Planning and Development
Saco City Hall
300 Main Street
Saco, Maine 04072-1538

Maggie Edwards
Administrative Assistant
MEdwards@sacomaine.org
Phone: (207) 282-3487 ext.353

Saco Planning Board
Meeting Minutes
October 2, 2018
City Hall Conference Room, 1st Floor, 6:00 PM

REGULAR MEETING
6:00 PM

Planning Board Members Present:	Neil Schuster, Chair, Alyssa Bouthot, Joyce Leary Clark, Matt Provencal, Rene Ittenbach, Vice Chair
Planning Board Members Excused:	Peter Scontras; Don Girouard
Staff Members Present:	Joseph Laverriere, City Engineer; Zach Mosher, City Planner;
NOTE:	Meeting is audio recorded. These audio records will be posted on the City's website and available for public review within one week of the meeting.

NEW BUSINESS AND PUBLIC HEARING:

1. **Minutes of September 18, 2018**
   Joyce motioned to accept the minutes as written, seconded by Rene, and so voted 5-0

2. **Review of a proposed building envelope of a nonconforming structure per Sec. 504-4 of the Zoning Ordinance for the property at 56 Surf St. Tax Map 003, Lot 31. Zoned R-1c and Shoreland Overlay. Applicant is Michael Pinette.**

Zach Mosher
Michael Pinette, is seeking approval under Section 230-504.B of the Zoning Ordinance for the removal and relocation of an existing single-family structure located at 56 Surf Street. The parcel is 0.32 acre (13,939 s.f.), and as such is a conforming lot in terms of area in the R-1c district. It is also located in the Shoreland

Overlay district. The proposal includes removing the existing (nonconforming as to setbacks) structure, which was damaged by storms last winter, and moving the building footprint so that all setbacks would be conforming. Currently the structure is 2.38 feet from the Surf Street right of way, and 2.84 feet from the southerly property line. Required setbacks in the R-1c zone are 25 feet, front and 15 feet, sides and rear.
In demolishing and then reorienting the structure, all side and rear setbacks would become conforming. The current 2.38 ft front setback would be improved to 18.6 feet: the near corner of a 12' x 40' deck proposed along the easterly wall of the house, facing Surf Street. The other (southerly) corner of the deck would be set back 30 feet from the front property line.
The net result is a more conforming situation. Current building lot coverage is 2,283 sf, or 16.37% of the parcel. Proposed building lot coverage is 2,440 sf, or 17.5% of the parcel. The applicant is also proposing to raise the structure approx. 3 ft., so as to meet the City's Floodplain Ordinance requirement.
Section 230-504.B(1) of the Saco Zoning Ordinance allows a non-conforming structure to be replaced, "…provided that such reconstruction or replacement is in compliance with all dimensional requirements of this chapter to the greatest extent practical as determined by the Planning Board …"
The structure would also have to meet current Shoreland Zoning regulations, floodplain regulations as this structure is currently located in the AO floodzone, and MaineDEP Chapter 355 standards. After discussing with Dick Lambert, the relocated building with new foundation will comply with local floodplain standards. The project is also subject to a coastal sand dune permit from the DEP. That and other issues are addressed in the conditions of approval date October 2, 2018.

DEPARTMENT REVIEW –
Police Department – No comment.
Fire Department – The Fire Dep't has recommended residential fire sprinklers.
Code Enforcement – As mentioned above, Dick believes that the reconstruction plan will be an improvement over the status quo, in that the new structure would be further back from the water and elevated to three feet, thereby meeting current Floodplain Ordinance requirements. This has been allowed in other situations that have been brought to Planning Board.
Engineering Department / Planning Department – Planning explained to the applicant that height is defined by the highest grade adjacent to the building, therefore the maximum is 35 feet above that number in this zoning district.

STAFF RECOMMENDATION – The Staff recommends APPROVAL of the relocation and rebuild of 56 Surf Street with the finding that it meets the requirements of Article 5 of the Saco Zoning Ordinance.

Rene: I move to open the public hearing, seconded by Alyssa and so voted 5-0

The Board heard from a few residents who discussed if this building was damaged in a storm. And if this new structure would meet the setback requirements. If this new structure would make changes to the peoples ROW access to Surf Street. All residents were satisfied with responses.

Rene: I move to close the public hearing, seconded by Alyssa, and so voted 5-0

Joyce: "Move to approve the request from applicant Michael Pinette to relocate the dwelling at 56 Surf Street as proposed, subject to the Conditions of Approval dated October 2, 2018 seconded by Rene, and so voted 5-0

3. **Review of proposed subdivision amendments to the Park North/Cascades subdivision plan. Applicant is Park North Development LLC. Tax Map 62, 63 and 64, Lot 1, 6 and 6-1. Zoned MU-3 and Contract Zone.**

Zach Mosher:

Rick Meek of Sebago Technics, on behalf of Park North Development LLC, is seeking approval for a 7th amendment of the Park North and Cascades Subdivision. The original subdivision was approved by the Planning Board in January of 2008. The 6th amendment was approved in November 2014 and created 65 lots in the Park North parcel and 6 lots in the Cascades parcel.

This item was workshopped with the Planning Board on the September 18, 2018. After the workshop, the applicant has revised the 7th amendment application to remove the consolidation of lots 6-15 that would form a contiguous 27 acre parcel as well as the proposal to subdivide lots 2-6 on East View Parkway. The amendment now consists of two parts:

1) The 1st part is proposing to alter phases 3 and 5 within the residential portion of the development which would consist of consolidating the proposed right of way of Bears Den Rd (not currently built), the previously proposed Open Space 1, lot C4 and lot CA-5 to accommodate 17 duplexes.

2) The 2nd part proposes to subdivide lot 18 (at the corner of Waterfall Dr and Portland Rd) to create an approx. 6 acre parcel for future development of a 72-unit apartment building. (Condition of approval number 16 from the original approval stated in part that "development of individual parcels for residential or commercial buildings and uses shall be subject to site plan review by the Planning Board." As such, a site plan application for the proposed apartment building will be submitted to the board.)

As mentioned, the applicant is no longer proposing to consolidate lots 6 through 15 on the east side of Eastview Parkway to form a contiguous 27 acre parcel as the Board decided this would constitute a major change to the contract zone, therefore necessitating City Council approval first. That consolidation would have included the removal of two previous ROW's that were proposed into this section of the development as well as the parcel formerly containing Stormwater Detention Area 2. The applicant is also no longer proposing to subdivide lots 2 through 4 on Eastview Parkway that would have created 6 lots.

After discussion with the City Administrator and others, staff is comfortable moving forward with the Board determining these are minor amendments to the site map and approving them as per the Park North Contract Zone (CZ), pursuant to Article 3, Section 11. The City Administrator will be looking to inform the Council at a future workshop of all prior Planning Board amendments (including this one), as this article does not exist in other contract zones and contradicts the Zoning Ordinance. The intent is to work with the Council to develop/amend city code to further clarify this and any future contract zone amendments.

Joyce: "I move to find the application for preliminary subdivision review complete," seconded by Alyssa, and so voted 5-0

DEPARTMENT REVIEW

Police Department - No comment.
Fire Department – No comment.
Public Works / Engineering Department – DPW does not have any concerns with the proposed changes to the residential components as shown on the revised 7th amended subdivision plan.
Code Enforcement – Code Enforcement does not have any concerns with the amendment as proposed here.

STAFF RECOMMENDATION – The Staff recommends APPROVAL of the Preliminary Subdivision Plan for the Park North / Cascades Subdivision amendment with the finding that it meets the requirements of Articles 1 and 7 of the Subdivision Regulations and is based on the conditions of approval dated October 2, 2018.

Elliott Chamberlain, applicant: They are removing a small loop road, and will bring the condos forward away from the stream to where the road is being removed. What was once 117 units, will now be 114 or 115 units. Lot 18 becomes smaller, Lot 18. So most of the staff have seen the preliminary plan for the 72-unit apartment building, and that new lot is where that building would go. If, of course, it gets approved. For now, they took out the changes to Eastview Parkway,

Rene: He noticed that in the revision B, it notes Lot 10 and not Lot 24? **Zach**: that might have been the revision "A". It should be dated 9-24-18. **Rene**: the older rev. states Lot 24, and the newer version is Lot 10. They are not using the revision block on plans. All agree that Lot 24 is correct.

Rene: I move to open the public hearing, seconded by Alyssa, and so voted 5-0

Roger Gay, City Councilor, Ward 2: Looking for clarification. The first proposal was for 114 units? **Elliott:** It will be around 114 or 115 units. **Roger**: and what about the 72-units? **Elliott**: that was only been a preliminary review by planning board. **Joyce:** and the idea is to leave Lot 18 as commercial? **Elliott:** Yes.
Kevin Roche: asked where does the conversation with Tim Murphy stand with CZ's and the TIF districts? **Zach:** He did not have any information on that. **Kevin Roche:** There was a conversation at the workshop about how lots were combined, and that the lot is now owned by the Maine National Guard, which is tax free. Is that determined to be ok under the Park North TIF, as well as the contract zone? **Zach**: that is a conversation that is still occurring. That isn't part of these amendments. **Kevin Roche**: Your adding over a 180-units. What's the discussion on a traffic study, and a traffic light? **Elliott**: we had Sebago Technics do an update on the traffic study, because we knew this was going to get us close with those added units, which

will probably trigger that need for a light. **Kevin Roche**: Is there a plan to get that quoted out, to show you are making a good faith effort to the City to add that traffic light? **Elliott**: Yes. They have scheduled a pre-con meeting this Friday, to discuss the LOC to include residential, the building of Eastview Parkway and the light. **Kevin Roche:** Lastly, is there any schedule on the trails? **Elliott**: He is working on the design with the guy who built the trails at Dunstan Crossing in Scarborough, to do the same thing here. Hopefully before the snow flies. November, December, January timeline.

Matt: I move to close the public hearing, seconded by Rene, and so voted 5-0

Rene: "I move to approve the proposed subdivision plan amendments to the approved Park North/Cascades subdivision submitted by Sebago Technics on behalf of Park North Development, LLC with the findings that it meets:
1) The application meets the requirements of Articles 1, and 7 of the Saco Subdivision regulations
2) The application meets the requirements of the Conditions of Approval dated October 2, 2018
3) The application recognizes that the original Conditions of Approval and Findings of Fact dated January 1, 2008 remain as part of the record and in effect." Seconded by Joyce, and so voted 5-0

4. **Preliminary Subdivision review for Eloise's Subdivision – 77 Lincoln Rd. Tax Map 101, Lot 31-2. Zoned C-1. Applicant is CVS Foundations, LLC.**

Zach Mosher:
Walter Pelkey of BH2M Engineers, on behalf of applicant, CVS Foundations, LLC**,** is seeking approval for a 6-lot subdivision off Lincoln Rd. The subject parcel (Map 101, Lot 31-1) consists of approx. 24 acres of wooded land and is located at 77 Lincoln Rd.
The parcel to be developed is currently zoned in the Conservation District (C-1). The C-1 district requires a minimum lot size of 80,000 sf with 200 ft. of road frontage, a minimum of a 30 ft. front setback and minimums of 25 ft. for side and rear setbacks. Each lot is expected to be developed into a single-family residence which is a permitted use in the C-1 district.
The Eloise's Way subdivision has a project area of 23.4 acres. The proposal for this lot involves the development of single-family dwellings on six (6) lots, a roughly 1,164 linear feet of street and turn-around built to City standards, and a stormwater management system. A private well and individual septic system would service each of the proposed lots. Suitable soils and adequate area for a septic system have been identified on each of the six proposed lots. Lots 2-6 would be serviced by underground utilities located within the Eloise's Way right of way. Lot 1 is proposed to be serviced via overhead utilities via a utility pole in the Lincoln Road right of way. The project will disturb more than 1 acre, so the applicant will need to obtain a Maine General Contractor's Permit from Maine Department of Environmental Protection.
The applicant is proposing to build a new fire cistern to serve these lots. The Fire Department will accept this as sufficient protection as long as each driveway is within 2,000 ft of the cistern.
A total of 4,195 s.f. of wetlands are proposed for disturbance on this site. The city's wetland consultant did conduct a review of the applicant's wetland delineation. The consultant found that the applicant's wetland delineation accurately depicts the current conditions at the site within the proposed project area and no alterations to the wetland boundaries are needed. A vernal pool assessment has been performed as well, dated May 8, 2018, and reports no egg masses or habitat suitable for amphibian breeding. The city has employed Normadeau Associates to review the applicant's findings, which have been found acceptable.

Traffic generated by the six proposed lots would result in approximately 58 vehicle trips on a typical weekday. Sight distance is reported as greater than 550 feet in each direction for a vehicle exiting Eloise's Way onto Lincoln Road.

DEPARTMENT REVIEW

Police Department – The Police Department indicated that a stop sign needs to be added at the intersection of the proposed new road and Lincoln Rd. Police also wanted to know if this proposed new road would be accepted by the city, or if it would remain a private way and the applicant has indicated that this will become a city street and therefore must be built to city standards.

Fire Department – The Fire Department wondered if the homes would be sprinklered or if a cistern would be provided. The applicant has chosen the latter. The Fire Department still needs to review the location and design of the proposed cistern.

Public Works / Engineering Department – Engineering had a question about mail delivery, wanting to make sure the applicant contact the United States Postal Service to determine whether mail delivery will be by centralized delivery location or individual mail boxes. In subdivisions, the Post Office seems to be preferring a centralized delivery location. If a centralized delivery location is required, then that location shall be reviewed and approved by the Department of Public Works.

Engineering also wanted the applicant to review and confirm that the standards contained in Section 10.11.5.6 of the Subdivision Regulations can be met by the proposed roadway entrance.

Engineering indicated that specific driveway culvert sizing requirements should be in accordance with the 50-year design storm event need to be provided on the plan set.

The depth of the roadside ditches shall be designed to provide 2' of cover over the top of all driveway culverts. The typical roadway sections should specify the minimum roadside ditch depth to achieve these cover requirements.

Planning Department – Planning wanted to make sure that the forested buffers are protected through deed provided to the city and is addressed as a condition of approval. Planning also wanted to confirm that there would be no driveway off the hammerhead.

Code Enforcement – Code Enforcement wanted to make sure that no wells were being placed inside the mapped wetland areas. Code also wanted to know if any blasting anticipated and the applicant has responded by saying that there is no blasting anticipated.

WAIVER REQUEST: The applicant is requesting waivers per Article 11, Sec. 12.1 and 12.2 from the Planning Board for the following subdivision preliminary site plan requirements: Sec 5.2.2 (16). The applicant is requesting waivers for sidewalks and curbing as there are no existing sidewalks and curbing in the area.

The applicant is also requesting a waiver from Sec. 10.11.5.9. of the Saco Subdivision ordinance which limits dead-end streets to 1,000 ft. The applicant is proposing a street of 1,187 ft.
The applicant is also requesting a waiver from Sec. 10.11.2 of the Saco Subdivision ordinance which indicates where possible that the applicant should provide a through street as access to abutting properties. The waiver request results from the fact that a through street would disturb more wetlands.
A review memo from DPW indicated:
• DPW is supportive of the waiver requested by the applicant for no curb and sidewalk.

• DPW is supportive of the waiver requested by the applicant for not providing a through street; however, they do recommend that a reserved right-of-way be provided to allow for the future connection to either Park Road or Fenderson Road.

• DPW does not object to the waiver requested by the applicant for dead-end road length in excess of 1,000 linear feet.

STAFF RECOMMENDATION –
Staff recommends accepting the waiver requests Eloise's Way subdivision as DPW is supportive of the requests.

Determination of Completeness - The application for Eloise's Way preliminary pl

Rene: "I move to find the application for the preliminary subdivision review of Eloise's Way to be complete," seconded by Joyce, and so voted 5-0

Bill Thompson, BH2M: On behalf of the applicant, CVS Foundations, LLC, our responses have addressed the staff review as noted on letter dated September 18, 2018.
The City's peer review consultant has reviewed and accepted the wetland delineation
ROW connection to abutting properties to be discussed here tonight.
Waiver requests:

a) curb and sidewalk as there is no sidewalk or curb along Lincoln Road.
b) No access to abutting properties so as to preserve wetlands.
c) Dead-end road length is excess of 1,000ft so as to minimize wetland impacts for access to lots 2,3, and 4.

The project access is an existing 50' strip of land with abutters along each side. Creating a radius along the property line intersections, would create an encroachment. The distance between the edge of pavement and property line, as designed, is 11ft exceeding the 10ft requirement outlined in Sec. 10.11.5.6.
The Fire Cistern has been updated per City standards, (Fire Dept. requirements), and has been added to the plan.
USPS has been contacted and they have directed to add a gang mailbox, which is shown on plan.
Fire cistern easement note has been added to plan, and note 30 on plan granting easement to the City of Saco.

Light detail has been revised to city standards and is shown
Driveway culvert sizing requirements are shown
Road section notes ditch depth at driveway culvert locations
Wetland impacts will be flagged prior to construction and monitored not to exceed limits of fill.
Wells will not be located in the wetland areas.
No blasting ledge is planned.

The question was asked why Lot 1 appears to be a separate lot? When that lot was purchased by Cary Seamans, that lot did not go all the way back, so as to be contiguous. Someone purchased it and it was found after the fact that it encroached on the parcel. It was corrected, but it already had its access to Lincoln road. But because of the Subdivision Regulations, they had to make it part of this subdivision.

Rene: on note 26 it says that 6 houses will be sprinkled? **Bill Thompson**: that note will need to come off. It was from an earlier review.
Neil: He doesn't ever remember the planning board ever granting a waiver for a dead-end street. So it should stay at 1,000ft. **Bill T**: They had thought to add a cul-de-sac, but it would add a bigger wetland impact.
Joe Laverriere, City engineer: He doesn't recall any time where the planning board allowed a waiver for a longer dead-end road. There may not be an opportunity to create a thru street today, but there are other roads near by such as Fenderson Rd. where there could be a connection for the future.
David Pendleton, Deputy Fire Chief: Let the Board be aware of fire safety, and any medical emergency. To have thru road access is recommended. Nowhere is there language that says that when a cistern is completed who is responsible, or owns it. I'm not sure if the City should own these. Maybe the, owner or contractor, after so long we might own them? We are up to 21 cisterns in the city. Annual checks on each water supply is needed, or at least should take place.

Board discussion:
Regarding the large amount of wetland on the proposed parcel, and the fact that the building envelope is small, especially to accommodate septic, well, and a house. The wetlands should be clearly marked, by some monumentation, and that all the wetlands should be delineated on the deed, as well as the forested buffer. Because if not noted on deed, or clearly marked, you start getting buildings built and fill being brought in, and nobody is paying attention, and before you know it, you have wetlands being filled in.
Joyce: Reserved ROW. **Bill T**: they can show the 50ft reserved ROW on the plan.

Alyssa: I move to open the public hearing, seconded by Rene, and so voted 5-0

Resident: Concerned with the wells in that area. There is a 20x 30ft vernal pool on the property, so whoever did the review, didn't show, or see that.

Resident at 81 Lincoln Rd: There is so much wetland out there. Someone should have walked that parcel. They have lived there over 30 years

Bill Thompson: Yes there are wetlands, but we have had 2 test pits done. The environmental studies have been done and they have been approved. If there is concern about vernal pools, we can take another look at that.

Roger Gay, city councilor, ward 2: will there be individual wells on each lot? **Bill T:** yes. **Roger Gay**: how far is the property line from the walking trails? Someone noted that the walking trail was no longer used.

Rene: I move to close the public hearing, seconded by Matt, and so voted 5-0

Waiver requests	
Street curb and sidewalk	board agreed that it was not needed
Thru street	board wants a future ROW added to plan toward the Mckenna property Between Lot 3 and 4
1,000ft length of street	Board members had mixed thoughts

Waiver Sec. 5.2.2(16)	**Rene: moved to grant the waiver for no curb and sidewalk, Alyssa seconded 4-1 (Matt)**
Waiver Sec. 10.11.5.9	**Rene: moved to grant the waiver for road length of road in excess of over 1,000ft, Matt 2nd, 2-3 (motion failed)**
Waiver Sec. 10.11. 2	**Rene: moved to grant waiver for a thru street, but reserve ROW for future connection, seconded by Matt 5-0**

Rene: I move to table, until further development of road length design is provided, seconded by Joyce, and so moved 5-0.

