskeag (Variant-V.P.D.)

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor of this soil for building site development are depth to bedrock less than 40" in Naskeag and wetness due to a water table perched above the bedrock surface or hardpan. Proper foundation drainage is recommended for construction. Naskeag does not meet the minimum requirements for subsurface wastewater disposal as defined by the State of Maine Subsurface Wastewater Disposal Rules. This soil (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

SCANTIC
(Typic Haplaquepts)

SETTING

Parent Material: Marine or lacustrine sediments.

Landform: Level or gently sloping marine or lake plains.

Position in Landscape: Lower to intermediate positions.

Slope Gradient Ranges: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained, with a perched water table 0.5 to 1.0 feet beneath the soil surface.

Typical Profile Description:

Surface layer: Dark grayish brown silt loam, 0-9"
Subsurface layer: Olive gray silt loam, 9-11"
Subsoil layer: Olive gray, silty clay loam, 11-16"
Substratum: Olive gray clay, 16-65"

Hydrologic Group: Group D

Surface Run Off: Slow

Permeability: Moderate or moderately slow in upper profile, slow to very slow in dense substratum.

Depth to Bedrock: Very deep, greater than 60".

Hazard to Flooding: May flood occasionally on lowest fringes during spring and periods of excessive precipitation.

INCLUSIONS
(Within Mapping Unit)

Similar: Lamoine, Enosburg (Swanton)

Dissimilar: Naskeag, Biddeford, Whately

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to the presence of a shallow water table throughout most of the year. Proper foundation drainage or site modification is recommended for construction. Scantic soil does not meet the minimum requirements for subsurface wastewater disposal, as defined by State of Maine Rules for Subsurface Wastewater Disposal. Scantic soil may be classified as wetlands, based on the combined consideration of hydrology, hydric conditions, and vegetation.

Development for stormwater: Scantic soils are poorly drained with a high perched water table 0.5 to 1.0 feet beneath the soil surface and exhibit permeabilities of 0.2 to 2.0 inches/hr. in the upper 10 inches, and less than 0.2 inches/hr. below 10 inches.

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

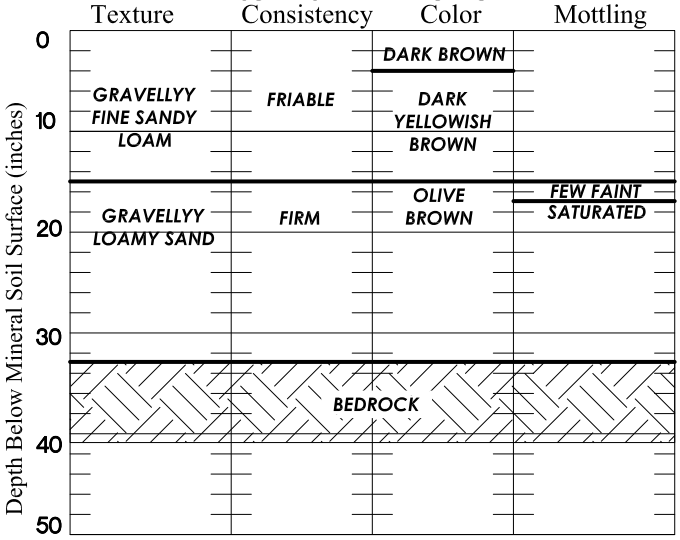
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 1** ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

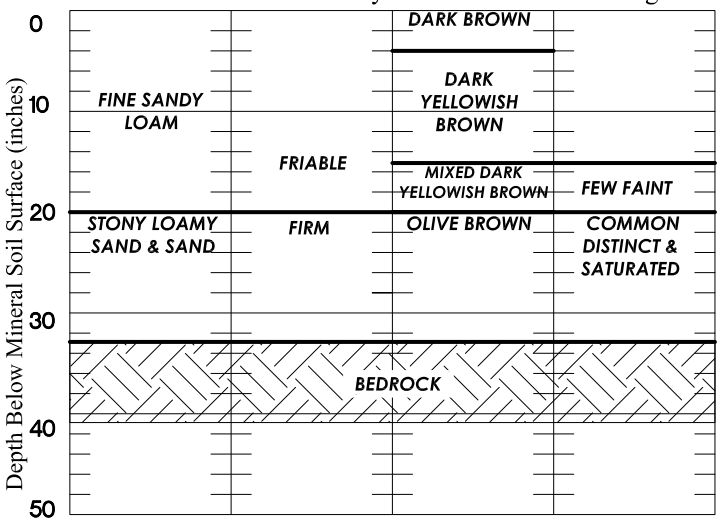


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 2** ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



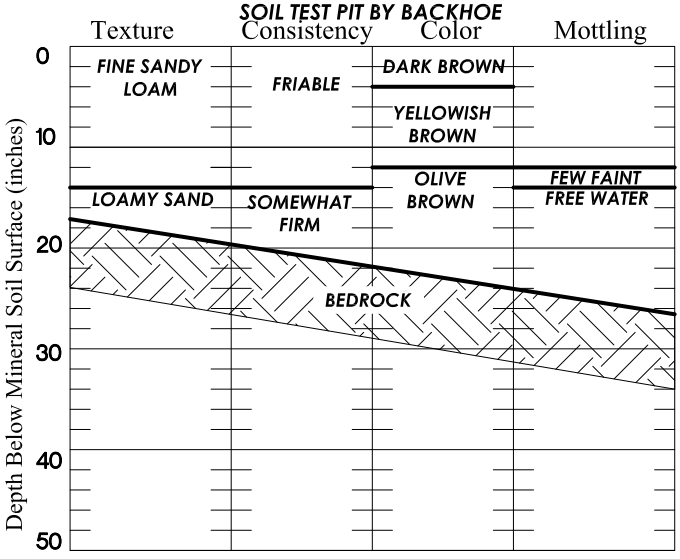
Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 3** ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

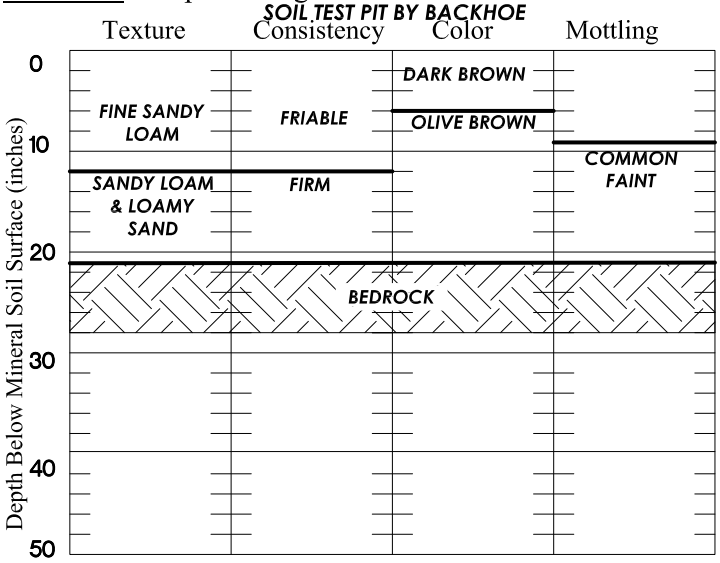


Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	_____ %	17-27 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
LYMAN-TUNBRIDGE (SWP VARIANT)			

Observation Hole **TP 4** ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	_____ %	21 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
LYMAN (VARIANT)			

SIGNATURE	LSE/CSS #	DATE
James Logan	237/213	2/23/22

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

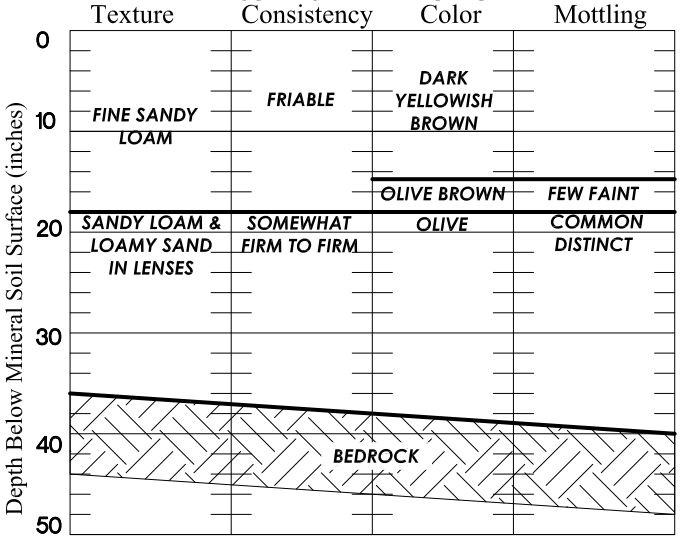
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 5** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

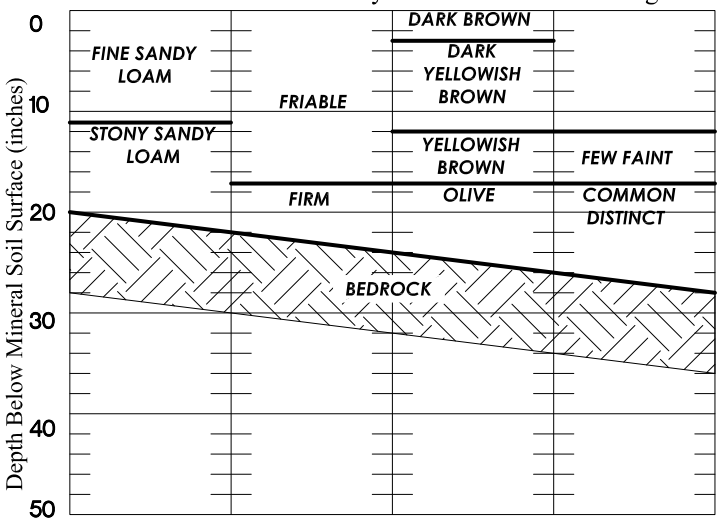


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

Observation Hole **TP 6** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



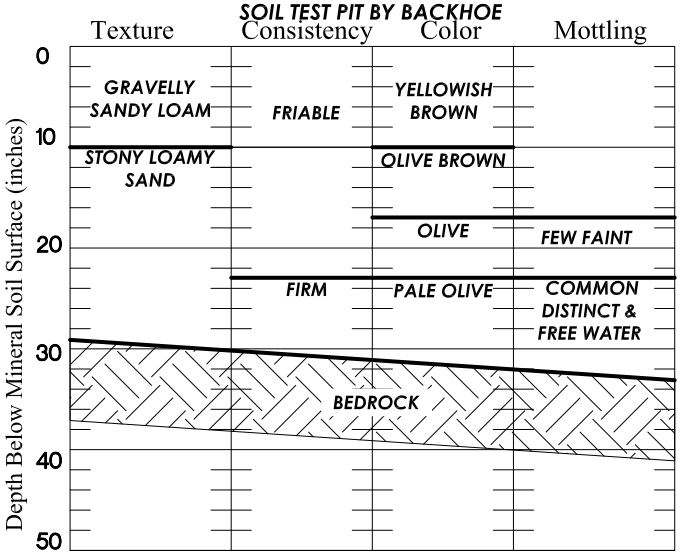
Soil Classification	Slope	Limiting Factor	
3 / AIII/D (Profile / Condition)	_____ %	20-28 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 7** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

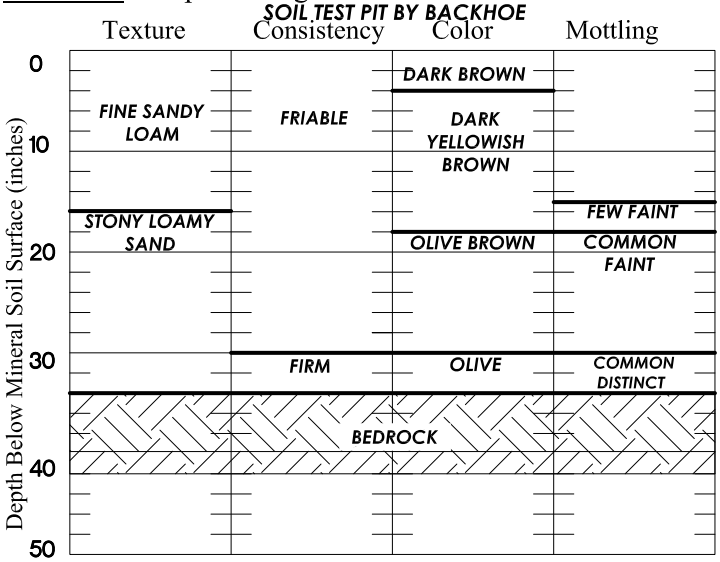


Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	17 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 8** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

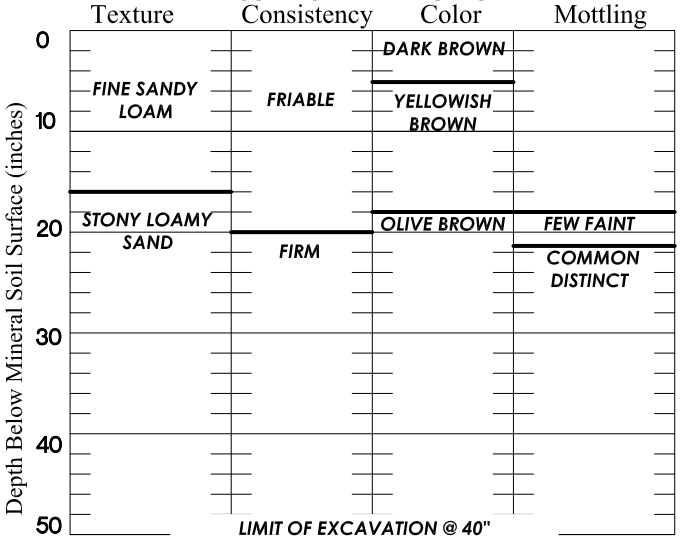
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 9** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

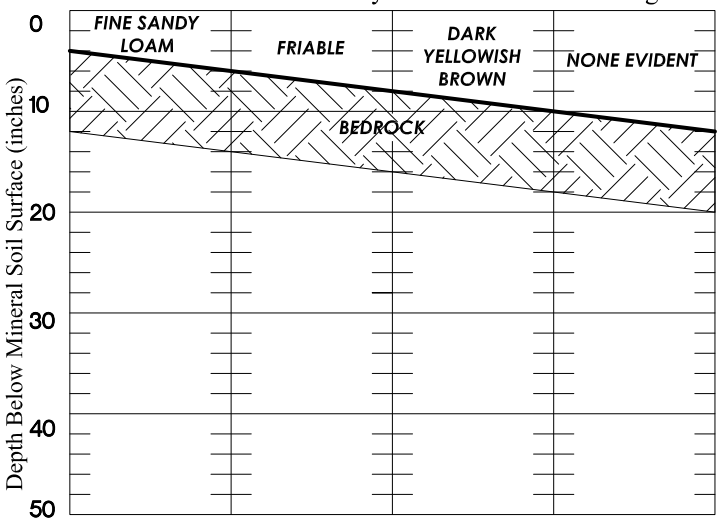


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	____ %	18 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
SKERRY			

Observation Hole **TP 10** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



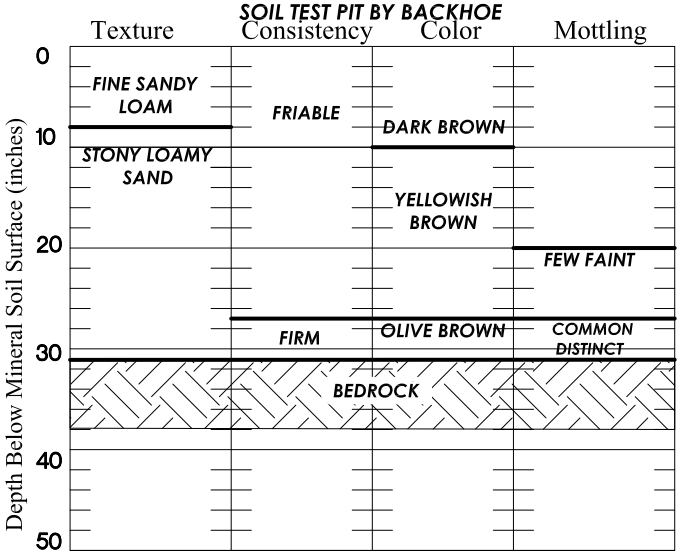
Soil Classification	Slope	Limiting Factor	
2 / AI (Profile / Condition)	____ %	4-12"	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
ABRAM/LYMAN			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 11** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

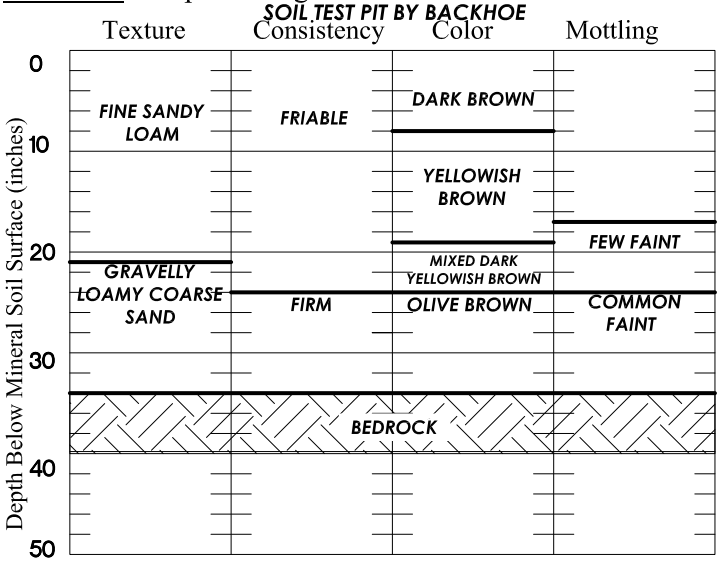


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	____ %	31 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE			

Observation Hole **TP 12** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
3 / AIII/C (Profile / Condition)	____ %	17 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE			

James Logan — SIGNATURE

237/213 — LSE/CSS #

2/23/22 — DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

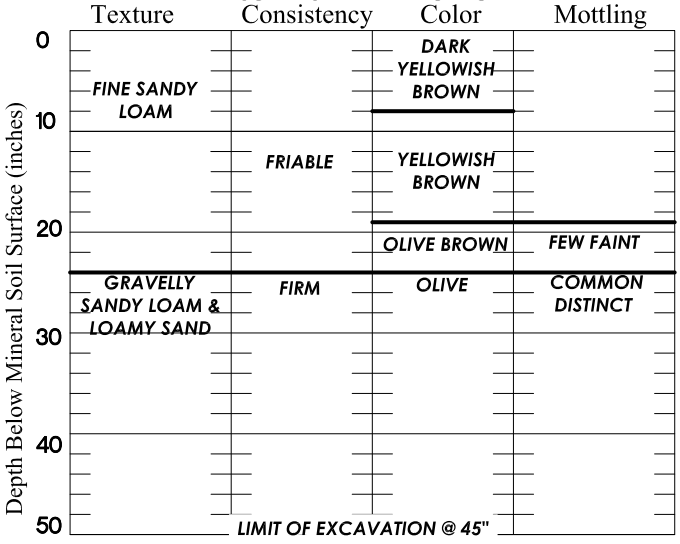
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 13** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

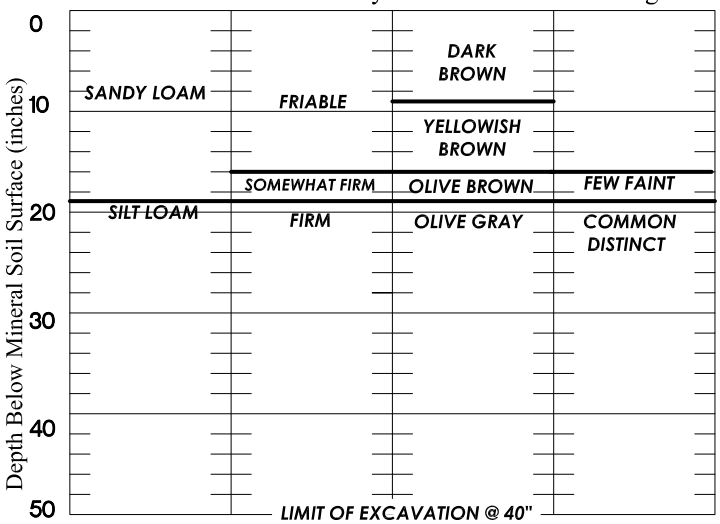


Soil Classification	Slope	Limiting Factor	
3 / C (Profile / Condition)	_____ %	19 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
SKERRY/DIXFIELD			

Observation Hole **TP 14** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



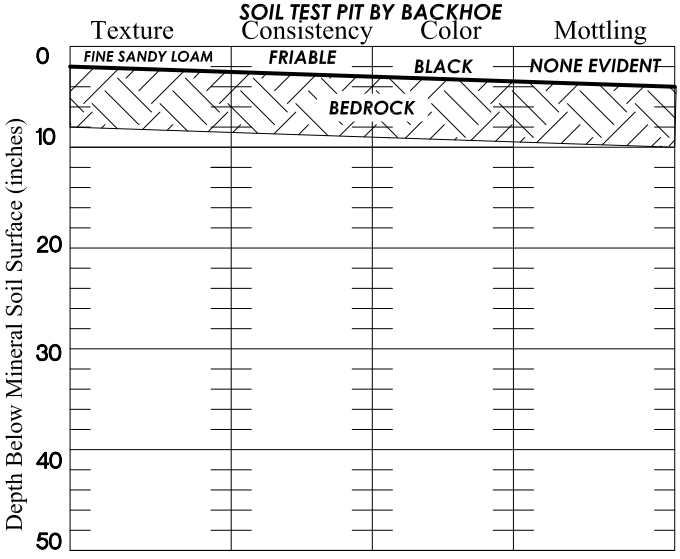
Soil Classification	Slope	Limiting Factor	
8 / C (Profile / Condition)	_____ %	16 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
DIXFIELD (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 15** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

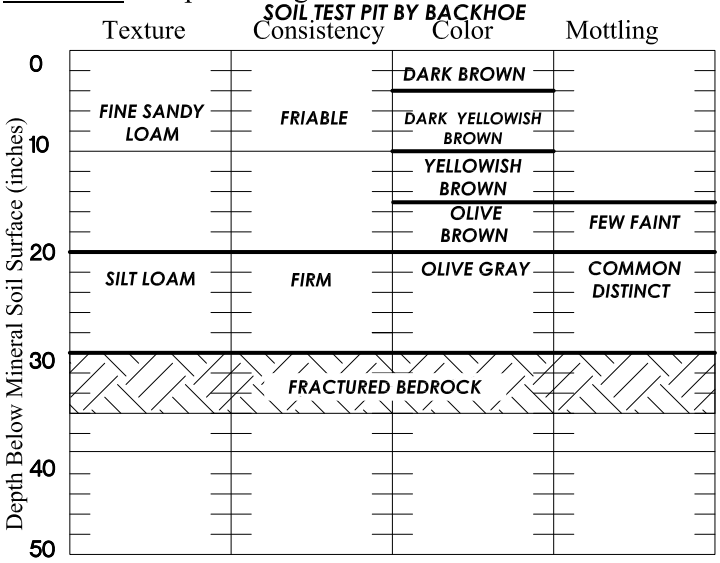


Soil Classification	Slope	Limiting Factor	
2 / AI (Profile / Condition)	_____ %	2-4 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
ABRAM			

Observation Hole **TP 16** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
8 / AIII/C (Profile / Condition)	_____ %	15 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (ATYPICAL)			

James Logan
SIGNATURE

237/213
LSE/CSS #

2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

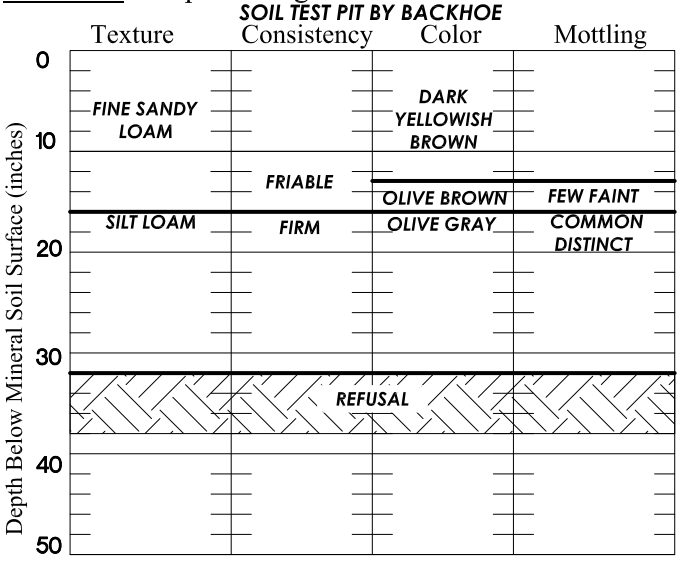
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 17** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

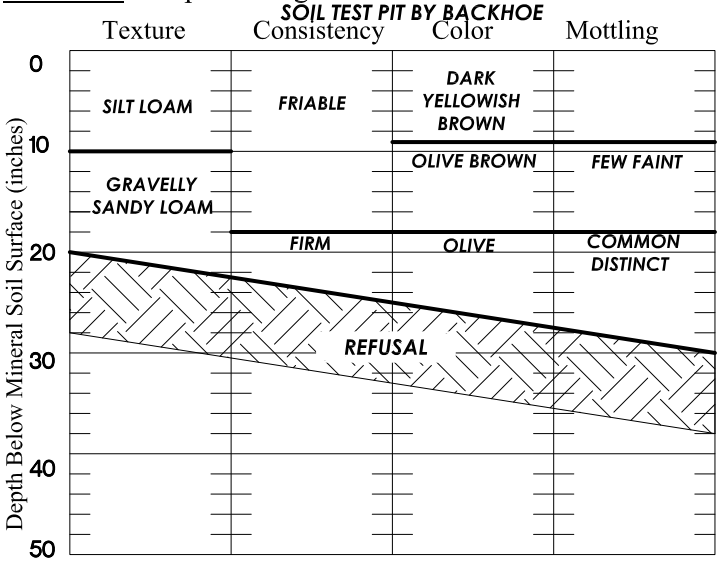


Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	13 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (ATYPICAL)			

Observation Hole **TP 18** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



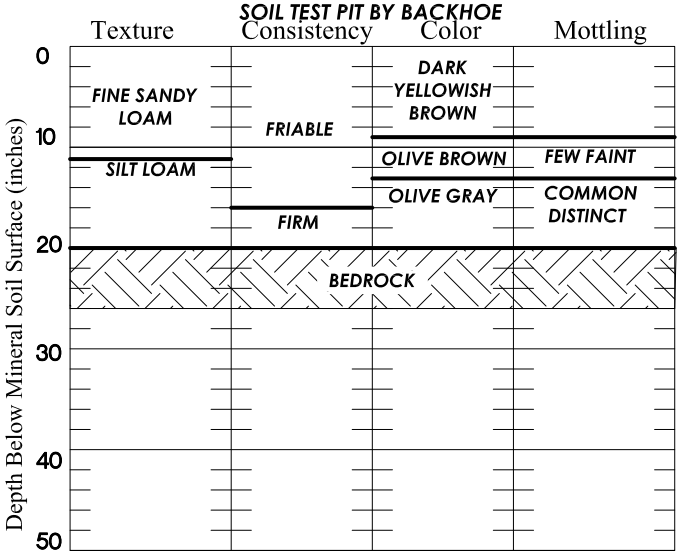
Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	9 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 19** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE

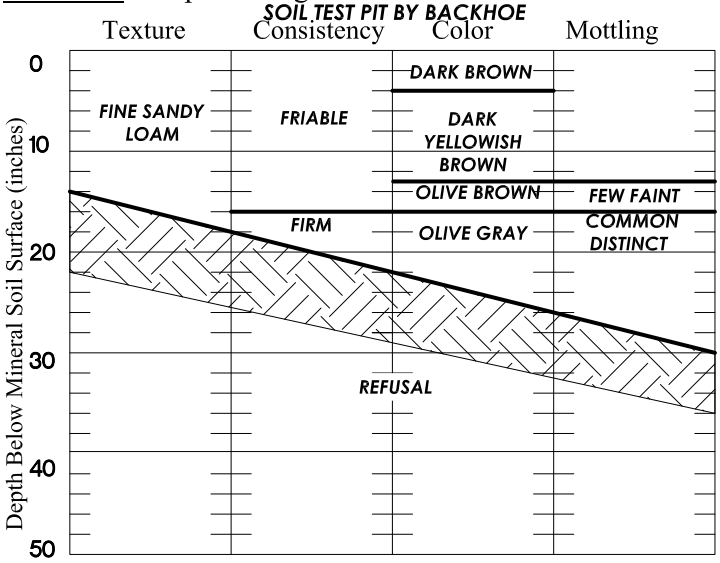


Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	9 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

Observation Hole **TP 20** ■ Test Pit □ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
8 / AIII/D (Profile / Condition)	_____ %	14-30 "	[ ] Ground Water [ ] Restrictive Layer [X] Bedrock [ ] Pit Depth
TUNBRIDGE (VARIANT)			

James Logan
SIGNATURE

237/213
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2/23/22
DATE

SOIL TEST PIT PROFILE DESCRIPTIONS

LONGVIEW PARTNERS, LLC
6 SECOND STREET BUXTON, MAINE

Town, City, Plantation: **KENNEBUNKPORT**

Street, Road, Subdivision: **GOOSE ROCKS ROAD** (MAP 15, BLK 1, LOT 1)

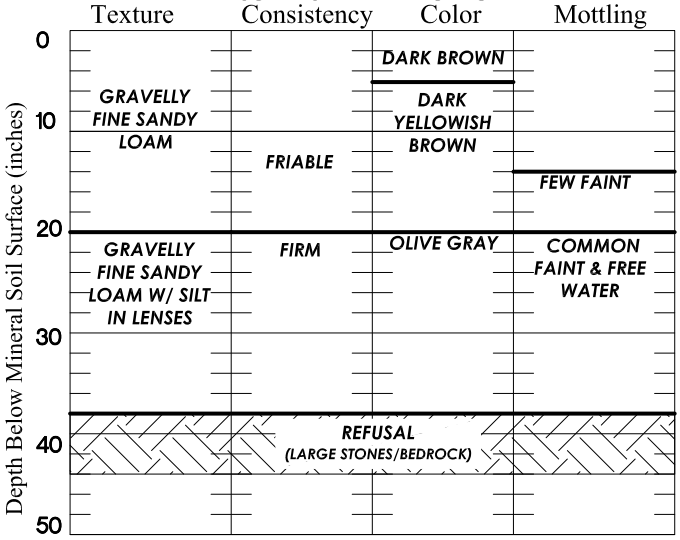
Owner's Name: **CREATIVE COAST CONSTRUCTION**

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole **TP 21** ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

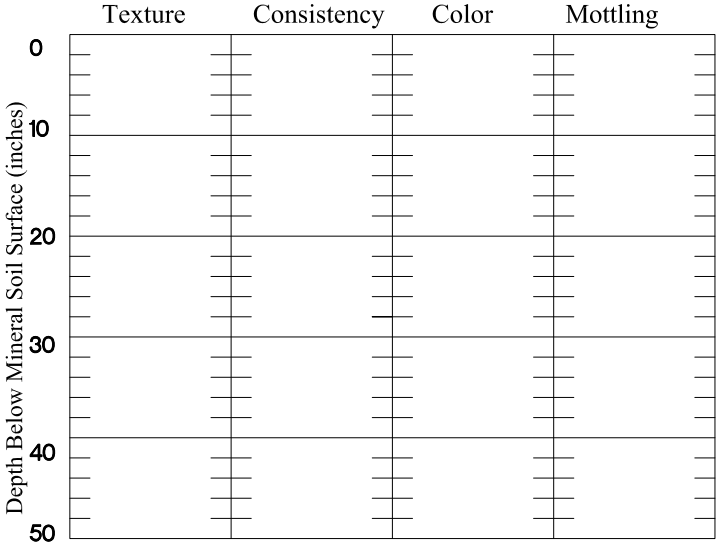
SOIL TEST PIT BY BACKHOE



Soil Classification	Slope	Limiting Factor	
8 / Profile; AIII/D / Condition; TUNBRIDGE (VARIANT)	_____ %	14 "	[X] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole _____ ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

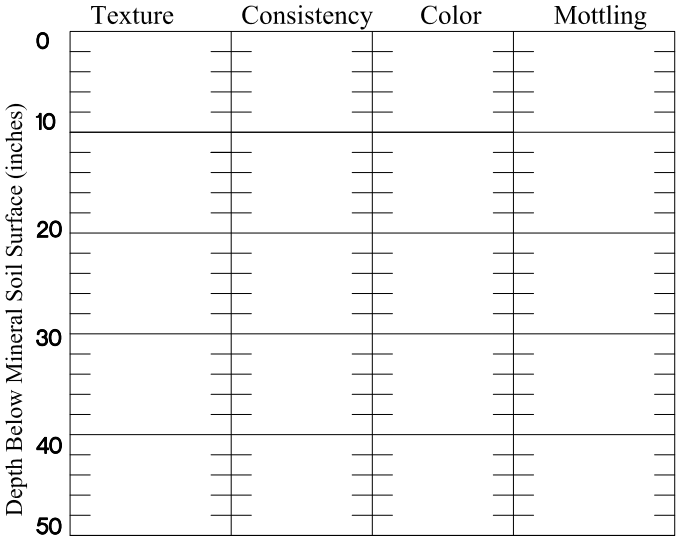


Soil Classification	Slope	Limiting Factor	
_____ / Profile; _____ / Condition	_____ %	_____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

SOIL DESCRIPTION AND CLASSIFICATION (PER STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES)

Observation Hole _____ ■ Test Pit ☐ Boring

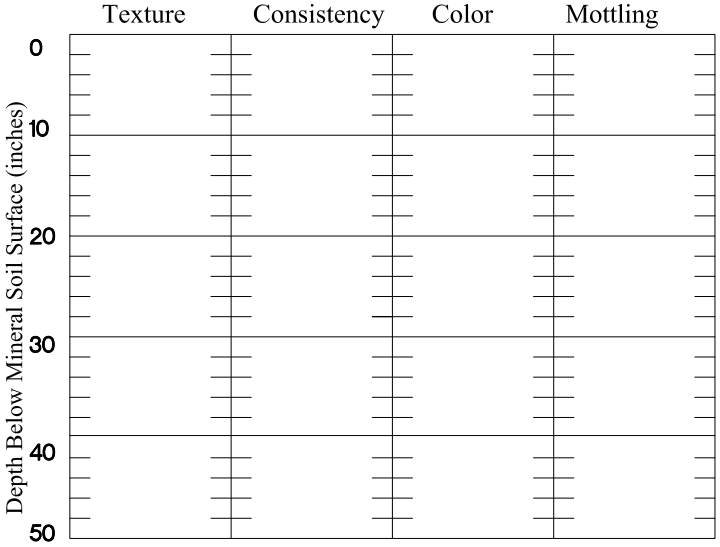
_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
_____ / Profile; _____ / Condition	_____ %	_____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole _____ ■ Test Pit ☐ Boring