5. **Site plan review of a proposed 8,344 sf dental practice at 485 Main St. Applicant is Foresite, LLC and Biddeford Saco Dental Associates. Tax Map 43, Lot 7. Zoned B2-b and Contract Zone.**

Zach Mosher:
Bob Metcalf of Mitchell Associates, on behalf of applicant Foresite, LLC and Biddeford Saco Dental Associates (BSDA), is seeking site plan approval for a two-story dental/professional office building to be located at 485 Main St (Tax Map 43, Lot 7). The site plan addresses both the requirements of a contract zone (CZ) originally approved in Oct 2010 (amended again in March 2015 and again in June 2018 by the City Council) and the underlying B2d business district. This two-story medical facility will be comprised of state of the art technology and its goal is to provide customers with a range of dental treatments, from cleanings to advanced dental surgery.
The project is proposed in two phases – phase 1 includes the construction of the first floor and 44 parking spaces and the second phase will include the construction of the second story and 23 parking spaces. While the proposed building coverage is approx. 8,344 sf, the total floor area for the complete project is approx. 14,285 sf. The first floor will be the location of the dental facility, the second floor will be the site of offices and also the location for more specialized dental care.
The parcel is a 1.48 acre vacant lot located between KFC and the York County Federal Credit Union (YCFCU) and is the location of the originally proposed CVS pharmacy site. The amended contract zone includes all three of these properties, including language specifying the construction of a rear connector drive serving the clientele of YCFCU and the proposed dental building by directing them to Smith Lane for access to the traffic signal on Main St. The proposal also features improvements to the KFC property for the rear connector as well as creating 12 parking spaces to service the KFC business that will be partially located on the BDSA site. This is a result of some KFC's parking being displaced due to the development of this parcel.

Some notable conditions outlined in the Contract Zone for the Foresite property are 1) a reduction in the front setback from 40 ft to 25 ft, 2) a landscaping plan prepared by a registered landscape architect is to be submitted as part of site plan review, 3) the required number of parking spaces shall be 41 for Phase 1, and 65 at full buildout. The applicant has satisfied these conditions. 62 spaces are required for by the Saco zoning ordinance for this use, and the applicant is providing 67 spaces.
A left turn and right turn in drive from Main Street and a right turn out for north bound traffic is proposed per provisions of the Contract Zone.
The sanitary sewer service will be connected to an existing sewer stub connection installed by the City when utility improvements were completed in Main Street several years back. A new sewer manhole will be provided for the new service and the manhole will be tied to the existing sewer stub as required by the City.
The public water service will be connected to an existing two inch service connection installed by the water utility when utility improvements were completed in Main Street several years back.
Traffic/Circulation – Per provisions of the CZ, entry to the site from Main Street will provide for a right turn in north bound and a left turn in south bound. Exiting from the site will only permit a right turn out heading north bound.
The YCFCU property will continue to provide one way circulation around the building, starting at the first drive entry. Exiting vehicles will be directed to Smith Lane via the two way connection drive over the KFC property for southbound and north bound turning movement at the traffic light on Main Street. Vehicles looking to go northbound only have the option to head to Main St.
Biddeford Saco Dental Associates (BSDA) will have the same access from Main Street as YCFCU. Four parking spaces along the southerly side of the new building are reserved for doctors only. Patients and staff will access the parking lot to the rear of the building. Wayfinding signage will be provided to direct patients to Smith Lane via the two way connection drive over the Linron (KFC) property to head south bound and north bound. North bound access will also be permitted by the restricted north bound exit on Main Street.
The CZ does allow an off premise sign for BSDA and that is proposed to be located in the Smith Lane right of way (City owned). This sign will provide wayfinding for vehicles heading southbound for access onto the BDSA and YCFCU properties.
When the plan was submitted for review by the city's traffic engineer consultant, a concern was raised about signage for traffic exiting back onto Main St, saying "Right Turn only." The review asked the applicant to revise the site plan to address the change in restricted exit sign to "No Left Turn".
Design: The building will provide a scale and massing indicative of the area. The design and materials will point to traditional New England forms, lines and materials. The proposed colors are earth tone. Parking will be situated to the side and rear of the building allowing the building to create a street presence.
Environmental – The project will disturb more than 1 acre and therefore will be subject to a Maine General Construction permit (MGCP). As part of these requirements the site will be subject to periodic erosion control inspections and stormwater inspections. Since the proposed impervious area for the project is approx. 43, 501 sf, it will not officially require a Chapter 500 permit for developments over an acre of impervious, but local requirements effectively meet Chapter 500 requirements.
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Determination of Completeness - The application for the site plan has been found to be complete.

Joyce: "I move to find the application for site plan review to be complete", seconded by Alyssa, and so voted 5-0.

DEPARTMENT REVIEW – Staff reviewed the Biddeford Saco Dental Associates plan at their July 24, 2018 PDRC meeting.

Police Department - No comment.
Fire Department – The applicant was asked to provide turning movement diagrams to the Fire Department so that trucks could safely navigate the site from the Main St access point. Fire apparatus will travel to the dental office via North St to Main St and turn right into the property. The apparatus should then be able to immediately turn left into the first row of parking behind the building.
The applicant provided updated diagrams that include turning movement into the site from Main Street and

Public Works / Engineering Department – Some of the comments from Engineering are described below (a full list of comments is in the application packet).
• Engineering wanted to make sure dumpsters were to be covered and airtight and asked if there would be a second pedestrian sidewalk connection on the northeasterly end of the building and this issue has now been addressed in the site plan.

• **Engineering** also wanted to know if an easement would be defined for the potential future City stormwater BMP adjacent to Main Street and if the applicant is willing to consider incorporating the design and construction of the City's BMP as part of this project with reimbursement from City for associated costs. This would eliminate potential future conflict with landscaping, etc. The applicant is unsure as this area is the site of significant stormwater improvements; alternatives need to be assessed to determine if an easement is possible.

• **Engineering** also wanted the applicant to clarify roadway and pavement width long Smith Lane at the reconfigured entrance. Joe indicated that the city standard is 12' for a local road and this entrance needs to be 12 ft in width. The applicant responded indicating that this standard will be met.

• **Engineering** also indicated that the previous site plan approval and contract zone included a one-way counter clockwise traffic pattern around the YCFCU site and recommends that pattern be maintained as part of this project. The applicant indicated that this will be maintained.

• **Engineering** also wanted to confirm if the building would be sprinkled; the applicant has indicated that the building will not be sprinkled as it does not meet the cubic volume threshold.

Water Resource Recovery District – The Water District has required the applicant to fill out a Wastewater Discharge Application. The district also asked if the applicant has planned to pre-treat the mercury amalgam and wanted to clarify if there will be a separator installed to do so.

The Staff finds that the Site Plan Application submitted for Biddeford-Saco Dental Associates meets the Design Review criteria set forth in Sec. 230-729 of the Saco Zoning Ordinance.
STAFF RECOMMENDATION – The Staff recommends APPROVAL for Site Plan Review and Design Review for Biddeford Saco Dental Associates at 485 Main St with the finding that it meets the requirements of Articles 4, 7, and 11 of the Saco Zoning Ordinance and is based on the conditions of approval dated October 2, 2018

Bob Metcalf, Mitchell & Associates: On behalf of Foresite Realty, LLC, we are proposing a 2-story dental/professional office building to be located at 485 Main Street. The property is a 1.48 acre vacant parcel. Foresite, LLC just received approval for the amended contract zone on June 18, 2018. The plan is essentially the same as presented before, but with modifications. The site plan has been prepared to address

provisions of the Contract Zone, underlying B-2d business zone, and the Site Plan review provisions of the Saco Land Use Ordinance.

Foresite, LLC and Biddeford Saco Dental Associates is currently located at 323 Main Street, and will relocate at this new location on the first floor of this new building. The second story office use and associated parking will be constructed in a second phase. The contract zone includes three properties. The York County Federal Credit Union, the proposed development site (Foresite, LLC), and KFC properties. This parcel was originally proposed as a CVS Pharmacy.

The project will include the construction of a rear connector drive that will direct patrons of BSDA and the York County Federal Credit Union (YCFCU) to Smith Lane for access to the traffic signal on Main Street for south bound and north bound traffic. A left turn and right turn in drive from Main Street and a right turn out for north bound traffic is proposed per provisions of the Contract Zone.

This application includes site improvements to the Linron (KFC) property for construction of the rear connector drive and parking for KFC to be partially located on the Foresite Realty, LLC parcel. There will be wayfinding signs to direct traffic throughout the site.

The proposed plan is essentially the same plan presented to the Planning Board during the Contract Zone Amendment process. Plans have been prepared in accordance with the Site Plan Performance Standards and addressing staff review comments received during the Contract Zone process and pre-submission review with staff.

Design of building will have traditional new England forms, with asphalt shingles, and clad siding, with wood shingle siding on the upper part, and 4/1 windows. The mechanical equipment on the roof top will be hidden. Elevations were shown showing the different sides.

Board discussed the elevations and what was being used to shield the mechanicals on the roof, as well as the landscaping plan, showing the steep slope. **Rene:** A stop sign should be located for those coming out of the YCFCU.

Rene: I move to open the public hearing, seconded by Matt, and so voted 5-0

Ron Giles, owner of KFC: just want to mention that we still do not have a signed agreement. They have verbally agreed, but the attorneys are still working on it.

Rene: I move to close the public hearing, seconded by Matt and so voted 5-0

Rene: need to have a trigger to know when they do the added 3 parking spaces in phase II

Zach will consult with Dick Lambert.

Alyssa: I move to approve the site plan application for Biddeford-Saco Dental Associates as submitted by Bob Metcalf of Mitchell and Associates to construct a new two story 8,344 sf facility at 485 Main St with the finding that it meets the requirements found in Articles 4, 7, and 11 Site Plan Approval Criteria of the Saco Zoning Ordinance and is based on the conditions dated October 2, 2018, and to include the phase 2 parking, seconded by Rene, and so voted 5-0

Respectfully Submitted by,

Maggie Edwards
Board Secretary

Planning and Development
Saco City Hall
300 Main Street
Saco, Maine 04072-1538

Maggie Edwards
Administrative Assistant
MEdwards@sacomaine.org
Phone: (207) 282-3487 ext.353

Saco Planning Board
Meeting Minutes
October 16, 2018
City Hall Auditorium, 2nd Floor, 5:30 PM

WORKSHOP: 5:30PM

1. **Contract Zone proposal for 506 Main St. Applicant is Mammoth Acquisitions, LLC. Tax Map 40, Lot 57. Zoned B2-c.**

   Natalie Burns, Esq., and Darrin Stairs, PE on behalf of applicant Mammoth Acquisitions, LLC is seeking to workshop a contract zone proposal that would result in the removal of the existing Rosa Linda's restaurant, and construction of a new building proposed for a "Hospital and Clinic for Humans," a permitted use in the B-2c zone. The new structure is proposed to be an urgent care facility, Convenient MD. The request for a CZ is to allow less parking spaces from the requested 52 down to 30 spaces. As well as reducing the front setback from 40ft to 15ft. Also requested is the height of the building from 35ft to 43ft. As well as more signage requested than what the ordinance states.

2. **Sketch plan review of a proposed 6,000s.f. commercial building at the corner of Rt. 1 and Cascade Rd. Applicant is Nate Libby. Tax Map 62, Lot 1-2. Zoned R-3.**

Walter Pelkey of BH2M Engineers LLC, on behalf of applicant Amari Holdings LLC (Mr. Nate Libby), requests feedback for a 6,000 sf retail building located at the corner of Rt 1 and Cascade Rd (Tax Map 62, Lot 1-2). The applicant proposes to construct a 6,000 sf commercial building (retail use) at the site of Evolution Gym, a 9,600 sf facility that was approved by the Planning Board in 2016. The parcel is zoned MU-3 and is also part of the Cascade Contract Zone. Retail uses are permitted in this contract zone.

No minutes were taken for the two workshop items. Although Board discussion of these items can be heard of the audio on the City's website.

REGULAR MEETING
6:00 PM

Planning Board Members Present:	Neil Schuster, Chair, Alyssa Bouthot, Joyce Leary Clark, Matt Provencal, Rene Ittenbach, Vice Chair; Peter Scontras; Don Girouard
Staff Members Present:	Joseph Laverriere, City Engineer; Zach Mosher, City Planner;
NOTE:	Meeting is audio recorded. These audio records will be posted on the City's website and available for public review within one week of the meeting.

NEW BUSINESS AND PUBLIC HEARING:

1. **Minutes of October 2 and October 16, 2018**

Because of the late submission of the October 2nd minutes, the Board decided to defer the review of the minutes to the next meeting.

2. **Site Plan review for the construction of a Single-Family Residence at 15 Oceanside. Applicant is George and Nancy Driscoll. Tax Map 11, Lot 116-1. Zoned R-1c and Shoreland Overlay.**

Don: brought to the Boards attention that he is an abutter to the Driscoll's and had recused himself at the meeting when the Driscoll's had applied for a contract zone just about a year ago, and he took the position as an abutter. So he asked the Board to consider whether he should participate as a Board member on this review.

Neither the Board or the applicant had any objection.

Zach Mosher: Dow and Coulombe, on behalf of applicant Nancy Driscoll, seeks site plan approval for a contract zone approved on November 20, 2017. The project is now subject to site plan review, the focus of which is the split of a residential parcel into two parcels, with the less-developed parcel proposed as the site of a new single-family dwelling.

Longer-serving Board members will recall that the primary purpose of the approved contract zone was to reconfigure the parcel identified as Tax Map 11, Lot 116 into two buildable parcels. The Driscoll's existing residence remains on Map 11, Lot 116. The remainder of the parcel is now identified as Map 11, Lot 116-1.

The existing Driscoll parcel (pre-contract zone) is 0.246 acre (10,743 s.f.), and as such is a conforming lot in terms of area in the R-1c district. It is also located in the Shoreland Overlay district. See the attached contract zone agreement for modifications to the lot and yard requirements that detail the area, frontage and width of each of the smaller lots resulting from the CZ-sanctioned lot split.

The proposal requires review by the Maine DEP, including a Natural Resources Protection Act (NRPA) Sand Dune permit. See attached letter from Mark Stebbins of the DEP, which also mentions the Permit by Rule application that was submitted by the applicant on July 6, 2018, for which permission was sought to remove an existing shed and patio from Lot 116-1. The Sand Dune permit has not yet been issued, and in the event that an eventual buyer may have their own ideas of an acceptable building design, the plan is for that

eventual buyer to obtain the Dune permit. The draft Conditions of Approval address this requirement. The structure is required to meet current Shoreland Zoning regulations and floodplain regulations, as the proposed structure is currently located mostly in the AO, and partly within the VE flood zones.

DEPARTMENT REVIEW –

Police Department – No comment.

Fire Department – No comment.

Code Enforcement – As Dick Lambert notes, the future buyers of Lot 116-1 will dictate the final design of the new dwelling. A 20' x 42' footprint is shown on the plan, but if the buyers prefer something different, they will be required to return to the Board for review.

Engineering Department / Planning Department – Planning wanted to make sure the applicant understand whether it was allowable to park cars above the proposed subsurface wastewater location.

Mike Coulombe, Dow & Coulombe, representing the Driscoll's: As part of the Contract Zone Agreement that was approved between the Driscoll's and the City of Saco in 2017, the Driscoll's are required to apply for a site plan review to the Planning Board. This parcel is located within the R-1c and the Shoreland Zone Overlay. Per the CZA minimum lot and yard requirements were modified to accommodate the dimensions of the subject parcel. As Zach noted, this parcel is located mostly within an AO Zone on the Flood Maps, and partly within the VE Zone, therefore, the parcel will be serviced by public water and with on-site subsurface wastewater disposal system. The chamber system is designed to support the weight of vehicles parked over the system, as well as pavement. The building footprint proposed is 20ft by 42ft. The Driscoll's intend to sell the parcel without constructing a building, and therefore will leave a final building design to the discretion of the purchaser of the parcel.

Don: Whoever purchases this parcel, is going to have to meet the conventional setbacks of the zoning ordinance, because the contract doesn't make those provisions.

Peter moved to open the public hearing, seconded by Rene, and so moved 7-0

Neil: The Board received 2 emails from abutters. One from Laury Delham, and one from Dennis LeClair expressing their concerns.

Rene moved to close the public hearing, seconded by Peter, and so moved 7-0

WAIVERS – The applicant is requesting several waivers regarding site plan review as not applicable to this project due to its limited nature and scope. Specifically, the applicant is requesting waivers from the items in Sec. 230-1104: (4) (5) (6) (7) (9) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (22).
Staff is supportive of these waiver requests as they are not applicable to this site plan review.

The Board discussed the waivers

Matt: Just because the Board is waiving these items, doesn't mean that we are waiving the requirements to DEP and Dick Lambert in the Code office.

Matt: "Move that Board grant waiver for the following items in Sec. 230-1104: (4) (5) (6) (7) (9) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20)." Seconded by Rene, and so moved 7-0

Don: "Move to approve the request from applicant Nancy Driscoll for site plan review of a proposed single-family dwelling at 15 Oceanside Drive, subject to the Conditions of Approval dated October 16, 2018" with the added condition that the septic system design of risers and covers be installed to comply with applicable FEMA zoning, seconded by Rene, and so voted 7-0.

3. **Fourth Subdivision Amendment proposal for Saco Factory West. Applicant is ROTM lofts, LLC. Tax Map 37, Lot 1.**

Zach Mosher: Tom Federle, on behalf of applicant ROTM Lofts, LLC, proposes a subdivision amendment that would allow Building #7 on Saco Island and only the land directly underneath (smaller building behind Run of the Mill brew pub) to be conveyed to another owner, Ryan Fitzpatrick. Existing easements for this building will not change. The property will still have easements and other benefits including allowance for overhangs or other encroachments onto the land of ROTM Lofts, the current owner of this building and Run of the Mill Brew Pub. This proposed conveyance will create an additional lot; therefore, a subdivision amendment application reviewed by the Planning Board is required. No other exterior changes are proposed.

Except for a small portion of the building used by the brew pub as a seasonal kitchen, Building 7 is currently empty. The new owner will allow the kitchen to continue operation, as the current applicant is not proposing any interior or exterior changes at this time. Any interior revisions would be proposed by the next owner. As mentioned, the request now is to just separate ownership.

Under the original redevelopment plan for the island, site plan and subdivision approvals were granted for SI Development, LLC on Saco Island on July 17, 2007. The project included perhaps 2/3 of the island: portions of Building 1, Buildings 3, 4, and 7 on the west side of the island, and a proposal for thirty condominium units on the easterly side of the island/Main Street. The DEP reviewed and approved the Site Location of Development permits for the project – one for the east side, one for the west -- the Saco River Corridor Commission also issued an approval, as did the U.S. Army Corps of Engineers.

Tom Federle, lawyer on behalf of ROTM Lofts, LLC. As Zach has mentioned, this is the 4th amendment. We are separating the ownership of Building #7 and the land underneath the building. Nothing on the ground is changing. There are no setback requirements. There are easements around the perimeter of the building that will remain. The only thing that is changing is the ownership, which means we must create a lot, that will be conveyed into the new ownership. And by creating that new

lot, means an amendment to the subdivision. No changes are being made to the plan. The only change is that the previous owner was Saco Island West, who sold it to ROTM Lofts, LLC, who in turn is selling Bldg. #7 to Ryan Fitzpatrick.

Matt moved to open the public hearing, seconded by Alyssa, and so moved 7-0
No comments from the public
Matt moved to closed the public hearing, seconded by Alyssa, and so moved 7-0

Determination of Completeness

Peter: "I move to find the application for the subdivision amendment complete.", seconded by Matt, and so voted 7-0.

DEPARTMENT REVIEW

Police Department - No comment

Fire Department – No comment

Public Works / Engineering Department – No comment

Code Enforcement – Code Enforcement does not have any concerns with the amendment as proposed here.

Joyce: "I move that the Board approve the amended subdivision plan submitted by Tom Federle for the purpose of splitting Building 7 off from the remainder of Saco Island West to Ryan Fitzpatrick, based on the application submitted and on the Findings of Fact and Conditions of Approval dated July 17, 2007, and as noted below:

1) **The application meets the requirements of Articles 1, and 7 of the Saco Subdivision regulations**
2) **The applications meets the requirements of the Conditions of Approval below (dated October 2, 2018)**
3) **The application recognizes that the original Conditions of Approval and Findings of Fact (July 17, 2007) remain as part of the record and in effect."**

Seconded by Rene, and so moved 7-0.

1. **Contract Zone Review for a Wireless Telecommunications Facility (WTF) at 644 Main St. Applicant is L&M Properties. Tax Map 42, Lot 9-1. Zoned B-2B.**

Zach Mosher: Michael Beale, on behalf of applicant Leon Foster, is proposing a contract zone for the construction of a 130' Wireless Telecommunications Facility (WTF) monopole tower on an undeveloped parcel. The site would be accessed from the parcel at 644 Main Street, and be installed on the parcel identified as Tax Map 42, Lot 9-1 – directly abutting 644 Main, and owned by L&M Properties, Inc. Each parcel is owned by Leon Foster, or a corporation through which Mr. Foster conducts business. The tower, or

Wireless Telecommunication Facility as defined by the Zoning Ordinance, would operate within a fenced 100' x 100' area, much as others the Board has reviewed, and will provide for multiple carriers.

The applicant was approved for a contract zone (CZ) at this location for the construction of an identical wireless facility in May 2014. In January 2015, the applicant obtained site plan approval from the Planning Board. However, the applicant did not obtain necessary approvals and permits from the City within the allotted timeframe of the contract zone, which nullified the contract zone.

Current zoning does not allow cell towers. Cell towers are not an allowed use in the B-2b zone, though as the applicant points out, Radio or TV Transmission Towers are, as a conditional use. The company has identified the area as important to improving its coverage, and is willing to move forward with a proposed contract zone.

The draft CZ agreement is simple and straightforward, proposing only to amend Section 410-6B to allow a Wireless Telecommunication Facility on the subject property.