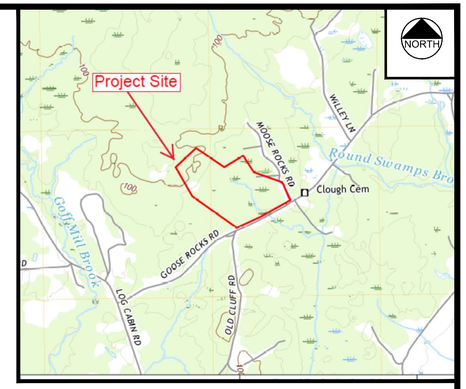
_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
_____ / Profile; _____ / Condition	_____ %	_____ "	[ ] Ground Water [ ] Restrictive Layer [ ] Bedrock [ ] Pit Depth

SIGNATURE	LSE/CSS #	DATE
James Logan	237/213	2/23/22

THE GLEN AT GOOSE ROCKS
9 LOT RESIDENTIAL SUBDIVISION
KENNEBUNKPORT, MAINE 04046



LOCATION MAP

SCALE: 1" = 3,000'

OWNER:

K.J. TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

CIVIL ENGINEERING & PERMITTING:

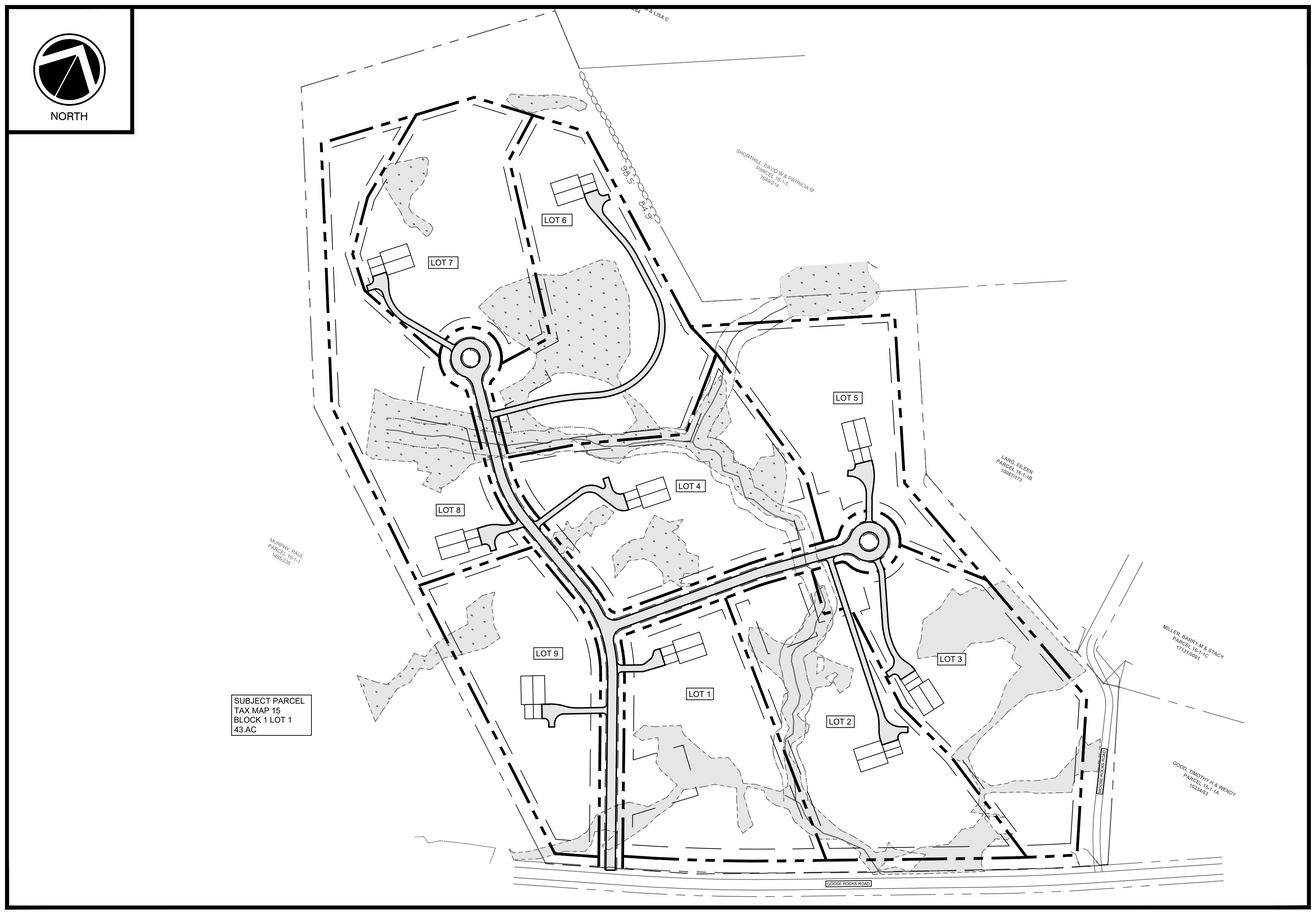
Atlantic Resource Consultants
ENGINEERING STRATEGIES AND SOLUTIONS

541 US ROUTE ONE, SUITE 21
FREEPORT, MAINE 04032

WETLAND DELINEATION:

LONGVIEW PARTNERS, LLC.

6 SECOND STREET
BUXTON, MAINE 04093



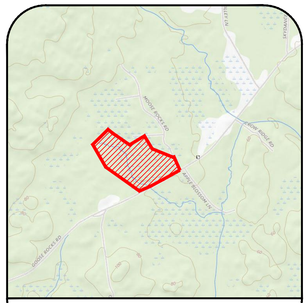
PLAN VIEW

SCALE 1"=150'

SHEET INDEX:

ISSUED TO TOWN OF KENNEBUNKPORT FOR
PRELIMINARY SUBDIVISION SUBMITTAL:
OCTOBER 2022

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION



Parcel Line Table		
Line #	Length	Direction
L1	45.94	S50° 49' 22"E
L2	53.21	N57° 10' 05"W
L3	24.22	N62° 21' 10"W
L4	39.47	N52° 43' 00"W
L5	26.79	N58° 00' 29"W
L6	98.45	N54° 56' 42"W
L7	84.89	N54° 42' 42"W
L8	84.86	S68° 05' 17"E
L9	33.52	N75° 50' 16"E
L10	36.88	S58° 20' 41"W
L11	2.50	S54° 42' 49"E

LEGEND

IRON PIPE FOUND	PROPERTY LINE
IRON ROD FOUND	ABUTTER LINE
IRON ROD SET	RIGHT OF WAY LINE
DRILL HOLE FOUND	FIELDSTONE WALL
DRILL HOLE SET	NOW OR FORMERLY
B.G. BELOW GROUND	BK 1234 PG 567 DEED BOOK & PAGE (YORK CO.)
DH DRILL HOLE	A.G. ABOVE GROUND
FND FOUND	EOP EDGE OF PAVEMENT
n/f NOW OR FORMERLY	WETLAND
NTS NOT TO SCALE	FEMA FLOOD ZONE B
(R) RECORD	SHORELAND OVERLAY ZONE

5/8" IR W/CAP J BRUCKER PLS 1285 FND & HELD

n/f PARCEL 16-1-5A THOMPSON, DAVID M & LISA C 6715/64

N50° 36' 20"W 200.41'

5/8" IR W/CAP TO BE SET P JOHNSON PLS 2408

S50° 36' 45"E 131.14'

5/8" IR W/CAP UNREADABLE @ END OF STONE WALL RLS 747 (DEED) FND & HELD

n/f MURPHY, PAUL PARCEL 15-1-1 1455/235

TIE LINE S55° 09' 12"E 372.33'

n/f SHORTHILL, DAVID W & PATRICIA M PARCEL 16-1-5 7649/214

5/8" IR W/CAP TO BE SET P JOHNSON PLS 2408

5/8" IR W/CAP UNREADABLE RLS 747 (DEED) FND & HELD

N45° 39' 11"E 555.40' 557.29'(R)

5/8" IR W/CAP SET P JOHNSON PLS 2408

104° 24' 00" (DEED & HELD)

S56° 32' 49"E 180.65' 179.60'(R)

N68° 53' 37"E 447.36' 446.99'(R)

5/8" IR W/CAP (UNREADABLE) RLS 747 (DEED) FND & HELD

S31° 09' 59"E 387.90' 390.99'(R)

DH IN LEDGE FND & HELD

143° 04' 42" 113.05' 59' (DEED)

5/8" IR FND ON LINE

n/f LANG, EILEEN PARCEL 16-1-1B 10087/173

S68° 05' 17"E 574.21' 572.56'(REC)

n/f MILLER, BARRY M & STACY PARCEL 16-1-1C 17131/0001

5/8" IR W/CAP RLS 747 FND & HELD

SEE DETAIL C

5/8" IR W/CAP SET P JOHNSON PLS 2408

5/8" IR W/CAPSET P JOHNSON PLS 2408

n/f GOOD, TIMOTHY H & WENDY PARCEL 15-1-1A 10234/63

MOOSE ROCKS ROAD 33' WIDE

S24° 15' 49"E 373.74'

SEE DETAIL A

N57° 56' 11"E 33.30'

N57° 56' 11"E 71.00'

SHORELAND OVERLAY ZONE

L= 216.03, R= 3975.25, Δ= 3° 06' 00" L10

N61° 26' 42"E 428.08'

GOOSE ROCKS ROAD 49.5' WIDE

L= 336.57, R= 3975.25, Δ= 4° 52' 48"

S65° 19' 29"W 161.99'

SEE DETAIL B

L11

N54° 42' 49"W 1070.30'

n/f MURPHY, PAUL PARCEL 15-1-1 1455/235

165° 23' 00" (DEED & HELD)

5/8" IR W/CAP SET P JOHNSON PLS 2408

FLOOD ZONE B

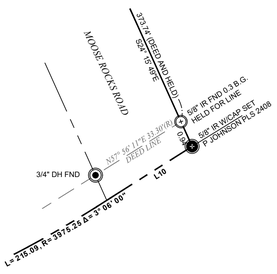
FLOOD ZONE C

FLOOD ZONE B

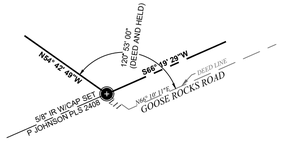
FLOOD ZONE C

KJ TRUDO PROPERTIES
1,895,615.3 SF
43.517 Ac±
MAP 15 LOT 1-1
18632/387

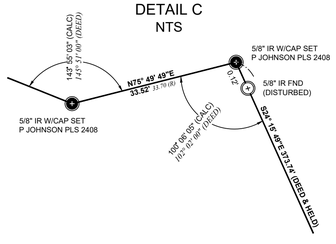
DETAIL A
NTS



DETAIL B
NTS



DETAIL C
NTS



0 100 200 400

REFERENCES

1. DEED AND PLAN BOOK REFERENCES SHOWN HEREON REFER TO DOCUMENTS FOUND IN THE YORK COUNTY, ME REGISTRY OF DEEDS (YCRD).
2. RELEVANT PRECEDENT CHAIN OF TITLE FOR ALL DEED REFERENCES SHOWN HEREON SHALL BE CONSIDERED TO BE A PART OF SAID REFERENCES.
3. 3 ROD WIDTH USED FOR GOOSE ROCKS ROAD WAS TAKEN FROM RECORDS FOUND IN THE TOWN OF KENNEBUNKPORT ROAD BOOK.
4. "STANDARD BOUNDARY SURVEY FOR DANIEL HIGGINS", BY: ECCO ENGINEERING, EDMUND C. COOPER, ME PLS 747 DATED: JUNE 14,1990, PLAN BK 193 PG 41 YCRD
5. "LAND OF PAUL PHILLIP MURPHY" BY: ANDREW E. BRADFORD, ME PLS 2010, DATED DECEMBER 2007, NOT RECORDED.

NOTES

1. BEARINGS ARE GRID AND REFER TO THE MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD83, U.S. SURVEY FEET (ME83-WF).
2. THE PROPERTY IS LOCATED IN A FARM AND FOREST ZONE
   - 2.1. MIN LOT SIZE: 130,680 SF.
   - 2.2. MIN LOT WIDTH: 200'
   - 2.3. MIN STREET FRONTAGE: 200'
   - 2.4. MIN FRONT SETBACK: 20'
   - 2.5. MIN SIDE SETBACK: 15'
   - 2.6. MIN REAR SETBACK: 15'
   - 2.7. MAX BUILDING HEIGHT: 35'
   - 2.8. MAX BUILDING COVERAGE: 10%

   THE DIMENSIONAL REQUIREMENTS SHOWN HEREON SHALL BE VERIFIED WITH THE CODE OFFICER PRIOR TO ANY REGULATED ADDITIONS OR CHANGES.
3. A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN FEMA FLOOD ZONE "B" AS NOTED AND SHOWN WITH THE REMAINDER IN ZONE "C", AREA OF MINIMAL FLOODING AS SOWN ON FEMA FIRM PANEL 2301700001B, EFFECTIVE DATE: APRIL 18, 1983.
4. WETLAND BOUNDARIES DEPICTED ON THIS PLAN WERE DELINEATED BY LONGVIEW PARTNERSHIP LLC, IN APRIL OF 2021.
5. THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CHAPTER 90 STANDARDS OF PRACTICE, PART 2 OF THE MAINE BOARD OF LICENSURE RULES WITH EXCEPTIONS AS ALLOWED.

REVISION NO.	DATE	BY:	DESCRIPTION

STATE OF MAINE PATRICK W. JOHNSON 2408 REGISTERED LAND SURVEYOR

JPS PROFESSIONAL SERVICES KENNEBUNK, ME

OWNER OF RECORD
KJ TRUDO PROPERTIES, LLC
20 Apple Blossom lane
Kennebunkport, ME 04046

PLAN OF LAND
MAP 15 LOT 1-1
GOOSE ROCKS ROAD
KENNEBUNKPORT, YORK COUNTY, MAINE

DATE: OCTOBER 26, 2022

PROJECT NO. 2021-113

SCALE: 1" = 100'

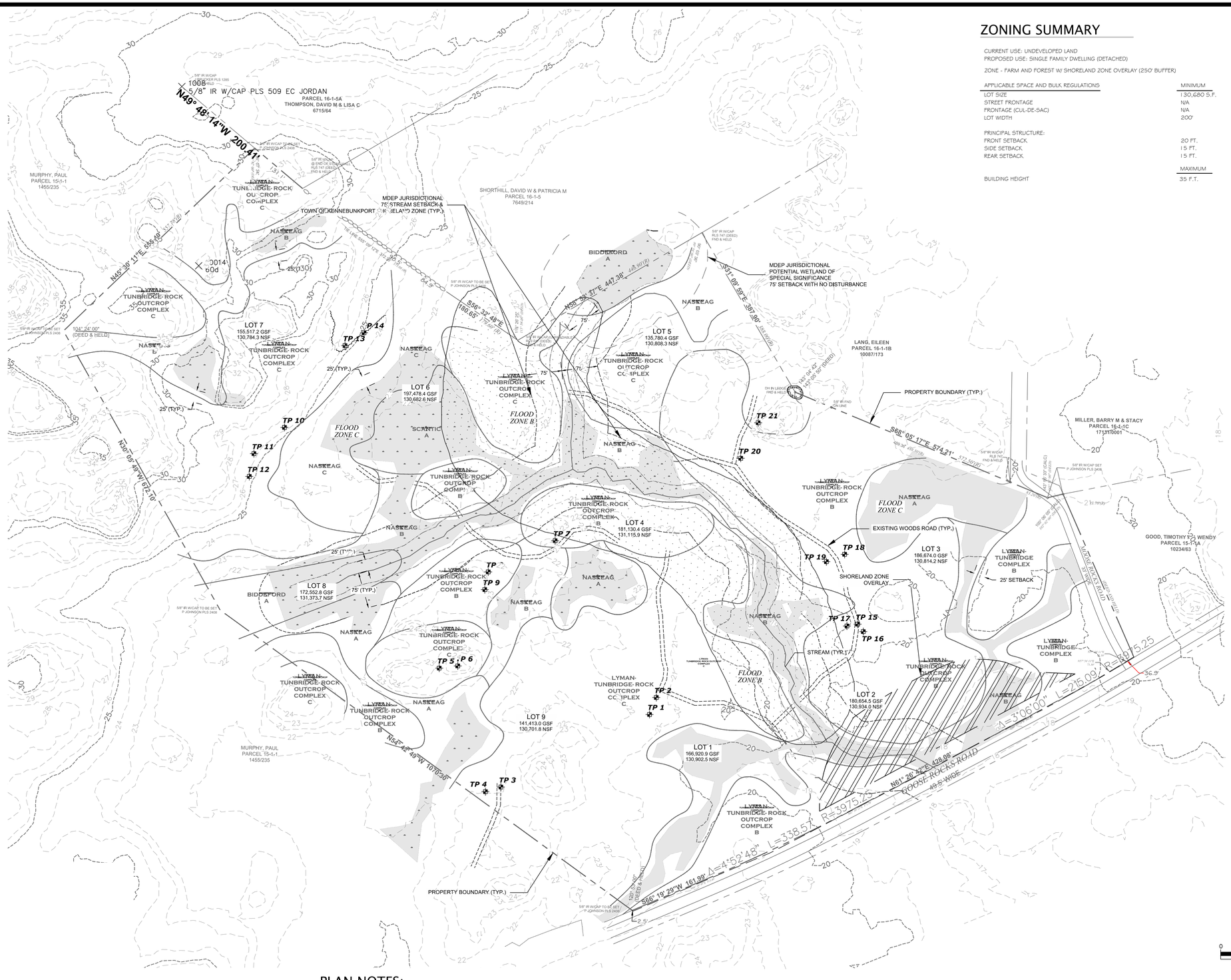
CAD FILE: 2021-113 SURVEYED BOUNDARY.dwg

SHEET 1

NORTH

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BOUNDARY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/ROW	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
	MONUMENT	
	IRON PIPE/ROD	●
	DRILLHOLE	
	BUFFER PIN	◉
BOOK: PAGE:	DEED CALL	
C1/L1	CURVE/LINE NO.	C1 / L1
	SOILS BOUNDARY	
	ZONE LINE	
	ZONE LINE ON PL	
	BENCHMARK	
	SURVEY CONTROL	
TP-1	TEST PIT	
MW-2	MONITORING WELL	
B-3	BORING	
	REACH	
	TCPATH	
	WATERSHED	
	SOIL BOUNDARY	
	BUILDING	
	WETLANDS	
	UPLAND	
	EDGE WETLAND	
	SIGN	
	STREAM	
	ROCK OUTCROP	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	GRAVEL ROAD	
	CURBLINE	
	EDGE WATER	
	TREELINE	
---122--- ---120---	CONTOURS	124
×30.20	SPOT GRADE	30.20
	CHAIN LINK FENCE	
x	WIRE FENCE	x
	STOCKADE FENCE	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	x
	CONIFEROUS TREE	x
	MULCH LINE	
	GUARDRAIL	
	BOLLARD	●
	RAILROAD	
G	GAS	G
GV	GAS GATE VALVE	
GM	GAS METER	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	POTABLE WELL	W
S	SEWER	S
FM	FORCE MAIN	FM
S	SEWER MH	●
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
	CATCH BASIN	■
D	DRAINAGE MH	●
	CULVERT	SD
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	
T	TELEPHONE MANHOLE	
	LIGHT POLE/WALL	
	UTILITY POLE	●
	GUY	
EB	EC. BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	



ZONING SUMMARY

CURRENT USE: UNDEVELOPED LAND
PROPOSED USE: SINGLE FAMILY DWELLING (DETACHED)

ZONE - FARM AND FOREST W/ SHORELAND ZONE OVERLAY (250' BUFFER)

APPLICABLE SPACE AND BULK REGULATIONS	MINIMUM	PROVIDED
LOT SIZE	130,680 S.F.	> 130,680 S.F.
STREET FRONTAGE	N/A	N/A
FRONTAGE (CUL-DE-SAC)	N/A	N/A
LOT WIDTH	200'	> 200'
PRINCIPAL STRUCTURE:		
FRONT SETBACK	20 FT.	20 FT.
SIDE SETBACK	15 FT.	15 FT.
REAR SETBACK	15 FT.	15 FT.
	MAXIMUM	PROVIDED
BUILDING HEIGHT	35 F.T.	35'

SCALE

0 50 100 200

SCALE in FEET
1"=100'

PLAN NOTES:

1. THE BASIS OF BEARING FOR THIS PLAN IS MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD83, U.S. SURVEY FEET (ME83-WF).
2. CONTOURS AND ELEVATIONS SHOWN REFER TO NAVD88 DATUM.
3. THIS PROPERTY SHOWN HEREON IS LOCATED IN FEMA FLOOD ZONE "C", AREA OF MINIMAL FLOODING, AS WELL AS ZONE "B", AREA BETWEEN 100-YEAR FLOOD AND 500-YEAR FLOOD, AS SOWN ON FEMA FIRM 230 170 0001 B, EFFECTIVE DATE: APRIL 18, 1983.
4. THIS PLAN IS A COMPOSITE OF PROPERTY BOUNDARY INFORMATION PER A SURVEY WORKSHEET PREPARED BY ANDREW BRADFORD, PLS, MAINE OFFICE OF GIS AERIAL PHOTOGRAPH & 2' TOPOGRAPHIC CONTOURS AND SUBMETER GPS LOCATION OF WETLAND BOUNDARIES & OTHER SITE FEATURES AS DEPICTED BY LONGVIEW PARTNERS, LLC.
5. WETLAND DELINEATION PERFORMED BY: LONGVIEW PARTNERS LLC. BUXTON, MAINE.

REV	DATE	DESCRIPTION
B	10/26/2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
A	9/10/2022	ISSUED TO FOR MDEP STORMWATER PERMIT

REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

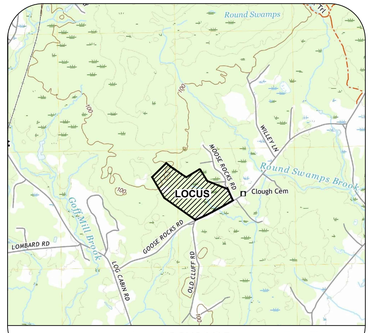
THE GLEN AT GOOSE ROCKS
EXISTING CONDITIONS PLAN

KJ TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: 1"=100'
CHECKED: APP	JOB NO. 21-059
FILE NAME:	
SHEET:	

S:\21-059 Trudo Kennebunkport Subdivision\Drawings\21-059 Base MDEP 10-25-2022.dwg



LOCUS MAP
1" = 2000'

NOTES

1. THE PROJECT SITE IS COMPRISED OF THE FOLLOWING LOT:

RECORD OWNER	YCRD BOOK PAGE	MAP/BOCK/LOT
KJ TRUDO PROPERTIES, LLC	18632 / 387	15-1-1B

2. TOTAL AREA OF PARCEL ..... 43.517 AC±

4. THE PROPERTY IS LOCATED IN A FARM AND FOREST ZONE

   4.1. MIN LOT SIZE: 130,680 SF.
   4.2. MIN LOT WIDTH: 200'
   4.3. MIN STREET FRONTAGE: 200'
   4.4. MIN FRONT SETBACK: 20'
   4.5. MIN SIDE SETBACK: 15'
   4.6. MIN REAR SETBACK: 15'
   4.7. MAX BUILDING HEIGHT: 35'
   4.8. MAX BUILDING COVERAGE: 10%

THE DIMENSIONAL REQUIREMENTS SHOWN HEREON SHALL BE VERIFIED WITH THE CODE OFFICER PRIOR TO ANY REGULATED ADDITIONS OR CHANGES.

5. THIS SURVEY EXCEPTS CHAPTER 90, PART 2, OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS RULES AS ALLOWED.

6. BEARINGS ARE GRID NORTH AND REFER TO THE MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD83, U.S. SURVEY FEET (ME83-WF).

6. A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN FEMA FLOOD ZONE "B" AS NOTED AND SHOWN WITH THE REMAINDER IN ZONE "C", AREA OF MINIMAL FLOODING AS SOWN ON FEMA FIRM PANEL 23017000001B, EFFECTIVE DATE: APRIL 18, 1983.

7. WETLAND BOUNDARIES DEPICTED ON THIS PLAN WERE DELINEATED BY LONGVIEW PARTNERSHIP LLC, IN APRIL OF 2021.

REFERENCES

1. DEED AND PLAN BOOK REFERENCES SHOWN HEREON REFER TO DOCUMENTS FOUND IN THE YORK COUNTY, ME REGISTRY OF DEEDS (YCRD).

2. RELEVANT PRECEDENT CHAIN OF TITLE FOR ALL DEED REFERENCES SHOWN HEREON SHALL BE CONSIDERED TO BE A PART OF SAID REFERENCES.

3. 3 ROD WIDTH USED FOR GOOSE ROCKS ROAD WAS TAKEN FROM RECORDS FOUND IN THE TOWN OF KENNEBUNKPORT ROAD BOOK.

4. "STANDARD BOUNDARY SURVEY FOR DANIEL HIGGINS", BY: ECCO ENGINEERING, EDMUND C. COOPER, ME PLS 747 DATED: JUNE 14,1990, PLAN BK 193 PG 41 YCRD

5. "LAND OF PAUL PHILLIP MURPHY" BY: ANDREW E. BRADFORD, ME PLS 2010, DATED DECEMBER 2007, NOT RECORDED.

LEGEND

- CONC MONUMENT TO BE SET
- IRON ROD W/ CAP SET OR FOUND AS NOTED
- IRON ROD W/ CAP TO BE SET PLS 2408
- DRILLHOLE FOUND AS NOTED
- IRON PIPE FOUND (SIZE AS NOTED)
- PROPERTY OR LOT LINE
- ABUTTER LINE
- RIGHT OF WAY LINE
- FIELDSTONE WALL
- 25' WETLAND BUFFER
- n/f NOW OR FORMERLY
- BK 1234 PG 567 DEED BOOK & PAGE (YORK CO.)
- A.G. ABOVE GROUND
- EOP EDGE OF PAVEMENT

- WETLAND
- STORMWATER EASEMENT
- MDEP NO DISTURBANCE BUFFER
- OPEN SPACE
- FEMA FLOOD ZONE B
- SHORELAND OVERLAY ZONE

Line and Curve Table

Line #/Curve #	Length	Bearing/Delta	Radius
B1	45.94	S50° 49' 22"E	
B2	53.21	S57° 10' 05"E	
B3	24.22	S62° 21' 10"E	
B4	39.47	S52° 43' 00"E	
B5	26.79	S58° 00' 29"E	
B6	98.45	S54° 56' 42"E	
B7	84.89	S54° 42' 42"E	
B8	36.88	S58° 20' 41"W	
C1	195.93	40.09	280.00
C2	122.32	25.03	280.00
C3	15.71	60.00	15.00
C4	86.48	76.23	65.00
C5	214.00	188.64	65.00
C6	39.85	35.13	65.00
C7	15.71	60.00	15.00
C8	21.34	4.37	280.00

Line and Curve Table

Line #/Curve #	Length	Bearing/Delta	Radius
C9	15.71	60.00	15.00
C10	15.71	60.00	15.00
C11	194.41	171.36	65.00
C12	145.93	128.64	65.00
C13	49.11	80.40	35.00
C14	69.84	114.33	35.00
C15	36.52	59.74	35.03
C16	140.79	59.74	135.03
C17	21.84	83.42	15.00
C18	21.52	82.22	15.00
L1	95.00	S43° 34' 18"E	
L2	56.33	N46° 25' 42"E	
L4	78.87	N71° 38' 48"W	
L5	92.32	S66° 19' 29"W	
L6	116.54	N42° 13' 27"W	
L7	45.50	N42° 13' 27"W	

NET DENSITY CALCULATIONS

	GROSS AREA	WETLANDS	EASEMENT	NET AREA
LOT 1	166,921	28,447	7,571	130,903
LOT 2	180,655	39,229	10,492	130,934
LOT 3	186,674	44,864	10,996	130,814
LOT 4	181,130	46,737	3,278	131,116
LOT 5	135,780	0	4,977	130,803
LOT 6	197,478	59,993	6,802	130,683
LOT 7	155,517	22,094	2,639	130,784
LOT 8	172,553	31,718	9,462	131,374
LOT 9	141,413	10,711	0	130,702
TOTAL AREA	1,518,122	283,793	56,217	1,178,112
FARM AND FOREST ZONE MIN LOT AREA				130,680
NO. OF ALLOWED UNITS				**9.0**

OPEN SPACE CALCULATIONS

TOTAL AREA	1,895,615
TOTAL OPEN SPACE	284,373
OPEN SPACE %	**15.0%**
WETLANDS	25,436
UPLAND	258,937
UPLAND %	**91.1%**

NO.	DATE	BY	DESCRIPTION
			REVISION

STATE OF MAINE — PATRICK W. JOHNSON — 2408 — REGISTERED PROFESSIONAL LAND SURVEYOR

JPS
PROFESSIONAL SERVICES
KENNEBUNK, ME

Owner Of Record:
KJ TRUDO PROPERTIES, LLC
20 Apple Blossom Lane
Kennebunkport, ME 04046

GOOSEROCKS SUBDIVISION

MAP 15 LOT 1-1
GOOSE ROCKS ROAD
KENNEBUNKPORT, YORK COUNTY, MAINE

DATE:
SEPTEMBER 14, 2022

PROJECT NO.: 2021-113
SCALE: 1" = 100'

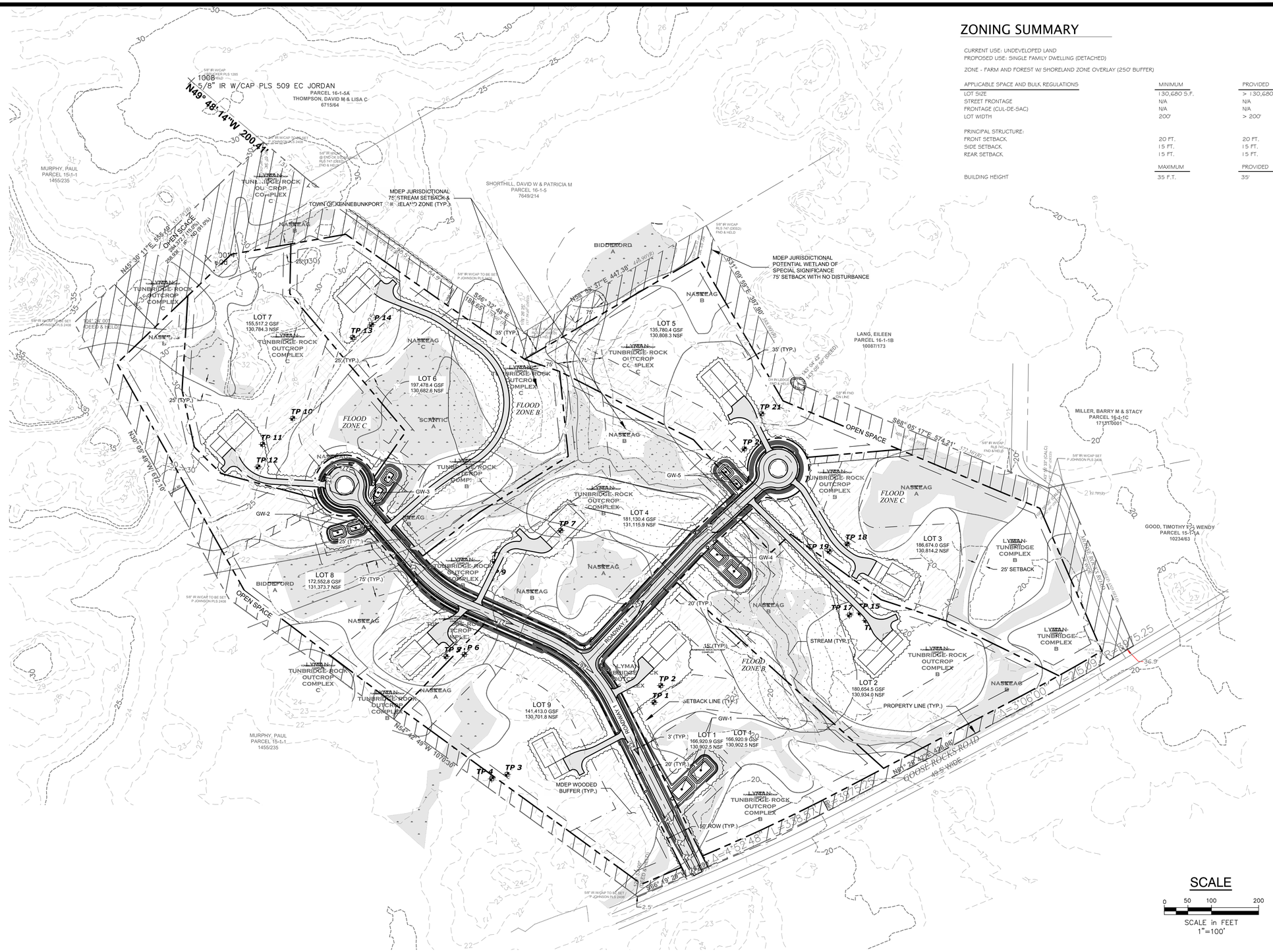
CAD FILE:
2021-113 SUBDIVISION PLAN.dwg

SHEET
1

NORTH

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BOUNDARY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/ROW	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
	MONUMENT	
	IRON PIPE/ROD	
	DRILLHOLE	
BOOK: PAGE:	BUFFER PIN	
C1/L1	DEED CALL	
	CURVE/LINE NO.	C1 / L1
	SOILS BOUNDARY	
	ZONE LINE	
	ZONE LINE ON PL	
	BENCHMARK	
	SURVEY CONTROL	
TP-1	TEST PIT	
MW-2	MONITORING WELL	
B-3	BORING	
	REACH	
	TCPATH	
	WATERSHED	
	SOIL BOUNDARY	
	BUILDING	
	WETLANDS	
	UPLAND	
	EDGE WETLAND	
	SIGN	
	STREAM	
	ROCK OUTCROP	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	GRAVEL ROAD	
	CURBLINE	
	EDGE WATER	
	TREELINE	
122 / 120	CONTOURS	124
x30.20	SPOT GRADE	+30.20
	CHAIN LINK FENCE	
	WIRE FENCE	
	STOCKADE FENCE	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	MULCH LINE	
	GUARDRAIL	
	BOLLARD	
	RAILROAD	
G	GAS	G
GV	GAS GATE VALVE	
GM	GAS METER	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	POTABLE WELL	W
S	SEWER	S
FM	FORCE MAIN	FM
S	SEWER MH	
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
	CATCH BASIN	
D	DRAINAGE MH	
	CULVERT	SD
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	
T	TELEPHONE MANHOLE	
	LIGHT POLE/WALL	
	UTILITY POLE	
	GUY	
	EC. BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	



ZONING SUMMARY

CURRENT USE: UNDEVELOPED LAND
PROPOSED USE: SINGLE FAMILY DWELLING (DETACHED)

ZONE - FARM AND FOREST W/ SHORELAND ZONE OVERLAY (250' BUFFER)

APPLICABLE SPACE AND BULK REGULATIONS	MINIMUM	PROVIDED
LOT SIZE	130,680 S.F.	> 130,680 S.F.
STREET FRONTAGE	N/A	N/A
FRONTAGE (CUL-DE-SAC)	N/A	N/A
LOT WIDTH	200'	> 200'
PRINCIPAL STRUCTURE:		
FRONT SETBACK	20 FT.	20 FT.
SIDE SETBACK	15 FT.	15 FT.
REAR SETBACK	15 FT.	15 FT.
	MAXIMUM	PROVIDED
BUILDING HEIGHT	35 F.T.	35'

SCALE

0 50 100 200

SCALE in FEET
1"=100'

PLAN NOTES:

1. THE BASIS OF BEARING FOR THIS PLAN IS MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD83, U.S. SURVEY FEET (ME83-WF).
2. CONTOURS AND ELEVATIONS SHOWN REFER TO NAVD88 DATUM.
3. THIS PROPERTY SHOWN HEREON IS LOCATED IN FEMA FLOOD ZONE "C", AREA OF MINIMAL FLOODING, AS WELL AS ZONE "B", AREA BETWEEN 100-YEAR FLOOD AND 500-YEAR FLOOD, AS SOWN ON FEMA FIRM 230 170 0001 B, EFFECTIVE DATE: APRIL 18, 1983.
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5. WETLAND DELINEATION PERFORMED BY: LONGVIEW PARTNERS LLC. BUXTON, MAINE.