If the proposal succeeds with the Council, the applicant would return to the Board for site plan review and be subject to the standards found in Section 230-728.

When Sec. 728 was adopted by the Council in 2002, consideration was given to where the City zoned for cell towers. It was agreed that the Turnpike corridor made sense: Wireless Telecommunication Facilities are conditional uses in the I-1 and I-3 zones (Mill Brook Business Park). Elsewhere, such facilities would be subject to contract zoning. Therefore, contract zoning is almost a routine route for cell tower approval in Saco.

DEPARTMENT REVIEW:

Police Department - No comment

Fire Department – No comment

Public Works / Engineering Department – No comment

Planning Department – Planning is supportive of the subdivision application.

Code Enforcement /City Attorney – The city attorney reviewed the contract zone on October 3rd 2018. His comments related to the fall down zone being more clearly defined as well as providing greater substance around the city's possible use of the tower. The applicant reviewed those comments and incorporated the information into the draft contract zone application in your packet.

PLANNING BOARD ACTION- The Planning Board is asked to review the proposed **contract zone** using Section 230-1405 of the Zoning Ordinance, and the following criteria to forward a recommendation to the City Council:

F. Recommendation. Before forwarding a recommendation on a contract zoning amendment to the City Council, the Planning Board shall make a finding on each of the four standards in this subsection. A favorable recommendation to the Council requires a positive finding on all four standards. If the Planning

Board makes a negative finding on any of the standards, its recommendation shall be negative. The Planning Board shall base its recommendation on whether:

(1) The rezoning is for land with an unusual nature or location;
(2) The rezoning is consistent with the Comprehensive Plan;
(3) The rezoning is consistent with, but not limited to, the existing uses and permitted uses within the original zone; and
(4) The conditions proposed are sufficient to meet the intent of this section.

Michael Rogers, agent for the applicant: This property was approved for a cell tower back in 2014. The reason this did not get developed was that AT&T cut their program, and decided not to move forward. So Mr. Foster was left without a tenant. He now has a National carrier who would like to locate here, with a possible second carrier. So, Mr. Foster would like to move forward with an approval. There would be no changes to the Site plan. The current structure on the property has been locked up and should/will be demolished.

Peter: It speaks of any interruptions in frequency, but for some reason the tower gets destroyed. The tower tells me it's just that tower. It really should say **THAT TOWER OR SUBSIQUENT TOWERs** should be replaced. **Don**: If the tower is destroyed for some reason or technology changes, The City should have the privilege of having it there. Also, should the vacant building be removed before any construction of the tower? Board decided that could be added as a condition at Site Plan review.

Don moved to open the public hearing, seconded by Peter, and so voted 7-0.
Roger Gay, City Councilor, Ward 2: asked how tall the cell tower would be?
The Board answered 130'.
Alyssa moved to close the public hearing, seconded by Peter, and so voted 7-0.

Determination of Completeness – The application has been found to be complete as per Section 1403-3.

Rene: "I move to find the application for the contract zone review to be complete.", seconded by Alyssa, and so moved 7-0

Rene: "I move that the Planning Board forward a positive recommendation to the City Council for the four criteria for the proposed contract zone that would allow a Wireless Telecommunication Facility to be installed and operate on the parcel at 642 and 644 Main Street.", seconded by Alyssa, and so moved 7-0.

Respectfully submitted by,

Maggie Edwards

Board Secretary

Planning and Development
Saco City Hall
300 Main Street
Saco, Maine 04072-1538

Maggie Edwards
Administrative Assistant
MEdwards@sacomaine.org
Phone: (207) 282-3487 ext.353

Saco Planning Board
Meeting Minutes
November 6, 2018
City Hall Conference Room, 5:30 PM

WORKSHOP: **5:30PM**

1. Zoning Ordinance Revision Update
   Presentation by Denise Clavette, Planning & Development Director

REGULAR MEETING
6:00 PM

Planning Board Members Present:	Neil Schuster, Chair, Alyssa Bouthot, Matt Provencal, Peter Scontras; Don Girouard
Planning Board Members Absent:	Rene Ittenbach, Joyce Leary Clark
Staff Members Present:	Denise Clavette, Planning & Development Director; Joseph Laverriere, City Engineer; Zach Mosher, City Planner;
NOTE:	Meeting is audio recorded. These audio records will be posted on the City's website and available for public review within one week of the meeting.

NEW BUSINESS AND PUBLIC HEARING:

1. **Minutes of October 2 and October 16, 2018**

The planning board did not receive the minutes, so there was no vote.

2. **Contract Zone proposal for 506 Main St. Applicant is Mammoth Acquisitions, LLC. Tax Map 40, Lot 57. Zoned B2-d.**

Zach: Natalie Burns, Esq., and Darrin Stairs, PE on behalf of applicant Mammoth Acquisitions, LLC is seeking review and approval under Section 230-1403 of the Zoning Ordinance for a contract zone agreement (CZA) for demolition of the existing Rosa Linda's restaurant, and construction of a new building proposed for a "Hospital and Clinic for Humans," a permitted use in the B-2c zone. As mentioned, 506 Main St is the current site of Rosa Linda's restaurant (Tax Map 40, Lot 57). The parcel is approx. 26,000 sf in size with an

approx. 3,600 sf building. The applicant is proposing to demolish the existing restaurant to construct an approx. 5,000 sf building for the proposed business, ConvenientMD.

The applicant has applied for this contract zone (CZ) for the following reasons:

- The applicant seeks to reduce the front setback from 40ft to 15ft. due to the limitations of the site that does not allow new construction to meet the required setbacks and buffers, and required parking
- The applicant seeks to install three wall signs, and the ability to install a freestanding sign, which is more than the zoning ordinance currently allows.
- The applicant seeks to increase the Height of structure from 35ft to 43ft…for a better building design and configuration.

The parcel is 26,324 sf, and as such is a conforming lot in terms of area in the B-2c district. The parcel has 212.65 feet of frontage on Main Street, which exceeds the minimum requirement of 100 feet. The applicant has included language in the contract zone to specify that these zoning requirements are tied to the proposed use only. The Saco Valley Credit Union on the west side of the property has a setback that looks to be approx. 15-20 ft, while the former Psychic Reading business on the east side of the property has a setback of approx. 25-30 ft. The applicant has used the "professional office" use to calculate parking requirements.

The applicant workshopped this item at the Planning Board meeting on October 16, 2018. During that meeting, the Board asked if rear access could be obtained and the applicant responded that, despite best attempts to have a dialogue with representatives of the Credit Union and Kerrymen Pub, no rear access was imminent, yet the applicant remains open to the idea.

After that workshop, these revisions were made to the proposed CZA:

- In Section 5.D, the applicant has indicated that the site shall be generally developed in accordance with Exhibit A (Site Plan). The applicant has also clarified that the final site design will be determined by the Planning Board during the site plan review process. Previously, this section stated that the site would be substantially developed in accordance with the Exhibit and established a procedure for amendments. This revision clarifies that the Exhibit is illustrative and not binding. Also, the building design exhibit has been removed from the CZA and the language has been modified to recognize that the Planning Board will determine the final design as part of the site plan review for the project.

- Language has also been added to Section 5.D to clarify that the applicant agrees as a condition of the CZA to connect to any future rear access from abutting property. This provision recognizes that some parking spaces may need to be reviewed and establishes that this work can be approved by the City Planner as a minor revision. The applicant continues to pursue the rear connector and has contacted the Planning & Development Director about this matter.

- The applicant has also provided a trip generation analysis in the application materials highlighting the less intensive impact this proposed use would have at the location. Traffic concerns will be treated with more depth during site plan review.

DEPARTMENT REVIEW –

Police Department – No comment.

Fire Department – No comment.

Code Enforcement – These are the following questions and comments from Code Enforcement:

- The proposed number of signs and total signage area significantly exceed that allowed by the Ordinance. What's the public benefit, and is the Board prepared for other businesses to point to this as a precedent?
- Can the applicant seek an easement allowing vehicular traffic access to Horton Avenue?

Engineering Department – DPW provided the following comments:

- General concept plan follows the preferred plan discussed with City staff several weeks ago.
- Proposed changes to site access are consistent with Main Street Access Study (2005).
- Consideration for rear access to Horton Avenue and existing traffic signal at Hutchins?
- Technically, dumpster encroachment into parking drive aisle conflicts with parking design dimensional standards.
- Extent of pavement should maintain 5' clear setback to abutting properties.

Planning Department – Planning Staff offers the following comments:

- Required setbacks in the B-2c zone are 40 feet for the front and 20 feet for side and rear yards. The applicant seeks to reduce the front setback to 15 feet. This calls to mind the recent contract zone application for the parcel at 485 Main Street, which received a reduction in the front setback from 40 feet to 25 feet; an easy-to-support reduction, in staff's view.
- Sec. 230-708.C (9)(a) [6] states that "In the Main Street corridor from Saco Island to the I-195 connector, no more than one row of parking spaces or 25% of the total required number of parking spaces, whichever is greater, shall be located between the front of the building and the street; the remainder shall be located to the side and rear of the building." The applicant proposes only landscaping between the building and Main Street, together with building placement that establishes a desirable building wall that bears more resemblance to a downtown Main Street configuration than a Portland Road/Rte. One, parking-heavy, greater-than-required building setback environment.
- Note that the existing credit union building next door to the subject property has a front setback from Main Street of about 17.5 feet. In staff's opinion, if the section of Main Street between Fairfield Street and I-195 is to become more pedestrian-friendly and less auto-dominated, buildings must be brought up closer to the rights-of- way and parking lots de-emphasized, i.e., brought to the side or rear of buildings. This project presents an ideal opportunity to do so.
- Signage in the B-2c zone allows for up to two signs (§230-707.E), and provides for sign area (size) to be determined by the width of the building, or, as stated in Table 707: "Overall size allowance per premises per foot of width of principal structure (square feet)," up to a maximum of 150 sf The proposed building measures approximately 106 feet in length as it faces Main Street, and 2 sf of signage is allowed for each foot of building width. So, the maximum of 150 sf would apply. Further, Table 707 states that "2 signs, only 1 of which may be freestanding, plus 1 additional wall sign not exceeding 12 square feet" are allowed. The

applicant has submitted graphics calling for three 125 sf wall signs on the building's north, south and east-facing walls. The applicant also seeks the ability in the future to install a freestanding sign "…of no more than 40 square feet in sign area, located between the front of the building and Main Street."

- As Mr. Lambert notes in his comments, the number of signs requested is twice the allowed, and the overall signage area is 2.5 times the area allowed.
- Again, the applicant has used the "professional office" use to calculate parking requirements. If the applicant is satisfied that 30 spaces are adequate, staff is supportive of the reduced parking numbers.

PLANNING BOARD ACTION - The Planning Board is being asked to review the proposed contract zone for 506 Main St and ConvenientMD using Section 230-1405 of the Zoning Ordinance, and the following criteria to make a recommendation to the City Council:

F. Recommendation. Before forwarding a recommendation on a contract zoning amendment to the City Council, the Planning Board shall make a finding on each of the four standards in this subsection. A favorable recommendation to the Council requires a positive finding on all four standards. If the Planning Board makes a negative finding on any of the standards, its recommendation shall be negative. The Planning Board shall base its recommendation on whether:

(1) The rezoning is for land with an unusual nature or location;

(2) The rezoning is consistent with the Comprehensive Plan;

(3) The rezoning is consistent with, but not limited to, the existing uses and permitted uses within the original zone; and

(4) The conditions proposed are sufficient to meet the intent of this section.

Don: I move to open the public hearing, seconded by Alyssa, and so moved 5-0

Elliott Chamberlain, Developer: I think this is a great re-development of this property. For them to say they are cutting back from three existing curb cuts to one, doesn't do it justice. That is a big deal. If the back access happens, that will cut the traffic down even more. This use will have less traffic than the current use, and then to direct traffic to the light (if the rear access happens), will be even better. It will be just like they did across the street, by directing all traffic to the light on Smith Lane.

Resident on Smith Lane: He supports the project, but wanted to know if this building was going to be lit up all night?

Applicant: Just for security reasons, they would require a minimal amount of lighting around the building. Typical hours will be from 8am-8pm., so there wouldn't be any bright lights late at night.

Peter: I move to close the public hearing, seconded by Alyssa, and so moved 5-0.

After much discussion, the Board chose to make recommendations separately on each of the items requested in the contract zone.

The planning board's discussion of these 3 items, setback, height, and signage, can be heard on the audio recording.

Don: "Move to forward a positive recommendation to the City Council for the contract zone proposed by applicant Mammoth Acquisition Company, LLC that would modify <u>setback</u> requirements in the Zoning Ordinance, thereby allowing an urgent care facility to proceed to site plan review on the parcel at 506 Main Street.", based on the fact that the application for the setback change meets all 4 standards Section 230-1405 of the contract zone, seconded by Peter, and so moved 5-0. Motion passes.

Alyssa: "Move to forward a positive recommendation to the City Council for the contract zone proposed by applicant Mammoth Acquisition Company, LLC that would modify <u>signage</u> requirements in the Zoning Ordinance, thereby allowing an urgent care facility to proceed to site plan review on the parcel at 506 Main Street.", seconded by Matt, and so moved. 0-5. Motion fails. (Neil, Peter, Don)

Matt: "Move to forward a positive recommendation to the City Council for the contract zone proposed by applicant Mammoth Acquisition Company, LLC that would modify <u>height</u> requirements in the Zoning Ordinance, thereby allowing an urgent care facility to proceed to site plan review on the parcel at 506 Main Street.", seconded by Alyssa, and so moved. 2-3. Motion fails. (Neil, Peter, Don)

3. **Conditional use and Site plan review of the proposed construction of a multi-family dwelling at 92 Lincoln St. Applicant is KB Building Contractor, LLC. Tax Map 38, Lot 234. Zoned R-3.**

Matt: Full disclosure. He received a notice, because he is an abutter to this project. He stated he could remain objective. The Board agreed to have him remain on the Board.

Zach: Paul Gadbois PE, on behalf of KB Building Contractors, LLC is seeking site plan and conditional use approval to construct a 3-unit residential building on a portion of Map 38, Lot 234. This new lot, addressed as 92 Lincoln St, has been deeded and recorded but does not yet have its own map and lot number (sold in June of 2018). This new lot is approx. 15,100 sq. ft. and is located within the R-3 and Saco River Overlay zoning districts. In the R-3 zoning district multifamily dwellings are a conditional use. The building footprint is proposed to be approx. 1,980 sf. A third unit results in a multi-family dwelling, which requires both a conditional use permit and site plan review. The proposed structure will be connected to public water and sewer.

There are also certain parking requirements to be met with multifamily residential structures. 7 spaces are required, and 7 spaces have been provided. The ordinance states that 2 spaces are required for each unit as well as a visitor's space for every 6, thereby requiring a total of 7 spaces.

The Saco River Corridor Commission has reviewed the project and issued a permit.

Conditional use permit – A waiver is requested from Sec. 901-B.1 (m) in the conditional use site plan requirements. Items (j) (n) and (o) are not applicable to the application. Outside of these items, the application is deemed to be complete.

Don: "I move that the Board grant the waiver for Sec. 901-B.1(j) (m) (n) and (o) as not applicable as part of conditional use requirements.", seconded by Alyssa, and so voted 5-0. Motion passes.

Site plan review -- Waivers are requested from Section 230-1104: (6), (7), (11), (12), (13), (14), (15), (16), (18), (19) and (20). Staff opines that the elements listed here are outside the scope of the project.

Don: "I move that the Board grant waivers of submission requirements Sections 1104-1.2(b) and 1104-1.10. as being unnecessary due to the scope of this application.", seconded by Peter, and so voted 5-0. Motion passes.

Determination of Completeness

Don: "I move to find the application for both conditional use, and site plan review to be complete.", seconded by Alyssa, and so voted. 5-0. Motion passes.

Paul Gadbois, engineer representing KB Builders

DEPARTMENT REVIEW

Police Department – The Police Department indicated that it had no traffic safety concerns at this time.

Fire Department – Fire requires the residence to be sprinklered. However, after speaking with Paul Gadbois, it is no longer required to be sprinklered, as Mr. Gadbois indicated that this structure will be constructed with 2-hour fire separated walls.

Public Works / Engineering Department – The applicant will need to apply for a drive entry permit from DPW

Planning Department – Planning is supportive of the three-unit construction.

Code Enforcement – The Code Department has requested that all areas of vegetation be cleared were reviewed and marked clearly prior to the clearing occurring. Because the building in the floodplain, it will also need to be elevated 3 ft above the base flood elevation.

PLANNING BOARD ACTION- The Planning Board is asked to review this site plan application for the construction of a three-family residential structure at 92 Lincoln St using Articles 4, 9 and 11 of the Saco Zoning Ordinance.

STAFF RECOMMENDATION – The Staff recommends APPROVAL for a conditional use permit and site plan review for the construction of a three-unit multifamily residence at 92 Lincoln St with the finding that it meets the requirements of Articles 4, 9, and 11 of the Saco Zoning Ordinance and is based on the conditions of approval, dated November 6, 2018.

Don: I move to open the public hearing, seconded by Alyssa, and so moved 5-0

Don: I move to close the public hearing, seconded by Alyssa, and so moved 5-0.

Matt asked if this project requires Design review?

Zach: By the letter of the law, this application is subject to Design review.

Board discussed and reviewed Section 230-729 Design Standards of the zoning ordinance and all agreed that they were met.

Don: "Move that the Board grant a Conditional Use Permit, Design review approval , and Site Plan approval under the provisions of the Saco Zoning Ordinance for the application submitted by Paul Gadbois on behalf of applicant KB Building Contractors for the proposal to construct a three-family dwelling at 92 Lincoln Street, based on the Conditions of Approval dated November 6, 2018.", and an added condition that applicant add low-level shrubbery between the parking lot, and sidewalk. Seconded by Matt, and so voted 5-0. Motion passes.

4. **Review of proposed amendment to the Park North contract zone. Applicant is Park North Development, LLC. Tax Map 62, Lot 1. Zoned MU-3 and Contract Zone.**

Zach: Park North Development LLC, is seeking review and a positive recommendation concerning an amendment to the Cascade contract zone that would allow "Lumber and Material Yards" to be a permitted use under Parcel 1 of the Cascade Contract Zone Agreement (CZA). The CZ divides the land into 4 parcels, each with their own regulations concerning uses, setbacks, lot coverages, and other dimensional regulations. This proposal is only concerned with adding the use "Lumber and Material Yards" to the list of permitted uses under Parcel 1, under the Cascade CZA.

The Cascade CZ was originally approved in June 2006 and the subdivision of the overall subdivision of Park North was originally approved on January 2008. Within a relatively short time the Rte. One sewer main had been extended to both the Cascade and Park North property with the aid of a TIF approved by the Council, and a road and utility network constructed.

The Cascade CZ has been amended prior to this proposal. In 2014 the applicant amended Parcel 1 of the Cascade CZ to include "Automobile Dealer" as a permitted use for Lot C1, a 14-acre parcel with frontage on Rte. 1. You'll notice "Automobile Dealer" as use #31 in parcel 1 of the Cascade CZ.

Again, this proposed amendment concerns only Parcel 1 within the Cascade CZ; a draft copy of the contract zone has been included in the application materials outlining the lumber and materials use to be added as item #32.

DEPARTMENT REVIEW

Police Department - No comment.

Fire Department – No comment.

Public Works / Engineering Department – No comment.

Code Enforcement – Code Enforcement indicated that the site plan should include colors and labels to clearly demarcate the Park North Contract Zone and the parcels within the Cascade Contract Zone.

Planning – The Planning Department asked the applicant to supply an overall subdivision plan indicating what parcels of the overall Park North Subdivision plan apply to which contract zone and which parcel in that contract zone. That color-coded plan is included in the application materials. It is important to keep in mind that the overall Park North subdivision is under two contract zones (the Cascade CZA, and the Park

North CZA) each further divided into 4 parcels, and each parcel containing specific uses and space and dimensional requirements.

PLANNING BOARD ACTION- The Planning Board is asked to review the proposed **contract zone amendment for the Cascade CZA** and forward a recommendation to the City Council. Staff opines that the criteria found in Sec. 230-1405 (F) of the Saco Zoning Ordinance have already been met during the approval process of the Cascade Contract Zone in 2006 and that this proposal is a relatively minor amendment that does not require a finding on the Sec. 230-1405 (F) standards. Staff finds that the both the Comp Plan and the Cascade CZA support and encourage more commercial uses within this part of the Park North Subdivision.

STAFF RECOMMENDATION – The Staff recommends the Planning Board send a positive recommendation for the Park North Development, LLC Contract Zone Agreement amendment to the City Council.

Elliott Chamberlain, applicant and developer: Zach has covered everything. We are just looking to add "Lumber and Material Yards" as a permitted Use to Parcel 1, which would make this Use #32.

Board discussion:

The Board discussed that it is consistent with the B-6 zone

Alyssa: I move to open the public hearing, seconded by Peter, and so moved 5-0

Roger Gay, city councilor, ward 2: The city council is looking forward to this.