REV	DATE	DESCRIPTION
B	10/26/2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
A	9/10/2022	ISSUED TO FOR MDEP STORMWATER PERMIT

REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

THE GLEN AT GOOSE ROCKS CONCEPTUAL DEVELOPMENT PLAN

KJ TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: 1"=100'
CHECKED: JAV	JOB NO. 21-059
FILE NAME:	
SHEET: C-101	

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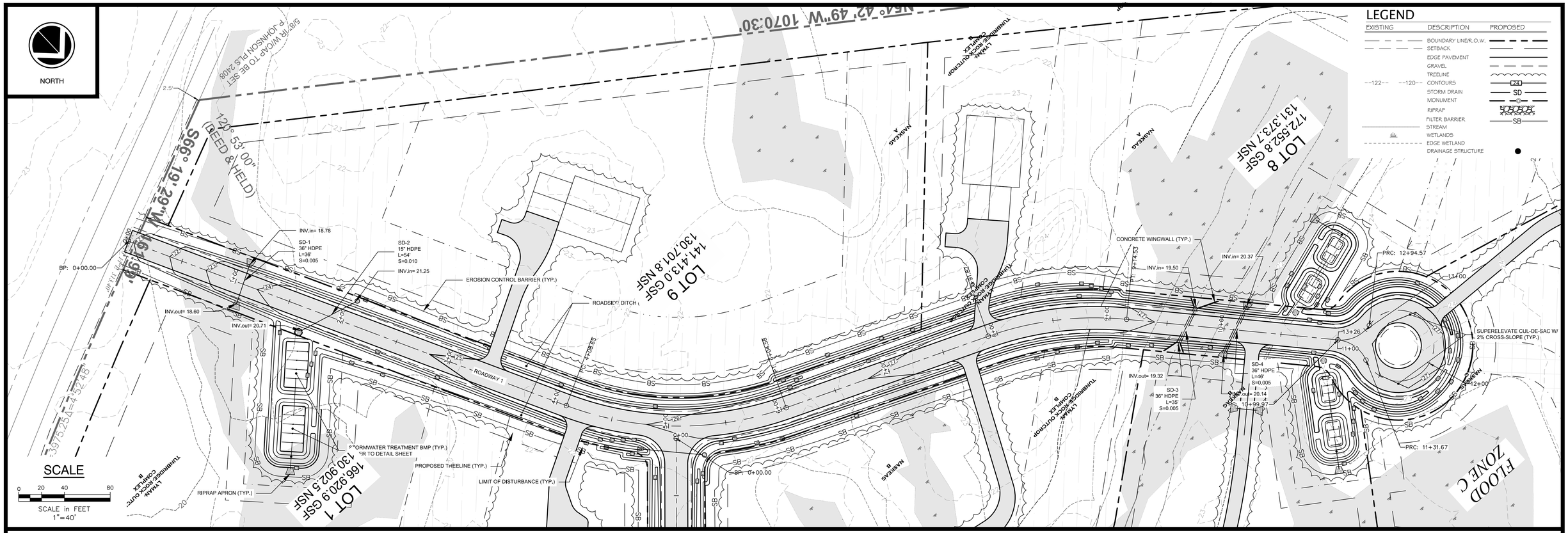
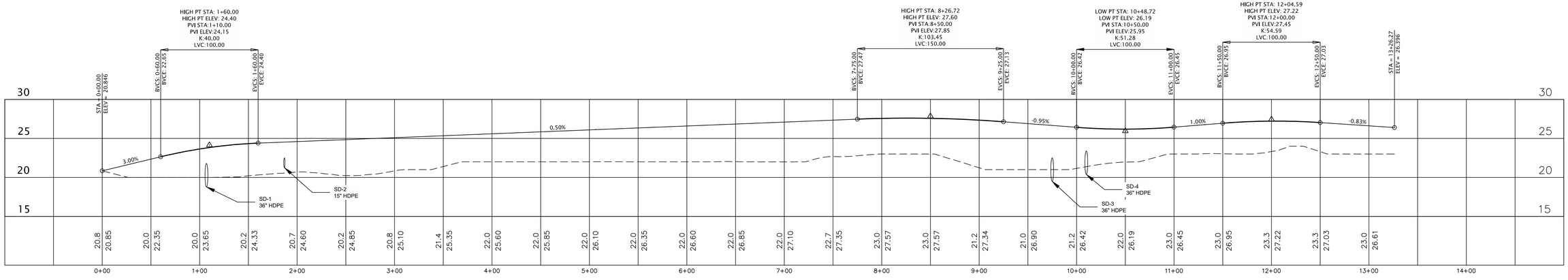


ROADWAY 1 PROFILE VIEW: STA. 0+00 ~ 13+26.27



GENERAL NOTES

1. ALL DIMENSIONS ARE PERPENDICULAR UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION.
3. LAYOUT AND LIMITS OF DISTURBANCE SHALL BE MARKED FOR OWNER'S APPROVAL PRIOR TO DISTURBANCE.
4. EXISTING CONDITIONS CONTOURS AND SITE ELEMENTS BASED ON NOTE PLAN NOTE #4. SOME FIELD LOCATIONS WILL VARY. CONTRACTOR TO NOTIFY & COORDINATE WITH ENGINEER WITH ANY DISCREPANCIES.

PLAN NOTES:

1. THE BASIS OF BEARING FOR THIS PLAN IS MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD83, U.S. SURVEY FEET (ME83-WF).
2. CONTOURS AND ELEVATIONS SHOWN REFER TO NAVD88 DATUM.
3. THIS PROPERTY SHOWN HEREON IS LOCATED IN FEMA FLOOD ZONE "C", AREA OF MINIMAL FLOODING, AS WELL AS FLOOD ZONE "B", AREA BETWEEN 100-YEAR FLOOD AND 500-YEAR FLOOD, AS SOWN ON FEMA FIRM 230 170 0001 B, EFFECTIVE DATE: APRIL 18, 1983.
4. DIGITAL CAD FILE OF MEETS & BOUNDS PROVIDED BY JPS SURVEY AND ENGINEERING. LOCATION AND LIMITS OF WETLANDS PROVIDED BY LONGVIEW PARTNERS. EXISTING TOPOGRAPHY PROVIDED BY GIS LIDAR.
5. WETLAND DELINEATION PERFORMED BY: LONGVIEW PARTNERS LLC. BUXTON, MAINE.

SCALE
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

REV	DATE	DESCRIPTION
B	10/26/2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
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REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

GOOSE ROCKS SUBDIVISION
ROADWAY PLAN & PROFILE ROADWAY I
KJ TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: AS SHOWN
CHECKED: JAV	JOB NO. 21-059
FILE NAME:	
SHEET: C-200	

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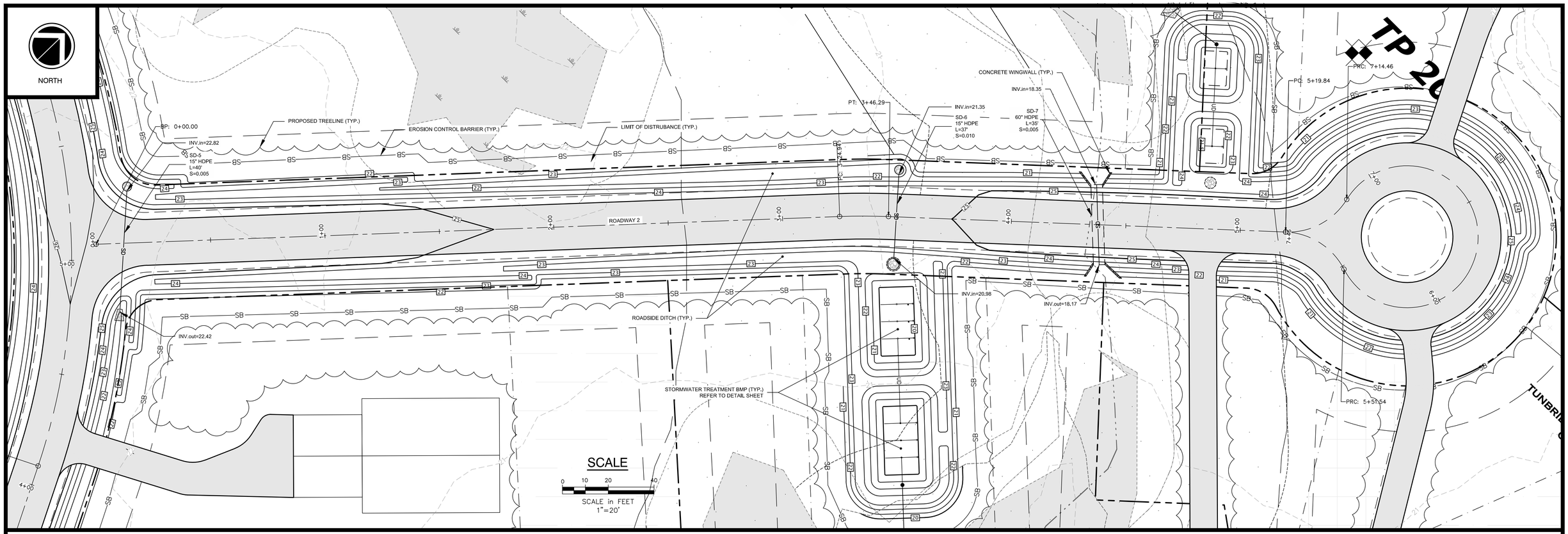
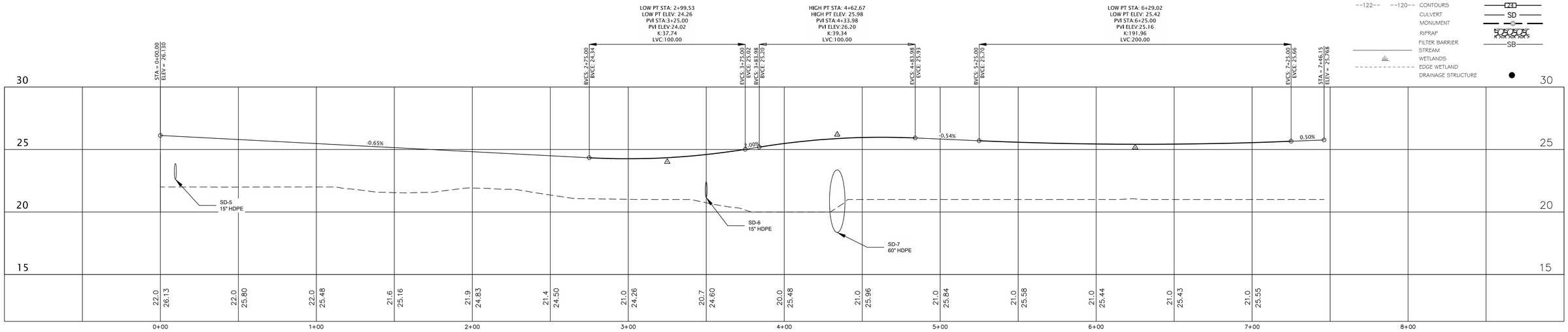


ROADWAY 2 PROFILE VIEW: STA. 0+00 ~ 7+46.15



LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BOUNDARY LINE/R.O.W.	
	SETBACK	
	EDGE PAVEMENT	
	GRAVEL	
	TREELINE	
--122-- --120--	CONTOURS	24
	CULVERT	SD
	MONUMENT	
	RIPRAP	
	FILTER BARRIER	SB
	STREAM	
	WETLANDS	
	EDGE WETLAND	
	DRAINAGE STRUCTURE	

SCALE
HORIZONTAL: 1"=30'
VERTICAL: 1"=5'

GENERAL NOTES

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REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

GOOSE ROCKS SUBDIVISION
ROADWAY PLAN & PROFILE ROADWAY II
KJ TRUDO PROPERTIES
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: AS SHOWN
CHECKED: JAV	JOB NO. 21-059
FILE NAME:	
SHEET: C-201	

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A. SOIL EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, SILTATION FENCE, EROSION CONTROL MIX, STONE CHECK DAMS, HAY BALE BARRIERS, CATCH BASIN SEDIMENT COLLECTION BAGS, EROSION CONTROL BLANKET, AND TEMPORARY SEEDING AND MULCHING AS REQUIRED. PERMANENT DEVICES INCLUDE THE USE OF RIP RAP AT EXPOSED STORM DRAIN AND CULVERT INLETS AND OUTLETS, AND PERMANENT VEGETATION.

GENERAL

1. IT IS ANTICIPATED THAT CONSTRUCTION MAY BEGIN AS SOON AS POSSIBLE FOLLOWING RECEIPT OF NECESSARY PERMITS.
2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION & SEDIMENT CONTROL BMPS - MANUAL FOR DESIGNERS AND ENGINEERS (2016), OR AS CURRENTLY REVISED OR U.S. ENVIRONMENTAL PROTECTION AGENCY PUBLICATION 832/R-92-005 (SEPTEMBER, 1992) STORM WATER MANAGEMENT FOR CONSTRUCTION, CHAPTER 3, WHICHEVER IS MORE STRINGENT.
3. ANY ADDITIONAL EROSION AND SEDIMENTATION CONTROL DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) PERSONNEL AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/ REPLACEMENT/ MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF ACCEPTABLE PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:
   a. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
   b. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
   c. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
   d. FOR AREAS STABILIZED WITH RIP RAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIP RAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIP RAP. STONE MUST BE SIZED APPROPRIATELY.
   e. PAVED AREAS: FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED.
   f. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH MATURE VEGETATION AT LEAST THREE INCHES IN HEIGHT, WITH WELL-GRADED RIP RAP, OR WITH ANOTHER NON-EROSIVE LINING CAPABLE OF WITHSTANDING THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHOUT RELIANCE ON CHECK DAMS TO SLOW FLOW. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE LINING, UNDERCUTTING OF THE BANKS, OR DOWN CUTTING OF THE CHANNEL.