Alyssa: I move to close the public hearing, seconded by Peter, and so moved 5-0

Matt: "I move that the Planning Board find that the proposed amendment to the Park North Development, LLC Contract Zone Agreement are consistent with findings made by the Board on June 6, 2006 and forward a positive recommendation to the Council for the proposed amendment to the Contract Zone titled "Contract Zone Agreement by and between Park North Development, LLC and the City of Saco" dated June 6, 2006", seconded by Don, and so voted 5-0. Motion passes.

5. **Review of proposed subdivision amendment to the Park North/Cascades subdivision plan. Applicant is Park North Development LLC. Tax Map 62, 63 and 64, Lot 1, 6, and 6-1. Zoned MU-3 and Contract Zone.**

Zach: Park North Development LLC, is seeking approval for an 8th amendment of the Park North and Cascades Subdivision. The Planning Board approved the original overall subdivision in January 2008. See the 10/23/18 letter from Rick Meek, P.E., Sebago Technics for details on lot consolidation, and re-subdivision of certain lots. As a reminder, this is a list of proposed amendments to the plan approved by the Board to date:

1st Amendment – Division of Lot C1, resulting in the creation of Lot C5 at the corner of Cascade Road and Rte. One, approved 1/22/08

2nd Amendment – Further division of Lot C1, resulting in the creation of Lot C6, approved 1/20/09. Applicant Wagner Drywall received site plan approval for the commercial building that now houses a day care and other uses.

3rd Amendment – Creation of Lots C4A, C4B and 22. The latter was carved out of the existing Lot 18 at the corner of Portland Road and Main Road (now Waterfall Drive) and is now occupied by the former Ocean Communities credit union building. Lots C4A and C4B were created from the existing parcel that lies between Cascade Road and Old Cascade Road. It is described in the parcel deed for the Cascade Inn as a separate parcel from the larger, former Inn property. Zones C4A and C4B have since been developed with single family dwellings.

4th Amendment – Easements associated with a force main and the pump station for Lots C1, C5 and C6 were created.

5th Amendment – Updating dimensional regulations in parcels 2, 3, and 4 of the contract zone agreement. The space and bulk regulations in Parcel 4 necessitated a change to the subdivision plan for Parcel 4.

6th Amendment – Modified the residential area of Lot 18.

7th Amendment –

- The 1st part proposes to alter phases 3 and 5 within the residential portion of the development which will consist of consolidating the proposed right-of-way of Bears Den Rd (not currently built), the previously proposed Open Space 1, lot C4 and lot CA-5 to accommodate 17 duplexes.
- The 2nd part proposes to subdivide lot 18 (at the corner of Waterfall Dr and Portland Rd) to create an approx. 6-acre parcel for future development of a 72-unit apartment building. (Condition of approval number 16 from the original approval stated in part that "development of individual parcels for residential or commercial buildings and uses shall be subject to site plan review by the Planning Board." As such, a site plan application for the proposed apartment building will be submitted to the Board.

DEPARTMENT REVIEW

Police Department - No comment.

Fire Department – No comment

Public Works / Engineering Department – No comment.

Code Enforcement – No comment.

PLANNING BOARD ACTION the Planning Board is asked to review the proposed **8th amendment for the Park North/Cascades subdivision.** Revisions to approved plans are addressed in Article 7 of the Subdivision Regulations. Staff is following the procedures for preliminary and final plan insomuch as Lots 2-4 along East View Parkway are proposed for further subdivision, into six lots, while acknowledging that 10 lots that were part of the 2008 approval are now proposed to be consolidated into one parcel, shown as Lot 9 on the proposed plan.

STAFF RECOMMENDATION – The Staff recommends the Planning Board support the proposed amendment to the Park North subdivision plan, for the following reasons:

- The applicant has recognized that demand for the larger lots originally proposed off East View Parkway is marginal. By proposing to subdivide Lots 2, 3 and 4 into six smaller lots, staff assumes that the applicant is responding to what the market is seeking, and foresees no adverse impact to the City, its residents, or abutters.
- Revisions to subdivision plans, particularly given the scale of Park North-Cascades, are both reasonable and to be reasonably anticipated.

After discussions with other staff, planning staff is comfortable moving forward with the Board determining these are minor amendments to the subdivision plan approving them as per the Contract Zone (CZ), pursuant to Article 3, Section 11. The City Administrator will be looking to inform the Council at a future workshop of all prior Planning Board amendments (including this one), as this article does not exist in other contract zones and contradicts the Zoning Ordinance.

Elliott Chamberlain, applicant and developer: They are not making any boundary changes, meaning the TIF district is not changing, and not increasing or decreasing in size. They are only moving interior lot lines.

Don: He isn't sure that these lot line changes aren't changing the contract zone. The city council originally approved this contract zone back in 2006. Now you are making changes to Parcel 2 and consolidating a bunch of lots into one, and changing some larger lots into smaller lots. To say that those lot line changes don't constitute a change in the contract zone is questionable.

Elliott: What is it different from adding a lot line, or moving a lot line?

Don: You have 8 parcels that are now being combined into one.

Zach: I think that is why he and Kevin met on this to determine if the sale of the parcel to the National Guard affected the contract zone. This is why the contract zone needs to be reviewed more closely, because it is vague in its wording. We have to determine whether these lot line changes the contract zone.

Don: How can we move on this when these amendments are being brought back to the council? Especially if all these approved amendments is a violation of the contract zone?

Denise: Nothing is going to be undone what has already happened.

Neil: My concern is that this is a tax-exempt property. Are we just fixing a problem that got created some other way? **Elliott:** whether the National Guard is tax-exempt or not, has no bearing on this proposal.

Elliott: I think that the planning board is within their jurisdiction to vote on lot line changes. Just like you did 7 times before. He and his attorney believe that the contract zone reads "that for interior lot line changes that you will go to the planning board" and that the planning board will approve or deny. The contact zone spells it out. If you do this you go to the planning board, if you do that you go to the council.

Don to Denise: Has that question specifically been posed to Tim Murphy? **Denise:** all these amendments will be reviewed by council. And the contract zone will be scrutinized to make the language clearer.

Elliott: Question is on whether just making interior lot line changes; does the planning board have the ability alone to make that decision, like they have in the last 7 amendments? Or when you make an actual contract zone change, like we just did a few minutes ago (use change), or changes in the boundary which is actually a contract zone change, and would need the city councils approval? **Neil:** read the language in the contract zone and it read the lot line changes could be approved by the planning board. His contention is that the contract zone was approved with the intention that the Rt. One parcel would be geared to commercial uses, and the back parcels would be residential. So he sees this proposal as a significant change in the contract zone. **Don:** This is not the deal that the City made with you on this project. It was supposed to be mixed use, with all commercial businesses on Rte. One.

Don: "I move to approve the proposed Eighth Amended Overall Subdivision plan amendments to the Park North/Cascades Subdivision submitted by Sebago Technics on behalf of Park North Development, LLC with the findings that it meets:

1) **The application meets the requirements of Article 7 of the Saco Subdivision regulations**
2) **The application meets the requirements of the Conditions of Approval dated November 6, 2018**
3) **The application recognizes that the original Conditions of Approval and Findings of Fact (January 1, 2008) remain as part of the record and in effect."**

Seconded by Alyssa, and so voted 4-0 (Neil abstained). Motion passes.

Respectfully submitted by,

Maggie Edwards
Board Secretary

Planning and Development
Saco City Hall
300 Main Street
Saco, Maine 04072-1538

Zach Mosher
City Planner
ZMosher@sacomaine.org
Phone: (207) 282-3487 ext.333

PLANNING BOARD MEMORANDUM

To: Saco Planning Board

From: Zach Mosher, City Planner

Re: Preliminary Subdivision Review for a 9 Lot Subdivision at 405 Flag Pond Rd

Date: November 20, 2018

I. PROPOSAL – Larry Bastion of Terradyn Consultants, LLC of behalf of applicant, Sebago Land Developers, Inc., proposes a 9 lot residential subdivision off Ricker Road, to include a roughly 1,660 ft long street that would be designed and built to City specs, and eventually offered to the City for acceptance. There are two existing lots that have been created and conveyed within the last 5 years and are a part of this subdivision proposal; however, this proposal includes the creation of 7 new lots. The property is located at Tax Map 108, Lot 29. It is approx. 26 acres in size and is mostly forested land at this time. The 26 acre total does include the two existing lots.

It is in the C-1 zoning district, with 80,000 sf minimum lot sizes and 200 ft frontage requirements – these figures are for lots not serviced by public sewer. Public water is not immediately available. Wells and septic systems would be provided individually for all lots. Well inclusion areas and septic system inclusion areas are included on the Subdivision Plan. As mentioned above, a new approx. 1,660 long residential street will be constructed between Ricker Road and Flag Pond Road and will provide frontage and access to the new lots. The street proposal includes a 50' wide future right-of-way that extends north between lots 6 and 7 and provides future connectivity with a neighboring parcel. The road will include a 5 ft wide sidewalk with esplanade.

The area outside the proposed lots, which includes approx. 5.8 acres surrounding a man-made pond near the center of the site and west of the proposed street abutting Flag Pond Road, will become common open space. Ownership and maintenance of the open space shall be assigned to the subdivision homeowners' association. This open space would be for the enjoyment of subdivision residents, and not available to the general public. While the open space requirement has been met, an impact fee for recreational facilities are addressed in the conditions of approval. Subdivision regulations indicate that for subdivisions where the average sf of each lot is 80,000 our greater, that at least 2.5% of the project area be dedicated to open space.

The project is expected to generate 10 trips per day. In total, the subdivision can be expected to generate approximately 70 daily trips, 5 AM peak hour trips & 7 PM peak hour trips. Sight line distances were found to be adequate to accommodate the proposed road.

The project will disturb more than 1 acre and therefore needs to meet the attain a General Contractor's Permit from Maine DEP. The Stormwater Report contains water quality treatment calculations as required by City of Saco and MDEP regulations. Maine Department of Environmental Protection (MDEP) Staff visited the site on August 31, 2017 to review the existing pond. The MDEP biologist determined that the pond was man-made and no regulatory setbacks will be required from the edge of water. The pond and wetland areas are depicted on the attached Preliminary Plan. The City's wetland consultant has reviewed and accepted the applicant's wetland delineation information.

As part of the building permit process the applicant will be required to submit a plot plan detailing the location of the house, driveway, grading and any restrictions. However at this time the applicant has indicated that there will be limitations of 5,000 SF total impervious area per lot and 20,000 SF total developed area per lot. This means that approx. 1.90 acres of impervious area will be created as a result of the project.

Since this project is located on an aquifer, the applicant is aware a geohydrologic study will be required per the requirements of Article 10.7 in the Saco Subdivision Regulations. The applicant has started the study process and anticipates that will be complete relatively shortly. That information will be included as part of the applicant final approval plan. The applicant will also need to ascertain whether any of subdivision land is part high or moderate value wildlife habitat as determined by the Maine Department of Inland Fisheries and Wildlife or within the Comprehensive Plan.

Determination of Completeness – Outside the two items just mentioned, the application for Ricker Rd preliminary plan review is complete. A suggested motion: **"I move to find the application for preliminary subdivision review to be complete."**

III. DEPARTMENT REVIEW

- **Police Department –** Typically the City would seek a new streetlight at both the intersection created by the new street, if one does not already exist, and at the end of the dead-end. Deputy Chief Huntress has suggested streetlights on each curve as well as both intersections. Those lights are shown on sheet C 2.0.

  Fire Department – The Fire Department wondered if the homes would be sprinklered or if a cistern would be provided. The applicant has chosen the latter. Fire also wanted to know if the cistern could be located closer to either the corner of Flag Pond Rd or Ricker Rd than originally depicted in the sketch plan. The cistern has been revised to be located near the corner of Flag Pond Rd and is still within 2,000 ft of each dwelling unit per requirements.

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300 Main Street
Saco, Maine 04072-1538

Zach Mosher
City Planner
ZMosher@sacomaine.org
Phone: (207) 282-3487 ext.333

Public Works / Engineering Department – Comments from DPW include the following:

- Since this project will disturb in excess of 1 acre, then it will be subject to the requirements of a Maine General Construction Permit (MGCP). The applicant is required to obtain said permit and comply with all requirements. In accordance with the MGCP, the erosion control requirements for this project need to include specific requirements for inspection frequency, maintaining weekly inspection records, etc. These written inspection logs need to be maintained onsite and available for viewing during site inspections.
- All work within the public right-of-way shall be subject to the terms and conditions of a Street Opening Permit to be issued by DPW. The developer shall be responsible for applying and obtaining a Street Opening Permit prior to the start of any work within the public right-of-way.
- As part of the Street Opening Permit, the developer shall be responsible for the restoration and maintenance of all surfaces for a one-year period.
- The United States Postal Service is requiring the installation of centralized mail box for delivery and no longer delivering to individual mail boxes. The proposed location of the centralized mailbox shall be shown on the plans for review and approved by the Department of Public Works.
- The areas suitable for installation of onsite water supply well within each lot should be shown on the Subdivision Plan.
- The thresholds for development within each of the lots will require some form of deed restriction or covenant. The language for these development restrictions should be submitted to the Planning Department for review and approval.
- As part of the building permit process, the applicant shall submit a plot plan for each lot that shall include the location and footprint for the house, location of driveway and proposed grading. Any site constraints (i.e. wetlands, buffers, easements, etc.) shall be shown on the plot plan as well as summary demonstrating conformance with the development thresholds established for each lot. We would also recommend consideration be given to making the plot plan requirement as a Condition of Approval.
- What is the applicant's proposal for future ownership of the open space lot? A note should be added to the Subdivision Plan indicating the ownership entity for the open space lot.
- All easements shown on the Subdivision Plan shall clearly identify, by name, the entity that is being granted the easement. Several of the easements should be conveyed to the City; however, others are not to be conveyed to the City (i.e. forested buffer easements that benefit individual lots, etc.).

The applicant has provided the necessary changes to the plan to address some of these comments. Other comments are addressed in the conditions of approval.

Planning Department – Planning wanted to make sure that the forested buffers are protected through deed provided to the city and this is addressed as a condition of approval.

Code Enforcement – Code Enforcement wanted to make sure that no wells were being placed inside the mapped wetland areas. Code also let the applicant know that the test pit for Lot 1 needs to be outside the forested buffer, and the applicant has now shown a test pit outside that buffer.

IV. PLANNING BOARD ACTION- The Planning Board is being asked to review this Preliminary Subdivision Plan for Ricker Rd according to the Saco Subdivision Regulations. The Planning Board will consider the following criteria from the Subdivision Regulations before granting approval for the preliminary plan:

A. Section 1. – Subdivision Purpose.

The purpose of these regulations shall be to assure the comfort, convenience, safety, health and welfare of the people, to protect the environment and to promote the development of an economically sound and stable community. To this end in approving subdivisions within the City of Saco Maine, or when adopting or amending these subdivision regulations, the Planning Board shall consider the following criteria and before granting approval, must determine that:

1.1.1 Pollution. The proposed subdivision will not result in undue water or air pollution. In making this determination, it has at least considered:

A. The elevation of the land above sea level and its relation to the flood plains;
B. The nature of soils and subsoils and their ability to adequately support waste disposal;
C. The slope of the land and its effect on effluents;
D. The availability of streams for disposal of effluents; and

E. The applicable state and local health and water resource rules and regulations;

1.1.2 Sufficient water. The proposed subdivision has sufficient water available for the reasonably foreseeable needs of the subdivision;

1.1.3 Municipal water supply. The proposed subdivision will not cause an unreasonable burden on the existing water supply;

1.1.4 Erosion. The proposed subdivision will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results;

1.1.5 Traffic. Though the proposed subdivision will not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed, the applicant has agreed with the Board that a portion of the vehicular trips generated by this subdivision will utilize the Rte. 1/I-195 corridors. The applicant agrees to make provision for offsetting this impact through the payment of $675.00 per unit, payable to the Code office upon the issuance of a building permit.

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City Planner
ZMosher@sacomaine.org
Phone: (207) 282-3487 ext.333

1.1.6 Sewage disposal. The proposed subdivision will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services;

1.1.7 Municipal solid waste disposal. The proposed subdivision will not cause an unreasonable burden on the municipality's ability to dispose of solid waste;

1.1.8 Aesthetic, cultural and natural values. The proposed subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline;

1.1.9 Conformity with local ordinances and plans. The proposed subdivision conforms with a duly adopted subdivision regulation, zoning ordinance, and the 2011 Comprehensive Plan;

1.1.10 Financial and technical capacity. The subdivider has adequate financial and technical capacity to meet the standards of this section based on letters from Saco and Biddeford Savings Institution and from the applicant;

1.1.11 Surface waters; outstanding river segments. Whenever situated entirely or partially within the watershed of any pond or lake or within 250 feet of any wetland, great pond or river as defined in Title 38, chapter 3, subchapter I, article 2-B, the proposed subdivision will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water.

A. When lots in a subdivision have frontage on an outstanding river segment, the proposed subdivision plan must require principal structures to have a combined lot shore frontage and setback from the normal high-water mark of 500 feet.

(1) To avoid circumventing the intent of this provision, whenever a proposed subdivision adjoins a shoreland strip narrower than 250 feet which is not lotted, the proposed subdivision shall be reviewed as if lot lines extended to the shore.

(2) The frontage and set-back provisions of this paragraph do not apply either within areas zoned as general development or its equivalent under shoreland zoning, Title 38, chapter 3, subchapter I, article 2-B, or within areas designated by ordinance as densely developed. The determination of which areas are densely developed must be based on a finding that existing development met the definitional requirements of section 4401, subsection 1, on September 23, 1983;

1.1.12 Ground water. The proposed subdivision will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of ground water;

1.1.13 Flood areas. Based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and information presented by the applicant whether the subdivision is in a flood-prone area. The subdivision is not in such an area;

1.1.14 Freshwater wetlands. All freshwater wetlands within the proposed subdivision have been identified on any maps submitted as part of the application, regardless of the size of these wetlands; none has been identified;

1.1.15 River, stream or brook. Any river, stream or brook within or abutting the proposed subdivision has been identified on any maps submitted as part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in Title38, section 480-B, subsection 9;

1.1.16 Storm water. The proposed subdivision will provide for adequate storm water management, based on the submitted stormwater management plan and review of said plan by the City;

1.1.17 Spaghetti-lots prohibited. If any lots in the proposed subdivision have shore frontage on a river, stream, brook, great pond or coastal wetland as these features are defined in Title 38, section 480-B, none of the lots created within the subdivision have a lot depth to shore frontage ratio greater than 5 to 1;

1.1.18 Lake phosphorus concentration. The long-term cumulative effects of the proposed subdivision will not unreasonably increase a great pond's phosphorus concentration during the construction phase and life of the proposed subdivision; and

1.1.19 Impact on adjoining municipality. The proposed subdivision will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality.

The Staff finds that the Preliminary Subdivision Plan Application submitted for Ricker Rd subdivision meets the criteria set forth in Article 1 and 5 of the Saco Subdivision Ordinance.

VI. STAFF RECOMMENDATION –

A. The Staff recommends APPROVAL of the Preliminary Subdivision Plan for Ricker Rd subdivision with the finding that it meets the requirements of Sections 1, 5, and 10 of the Subdivision Regulations of the Saco Code of Ordinances and is based on the conditions of approval outlined below.

"Move that the Board grant approval under the provisions of the Saco Subdivision Regulations for the preliminary plan submitted by Larry Bastion of Terradyn Consultants, LLC for the Ricker Rd subdivision at Tax Map 109, Lot 28 based on the attached Conditions of Approval."

VII. CONDITIONS -

Should the Planning Board approve the application, the approval is subject to the following conditions.

Planning and Development
Saco City Hall
300 Main Street
Saco, Maine 04072-1538

Zach Mosher
City Planner
ZMosher@sacomaine.org
Phone: (207) 282-3487 ext.333

1) All details will conform to City of Saco standards, including but not limited to the City of Saco Zoning Ordinance and Subdivision Regulations.

2) A note shall appear on the Recording Plan as follows: "Failure to commence substantial construction of this subdivision within two years of the date of signing of the plan shall render this plan null and void."

3) The applicant shall, upon beginning construction of the through street, post a sign of a size no smaller than two feet by three feet and with two inch letters on black on a white background, with the following message: "This is not a public way owned by the City of Saco." The sign shall identify the developer and include an address and telephone number which may be used to contact the applicant.

4) This approval is governed by the action taken by the Saco Planning Board for the preliminary subdivision plan application.

5) No deviations from the approved plans are permitted without prior approval from the Planning Board for major changes, and from the City Planner for minor changes. The determination of major or minor shall be made by the City Planner.

6) Section 10.2 of the Subdivision Regulations and Article 16 of the Zoning Ordinance provide the basis for open space and recreational facilities, and impact fees in lieu of open space if open space and/or recreational facilities are not provided. A payment in lieu regarding recreational fees is proposed and must be addressed prior to any building permit being issued.

7) A Letter of Credit, acceptable to the City of Saco, shall be established for 150% of the construction cost of all required improvements, including but not limited to the following: utility installation, landscaping, paving, work within ROW, road construction, drainage, loam & seed, and sediment & erosion control. To establish the amount of the Letter of Credit, the applicant shall provide the City with itemized, per unit cost estimates, and a construction schedule, at least one week before any anticipated site work. This Letter of Credit shall be maintained for a period not less than three months beyond the anticipated completion of the project.