B. EROSION AND SEDIMENTATION CONTROL MEASURES

1. PRIOR TO THE BEGINNING OF CONSTRUCTION, THE TEMPORARY SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE, OR ENGINEER. SILT FENCE SHALL BE INSTALLED ALONG THE DOWNGRADIENT SIDE OF CONSTRUCTION WORK AREAS, WITH LOCATIONS BEING ADJUSTED ALONG WITH THE CONSTRUCTION PHASING AREAS. THE CONTRACTOR MAY USE EROSION MIX IN PLACE OF SINGLE SILT FENCE BARRIER. IN AREAS WHERE THE GRADE IS STEEPER THAN 8% SILT FENCE AND EROSION CONTROL MIX SHOULD BE USED.
2. THE SILT FENCE SHALL BE INSTALLED PER THE DETAIL PROVIDED IN THE PLAN SET AND INSPECTED IMMEDIATELY AFTER EACH RAINFALL, AND AT LEAST WEEKLY IN THE ABSENCE OF SIGNIFICANT RAINFALL. ANY REQUIRED REPAIRS WILL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDE OF THE SILT BARRIERS. THIS SEDIMENT WILL BE SPREAD AND STABILIZED IN AREAS OF THE SITE NOT SUBJECT TO EROSION. THE CONTRACTOR SHALL MAKE REPAIRS IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE. IF SUCH EROSION IS OBSERVED, THE CONTRACTOR SHALL TAKE PROACTIVE ACTION TO IDENTIFY THE CAUSE OF THE EROSION AND TAKE ACTION TO AVOID ITS REOCCURRENCE. PROPER PLACEMENT OF STAKES AND KEYING THE BOTTOM OF THE FABRIC INTO THE GROUND IS CRITICAL TO THE FENCE'S EFFECTIVENESS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM AND MEASURES TAKEN TO AVOID THE CONCENTRATION OF FLOWS NOT INTENDED TO BE DIRECTED TO THE SILT FENCE. SILT FENCE SHALL BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION.
3. TEMPORARY SEDIMENT SUMPS WILL PROVIDE SEDIMENTATION CONTROL FOR STORMWATER RUNOFF FROM DISTURBED AREAS DURING CONSTRUCTION UNTIL STABILIZATION HAS BEEN ACHIEVED.
4. A CONSTRUCTION ENTRANCE WILL BE CONSTRUCTED AT ALL ACCESS POINTS ONTO THE SITE TO PREVENT TRACKING OF SOIL ONTO ADJACENT LOCAL ROADS AND STREETS.
5. SILT LOGS MAY BE INSTALLED IN LIEU OF STONE CHECK DAMS PROVIDED THE DEVICES ARE WELL ANCHORED, AND IF PRIOR APPROVAL IS RECEIVED FROM THE PROJECT ENGINEER.
6. SILTSACKS™ WILL BE UTILIZED IN CATCH BASINS IN OR NEAR WORK AREAS AT RISK FROM RECEIVING TRANSPORTED SEDIMENT.
7. ALL CATCH BASINS AND FIELD INLETS, NEW OR EXISTING, THAT MAY RECEIVE RUNOFF FROM DISTURBED AREAS MUST BE PROTECTED DURING CONSTRUCTION.
8. REMOVAL OF SOD, TREES, BUSHES AND OTHER VEGETATION AND SOIL DISTURBANCE WILL BE KEPT TO A MINIMUM WHILE ALLOWING PROPER SITE DEVELOPMENT.
9. GRUBBINGS AND ANY UNUSABLE TOPSOIL SHALL BE STRIPPED AND REMOVED FROM THE PROJECT SITE AND DISPOSED OF IN AN APPROVED MANNER.
10. ANY SUITABLE TOPSOIL WILL BE STRIPPED AND STOCKPILED FOR REUSE IN FINAL GRADING. TOPSOIL WILL BE STOCKPILED IN A MANNER SUCH THAT NATURAL DRAINAGE IS NOT OBSTRUCTED AND NO OFF-SITE SEDIMENT DAMAGE WILL RESULT. IF A STOCKPILE IS NECESSARY, THE SIDE SLOPES OF THE TOPSOIL STOCKPILE WILL NOT EXCEED 2:1. TOPSOIL STOCKPILES WILL BE TEMPORARILY SEEDED WITH AROOSTOOK RYE, ANNUAL OR PERENNIAL RYE GRASS WITHIN 7 DAYS OF FORMATION, OR TEMPORARILY MULCHED IF SEEDING CANNOT BE DONE WITHIN THE RECOMMENDED SEEDING DATES.
11. TEMPORARY DIVERSION BERMS AND DRAINAGE SWALES SHALL BE CONSTRUCTED AS NECESSARY TO PREVENT OFF-SITE DRAINAGE FROM ENTERING THE WORK AREA.
12. TEMPORARY STABILIZATION SHALL BE CONSTRUCTED WITHIN 7 DAYS OF INITIAL DISTURBANCE OF SOILS, PRIOR TO ANY RAIN EVENT, AND PRIOR TO ANY WORK SHUT DOWN LASTING MORE THAN ONE DAY. TEMPORARY STABILIZATION INCLUDES SEED, MULCH, OR OTHER NON-ERODABLE COVER.
13. TEMPORARY SEEDING SPECIFICATIONS: WHERE SEEDBED HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME, AND SEED. APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET) AND 10-10-10 (N-P205-K20) FERTILIZER AT A RATE OF 600 LBS PER ACRE (13.8 LB. PER 1,000 SQUARE FEET). UNIFORMLY APPLY SEED AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2 TONS PER ACRES, AND ANCHOR AS NECESSARY. RECOMMENDED TEMPORARY SEEDING DATES AND APPLICATION RATES ARE AS FOLLOWS:

    AROOSTOOK RYE: RECOMMENDED SEEDING DATES: 8/15 -10/1
    APPLICATION RATE: 112 LBS/ACRE
    ANNUAL RYE GRASS: RECOMMENDED SEEDING DATES: 4/1 - 7/1
    APPLICATION RATE: 40 LBS/ACRE
    PERENNIAL RYE GRASS: RECOMMENDED SEEDING DATES: 8/15 - 9/15
    APPLICATION RATE: 40 LBS/ACRE

14. PERMANENT SEEDING SPECIFICATION. IF A LANDSCAPE PLAN HAS BEEN PREPARED FOR THE PROJECT, SOIL PREPARATION AND SEED SPECIFICATIONS OF THAT PLAN SHALL SUPERSEDE THESE GENERAL PERMANENT SEEDING REQUIREMENTS. IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND JUNE 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1SHALL BE SEEDED WITH AROOSTOOK RYE OR MULCHED AT RATES PREVIOUSLY SPECIFIED. SEE WINTER CONDITIONS NOTES FOR SEEDING STABILIZATION AFTER NOVEMBER 1.
    a. APPLY TOPSOIL TO A MINIMUM DEPTH OF 4 INCHES. MIX TOPSOIL WITH THE SUBSOIL TO A MINIMUM DEPTH OF 6 INCHES.
    b. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET) AND GRANULAR, COMMERCIAL-GRADE, 10-10-10 (N-P2O5-K2O) FERTILIZER AT A RATE OF 800 LBS PER ACRE (18.4 LBS PER1,000 SQUARE FEET).
    c. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2 TONS PER ACRES, AND ANCHOR AS NECESSARY.
    d. THE SEED MIXTURE FOR LAWN AND FILTRATION BASIN AREAS SHALL CONSIST OF SEEDS PROPORTIONED BY WEIGHT AS FOLLOWS:

        30% CREEPING RED FESCUE
        50% KENTUCKY BLUEGRASS
        20% ITALIAN/PERENNIAL RYE GRASS

    NOTE: SEED MIXTURE SHALL CONSIST OF AT LEAST TWO VARIETIES OF EACH TYPE OF GRASS. WHEN USED IN A FILTER BASIN, STORMWATER SHALL NOT BE DIRECTED TO THE BASIN UNTIL THE GRASS IS ESTABLISHED.
15. MULCH ALL AREAS SEEDED SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE.

1. DITCH LININGS, STONE CHECK DAMS, AND RIP RAP INLET AND OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF COMPLETING THE GRADING OF THAT SECTION OF DITCH OR INSTALLATION OF CULVERT.
2. RIP RAP REQUIRED AT CULVERTS AND STORM DRAIN INLETS AND OUTLETS SHALL CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE.
3. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 15%, IN THE BASE OF DITCHES NOT OTHERWISE PROTECTED, AND ANY DISTURBED AREAS WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE (E.G. WETLANDS AND WATER BODIES). EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

C. SPECIAL MEASURES FOR SUMMER CONSTRUCTION

DURING DRY SUMMER CONDITIONS, THE CONTRACTOR SHALL;

1. IMPLEMENT A PROGRAM TO APPLY DUST CONTROL MEASURES ON A DAILY BASIS EXCEPT THOSE DAYS WHERE PRECIPITATION IS SUFFICIENT TO SUPPRESS DUST FORMATION. THIS PROGRAM SHALL EXTEND TO AND INCLUDE SWEEPING OF ADJACENT STREETS.
2. SPRAY ANY MULCHES WITH WATER AFTER ANCHORING TO DAMPEN THE SOIL AND ENCOURAGE EARLY GROWTH. SPRAYING MAY BE REQUIRED SEVERAL TIMES. TEMPORARY SEED MAY BE REQUIRED UNTIL THE LATE SUMMER SEEDING SEASON.
3. COVER STOCKPILES OF FINE-GRAINED MATERIALS, OR EXCAVATED SOILS WHICH ARE SUSCEPTIBLE TO EROSION TO PROTECT FROM THE INTENSE, SHORT-DURATION STORMS WHICH ARE MORE PREVALENT IN THE SUMMER MONTHS.
4. TAKE ADDITIONAL STEPS NEEDED, INCLUDING WATERING, OR COVERING EXCAVATED MATERIALS TO CONTROL FUGITIVE DUST EMISSIONS TO MINIMIZE REDUCTIONS IN VISIBILITY AND THE AIRBORNE DISBURSEMENT OF FINE-GRAINED SOILS. THIS IS PARTICULARLY IMPORTANT GIVEN THE POTENTIAL PRESENCE OF SOIL CONTAMINANTS, AND THEIR PROXIMITY ALONG THE ADJACENT STREETS AND PROPERTIES.
5. THESE MEASURES MAY ALSO BE REQUIRED IN THE SPRING AND FALL DURING THE DRIER PERIODS OF THESE SEASONS.

D. WINTER CONDITIONS

1. "WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1ST THROUGH APRIL 15TH. IF AREAS WITHIN THE CONSTRUCTION ACTIVITY ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15TH, THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS. NO MORE THAN ONE ACRE OF THE SITE MAY BE WITHOUT STABILIZATION AT ONE TIME.
2. SILT FENCE: IN LIEU OF PROVIDING THE 4" X 4" TRENCH, FOR FROZEN GROUND, STONY SOIL, THE PRESENCE OF LARGE ROOTS, OR OTHER PROHIBITIVE CONDITIONS, THE BOTTOM 8" TO 12" OF THE FABRIC MAY BE LAID ON EXISTING GRADE AND BACK FILLED WITH STONE ANCHORING MATERIAL, AS SHOWN ON THE DRAWINGS.
3. HAY MULCH SHALL BE APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.
4. AFTER NOVEMBER 1ST OR THE FIRST KILLING FROST FOR THE REGION AND BEFORE SNOW FALL, ALL EXPOSED AND DISTURBED AREAS NOT TO UNDERGO FURTHER DISTURBANCE ARE TO HAVE DORMANT SEEDING. THE DORMANT SEEDING METHOD: PREPARE THE SEEDBED, LIME AND FERTILIZE, APPLY THE SELECTED PERMANENT SEED MIXTURE AT DOUBLE THE REGULAR SEEDING RATE, AND MULCH AND ANCHOR. DORMANT SEEDINGS NEED TO BE ANCHORED EXTREMELY WELL ON SLOPES, DITCH BASES AND AREAS OF CONCENTRATED FLOWS. DORMANT SEEDING REQUIRES INSPECTION AND RESEEDING AS NEEDED IN THE SPRING. ALL AREAS WHERE COVER IS INADEQUATE MUST BE IMMEDIATELY RESEEDED AND MULCHED AS SOON AS POSSIBLE.
5. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1ST, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
6. MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

E. HOUSEKEEPING

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORM WATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS, ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.
3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL.
4. DEBRIS AND OTHER MATERIAL. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER, MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
5. COMPLY WITH ALL LOCAL AND STATE REGULATIONS FOR THE REMOVAL AND DISPOSAL OF CONSTRUCTION DEBRIS AND WASTE.
6. TRENCH OR FOUNDATION DE-WATERING. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED AREAS THAT ARE SPECIFICALLY DESIGNATED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFER DAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE.
7. NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORWATER DISCHARGES. WHERE ALLOWED NON-STORWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE.

F. INSPECTION AND MAINTENANCE

1. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORM WATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE A WEEK AND BEFORE AND AFTER A STORM EVENT, PRIOR TO COMPLETION OF PERMANENT STABILIZATION. A PERSON WITH KNOWLEDGE OF EROSION AND STORM WATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT AND ANY DEP OR MUNICIPAL COMPANION DOCUMENTS, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE MODIFIED OF IF ADDITIONAL BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
2. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME AND QUALIFICATIONS OF THE PERSON PERFORMING THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES.
3. INSPECTION OF THE PROJECT WORK SITE SHALL INCLUDE:
   a. IDENTIFICATION OF PROPER EROSION CONTROL MEASURE INSTALLATION IN ACCORDANCE WITH THE EROSION CONTROL DETAIL SHEET.
   b. DETERMINE WHETHER EACH EROSION CONTROL MEASURE IS PROPERLY OPERATING. IF NOT, IDENTIFY DAMAGE TO THE CONTROL DEVICE AND DETERMINE REMEDIAL MEASURES.
   c. IDENTIFY AREAS WHICH APPEAR VULNERABLE TO EROSION AND DETERMINE ADDITIONAL EROSION CONTROL MEASURES WHICH SHOULD BE USED TO IMPROVE CONDITIONS.
   d. INSPECT AREAS OF RECENT SEEDING TO DETERMINE PERCENT CATCH OF GRASS. A MINIMUM CATCH OF 90 PERCENT IS REQUIRED PRIOR TO REMOVAL OF EROSION CONTROL MEASURES.
4. IF INSPECTION OF THE SITE INDICATES A CHANGE SHOULD BE MADE TO THE EROSION CONTROL PLAN, TO EITHER IMPROVE EFFECTIVENESS OR CORRECT A SITE-SPECIFIC DEFICIENCY, THE INSPECTOR SHALL IMMEDIATELY IMPLEMENT THE CORRECTIVE MEASURE AND NOTIFY THE OWNER OF THE CHANGE.
5. ALL CERTIFICATIONS, INSPECTION FORMS, AND WRITTEN REPORTS PREPARED BY THE INSPECTOR(S) SHALL BE FILED WITH THE OWNER, AND THE PERMIT FILE CONTAINED ON THE PROJECT SITE. ALL WRITTEN CERTIFICATIONS, INSPECTION FORMS, AND WRITTEN REPORTS MUST BE FILED WITHIN ONE (1) WEEK OF THE INSPECTION DATE.
6. THE PERMITTEE SHALL RETAIN COPIES OF THE ESC PLAN AND ANY FORMS, SUBMISSIONS, REPORTS, OR OTHER MATERIALS REQUIRED BY THE GENERAL PERMIT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.
7. THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION/SEDIMENT CONTROL REPORT, INCLUDING CONTROL OF FUGITIVE DUST, AND SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

C. CONSTRUCTION SCHEDULE & SEQUENCE

(TIMELINES ARE APPROXIMATE AND WILL BE DEPENDENT ON WEATHER AND SITE CONDITIONS).

1. **PRE-CONSTRUCTION CONFERENCE:** PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE CONTRACTOR, THE ARCHITECT, THE OWNER, AND THE SITE DESIGN ENGINEER SHALL MEET TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION AND THE DESIGNATION OF THE RESPONSIBLE PARTIES FOR IMPLEMENTING THE PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE MEETING. PRIOR TO THE MEETING, THE CONTRACTOR WILL PREPARE A DETAILED SCHEDULE AND A MARKED-UP SITE PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL CONDUCT A MEETING WITH EMPLOYEES AND SUB-CONTRACTORS TO REVIEW THE EROSION CONTROL PLAN, THE CONSTRUCTION TECHNIQUES WHICH WILL BE EMPLOYED TO IMPLEMENT THE PLAN AND PROVIDE A LIST OF ATTENDEES AND ITEMS DISCUSSED AT THE MEETING TO THE OWNER. THREE COPIES OF THE SCHEDULE, THE CONTRACTOR'S MEETING MINUTES, AND MARKED-UP SITE PLAN SHALL BE PROVIDED TO THE OWNER.
2. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES IS OPTIMIZED.
   a. INSTALL SAFETY AND CONSTRUCTION FENCE TO SECURE THE SITE FOR DEMOLITION.
   b. INSTALL ALL PERIMETER SILTATION FENCE AND EROSION CONTROL BARRIERS. PARTICULAR ATTENTION SHALL BE PAID TO AREAS UPSTREAM OF PROTECTED NATURAL RESOURCES. SIGNS SHALL BE ERECTED PERIODICALLY ALONG THESE PERIMETER BARRIERS INDICATING THAT THE DOWNSTREAM AREAS ARE OFF LIMITS TO ALL CONSTRUCTION ACTIVITIES.
   c. INSTALL CONSTRUCTION ENTRANCES.
   d. MAINTAIN EXISTING PAVED AREAS FOR LAYDOWN AND ACCESS DURING INITIAL CONSTRUCTION ACTIVITIES.
   e. CONSTRUCT ACTIVITIES ON THE SITE TO OPTIMIZE THE HANDLING OF MATERIALS AND RESTRICT THE DENUDED AREAS TO THE TIME STIPULATED.
   f. CONSTRUCT STABILIZED PADS FOR FOUNDATION AND BUILDING CONSTRUCTION.
   g. MAINTAIN STABILIZED SITE ACCESS AND WORKING AREAS DURING BUILDING CONSTRUCTION.
   h. INSTALL STORWATER BMP'S
   i. REMOVE EXISTING PAVEMENT AND INSTALL NEW PAVEMENT BASE GRAVEL MATERIALS TO RAISE THE SITE TO THE DESIGN SUBGRADE ELEVATION.
   j. INSTALL BINDER PAVEMENT.
   k. LANDSCAPE (LOAM AND SEED).
   l. INSTALL SURFACE PAVEMENTS.
   m. INSTALL STRIPING, SIGNAGE, AND MISCELLANEOUS SITE IMPROVEMENTS.
   n. REVIEW AND PUNCH THE SITE.
   o. REMOVE ANY TEMPORARY EROSION CONTROL MEASURES.
3. THE CONTRACTOR MUST MAINTAIN AN ACCURATE SET OF RECORD DRAWINGS INDICATING THE DATE WHEN AN AREA IS FIRST DENUDED, THE DATE OF TEMPORARY STABILIZATION, AND THE DATE OF FINAL STABILIZATION. ON OCTOBER 1 OF ANY CALENDAR YEAR, THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN FOR STABILIZING THE SITE FOR THE WINTER AND A DESCRIPTION OF WHAT ACTIVITIES ARE PLANNED DURING THE WINTER.

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
B	10/26/2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
A	9/10/2022	ISSUED TO MDEP FOR STORMWATER PERMIT

REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

THE GLEN AT GOOSE ROCKS

EROSION & SEDIMENTATION CONTROL NOTES

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CHECKED: JAV	JOB NO. 22-008
FILE NAME:	
SHEET: C-300	

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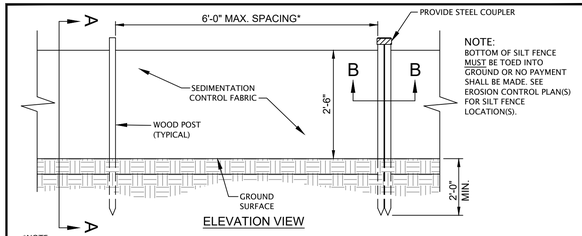

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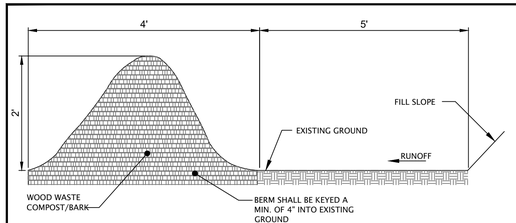


NOTES:
1. THE WOOD WASTE COMPOST/BARK MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:

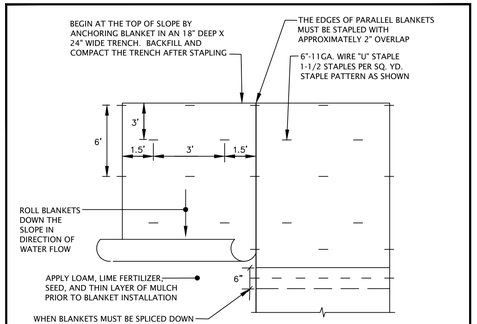
A. MOISTURE CONTENT - 30-60%
B. pH - 5.0-8.0
C. SCREEN SIZE - 100% LESS THAN 3", MAX. 70% LESS THAN 1"
D. NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION
F. NO STONES LARGER THAN 2" IN DIAMETER

2. THE COMPOST BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.

3. THE WOOD WASTE COMPOST/BARK FILTER BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.

4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS COMPLETED OR 70% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED BY SPREADING SUCH THAT THE NATIVE EARTH CAN BE SEEN BELOW.

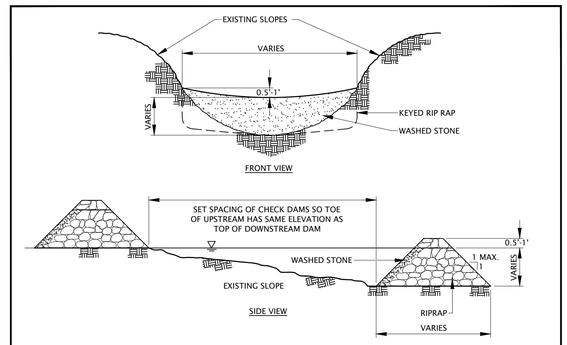
D EROSION CONTROL MIX BERM SEDIMENT BARRIER
N.T.S.



NOTES:
1. IF GRASS CATCH IS NOT 75% BY SEPTEMBER 1, ADD #4 REBAR @ 3'-0" ROWS ON 3' CENTERS. REMOVE OR DRIVE REBAR 3" BELOW GRADE IN SPRING FOLLOWING TURF ESTABLISHMENT.

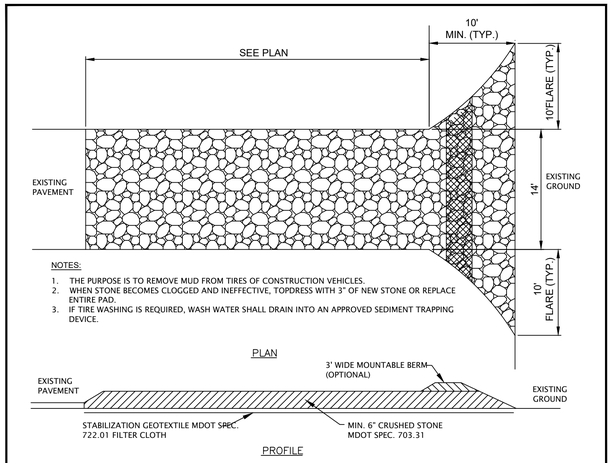
2. MULCH RATE TO BE 1/2 THE RATE OTHERWISE SPECIFIED.

G EROSION CONTROL BLANKET DETAIL
N.T.S.

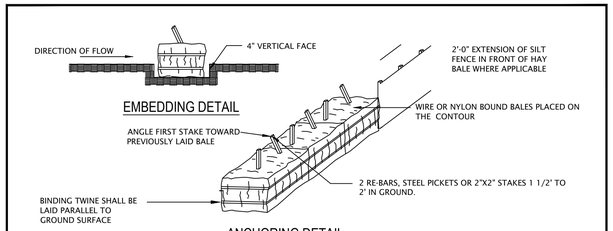


NOTES:
1. STONE SHALL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
3. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
4. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
5. AT THE CONCLUSION OF THE PROJECT WHEN FINAL GRADES HAVE BEEN ESTABLISHED/STABILIZED ALL CHECK DAM AND SEDIMENT MATERIALS SHALL BE REMOVED.

I CHECK DAM DETAIL
N.T.S.

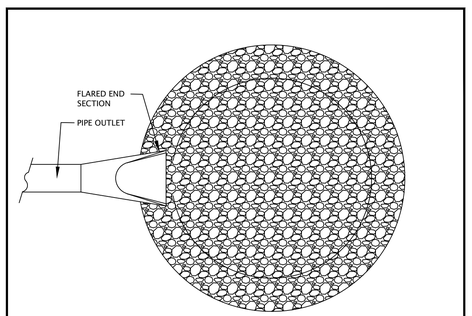


B STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.



CONSTRUCTION SPECIFICATIONS
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. A SILT SACK IS ALSO REQUIRED WHEN HAY BALES ARE USED FOR INLET PROTECTION.

E STRAW OR HAY BALE BARRIER
N.T.S.

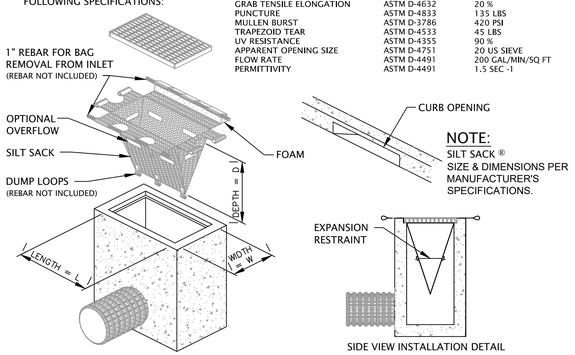


H FOREBAY DETAIL
N.T.S.

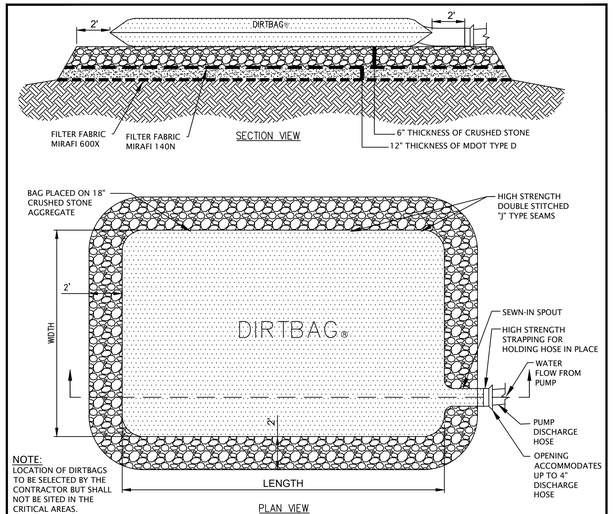
NOTE: THE SILT SACK ® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

HIGH-FLOW SILT SACK ® (FOR USE IN LOW POINTS/SAGS)
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1



C SILT SACK ® DETAIL & SPECIFICATIONS
N.T.S.



F DIRTBAG / SPECIFICATIONS FOR DEWATERING DETAIL
N.T.S.

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REVISIONS

STATE OF MAINE — JASON A. VAFIADES No. 12661 — LICENSED PROFESSIONAL ENGINEER — 10/26/2022

THE GLEN AT GOOSE ROCKS

EROSION & SEDIMENTATION CONTROL DETAILS

K.J. TRUDO PROPERTIES, LLC
20 APPLE BLOSSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: N.T.S.
CHECKED: JAV	JOB NO. 22-008
FILE NAME:	
SHEET: C-301	

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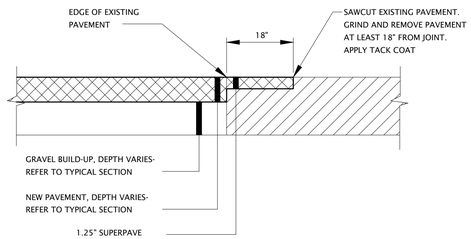
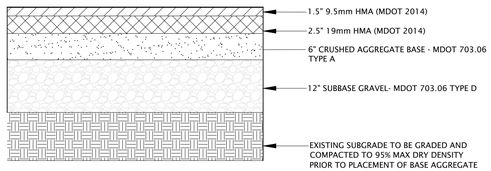


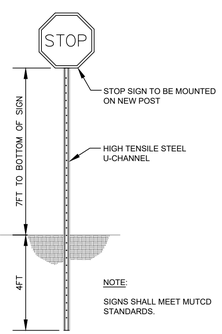
A PAVEMENT BUTT-JOINT DETAIL

N.T.S.



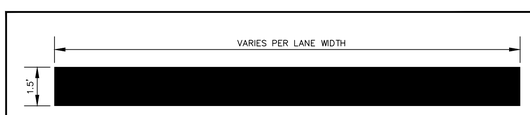
B PAVEMENT BUILD-UP DETAIL

N.T.S.



C STOP SIGN DETAIL

N.T.S.



D STOP BAR DETAIL

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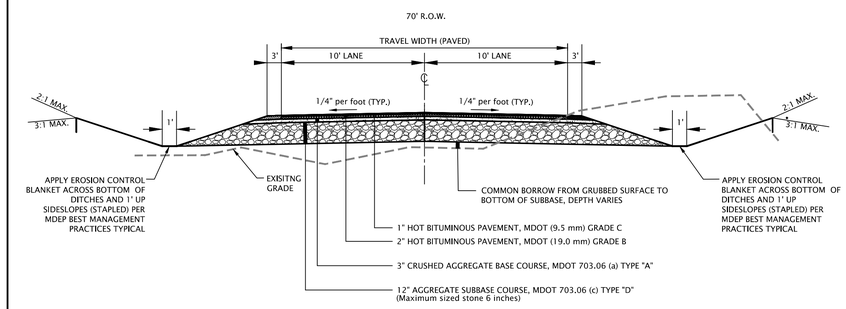
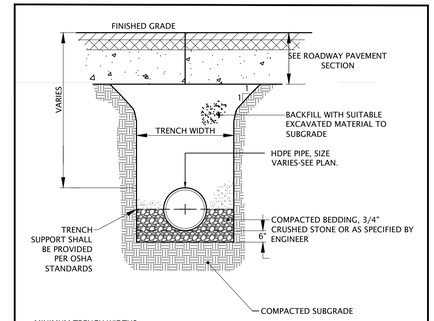


1. THIS DETAIL REFLECTS MINMUM REQUIREMENTS, INSITU SOIL CONDITIONS MAY REQUIRE ADDITIONAL MATERIALS AS DIRECTED BY PUBLIC WORKS DIRECTOR OR ENGINEER.
2. CLEARING AND GRUBBING SHALL BE 6"-12" DEEP DEPENDING ON SOIL CONDITIONS AND EXTEND A MINIMUM OF THE ENTIRE WIDTH OF THE RIGHT OF WAY.
3. ALL CONSTRUCTION SHALL MEET THE REQUIREMENTS RELATIVE TO THE APPLICABLE MDOT STANDARD SPECIFICATION FOR MATERIALS, PLACEMENT AND TESTING.

E TYPICAL ROADWAY SECTION DETAIL

N.T.S.



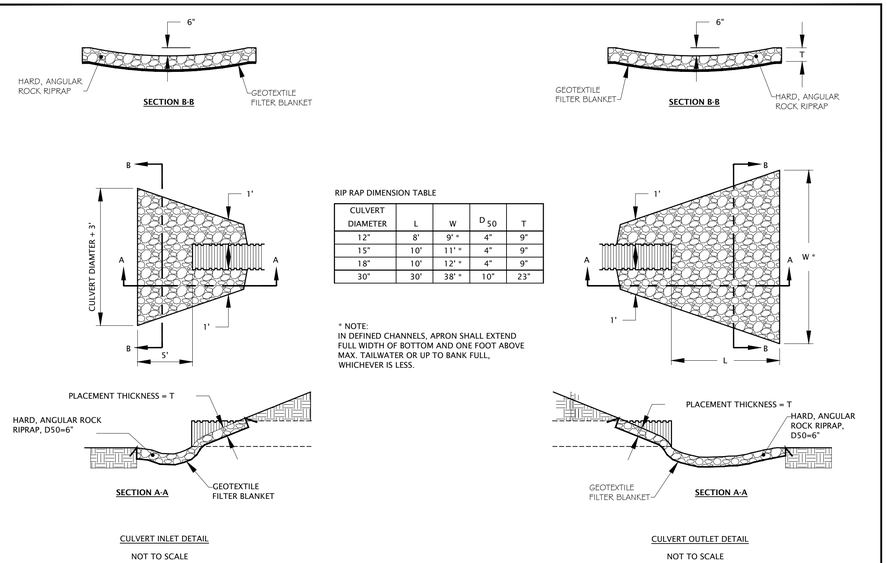
MINIMUM TRENCH WIDTHS

PIPE DIA.	PIPE O.D.	TRENCH WIDTH
12"	14.45"	31"
24"	27.8"	44"
36"	41.7"	58"

NOTES:
1. WHERE TRENCHES PENETRATE DETENTION BASIN EMBANKMENTS OR OTHER SUCH SPECIAL SECTIONS, BACKFILL SHALL CONFORM TO THE THEIR REQUIREMENTS.

G HDPE CULVERT PIPE TRENCH

N.T.S.



CULVERT DIAMETER	L	W	D_{50}	T
12"	8'	9' *	4"	9"
15"	10'	11' *	4"	9"
18"	10'	12' *	4"	9"
30"	30'	38' *	10"	23"

F CULVERT RIP-RAP APRON DETAILS

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JASON A. VAFIADES
No. 12661
LICENSED PROFESSIONAL ENGINEER
10/26/2022

THE GLEN AT GOOSE ROCKS

SITE CIVIL DETAILS

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Freeport, ME 04032
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DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: N.T.S.
CHECKED: JAV	JOB NO. 22-008
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SHEET: C-302	

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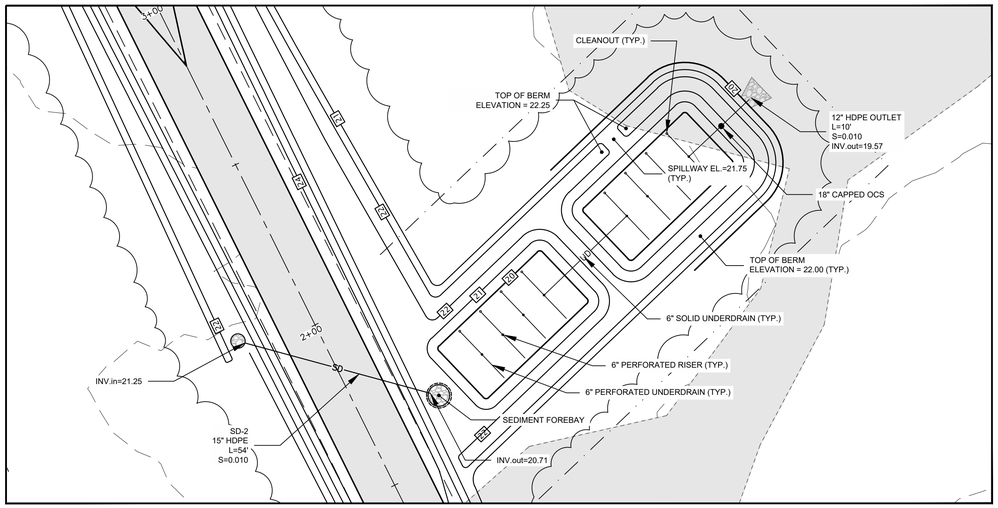
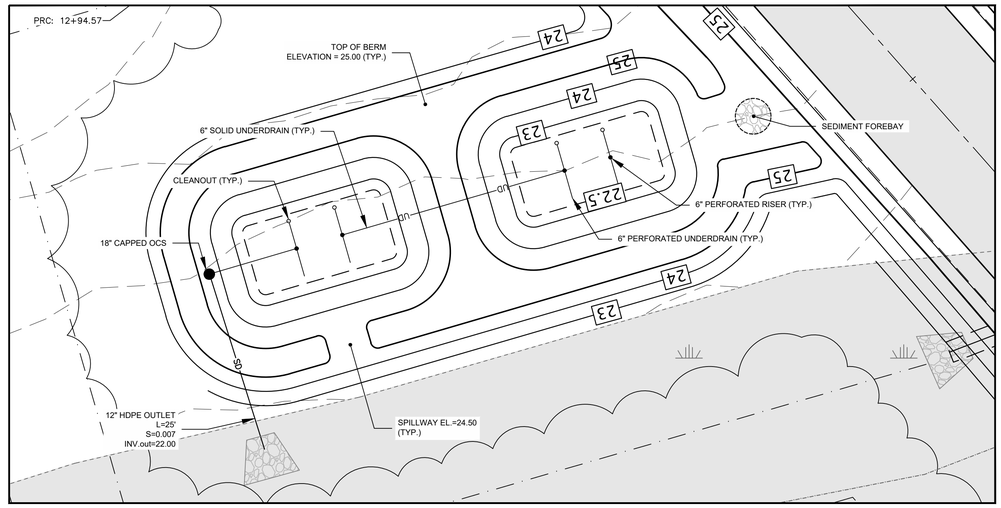
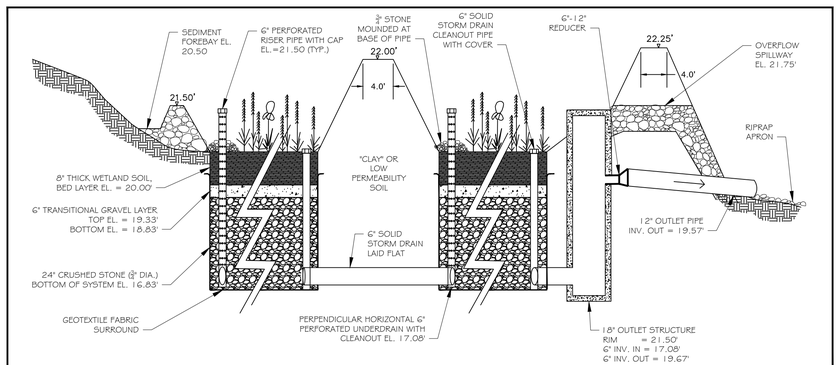


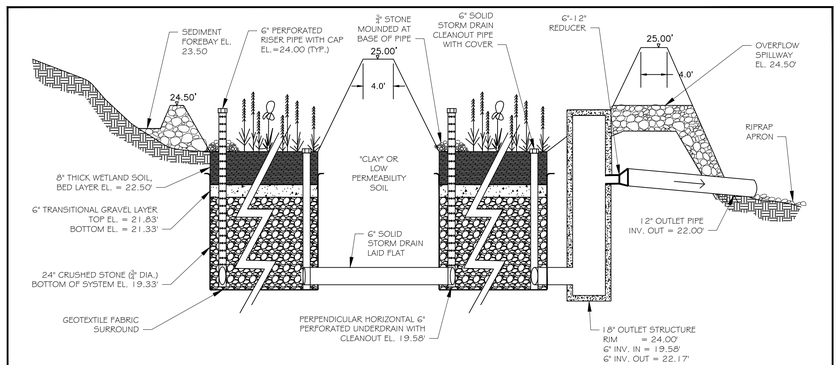
PLAN VIEW
GRAVEL WETLAND-1
1" = 20'



PLAN VIEW
GRAVEL WETLAND-2
1" = 10'



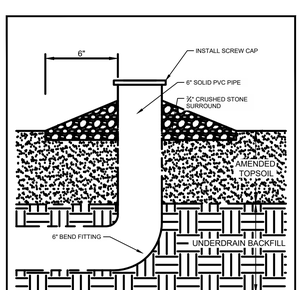
A CROSS-SECTION OF GRAVEL WETLAND
N.T.S.