8) Prior to work commencing, the applicant shall establish a construction inspection account equal to 3% of the base cost of the Letter of Credit.

9) No work shall commence until two mylar sets and three paper sets of the final plans have been received by the Planning Office, signed by the Planning Board and recorded at the York County Registry of Deeds. Proof of recording shall be submitted to the Planning Office.

10) Prior to any construction activities, the applicant and contractor shall meet with the Public Works Engineer and City Planner to review plans, inspection schedules and erosion control practices.

11) All plans and specifications shall be provided on disk in an AutoCAD format. The final plan shall be submitted in digital format as a single composite electronic file. The plan may be submitted on a disc, via e-mail, or other format acceptable to the City Planner, and shall be compatible with commonly used CAD and/or GIS software. See Section 6.2.6 of the Subdivision Regulations for further detail.

12) As-built plans shall be submitted before the final release of the Letter of Credit.

13) Stumps generated on-site will be ground and either used on-site for erosion control or will be hauled off-site. Stumps shall not be buried within areas shown as right of way on the final plan.

14) No filling or alteration of wetlands on individual lots shall be done without the appropriate state or local approvals.

15) The applicant shall be responsible for providing the following basic services until street acceptance:

- Snow plowing of all ways in a manner similar to that provided by the City of Saco for City streets;
- City trash collection is provided for all single family and multi-family (less than 6 units) on an City accepted public way. Until such time as the street is accepted, trash collection will be the responsibility of the developer, unless developer obtains permission from City's solid waste contractor to perform collection on private property.
- Maintenance of all roadway surfaces, drains, sewers and other utilities;
- Installation of street signs and lights. Lights are to be energized no later than at the time of issuance of the Certificate of Occupancy to the first occupied residence in the subdivision;
- The costs of performing the provisions of this section shall be added into the bond or surety provided for in Article 8 or included in the covenant provided for in Article 8;

16) Prior to the start of construction, the applicant shall submit a copy of the CMP electrical plan for the development and the applicant shall confer with the DPW for the location of an electrical service and meter set to serve the street light system.

17) All work within the public right-of-way shall be subject to the terms and conditions of a Street Opening Permit to be issued by DPW. The developer shall be responsible for applying and obtaining a Street Opening Permit prior to the start of any work within the public right-of-way. As part of the Street Opening Permit, the developer shall be responsible for the restoration and maintenance of all surfaces for a one-year period.

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City Planner
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18) Prior to the start of construction, a copy of the recorded forested buffer restrictions shall be submitted to the City. The total area of impervious surfaces on each of Lots 1 through 7 shall not exceed 5,000 square feet. The total developed area (including impervious surfaces) on each of Lots 3 through 7 shall not exceed 20,000 square feet. The total developed area on Lots 1 and 2 shall be less than 20,000 square feet as limited by stormwater buffers, easements and wetland areas shown on the Subdivision Plan.

19) As part of the building permit process, the applicant shall submit a plot plan for each lot that shall include the location and footprint for the house, location of driveway and proposed grading. Any site constraints (i.e. wetlands, buffers, easements, etc.) shall be shown on the plot plan as well as summary demonstrating conformance with the development thresholds established for each lot.

20) No filling or alteration of wetlands on individual lots shall be done without the appropriate state or local approvals.

21) The applicant is required to obtain a Maine General Contractor's Permit from MEDEP since the project will disturb in excess of 1 acre and shall be submitted to the City prior to the start of construction.

22) The fire cistern tank shall be installed in accordance with the Saco Fire Department standards. A manufacturer's submittal for the fire cistern tank and appurtenances shall be submitted to the Saco Fire Department for review and approval prior to ordering the structure. A specific note shall be added to the plan specifying these requirements.

23) Areas within or adjacent to the proposed subdivision shall be identified as high or moderate value wildlife habitat by the Maine Department of Inland Fisheries and Wildlife or within the Comprehensive Plan. If any portion of the subdivision is located within an area designated as a critical natural area by the Comprehensive Plan or the Maine Natural Areas Program, the plan shall indicate appropriate measures for the preservation of the values which qualify the site for such designation.

Zach Mosher

_____

Zach Mosher
City Planner

September 25, 2018

Mr. Zach Mosher, Planner
City of Saco
300 Main Street
Saco, ME 04072

Preliminary Plan Submittal
Ricker Road Subdivision
Ricker Road & Flag Pond Road

Dear Zach:

Terradyn Consultants, LLC is pleased to submit the attached preliminary plan for a proposed 7-unit residential subdivision at 405 Flag Pond Road, which is located at the northwest corner of the Ricker Road and Flag Pond Road intersection. The project site is approximately 26.12 acres in size and is identified as Lot 28 on the City of Saco Tax Map 109. Sebago Land Developers, Inc. is the applicant and owner of the project site.

The project site is located in the City of Saco's C-1 Zoning District, where single-family dwellings are permitted under Article 4 of the City's Zoning Ordinance. The site is mostly forested with an open grass/brush area extending into the site from the Flag Pond Road/Ricker Road intersection. There is a man-made pond is located in the middle of the site. Residential lots and Ricker Road abut the site to the east. Residential lots and Flag Pond Road abut the site to the south. Undeveloped land abuts the site to the north and west. Two lots have been created, developed, and sold from the parcel within the last 5-years. Those two lots are located at the corner of Flag Pond Road and Ricker Road and are labeled as existing lot on the attached Preliminary Subdivision Plan (Lots 8 and 9). The following existing conditions figures showing the project site are included in Attachment 1 for reference.

EXISTING CONDITIONS FIGURES	
Figure 1	USGS Quadrangle, Old Orchard Beach
Figure 2	Aerial Photograph

The Preliminary Subdivision application and Subdivision Review checklist are included as Attachments 2 and 3, respectively.

Project History

The Planning Board reviewed the Sketch Plan application at the May 15, 2018 meeting. The layout at that time was a 7-lot subdivision on a dead cul-de-sac entering the site from Ricker Road. Based on feedback from the Planning Board, the Plan has been revised to include a through street from Flag Pond Road to Ricker Road. The current plan still features 7 new residential lots with frontage and access from a proposed road to be built as part of this project.

Property Owner

The record owner of the property (Map 109/Lot 28) is:

Sebago Land Developers, Inc.
144 Dryad Woods Road
Raymond, ME 04071

Deeds for the property are included in Attachment 4. The boundary survey for the property is included in the plan set.

Proposed Project

The applicant is proposing to create seven (7) single family residential lots that are at least 80,000 square feet in size, in addition to the two existing lots that were previously created. The net residential density calculations, shown on the Subdivision Plan, reveal that the parcel can support up to ten (10) 80,000 square foot lots. A new 1,660 +/- long residential street will be constructed between Ricker Road and Flag Pond Road and will provide frontage and access to the new lots. There is no Resource Protection Zone within the boundaries of the property. The area outside the proposed lots, which includes approximately 5.8 acres surrounding the man-made pond and west of the proposed street abutting Flag Pond Road, will become common open space. The plan proposes a 50' wide future right-of-way that extends north between lots 6 and 7 and provides future connectivity with a neighboring parcel.

Site Utilities

Each lot will feature a private well and subsurface wastewater disposal field. There is no public water or sewer infrastructure in the vicinity of the site. Proposed wells shall be separated a minimum of 100 feet from wastewater disposal systems in accordance with the Maine Subsurface Wastewater Disposal Rules. Harris Septic Solutions conducted a preliminary soils evaluation on October 30, 2017. Test pits for proposed septic systems are provided in Attachment 5, demonstrating suitable soils for wastewater disposal systems on each lot. The test pits indicate uniform deep sandy soils across the site and within areas proposed for home construction.

Stormwater Management

Stormwater will follow existing drainage patterns and will be treated by forested buffers. Runoff will be treated to City of Saco and Maine Department of Environmental Protection (MDEP) Chapter 500 standards prior to discharge from the site.

Detailed stormwater calculations in this application show that the City's water quantity and quality stormwater regulations are being met by discharging runoff from the roadway and residential lots to forested buffers and a meadow buffer. The Stormwater Report (Attachment 6) contains water quality treatment calculations as required by City of Saco and MDEP regulations. Stormwater treatment levels exceed MDEP Standards for both the roadway and residential lots.

An unnamed MDEP jurisdictional stream is located at the northern corner of the property. The site is not within a 100-year flood zone, as shown on the Flood Insurance Rate Map (Attachment 7). Longview Partners delineated wetlands on site in the summer of 2017. Areas of forested freshwater wetlands are located on the northern portion of the site to the north and east of the man-made pond, and on the eastern corner of the site. The wetlands drain north towards Ricker Brook. Maine Department of Environmental Protection (MDEP) Staff visited the site on August 31, 2017 to review the existing pond. The MDEP biologist determined that the pond was man-made and no regulatory setbacks will be required from the edge of water. The pond and wetland areas are depicted on the attached Preliminary Plan. The existing pond is incorporated in the stormwater management system for the subdivision and as a site amenity in the open space area.

Traffic

The proposed street will provide access to 7 single family homes. According to the ITE Trip Generation Manual Land Use Code 210 – Single Family Detached Housing, each home is expected to generate approximately 10 trips per day, 0.75 trips in the peak morning hour and 1.01 trips in the evening peak hour. In total, the subdivision can be expected to generate approximately 70 daily trips, 5 AM peak hour trips & 7 PM peak hour trips.

Fire Protection

The subdivision plan includes a 10,000-gallon underground fire suppression storage tank located at the approximate halfway point of the new road. All proposed lots will be located within 1,000 linear feet of the cistern. The cistern and hydrant system will be constructed per City of Saco specifications.

Road Design

The subdivision road is designed to the Local Street standard with a minimum 50-foot wide right-of-way. The road is approximately 1,660' from Flag Pond Road to Ricker Road. The plans propose a 5' wide bituminous sidewalk and 5' wide esplanade with sloped slipform concrete on the left side of the road (entering from Flag Pond Road).

Deed Restrictions

The stormwater management system uses four (4) forested buffers and one (1) meadow buffer for water quality treatment. The comparison of pre- and post-development flows for the subdivision are based upon the developed area within its watershed. For this reason, we propose limitations of 5,000 SF total impervious area per lot and 20,000 SF total developed area per lot. These limitations will need to be deed restricted. The proposed limited disturbance forested buffers and meadow buffer will also be deed restricted.

Open Space Ownership

The applicant intends to set up a homeowners' association that will own the open space. The open space will be owned in common by the 7 single-family house lots.

Technical Capacity & Project Consultants

Sebago Land Development, Inc. is an experienced developer who has been involved in several residential developments. The applicant has hired the following project consultants:

Engineer:
Terradyn Consultants, LLC
P.O. Box 339
New Gloucester, ME 04260
Larry Bastian, P.E. #4321
(207) 926-5111

Natural Resources Mapping:
Long View Partners, LLC
6 Second Street
Buxton, ME 04093
(207) 693-8799

Surveyor:
Wayne T. Wood & Associates
30 Wood Drive
Gray, ME 04039
(207) 657-3330

Licensed Site Evaluator:
Harris Septic Solutions
Windham, ME 04062
(207) 892-2435

Both Wayne T. Wood Associates & Terradyn Consultants have been involved with many similar projects across the State of Maine. Terradyn Consultants, LLC was established in 2005 and has completed hundreds of projects including residential & commercial subdivisions, site plans, watershed studies, and environmental permitting. We have worked & secured permits within the City of Saco several times and have professional references available from MDEP, CCSWCD, contractors & private developers.

Sebago Land Developers, Inc. is an experienced residential developer in southern and central Maine and has completed several residential subdivisions in the state.

The attached plan set is based upon a boundary survey performed by Wayne T. Wood, PLS of Wayne T. Wood & Co. The plan set shows topographic information obtained from the State of Maine Office of GIS. The site wetland delineation and vernal pool assessment was performed by Longview Partners, Inc. The medium intensity soil survey for the site was obtained from the

Natural Resources Conservation Service (Attachment 8). Hydrologic soil groups for the property are obtained from the medium intensity soil survey and are shown on the pre- and post-development watershed maps.

The following items are attached as required by the Preliminary Subdivision Application procedures:

- Preliminary Subdivision Application Fee ($2,725)
- Attachment 1: Existing Conditions Figures
- Attachment 2: Preliminary Subdivision Application
- Attachment 3: Subdivision Review Checklist
- Attachment 4: Property Deeds
- Attachment 5: Soil Test Pits
- Attachment 6: Stormwater Report
- Attachment 7: Flood Insurance Rate Map
- Attachment 8: Medium Intensity Soil Survey
- Attachment 9: Certificate of Good Standing
- Attachment 10: Financial Capability
- Attachment 11: List of Abutters
- Preliminary Subdivision Plan Set

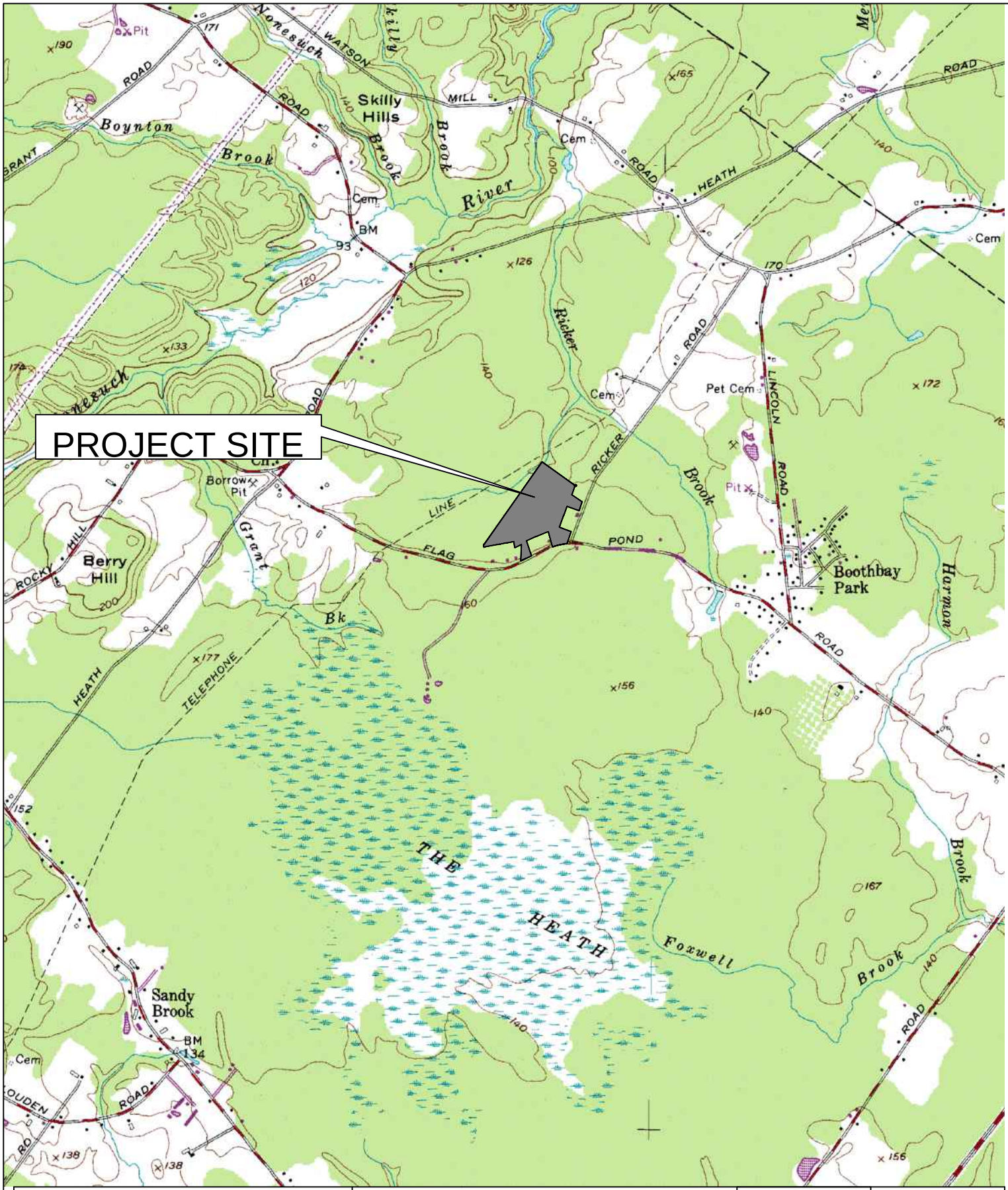
We are hopeful that this application can be placed on the agenda for the October 16, 2018 Planning Board Meeting. Thank you for your consideration, and please call us if you have any questions as you review the enclosed plans and information.

Sincerely,
TERRADYN CONSULTANTS LLC

Larry Bastian, P.E.

Enclosures: As noted above

cc. Dan Foster, Sebago Land Developers, Inc



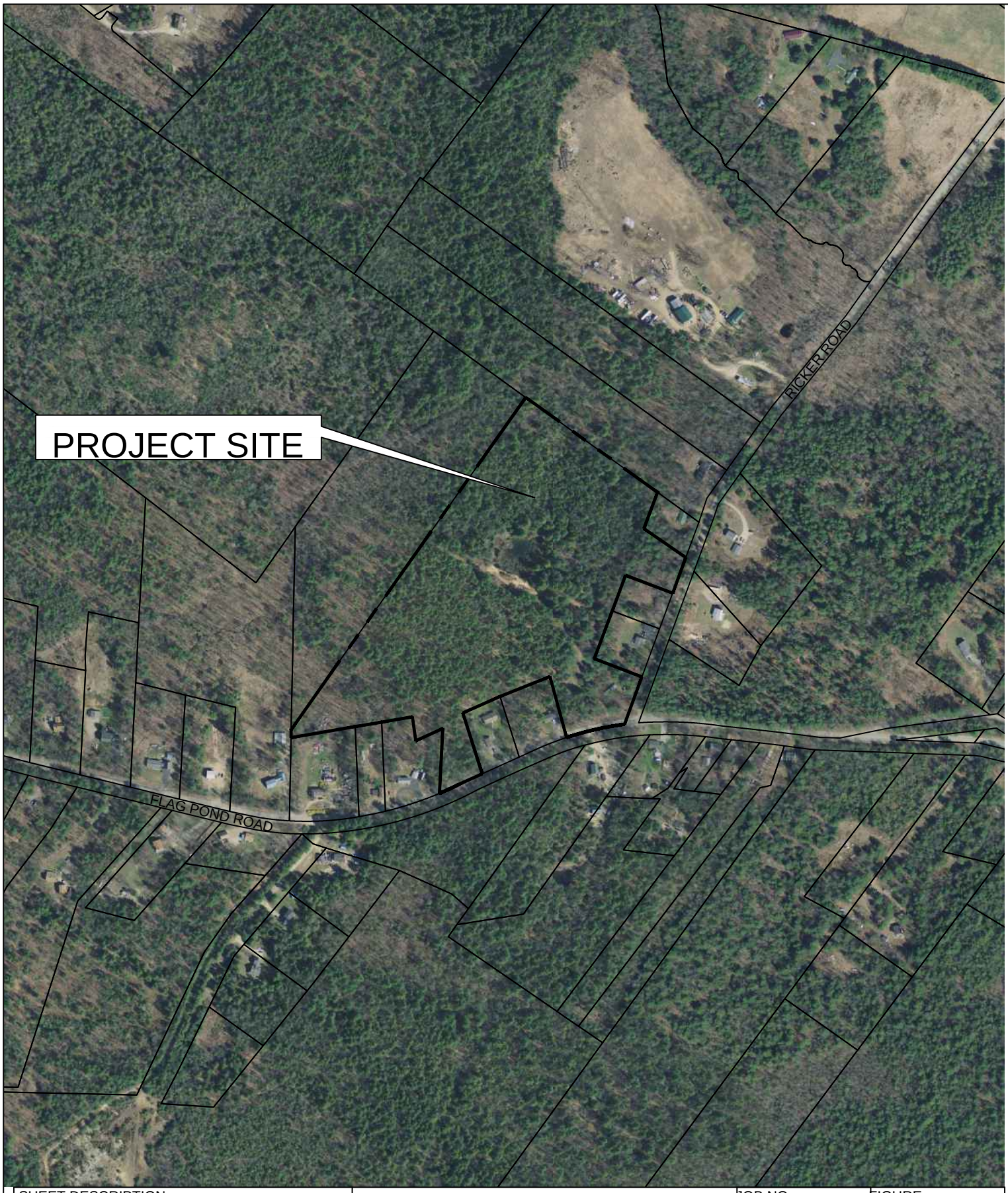
SHEET DESCRIPTION
U.S.G.S. QUADRANGLE MAP
OLD ORCHARD BEACH

PREPARED FOR
DAN FOSTER
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

TERRADYN
CONSULTANTS, LLC
P.O. Box 339
111 Elderberry Lane
New Gloucester, ME 04260
Office: (207) 926-5111
Fax: (207) 221-1317
www.terradynconsultants.com
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

JOB NO. 1722
DATE 4/19/2018
SCALE 1"=500'

FIGURE 1
OF 2



SHEET DESCRIPTION
AERIAL PHOTOGRAPH
RICKER ROAD & FLAG POND ROAD
SACO, MAINE

PREPARED FOR
DAN FOSTER
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

TERRADYN
CONSULTANTS, LLC

41 Campus Drive
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New Gloucester, ME 04260
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Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

JOB NO. 1722

DATE 4/9/2018

SCALE 1"=500'

FIGURE 2

OF 2

Account Number_____

Fee_____

Received by_____

Date_____

SACO PLANNING BOARD
300 Main Street
Saco, Maine 04072

APPLICATION FORM FOR:

( ) Sketch Plan, Subdivision

(x) Preliminary Plan Subdivision

( ) Final Plan Subdivision

This application shall conform in all respects to the City of Saco Subdivision Regulations. It shall be accompanied by twelve (12) copies of the Plan and all submissions.

A. INFORMATION ON SUBDIVISION

1. Proposed name of subdivision Ricker Road Subdivision
2. Number of lots/units 7
3. Does the applicant propose to dedicate to the public all streets and open space shown on the plan? No
4. State number of acres which applicant proposes to dedicate to public usage for recreational or open space: 5.80 Ac
5. Does owner intend to request any waivers of the requirements of the Subdivision Regulations of this Board upon the submission of the Final Plan for approval? No
6. If any waivers of requirements are to be requested, list them and give reasons why such requirements should be waived: _____

B. APPLICANT INFORMATION

OWNER'S NAME Sebago Land Developers, Inc. (Dan Foster)

Address 144 Dryad Woods Road, Raymond, ME 04071

Telephone and Fax Numbers (207) 653-2840

E-mail Address sebagolanddev @gmail.com

APPLICANT'S NAME Dan Foster

Address 144 Dryad Woods Road, Raymond, ME 04071

Telephone and Fax Numbers (207) 653-2840

E-mail Address sebagolanddev@ gmail.com

ARCHITECT/ENGINEER'S NAME Larry Bastian, P.E., Terradyn Consultants

Address 41 Campus Drive, Suite 101, New Gloucester, ME 04260

Telephone and Fax Numbers (207) 926-5111

E-mail Address larry @ terradynconsultants.com

1. If Applicant is a Corporation, state whether the Corporation is licensed to do business in Maine X YES_____NO and attach a copy of Secretary of State's Registration. ATTACHED
2. What interest does the Applicant have in the parcel to be subdivided (Option, land purchase contract, record ownership, etc.)? record ownership

C. INFORMATION ON PARCEL TO BE SUBDIVIDED

1. Location of property: Book 17,576 Lot 493
   (from York County Register of Deeds)
2. Location of property: Map 109 Lot 28
   (from Assessor's Office)
3. Street Address: Corner of Ricker Road and Flag Pond Road in Saco
4. Present use of land: undeveloped
5. Current zoning of property: C-1
6. Acreage of parcel to be subdivided: 26.12 acres

7. Indicate the nature of any restrictive covenants to be placed on the deeds:_____
none

8. A complete statement of any easements relating to the property is attached. If none, please state. none

9. Does applicant have an interest in abutting property? If none, please state.
none

10. Does the Preliminary Plan cover the entire contiguous holdings of the Applicant?_
Yes

NOTE: All plans submitted for review should contain all required information outlined in the City of Saco Subdivision Regulations, or a waiver request for specific items and reasons why specific items should be waived.

NOTE: Complete this form and return it with the required documents and twelve (12) drawings of the plan.

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

Signed_____

APPLICANT

Date September 25, 2018

The Planning Board normally meets the first and third Tuesdays of the month. Applicants must submit materials THREE WEEKS prior to the scheduled meeting for placement on the Board's agenda. If application and submission materials are not complete, placement on an agenda may be delayed.

Applications are placed on the Planning Board's agenda at the conclusion of staff review only.

FEE: a $25.00 non-refundable fee must be deposited with all applications. The required deposit is $1,000 plus $175.00 per lot on an existing street, or $1,500 plus $175.00 per lot on a proposed street, as determined by the City Planner. A copy of the Cost Recovery Ordinance is attached.

September 17, 2018

Michael Tadema-Wielandt, P.E.
Terradyn Consultants, LLC.
565 Congress Street, Suite 310
Portland, ME 04101

Dear Mike:

On behalf of Sebago Land Developers, Inc., I hereby authorize Terradyn Consultants, LLC to act on my behalf as my agent in the processing of all local, state and federal permit applications for the proposed residential subdivision located at the corner of Flag Pond and Ricker Roads in Saco, Maine.

Sincerely,

Dan Foster
Sebago Land Developers, Inc.

City of Saco

Subdivision Review Checklist
Preliminary Plan

RICKER ROAD SUBDIVISION
Sebago Land Developers, Inc.

NOTE: This checklist is based on Section 5.2 of the City of Saco Subdivision Regulations. This checklist shall be completed and submitted as part of the preliminary subdivision review application. Please contact the City Planning Office with questions.

When the applicant or his authorized agent makes formal application for preliminary subdivision plan review, the application shall contain at least the following exhibits and information. The Planning Board or the City Planner may require the submission of additional information if the submissions below are insufficient to determine whether the application meets the criteria for approval.

5.2 To apply for preliminary subdivision approval, an applicant must submit a properly executed Application Form, a completed copy of the Subdivision Review Checklist, fifteen (15) contact prints of the preliminary plan, and fifteen (15) copies of the accompanying statements. The application shall be accompanied by a fee determined under the City's Cost Recovery Ordinance. No review of the plans will begin until the fee has been received by the city.

5.2.2 A preliminary plan submitted to the Board shall contain the following:

X 1. The preliminary plan must be a contact print of an original drawing in permanent black ink on mylar, or other reproducible, stable based transparent originals. It shall also:
- X Be clearly designated as "preliminary plan."
- X Be drawn at a scale not less than one inch equals 100 feet.
- X Sheets shall be 24" by 36".
- X Plans shall be prepared by an engineer, architect, landscape architect, or land surveyor registered in Maine.
- X Surveyed plans shall be stamped and signed.
- X If multiple sheets are used, they must be accompanied by an index sheet as a cover showing the entire subdivision.

X 2. Location Plan. Two location plans of the subdivision and neighboring areas within at least a 2000 foot radius at scales of 800 feet to the inch and 200 feet to the inch, showing right of way lines of all proposed streets in the subdivision and their location in relation to existing streets and readily identifiable as to locus on the Zoning Map of Saco, Maine, as most recently amended.

X 3. a. Subdivision name
X b. Boundaries
X c. Acreage
X d. Tax map and lot numbers
X e. Date
X f. Graphic scale
X g. Magnetic and true north arrow.

4. Name and address of:

X a. Record owner.
X b. Subdivider.
X c. Engineer, surveyor, firm, and/or individual who prepared the plan.

X 5. A field survey of the boundary lines of the tract, giving complete descriptive data by bearings and distances, made and certified by a registered land surveyor.

X 6. Boundary lines of adjacent land and names of owners as determined from most recent tax list.

X 7. Location, name, and present width of each street and public or private way bounding, approaching or within 500 feet of the subdivision, and any easements within or adjacent to the subdivision.

X 8. Locations and outlines of all existing buildings.

9. Significant site features such as (if none, state such):

NA a. Stone walls
NA b. Fences
NA c. Large trees (24 inch diameter breast height)
X d. Wooded areas
NA e. Rock ridges and outcroppings
NA f. Cemeteries
X g. Water courses
X h. Wetlands and water bodies on the site
X i. Wooded areas, watercourses, wetlands and water bodies within 200 feet of the site shall also be identified, when possible.

X

X 10. Topography with two-foot contours of existing and proposed grades to include the demarcation of wetlands, 100-year flood elevations, and flood hazard areas.

X 11. The location, direction, and length of every proposed street line, lot line

and boundary line established on the ground, the location of temporary markers adequate to enable the Board to locate the layout in the field, and the names of proposed streets.

X 12. Lot lines with dimensions.

X 13. Zoning setback lines.

X 14. The area of each lot in square feet and acres.

X 15. Lot numbers.

16. Locations of (if none, state so):

X a. Existing and proposed monuments
NA b. Existing and proposed hydrants
X c. Location and size of public utility facilities
NA d. Sewer lines
X e. Culverts
X f. Drains
NA g. Water lines.
X h. When sewage disposal is to be accomplished by subsurface disposal systems, the location of all test pits dug on the site shall be submitted. The plumbing inspector must be notified before test pits are dug.

X 17. Park, open, recreation, or common areas within a subdivision and a plan of any formal recreation area. (Amended 1/30/90)

NA 18. Locations and species of proposed street trees and/or wooded areas to be retained within the sidelines of each street, and other no-cut areas.

The preliminary plan submission shall also include:

X 18. A plan for the management of surface drainage waters, including existing waterways and the proposed disposition of water from proposed subdivision to new or existing subsurface drainage systems with sufficient capacity to dispose of the storm flows.

X 19. Street plans and profiles showing the percent slope of each grade, and the radius, length, point of curvature and point of tangency of each curve.

X 20. Street plans and profiles showing proposed centerline grades and existing ground grades at fifty (50) foot stations. All existing and proposed elevations shall be based on the U.S.C. & G.S. Datum.

21. Location of all of the following proposed improvements unless

specifically waived in writing by the Board:

X a. Proposed monuments
NA b. Parking areas
NA c. Street lights
X d. Sidewalks
X e. Street signs
X f. All utilities above and below ground
X g. Curbs
NA h. Gutters
X i. Storm drainage facilities and courses
X j. All easements
X k. Service and utility buildings and structures
NA l. Dumpsters. (Amended 1/30/90)

X 22. Erosion control plan showing the placement of all berms, silt fences, hay bales, sedimentation ponds and other erosion control devices, detention ponds, to the standards of the "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices," by the Cumberland County Soil and Water Conservation District and the Maine Department of Environmental Protection, latest revision. (Amended 10/26/93)

5.2.3 Accompanying Statements and Data

The applicant shall submit with the preliminary plan fifteen (15) copies each of the following statements:

X 23. Verification of subdivider's legal right, title, or interest in the property (deed or purchase and sale agreement.)

X 24. A copy of the deed upon which the survey was based.

X 25. A copy of all existing easements, covenants, and restrictions applying to the area proposed to be subdivided. If none, state so.

X 26. Proposed arrangements for water supply as required by the Biddeford and Saco Water Company, and a letter from the water company stating that the water supply is adequate to serve the subdivision. If public water is not required and an on-site water supply is proposed, the developer must submit an explanation of why a public water supply is not feasible and submit materials which will reasonably satisfy the Planning Board that each lot has the capability to support the well, the septic system, and a principal structure and will meet the minimum specifications of these standards, the Maine Rules Relating to Drinking Water (10-144 AC.M.R. 231) and all other pertinent State and local codes.

X 27. Proposed arrangements for storm drainage, with supporting data and

design analysis, including plans and profiles showing location and size of drain lines and culverts, catch basins and manholes, and such other information as may be required to define the drainage provisions, stamped by an engineer registered in Maine, and an operating and maintenance plan for any detention basins.

X 28. A copy of that portion of the county Soil Survey covering the subdivision superimposed on a copy of the plan. When the medium intensity soil survey shows soils which are questionable for the uses proposed, the Planning Board may require the submittal of a high intensity soil survey.

X 29. An estimate of the amount and type of traffic to be generated daily and at peak hours. For developments involving 40 or more parking spaces or projected to generate more than 200 vehicle trips per day, a traffic impact analysis, prepared by a traffic engineer, shall be submitted. The analysis shall show, at a minimum, the expected average number of vehicle trips per day, peak-hour volumes, access conditions at the site, distribution of traffic, types of vehicles expected, effect upon the level of service of the street giving access to the site, neighboring streets which may be affected, the intersection(s) nearest to the site and other intersections which may be affected, and recommended improvement to maintain the level of service on the road.

X 30. The names, addresses and tax map and lot numbers of owners of record of adjacent property, including any property directly across an existing street from the subdivision, and the names, addresses and tax map and lot numbers of owners of record of all property within 600 feet of the subdivision.

X 31. Description of how proposed open space will be owned and managed.

X 32. When sewage disposal is to be accomplished by subsurface disposal systems, test pit analyses prepared by a Licensed Site Evaluator shall be provided.

X 33. Proof of financial capacity as described in Section 8.7 of the Subdivision Regulations.

X 34. Proof of technical ability as described in Section 8.8 of the Subdivision Regulations.

X 35. The anticipated amount of land to be covered by buildings and structures expressed in square feet and as a percentage of the site and lots.

X 36. The anticipated amount of land to be covered by buildings, pavement, and other impervious coverage expressed in square feet, percentage of site, and percentage of lot.

DEBRA L. ANDERSON, REGISTER OF DEEDS
Bk 17576 PG 493
Instr # 2017042748
10/06/2017 12:37:07 PM
Pages 4 YORK CO

WARRANTY DEED

Corporate Grantor

KNOW ALL BY THESE PRESENTS, that **Sebago Land Developers, Inc.**, a corporation organized and existing under the laws of the State of Maine, and having a place of business at 144 Dryad Woods Road, Raymond, ME 04071, for consideration paid, grants to:

Sebago Land Developers, Inc.

a corporation organized and existing under the laws of the State of Maine, whose mailing address is: 144 Dryad Woods Road, Raymond, Maine 04071, with **warranty covenants,** the real estate situated in Saco, County of York, and State of Maine, described as follows:

> A certain lot or parcel of land, together with any buildings and improvements thereon, situated in the City of Saco, County of York, and State of Maine, being more particularly described in Exhibit A attached hereto and made a part hereof.

In Witness Whereof, the said **Sebago Land Developers, Inc.**, has caused this instrument to be executed by Daniel A. Foster, its President thereunto duly authorized this 6th day of October, 2017.

Signed, Sealed and Delivered
In the presence of:

Sebago Land Developers, Inc.

By: _____
Daniel A. Foster, its President

State of Maine
County of Cumberland

October 6th 2017

Then personally appeared the above named **Daniel A. Foster**, President of said Sebago Land Developers, Inc., and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Sebago Land Developers, Inc.

Before me,

LEE ANN SANBORN
NOTARY PUBLIC, STATE OF MAINE
MY COMMISSION EXPIRES APRIL 1, 2024

Attorney at Law/Notary Public
Printed Name: LeeAnn Sanborn

SEAL

No R.E. Transfer Tax Paid

Sebago Land Dev 144 Dryad Woods Rd Raymond 04071

EXHIBIT A
(Proposed 20.37 acre lot on Ricker Road, Saco, Maine)

A certain lot or parcel of land situated on the Northwesterly side of the Ricker Road in the City of Saco, County of York and State of Maine being more particularly described as follows:

Beginning at a 5/8" capped rebar (#1328) set in the ground at the Easterly corner of land now or formerly of Ronald & Ingrid Towne (6498/162) on the assumed Northwesterly side line of the Ricker Road;

Thence N 36°24'42" E along the said side line of the Ricker Road 159.45 feet to a 1 ½" iron pipe found set in the ground at the Southerly corner of land now or formerly of Joyce E. Elsner (3639/140);

Thence N 38°06'01" W along land of the said Elsner 200.00 feet to the Westerly corner of land of the said Elsner;

Thence N 38°31'04" E continuing along land of the said Elsner 150.00 feet to a 1 ½" iron pipe found set in the ground at the Northerly corner of land of the said Elsner on the Southwesterly side line of land now or formerly of Richard C. & Rebecca Lynn Knox (3395/62);

Thence N 36°11'49" W along land of the said Knox 662.93 feet to a granite monument found set in the ground at the Easterly corner of land now or formerly of Ralph E. Temm (4581/109);

Thence S 53°30'10" W along land of the said Temm 1584.11 feet to a nail found set in the root of an oak tree at the Southerly corner of land of the said Temm on the Easterly side line of land now or formerly of Derwood P. & Barbara J. Sawtelle (4103/91);

Thence S 18°51'32" W along land of the said Sawtelle 39.30 feet to the Northwesterly corner of land now or formerly of Travis Brooks (8955/257);

Thence S 75°16'21" E along land of the said Brooks 129.12 feet to a point;

Thence S 78°08'19" E continuing along land of the said Brooks 103.58 feet to a 1 ¼" iron pipe found set in the ground at the Northeasterly corner of land of the said Brooks and the Northwesterly corner of land now or formerly of Betty Ann Brooks (1615/463);

Thence S 86°59'49" E along land of the said Betty Ann Brooks 104.82 feet to a 1" iron pipe found set in the ground at the Northeasterly corner of land of the said Betty Ann Brooks, the Northwesterly corner of land now or formerly of James E. Prindall, Jr. & Nancy L. Prindall (1531/436) and the Southwesterly corner of land now or formerly of Sebago Land Developers, Inc. (17,386/725);

Thence N 03°00'11" E along land of the said Sebago Land Developers, Inc. 80.00 feet to a point;

Thence N 88°03'56" E continuing along land of the said Sebago Land Developers, Inc. 317.27 feet to a point;

Thence S 01°06'36" W continuing along land of the said Sebago Land Developers, Inc 50.00 feet to a 5/8" capped rebar (#1328) set in the ground at the Northwesterly corner of other land of the said Sebago Land Developers, Inc. (17,386/722);

Thence N 84°53'14" E along the said other land of the Sebago Land Developers, Inc. 368.88 feet to a 5/8" capped rebar (#1328) set in the ground at the Northerly corner of the said other land of the Sebago Land Developers, Inc.;

Thence S 85°38'06" E across land of the Grantor 305.97 feet to a 5/8" capped rebar (#1328) set in the ground on the Northwesterly side line of land now or formerly of Terrence A. Merrill & Christine M. Cote (7839/219);

Thence N 36°39'47" E along land of the said Merrill & Cote 69.84 feet to a 5/8" capped rebar (#1293) found set in the ground at the Northerly corner of land of the said Merrill & Cote and the Westerly corner of land of the said Towne;

Thence N 37°34'48" E along land of the said Towne 148.25 feet to a 1 ½" iron pipe found set in the ground at the Northerly corner of land of the said Towne;

Thence S 52°00'07" E continuing along land of the said Towne 199.41 feet to the point of beginning. Containing 20.37 acres.

All bearings are Magnetic of the year 1984.

Reference is made to a "Plan of Land on Flag Pond Road & Ricker Road in Saco, Maine for Dan Foster" dated December 2016 by Wayne T. Wood & Co. recorded in the York County Registry of Deeds in Plan Book 386, Page 19.

Meaning and intending to convey a portion of the premises conveyed to this Grantor by deed recorded in the York County Registry of Deeds in Book 17,386 Page 728.

In further recitation of the title, the Grantor herein states that this conveyance is a transfer of an interest in land to an abutter within the meaning of the Municipal Subdivision Law Title 30-A M.R.S.A. Section 4401 (4) (D-6) and shall become part of, and merged with, other land of Sebago Land Developers, Inc. as described in deed recorded in York County Registry of Deeds in Book 17386, Page 725, subject to the provisions of said Title 30-A, M.R.S.A. Section 4401 (4)(D-6).

BK 17386 PGS 725 - 727
INSTR # 2016054318
RECEIVED YORK SS
12/19/2016 09:59:29 AM
DEBRA ANDERSON
REGISTER OF DEEDS

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS, That I, **Norman A. Boivin,** of Saco, Maine, for consideration paid, grant to:

Sebago Land Developers, Inc.

a corporation organized and existing under the laws of the State of Maine, of Raymond, Maine, whose mailing address is: 144 Dryad Woods Road, Raymond, Maine 04071, with **warranty covenants**, the real estate situated in Saco, County of York, and State of Maine, described as follows:

> A certain lot or parcel of land, together with any buildings and improvements thereon, situated in the City of Saco, County of York, and State of Maine being more particularly described in Exhibit A attached hereto and made a part hereof.

Witness my hand and seal this 16th day of December, 2016.

Signed, Sealed and Delivered
in the presence of

Norman A. Boivin

Norman A. Boivin

State of Maine
County of York

December 16, 2016

Then personally appeared before me the above named Norman A. Boivin and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Attorney at Law ~~Notary Public~~
Printed Name:

DONNELLY S. DOUGLAS
Maine Attorney at Law
Maine Bar No. 147

Maine R.E. Transfer Tax Paid

E

3p8 → Douglas Title

EXHIBIT A

(Proposed 87,413 sq.ft. lot on Flag Pond Road, Saco, Maine)

A certain lot or parcel of land situated on the Northerly side of the Flag Pond Road in the City of Saco, County of York and State of Maine being more particularly described as follows:

Beginning at a metal fence post found set in the ground on the assumed Northerly side line of the Flag Pond Road at the Southwesterly corner of land now or formerly of Lucille M. Pelletier (York County Registry of Deeds Book 11233, Page 300);

Thence N 01°06'36" E along land of the said Pelletier and across land of the Grantor 416.20 feet to a point;

Thence S 88°03'56" W across land of the Grantor 317.27 feet to a point;

Thence S 03°00'11" W continuing across land of the Grantor 80.00 feet to a 1" iron pipe found set in the ground at the Northeasterly corner of land now or formerly of Betty Ann Brooks (1615/463) being also the Northwesterly corner of land now or formerly of James E. Prindall, Jr. & Nancy L. Prindall (1531/436);

Thence S 86°59'49" E along land of the said Prindall 105.00 feet to a point;

Thence S 14°37'45" W continuing along land of the said Prindall 100.00 feet to a point;

Thence N 86°24'27" E continuing along land of the said Prindall 105.00 feet to a point;

Thence S 14°37'45" W continuing along land of the said Prindall 250.00 feet to a point on the said side line of the Flag Pond Road;

Thence N 86°24'27" E along the said side line of the Flag Pond Road 192.35 feet to the point of beginning. Containing 87,413 square feet.