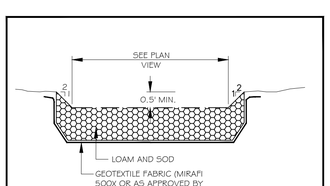
B CROSS-SECTION OF GRAVEL WETLAND
N.T.S.

GRAVEL WETLAND NOTES

1. WETLAND SOIL: THE WETLAND SOIL SHALL HAVE A THICKNESS OF 8 INCHES MINIMUM AND SHOULD HAVE A LOW HYDRAULIC CONDUCTIVITY (0.1-0.01 FT/DAY). THIS SOIL CAN BE MANUFACTURED, USING COMPOST, SAND AND FINE SOILS, INTO A BLEND WITH MORE THAT 15% ORGANIC MATTER. IT SHOULD CONTAIN MORE THAN 15% SILT (PASSING THE #200 SIEVE), BUT WITH A CLAY SIZE PORTION THAT IS LESS THAN 2%.
2. CONSTRUCTION: THE SUBAREA DRAINING TO A CREATED WETLAND MUST BE COMPLETELY STABLE BEFORE RUNOFF IS DIRECTED TO THE BASIN TO PREVENT SEDIMENTATION OF THE DRAINAGE LAYER; OR ALL RUNOFF SHOULD BE RE-DIRECTED UNTIL CONSTRUCTION IS FINALIZED. THE VEGETATION WITHIN THE STRUCTURE IS EQUALLY IMPORTANT AND MUST BE WELL ESTABLISHED BEFORE IT CAN ACCEPT ANY RUNOFF. CONSTRUCTION SHOULD BE STARTED NO LATER THAN SEPTEMBER 1 OR EARLIER THAN JUNE 1; AND IF VEGETATION CANNOT BE ESTABLISHED BY THE END OF THE GROWING SEASON, CONSTRUCTION SHOULD BE DELAYED TO THE FOLLOWING YEAR. SEEDING OR STABILIZATION MUST OCCUR BY SEPTEMBER 15 IN PREPARATION FOR THE WINTER SEASON.
OVERSITE: A GRAVEL WETLAND SHOULD ONLY BE CONSTRUCTED UNDER THE SUPERVISION FROM THE DESIGN ENGINEER.



C UNDERDRAIN CLEANOUT DETAIL
N.T.S.



D TURF OVERFLOW SPILLWAY DETAIL
N.T.S.

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LICENSED PROFESSIONAL ENGINEER
10/26/2022

THE GLEN AT
GOOSE ROCKS

STORMWATER DETAILS I

K.J. TRUDO PROPERTIES, LLC
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FILE NAME:	
SHEET: C-303	

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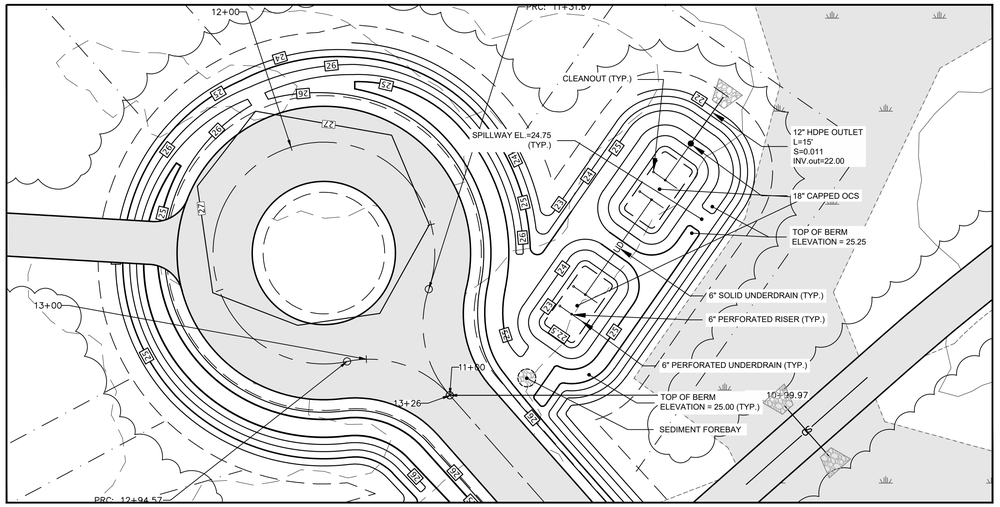
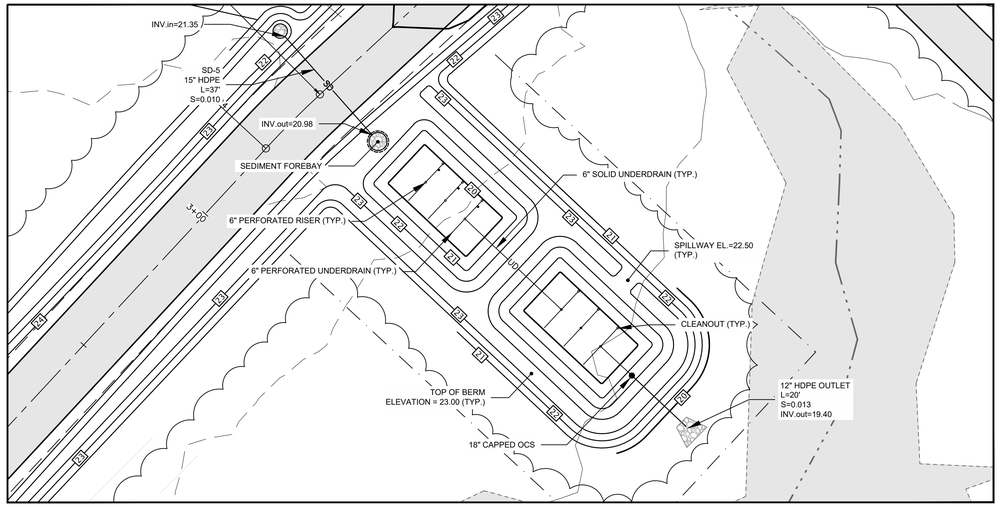
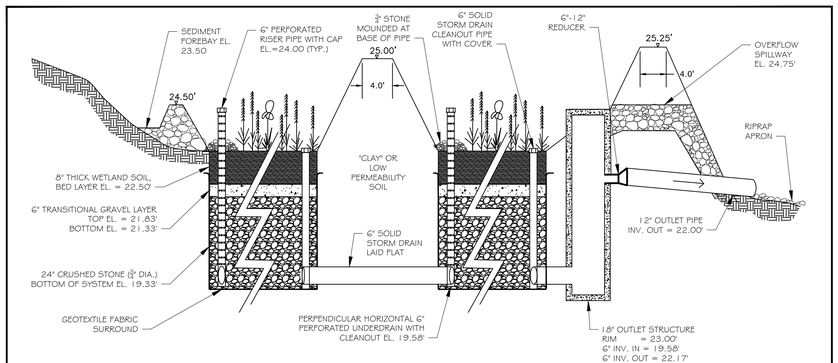


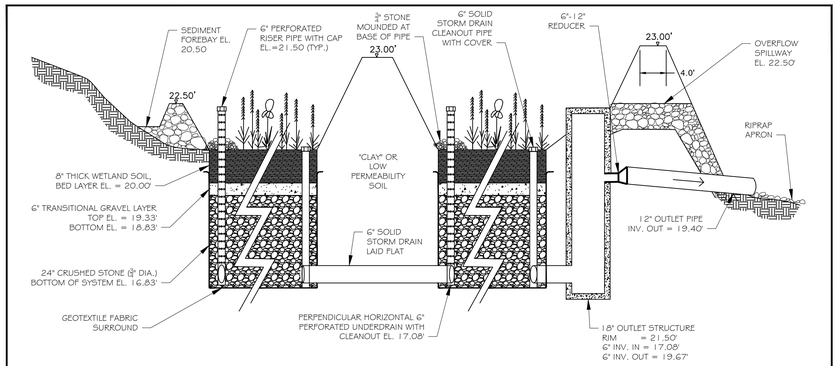
PLAN VIEW
GRAVEL WETLAND-3
1" = 20'



PLAN VIEW
GRAVEL WETLAND-4
1" = 20'



A CROSS-SECTION OF GRAVEL WETLAND
N.T.S.



B CROSS-SECTION OF GRAVEL WETLAND
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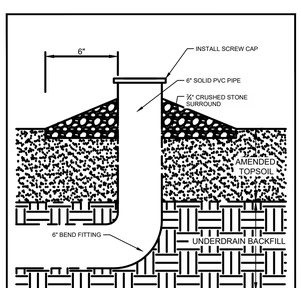

C UNDERDRAIN CLEANOUT DETAIL
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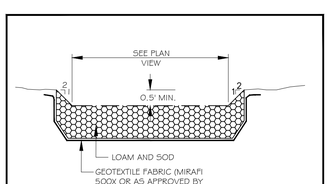

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SHEET: C-304	

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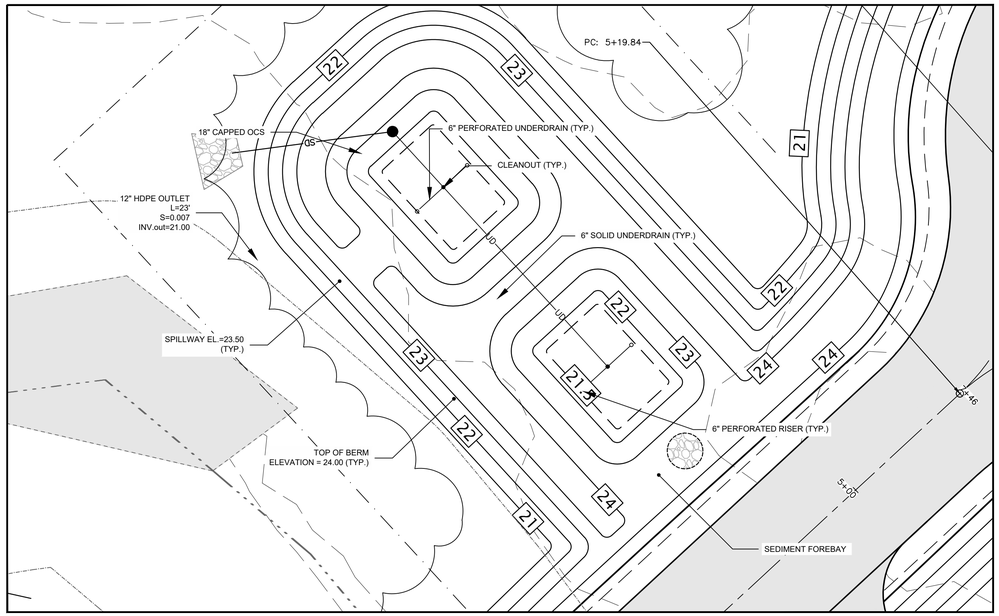
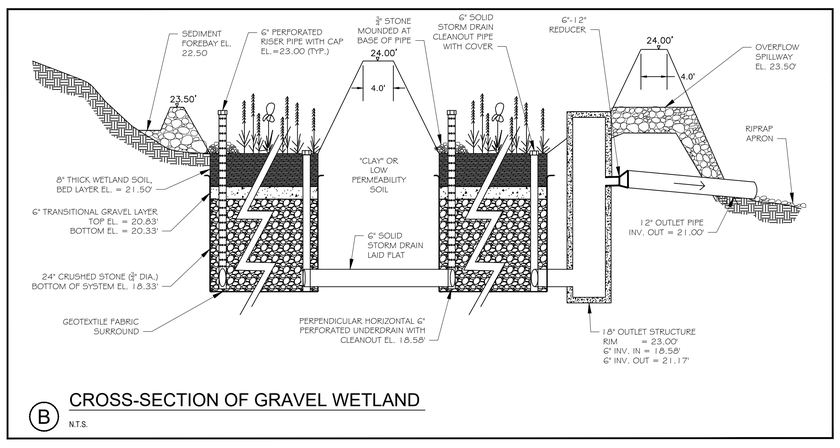


PLAN VIEW
GRAVEL WETLAND-5
1" = 10'



B CROSS-SECTION OF GRAVEL WETLAND
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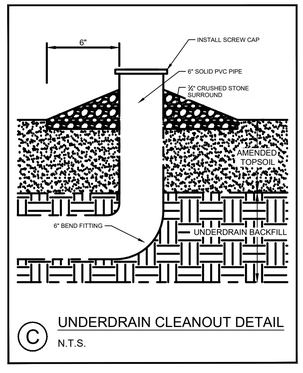
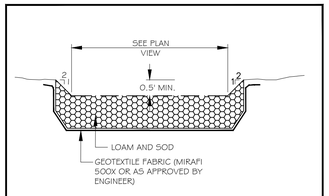


C UNDERDRAIN CLEANOUT DETAIL
N.T.S.



D TURF OVERFLOW SPILLWAY DETAIL
N.T.S.

GRAVEL WETLAND NOTES

1. WETLAND SOIL: THE WETLAND SOIL SHALL HAVE A THICKNESS OF 8 INCHES MINIMUM AND SHOULD HAVE A LOW HYDRAULIC CONDUCTIVITY (0.1-0.01 FT/DAY). THIS SOIL CAN BE MANUFACTURED, USING COMPOST, SAND AND FINE SOILS, INTO A BLEND WITH MORE THAT 15% ORGANIC MATTER. IT SHOULD CONTAIN MORE THAN 15% SILT (PASSING THE #200 SIEVE); BUT WITH A CLAY SIZE PORTION THAT IS LESS THAN 2%.

2. CONSTRUCTION: THE SUBAREA DRAINING TO A CREATED WETLAND MUST BE COMPLETELY STABLE BEFORE RUNOFF IS DIRECTED TO THE BASIN TO PREVENT SEDIMENTATION OF THE DRAINAGE LAYER; OR ALL RUNOFF SHOULD BE RE-DIRECTED UNTIL CONSTRUCTION IS FINALIZED. THE VEGETATION WITHIN THE STRUCTURE IS EQUALLY IMPORTANT AND MUST BE WELL ESTABLISHED BEFORE IT CAN ACCEPT ANY RUNOFF. CONSTRUCTION SHOULD BE STARTED NO LATER THAN SEPTEMBER 1 OR EARLIER THAN JUNE 1; AND IF VEGETATION CANNOT BE ESTABLISHED BY THE END OF THE GROWING SEASON, CONSTRUCTION SHOULD BE DELAYED TO THE FOLLOWING YEAR. SEEDING OR STABILIZATION MUST OCCUR BY SEPTEMBER 15 IN PREPARATION FOR THE WINTER SEASON.
OVERSITE: A GRAVEL WETLAND SHOULD ONLY BE CONSTRUCTED UNDER THE SUPERVISION FROM THE DESIGN ENGINEER.

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
B	10/26/2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
A	9/10/2022	ISSUED TO MDEP FOR STORMWATER PERMIT

REVISIONS

STATE OF MAINE
JASON A. VAFIADES
No. 12661
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/26/2022

THE GLEN AT
GOOSE ROCKS

STORMWATER DETAILS III

K.J. TRUDO PROPERTIES, LLC
20 APPLE BLOSOM LANE
KENNEBUNKPORT, MAINE 04046

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN: ZWG	DATE: SEPTEMBER 2022
DESIGNED: JAV	SCALE: AS SHOWN
CHECKED: JAV	JOB NO. 22-008
FILE NAME:	
SHEET: C-305	

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