All bearings are Magnetic of the year 1984.

Reference is made to a "Plan of Land on Flag Pond Road & Ricker Road in Saco, Maine for Dan Foster" dated December 2016 by Wayne T. Wood & Co. to be recorded in the York County Registry of Deeds.

Meaning and intending to convey a portion of the premises conveyed to this Grantor by deed recorded in the York County Registry of Deeds in book 17,186 page 519.

In further recitation of the title, the Grantor herein states that this deed and another deed to this Grantee dated December 16, 2016 to be recorded herewith are dividings accomplished by a subdivider who has retained a lot for his own use as a single family residence that has been the subdivider's principal residence for a period of at least 5 years immediately preceding the two conveyances to Sebago Land Developers, Inc. dated December 16, 2016..

DEBRA L. ANDERSON, REGISTER OF DEEDS
E-RECORDED **Bk 17642 PG 343**
Instr # 2018001587
01/12/2018 11:24:07 AM
Pages 2 YORK CO

DLN: 1001840019223

WARRANTY DEED

Corporate Grantor

Maine R.E. Transfer Tax Paid

KNOW ALL BY THESE PRESENTS, that **Sebago Land Developers, Inc.**, a corporation organized and existing under the laws of the State of Maine, and having a place of business at 144 Dryad Woods Road, Raymond, ME 04071, for consideration paid, grants to:

Ian L. Geib and Danielle N. Geib

whose mailing address is: 407 Flag Pond Road, Saco, Maine **with warranty covenants, as joint tenants**, the real estate situated in Saco, County of York, and State of Maine, described as follows:

> A certain lot or parcel of land, together with any buildings and improvements thereon, situated in the City of Saco, County of York, and State of Maine, being more particularly described in Exhibit A attached hereto and made a part hereof.

In Witness Whereof, the said **Sebago Land Developers, Inc.**, has caused this instrument to be executed by Daniel A. Foster, its President thereunto duly authorized this 12th day of January, 2018.

Signed, Sealed and Delivered
in the presence of

Sebago Land Developers, Inc.

BY: _____
Daniel A. Foster, its President

State of Maine
County of

January 12th 2018

Then personally appeared the above named **Daniel A. Foster**, President of said Sebago Land Developers, Inc., and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Sebago Land Developers, Inc.

Before me,

_____
Attorney at Law/Notary Public
Printed Name: Connie Jo Minervino
Notary Public, Maine
My Commission Exp.
12/29/2021

D.F.

EXHIBIT A

(Proposed 80,840 sq. ft. lot on Flag Pond Road, Saco, Maine)

A certain lot or parcel of land situated on the Northerly side of the Flag Pond Road in the City of Saco, County of York and State of Maine being more particularly described as follows;

Beginning at a 1-1/2" iron pipe found set in the ground on the assumed Northerly side line of the Flag Pond Road at the southeasterly corner of land now or formerly of Lorna J. West (York County Registry of Deeds Book 3440, Page 319);

Thence N 01° 15' 30" W along land of the said West 247.99 feet to a 1-1/2" iron pipe found set in the ground at the northeasterly corner of land of the said West;

Thence S 84° 53' 14" W continuing along land of the said West 195.87 feet to a metal fence post found set in the ground at the northwesterly corner of land of the said West and the Northeasterly corner of land now or formerly of Lucille M. Pelletier (11,233/300);

Thence S 83° 16' 18" W along land of the said Pelletier 153.37 feet to a metal fence post found set in the ground at the northwesterly corner of land of the said Pelletier;

Thence N 01° 06' 36" E across land formerly of Norman A. Boivin 120.12 feet to a point;

Thence N 84° 53' 14" E continuing across land formerly of Norman A. Boivin 368.88 feet to a point;

Thence S 24° 50' 04" E continuing across land formerly of Norman A. Boivin 431.58 feet to a point on the said side line of the Flag Pond Road;

Thence N 78° 50' 07" W along the said side line of the Flag Pond Road 47.67 feet to a point;

Thence N 83° 36' 18" W continuing along the said side line of the Flag Pond Road 152.33 feet to the point of beginning.

Containing 80,840 square feet.

All bearings are magnetic of the year 1984.

Reference is made to a "Plan of Land on Flag Pond Road & Ricker Road in Saco, Maine for Dan Foster" dated December 2016 by Wayne T. Wood & Co. recorded in Plan Book 386 Page 19 in the York County Registry of Deeds.

Meaning and intending to convey premises described in Warranty Deed from Norman A. Boivin to Sebago Land Developers, Inc., dated December 16, 2016 and recorded in the York County Registry of Deeds in Book 17386, Page 722.

Andriy Lisovichenko
4 Ricker RD.
Saco, ME 04072

DEBRA L. ANDERSON, REGISTER OF DEEDS
Bk 17583 PG 251
Instr # 2017044251
10/18/2017 10:44:10 AM
Pages 2 YORK CO

WARRANTY DEED

Corporate Grantor

KNOW ALL BY THESE PRESENTS, that **Sebago Land Developers, Inc.**, a corporation organized and existing under the laws of the State of Maine, and having a place of business at 144 Dryad Woods Road, Raymond, Maine 04071, for consideration paid, grants to:

Andriy Lisovichenko and Alevtyna Vykhodtseva

whose mailing address is: 4 Ricker Road, Saco, ME 04072, as joint tenants with rights of survivorship, with **warranty covenants**, the land in Saco, County of York, and State of Maine, described as follows:

A certain lot or parcel of land, together with any buildings and improvements thereon, situated in the City of Saco, County of York, and State of Maine as set forth in Exhibit A attached hereto and made a part hereof.

Maine R.E. Transfer Tax Paid

In Witness Whereof, the said **Sebago Land Developers, Inc.**, has caused this instrument to be executed by Daniel A. Foster, its President thereunto duly authorized this 16 day of October, 2017.

Signed, Sealed and Delivered in the presence of

Amanda DeRaspe

Sebago Land Developers, Inc.

BY: [signature]

Daniel A. Foster, Its President

State of Maine
County of Cumberland

October 16 2017

Then personally appeared the above named Daniel A. Foster, President of said Sebago Land Developers, Inc. and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Sebago Land Developers, Inc.

Before me,

Amanda DeRaspe

Attorney at Law/Notary Public
Printed Name: Amanda DeRaspe

AMANDA DERASPE
STATE OF MAINE
NOTARY PUBLIC
COMMISSION EXPIRES
DECEMBER 21 2020

Red Door Title, LLC
1 NH Ave. Ste. 320
Portsmouth, NH 03801

2 pgs

EXHIBIT A

(80,537 sq.ft. lot on Ricker Road, Saco, Maine)

A certain lot or parcel of land, with the buildings thereon, situate on the Northerly side of the Flag Pond Road and the Northwesterly side of the Ricker Road in the City of Saco, County of York and State of Maine being more particularly described as follows:

Beginning at the intersection of the assumed Northerly side line of the Flag Pond Road with the assumed Northwesterly side line of the Ricker Road;

Thence N 38°22'05" E along the said side line of the Ricker Road 202.45 feet to a 1 ¼" iron pipe found set in the ground at the Southerly corner of land now or formerly of Terrence A. Merrill & Christine M. Cote (York County Registry of Deeds, Book 7839, Page 219);

Thence N 50°46'36" W along land of the said Merrill & Cote 196.65 feet to a 1" iron pipe found set in the ground at the Westerly corner of land of the said Merrill & Cote;

Thence N 36°39'47" E continuing along land of the said Merrill & Cote 125.00 feet to a 5/8" capped rebar (#1328) set in the ground;

Thence N 85°38'06" W across land of the Grantor 305.97 feet to a 5/8" capped rebar (#1328) set in the ground at the Northerly corner of land of Sebago Land Developers, Inc. (17,386/722);

Thence S 24°50'04" E along land of the said Sebago Land Developers, Inc. 431.58 feet to a 5/8" capped rebar (#1328) set in the ground on the said side line of the Flag Pond Road;

Thence S 78°50'07" E along the said side line of the Flag Pond Road 77.33 feet to the point of beginning. Containing 80,537 square feet.

All bearings are Magnetic of the year 1984.

Reference is made to a "Plan of Land on Flag Pond Road & Ricker Road in Saco Maine for Dan Foster" dated December 2016 by Wayne T. Wood & Co. and recorded in Plan Book 386 Page 19 in the York County Registry of Deeds.

Meaning and intending to convey a portion of the premises conveyed to this Grantor by deed recorded in the York County Registry of Deeds in Book 17,386 Page 728.

HARRIS
SEPTIC SOLUTIONS

Preliminary Soils Evaluation Report

October 30, 2017

Applicant/Address: Sebago Land Developers, Inc.
144 Dryad Woods Road
Raymond, ME 04071

Subject Parcel: Ricker Road Subdivision - Saco, Maine
(Proposed 7 lot subdivision)

Attached you will find soil descriptions and classifications for your proposed 7 lot subdivision. Locations as depicted on the attached plot plans are approximate only. It is recommended that these locations be identified by your surveyor prior to submissions to the Town for approval. All test pits are marked on site with pink and orange flagging. Please contact me if additional testing is needed to locate test pits within the subject parcels.

Please feel free to call with any questions you may have regarding this report.

Sincerely,

Norman "Bud" Harris, LSE#348

STATE OF MAINE
NORMAN P. HARRIS #348
LICENSED SITE EVALUATOR

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div of Environmental Health, 11 SHS
(207) 287-2070 FAX (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	SACO
Street or Road	RICKER ROAD SUBDIVISION
Subdivision, Lot •	

OWNER/APPLICANT INFORMATION

Name (last, first, MI): SEBAGO LANE DEVELOPERS, INC. ■ Owner ☐ Applicant

Mailing Address of Owner/Applicant: 144 DRYAD WOODS ROAD, RAYMOND, ME 04071

Daytime Tel. • 207-653-2840

>> Caution: LPI APPROVAL REQUIRED <<

Town/City _____ Permit • _____

Date Permit Issued ___/___/___ Fee: $ _____ Double Fee Charged ( )

_____ L.P.I • _____
Local Plumbing Inspector Signature

☐ Owner ☐ Applicant ☐ State

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map • _____ Lot • _____

Owner or Applicant Statement

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a permit.

_____ _____
Signature of Owner or Applicant — Date

Caution: Inspection Required

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

_____
(1st) Date Approved

_____ _____
Local Plumbing Inspector Signature — (2nd) Date Approved

PERMIT INFORMATION

TYPE OF APPLICATION

■ 1. First Time System
☐ 2. Replacement System
Type Replaced: _____
Year Installed: _____
☐ 3. Expanded System
☐ a. <25% Expansion
☐ b. ≥25% Expansion
☐ 4. Experimental System
☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

■ 1. No Rule Variance
☐ 2. First Time System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 3. Replacement System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 4. Minimum Lot Size Variance
☐ 5. Seasonal Conversion Approval

DISPOSAL SYSTEM COMPONENTS

1. ■ Complete Non-engineered System
2. ☐ Primitive System(graywater & alt toilet)
3. ☐ Alternative Toilet, specify: _____
4. ☐ Non-engineered Treatment Tank (only
5. ☐ Holding Tank, _____ Gallons
6. ☐ Non-engineered Disposal Field (only)
7. ☐ Separated Laundry System
8. ☐ Complete Engineered System(2000gpd+)
9. ☐ Engineered Treatment Tank (only)
10. ☐ Engineered Disposal field (only)
11. ☐ Pre-treatment, specify: _____
12. ☐ Miscellaneous Components

SIZE OF PROPERTY

+/-30 ☐ sq. ft. ■ acres

DISPOSAL SYSTEM TO SERVE

1. ■ Single Family Dwelling Unit, No. of Bedrooms: 3-4
2. ☐ Multiple Family Dwelling, No of Units: _____
3. ☐ Other: _____ (SPECIFY)

Current Use ☐ Seasonal ☐ Year Round ☐ Undeveloped

SHORELAND ZONING

☐ Yes ■ No

TYPE OF WATER SUPPLY

1. ■ Drilled Well 2. ☐ Dug Well 3. ☐ Private
4. ■ Public 5. ☐ Other: UNKNOWN

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. ■ Concrete
a. ■ Regular
b. ☐ Low Profile
2. ☐ Plastic
3. ☐ Other: _____
CAPACITY 1000 gallons

DISPOSAL FIELD TYPE & SIZE

1. ■ Stone Bed 2. Stone Trench
3. ☐ Proprietary Device
a. ☐ cluster array c. ☐ Linear
b. ☐ regular load d. ☐ H-20 loaded
4. ☐ Other: _____
SIZE: _____ ■ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT

1. ■ No 3. ☐ Maybe
2. ☐ Yes >> Specify one below:
a. ☐ multi-compartment tank
b. ☐ ___ tanks in series
c. ☐ increase in tank capacity
d. ☐ Filter on tank outlet

DESIGN FLOW

270-360 gallons per day
BASED ON:
1. ■ Table 4A (dwelling unit(s))
2. ☐ Table 4C (other facilities)
SHOW CALCULATIONS
- for other facilities -
3 TO 4 BEDROOMS AT 90 GALLONS PER DAY EACH
3. ☐ Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
___/___
at Observation Hole • _____
Depth _____"
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. ☐ Medium - 2.5 sq.ft./gpd
2. ☐ Medium-Large - 3.3 sq.ft./gpd
3. ☐ Large - 4.1 sq.ft./gpd
4. ☐ Extra-Large - 5.0 sq.ft./gpd

EFFLUENT EJECTOR PUMP

1. ☐ Not required
2. ■ May be required
3. ☐ Required
Specify only for engineered systems
DOSE: _____ Gallons

PRELIMINARY

STATE OF MAINE NORMAN P. HARRIS #348 LICENSED SITE EVALUATOR

LATITUDE AND LONGITUDE

at center of disposal area
Lat. ___ d ___ m ___ s
Lon. ___ d ___ m ___ s
if g.p.s, state margin of error ___

SITE EVALUATOR STATEMENT

I Certify that on 10/27/17 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed sytem is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Norman Harris — #348 — 10/30/17
Site Evaluator Signature — SE • — Date

NORMAN "BUD" HARRIS (HARRIS SEPTIC SOLUTIONS, INC.) (207) 892-2435 harrisseptic@gmail.com

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

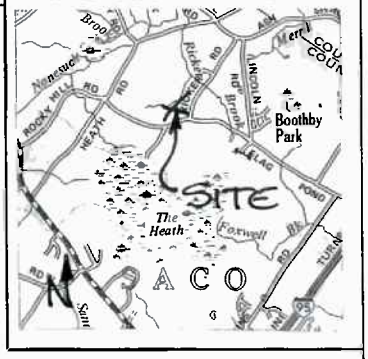
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div of Environmental Health, 11 SHS
(207) 287-5672 FAX (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
SACO	RICKER ROAD SUBDIVISION	SEBAGO LANE DEVELOPERS, INC.

SITE PLAN Scale 1" = _____ ft. or as shown

SITE LOCATION PLAN



SEE ATTACHED
PROPOSED LOT PLANS

STATE OF MAINE
NORMAN P. HARRIS #348
LICENSED SITE EVALUATOR

N

NORTH ORIENTATION APPROXIMATE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-1A ■ Test Pit ☐ Boring
2 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0	LOAMY SAND		VERY DARK BROWN	
10	FINE SAND	FRIABLE	DARK YELLOW BROWN	COMMON & DISTINCT
20	SAND	SOMEWHAT FIRM	PALE OLIVE YELLOW	
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
5 Profile / E Condition	2-4 %	9 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole TP-2A ■ Test Pit ☐ Boring
2 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0	MIXED LOAM & SAND	FRIABLE	VERY DARK BROWN TO GRAY BROWN	
10	FINE SAND	FRIABLE TO SOMEWHAT FIRM	PALE OLIVE YELLOW	COMMON & DISTINCT
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
5 Profile / D Condition	0-3 %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Norman Harris
Site Evaluator Signature

#348
SE •

10/30/17
Date

NORMAN "BUD" HARRIS (HARRIS SEPTIC SOLUTIONS, INC.) (207) 892-2435

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation	Street, Road Subdivision	Owner's Name
SACO	RICKER ROAD SUBDIVISION	SEBAGO LANE DEVELOPERS, INC.

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-3A ■ Test Pit ☐ Boring
1 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAM / LOAMY SAND / MEDIUM SAND	FRIABLE	VERY DARK BROWN / GRAY / STRONG BROWN	
10–50	COARSE SAND	VERY FRIABLE	YELLOW BROWN	FEW & FAINT

Soil Classification	Slope	Limiting Factor	
5 Profile / C Condition	2-5 %	45 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole TP-3B ■ Test Pit ☐ Boring
1 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM / FINE SAND / MEDIUM SAND	FRIABLE / FRIABLE TO SOMEWHAT FIRM	VERY DARK BROWN / GRAY / PALE BROWN	
10–50	SAND	FRIABLE	PALE YELLOW BROWN	MANY & PROMINENT

Soil Classification	Slope	Limiting Factor	
5 Profile / C Condition	2-4 %	21 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-4A ■ Test Pit ☐ Boring
2 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND / MEDIUM SAND	FRIABLE	DARK BROWN / PALE YELLOW BROWN	
10–50	SAND	VERY FRIABLE	YELLOW BROWN	

Soil Classification	Slope	Limiting Factor	
5 Profile / B Condition	0-2 %	50 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

Observation Hole TP-5A ■ Test Pit ☐ Boring
2 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	DARK BROWN	
10–30	MEDIUM SAND	VERY FRIABLE	PALE YELLOW BROWN	
30–50	SAND		YELLOW BROWN	

LIMIT OF EXCAVATION AT -47"

Soil Classification	Slope	Limiting Factor	
5 Profile / C Condition	0-3 %	47 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

NORMAN P. HARRIS #348 LICENSED SITE EVALUATOR

Site Evaluator Signature
NORMAN "BUD" HARRIS (HARRIS SEPTIC SOLUTIONS, INC.)

#348
SE •

(207) 892-2435

10/30/17
Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation	Street, Road Subdivision	Owner's Name
SACO	RICKER ROAD SUBDIVISION	SEBAGO LANE DEVELOPERS, INC.

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-6A ■ Test Pit ☐ Boring
2 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	DARK BROWN	
10–20	MEDIUM SAND		PALE YELLOW BROWN	
20–30		VERY FRIABLE		
30–40	SAND		YELLOW BROWN	
40–50				

LIMIT OF EXCAVATION AT -50"

Soil Classification	Slope	Limiting Factor	
5 Profile / B Condition	0-2 %	50 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

Observation Hole TP-7A ■ Test Pit ☐ Boring
1 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND		VERY DARK BROWN	
10–20	LOAMY COARSE SAND		GRAYISH BROWN	
20–30	MEDIUM SAND	FRIABLE	PALE YELLOW BROWN	
30–40	SAND		LIGHT YELLOW BROWN	
40–50				FEW & FAINT

Soil Classification	Slope	Limiting Factor	
5 Profile / C Condition	2-4 %	40 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ☐ Test Pit ☐ Boring
_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

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

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

STATE OF MAINE
NORMAN P. HARRIS #348
LICENSED SITE EVALUATOR

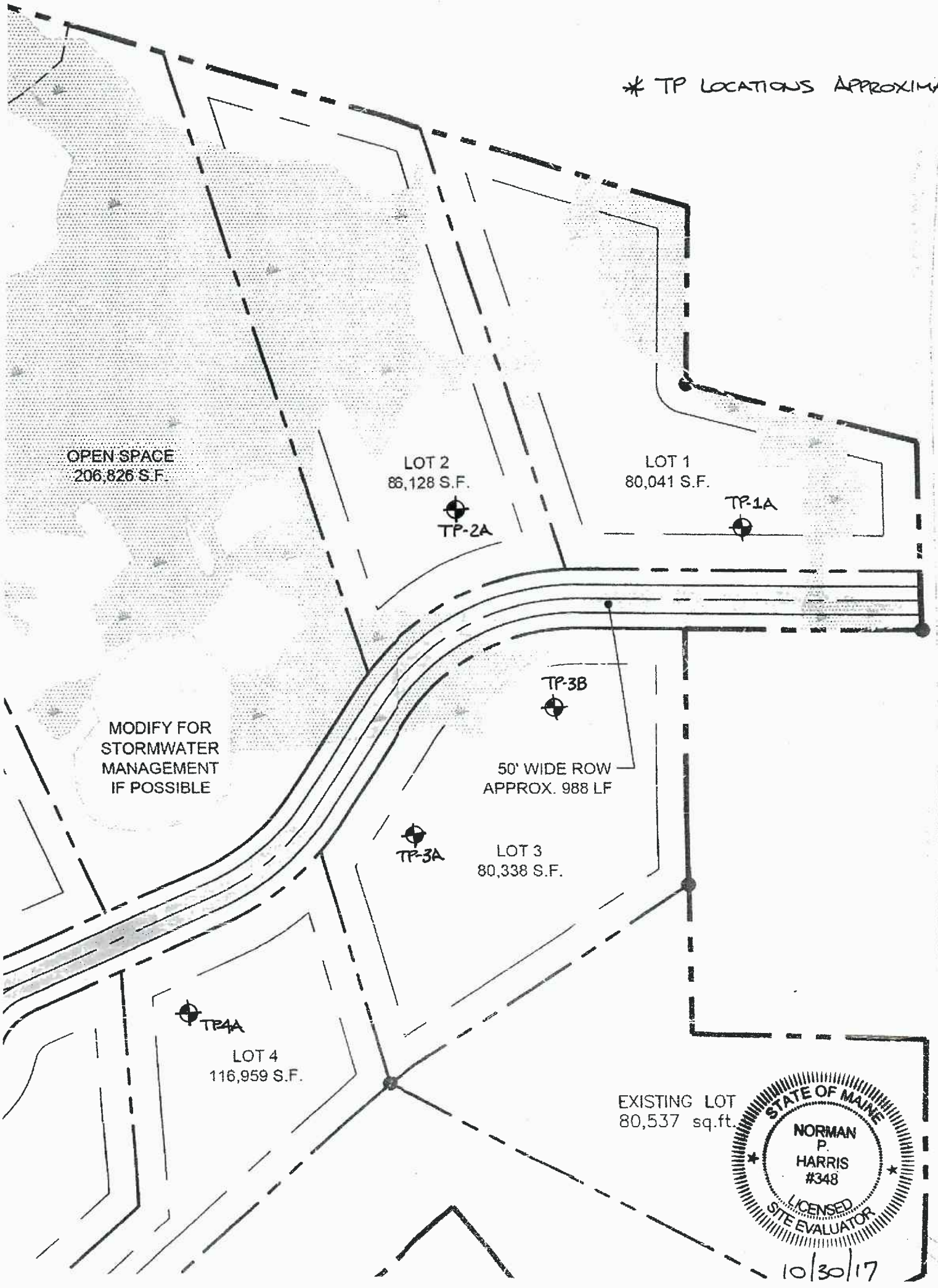
Soil Classification	Slope	Limiting Factor	
Profile / Condition	___ %	___ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

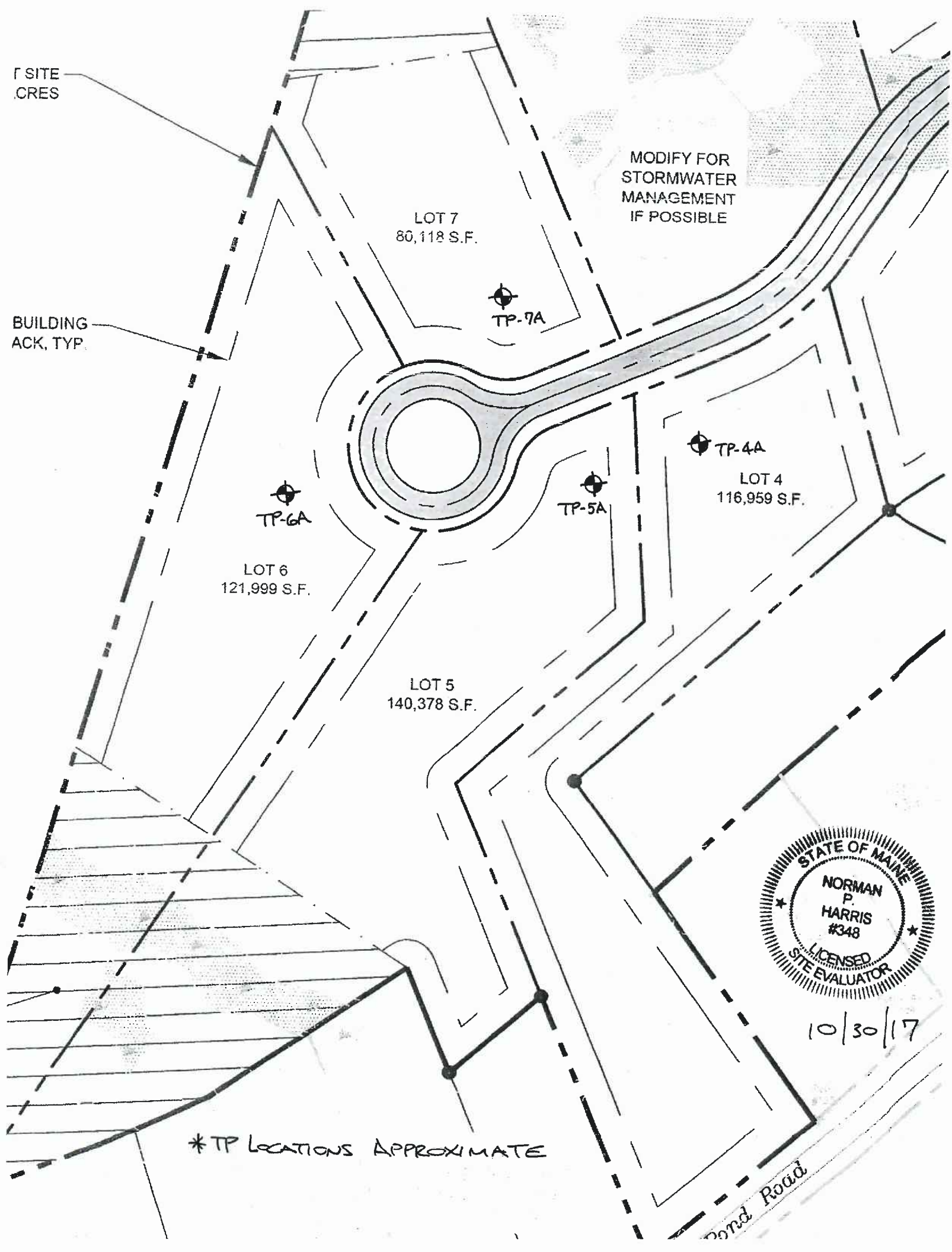
Site Evaluator Signature

#348
SE •

10/30/17
Date

NORMAN "BUD" HARRIS (HARRIS SEPTIC SOLUTIONS, INC.)
(207) 892-2435


* TP LOCATIONS APPROXIMATE
OPEN SPACE
206,826 S.F.
LOT 2
86,128 S.F.
TP-2A
LOT 1
80,041 S.F.
TP-1A
TP-3B
MODIFY FOR
STORMWATER
MANAGEMENT
IF POSSIBLE
50' WIDE ROW
APPROX. 988 LF
TP-3A
LOT 3
80,338 S.F.
TP4A
LOT 4
116,959 S.F.
Ricker Road
EXISTING LOT
80,537 sq.ft.
STATE OF MAINE
NORMAN
P.
HARRIS
#348
LICENSED
SITE EVALUATOR
10/30/17


Γ SITE
.CRES
BUILDING
ACK, TYP.
MODIFY FOR
STORMWATER
MANAGEMENT
IF POSSIBLE
LOT 7
80,118 S.F.
TP-7A
TP-4A
LOT 4
116,959 S.F.
TP-6A
TP-5A
LOT 6
121,999 S.F.
LOT 5
140,378 S.F.
STATE OF MAINE
NORMAN
P.
HARRIS
#348
LICENSED
SITE EVALUATOR
10/30/17
*TP LOCATIONS APPROXIMATE
Pond Road

STORMWATER MANAGEMENT PLAN

Ricker Road Subdivision
Saco, Maine

The following Stormwater Management Plan has been prepared for Sebago Land Development, Inc. to evaluate stormwater runoff and erosion control for the proposed 7 lot residential subdivision to be located at the corner of Ricker Road and Flag Pond Road in Saco, Maine.

Site Calculations

Total Property Area	26.12 Ac (+/-)
Existing Impervious Area	0.00 Ac
Total New Impervious Area	1.75 Ac
New Landscaped Area	2.0 Ac
Total Developed Area	3.75 Ac

Assumptions

Subdivision	
Residential Lot Impervious Area	2,500 SF
Residential Lot Roof Area	1,700 SF
Residential Lot Lawn Area	Max of 7,500 SF

Existing Conditions

The development parcel is located at the intersection of Flag Pond Road and Ricker Road in Saco, Maine. The property is approximately 26.12 acres and is bounded on the east by Ricker Road, on the south by Flag Pond Road and on the north and west by undeveloped land. The existing site is covered with mixed-growth woodlands with the exception of previously-subdivided residential lots. The site contains a shallow man-made pond about 1/3 acre in size and has been partially cleared. The development area is located within the Ricker Brook Watershed. Ricker Brook drains to the Nonesuch River. The Nonesuch River is not listed as an urban impaired watershed by MDEP. A copy of the U.S.G.S. Quadrangle Map (Old Orchard) is attached to this submittal.

The project area features topography that is relatively flat. The site generally falls from elevation 160 at Flag Pond Road to 138 as it drains toward Ricker Brook over a distance of approximately 1,400. This results in an average grade of about 1.5%. The back portion of the property contains a large forested wetland.

Proposed Development

Ricker Hill Subdivision is a proposed 7 lot residential subdivision with approximately 5.2 acres of common open space. The project stormwater management system will feature a series of culverts and catch basins that will lead to one of five level spreaders, which all drain to meadow and forest buffers. The project will be accessed by a new road connecting Ricker Road and Flag Pond Road. Approximately 1715' of new roadway will be created. The road will have a 24' wide driving surface and a 5' wide sidewalk located behind an esplanade.

Drainage Pattern

Runoff leaves the development area in two general locations. These areas are modeled as Study Points 1 and 2 in the attached stormwater analysis. Both study points are located in wetland channels located just upstream of Ricker Brook.

Study Point #1 is located just upstream of the northern tributary and handles the western portion of the site.

Study Point #2 is located just upstream of the southern tributary and handles the eastern portion of the site.

The proposed development will preserve the general pre-development flow patterns.

Flooding

The development area is not located within an area of flood hazard according to the Federal Insurance Rate Map 2301550030D. See attached map.

Modeling Assumptions

The onsite stormwater facilities were sized utilizing the USDA Soil Conservation Service (SCS) TR-20 Runoff Simulation Model, as contained in the HydroCAD computer software program (Version 9.0). Runoff curve numbers were determined for each direct watershed by measuring the area of each hydrologic soil group within each type of land cover. Weighted curve numbers were then calculated using curve numbers for various cover types and hydrologic soil groups, assuming "good" conditions as defined in U.S Soil Conservation Service (SCS) publications. Times of concentration and travel times were determined from site topographic maps in accordance with SCS procedures. A maximum length of 150 feet was used for sheet flow.

All of the watersheds' peak runoff rates were analyzed for the 2, 10, and 25-year frequency, 24-hour duration storm events. A Type III rainfall distribution was applied to these storms. The rainfall amounts for York County are as follows:

Storm Frequency Precipitation (in./24 hr)	
2-year	3.0
10-year	4.6
25-year	5.4
50-year	6.1

Onsite & Offsite Soils

The on-site and off-site soils were delineated from the York County Medium Intensity Soil Survey as shown on the Soil Data Viewer on the NRCS website (See attached map). The soil survey reports that the watershed soils are as summarized below:

Soil Type Summary Table		
Soil Symbol	Soil Name	HSG
AdB	Adams loamy sand	A
Ch	Chocorua peat	A/D
CrB	Croghan loamy sand	A
Na	Naumburg sand	A/D
Ra	Raynham silt loam	C/D
Sc	Scantic silt loam	D

Water Quantity (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project areas. Calculations and computer modeling sheets are provided with this report.

Table 1 - Stormwater Runoff Summary Table Pre-Development vs. Post-Development								
Study Point #	2Yr/24Hr (cfs)		10Yr/24Hr (cfs)		25Yr/24Hr (cfs)		50Yr/24Hr (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	10.1	10.1	20.4	20.8	30.9	30.9	42.6	42.5
2	0.4	0.4	2.0	2.0	4.3	4.3	6.7	6.7

As the above result table shows, the post-development flow rate for the 2, 10, 25 and 50-year/24-hour design storm events are equal to or less than the pre-development condition for both study points, with the exception of the 10-year storm for Study Point #1. Due to the highly infiltrative A soils on site, the 0.4 cfs increase is negligible.

Water Quality (BMP Standard)

The water quality requirements will primarily be met by buffers throughout the site. The buffers will provide full treatment for the following areas:

- 88% of the roadway impervious area
- 100% of residential lots

Each residential lot will drain to a meadow or forest buffer and will therefore get 100% treatment.

The combination of level spreaders and roadside buffers will provide the required level of treatment for the roadway. The impervious and developed linear treatment percentages for the roadway are detailed below:

New Impervious Area: The project will result in the creation of approximately 1,715' of new roadway. Altogether, approximately 46,912 SF (1.08 AC) of new impervious area will be created. Approximately 41,060 SF of onsite new impervious area will be treated.

Percentage of Treatment of the New Impervious Area = 87.5% (75% req'd)

Project Developed Area: The project will result in the creation of approximately 1,715' of new roadway. Altogether, approximately 81,882 SF (1.88 AC) of new developed area will be created. Approximately 69,760 SF of onsite developed area will be treated.

Percentage of Treatment of the Developed Area = 85.2% (50% required)

See attached worksheets.

BMP Sizing Calculations:

Forest Buffer with Level Lip Spreader

Level Spreader #1:
The buffer contains soils that are consistent with Soil Group A/D. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* of the BMP manual shows that standard sizing for a 75' flow path requires that the berm length for a forest buffer for A/D soils, respective must be 150' per acre of impervious area and 45' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.074 Ac
Lawn area = 0.115 Ac

Standard sizing: 150(0.074) + 45(0.115) = 11.1'+5.2' = 16.3'. Proposed L=20'

Level Spreader #2:
The buffer contains soils that are consistent with Soil Group A/D. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* of the BMP manual shows that standard sizing for a 100'

flow path requires that the berm length for a forest buffer must be 150' per acre of impervious area and 45' per acre of lawn.

Evaluation of the watershed shows that it contains the following:

Impervious area = 0.070 Ac
Lawn area = 0.055 Ac

Standard sizing: 150(0.070) + 45(0.055) = 10.5'+2.5' = 13.0'. Proposed L=20'

Level Spreader #3:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* of the BMP manual shows that standard sizing for a 100' flow path requires that the berm length for a forest buffer must be 65' per acre of impervious area and 20' per acre of lawn.

Evaluation of the watershed shows that it contains the following:

Impervious area = 0.302Ac
Lawn area = 0.180 Ac

Standard sizing: 65(0.302) + 20(0.180) = 19.6'+3.6' = 23.2'. Proposed L=30'

Level Spreader #4:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* of the BMP manual shows that standard sizing for a 75' flow path requires that the berm length for a forest buffer must be 75' per acre of impervious area and 25' per acre of lawn.

Evaluation of the watershed shows that it contains the following:

Impervious area = 0.233 Ac
Lawn area = 0.160 Ac

Standard sizing: 75(0.233) + 25(0.160) = 17.5'+4' = 21.5'. Proposed L=25'

Meadow Buffer with Level Lip Spreader

Level Spreader #5:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* of the BMP manual shows that standard sizing for a 100' flow path requires that the berm length for a meadow buffer must be 75' per acre of impervious area and 25' per acre of lawn.

Evaluation of the watershed shows that it contains the following:

Impervious area = 0.120 Ac
Lawn area = 0.036 Ac

Standard sizing: 75(0.120) + 25(0.036) = 9'+0.9' = 9.9'. Proposed L=20'

Summary

Based on the results of this evaluation, the proposed stormwater design is not expected to cause flooding, erosion or other significant adverse effects downstream of the site.

Larry Bastian, P.E.

1722 **Ricker Rd Subdivision, Saco ME**

Stormwater Treatment Areas

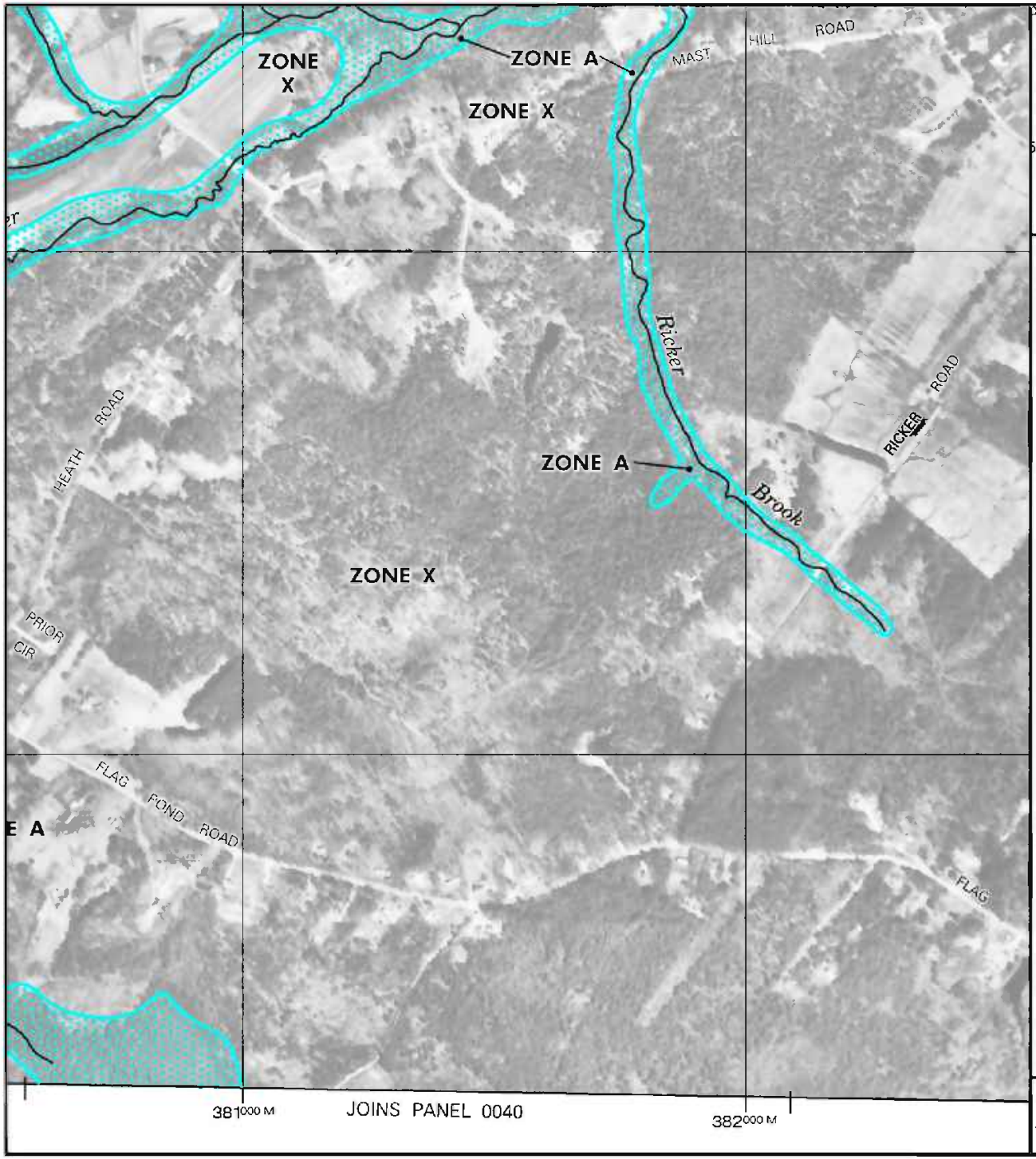
ROADWAY:

Total New Impervious Area (SF)=	46912
Total New Landscaped Area (SF)=	34970
Total Developed Area (SF) =	81882

Watershed	Location or Lot #	New Impervious Area (SF)	Total Impervious Area Treated (SF)	New Landscaped Area	Total Landscaped Area Treated (SF)	Developed Area (SF)	Total Developed Area Treated (SF)	Incremental Treatment % (Impervious)	Incremental Treatment % (Developed)	BMP
ROADWAY										
S3-3	sta 0+00 - 4+47 L	6258	6258	4917	4917	11175	11175	13.34%	13.65%	Roadside buffer
S3-2	sta 0+00 - 2+30 R	3220	3220	5025	5025	8245	8245	6.86%	10.07%	Lev spr #1/buffer
S3-1	sta 2+30 - 4+47 R	3038	3038	2387	2387	5425	5425	6.48%	6.63%	Lev spr #2/buffer
S1-8	sta 4+47 - 7+15 L (CB1-3)	3852	3852	1184	1184	5036	5036	8.21%	6.15%	Lev spr #3/buffer
S1-9	sta 4+47 - 10+00 R	6198	6198	5736	5736	11934	11934	13.21%	14.57%	Lev spr #3/buffer
S1-7	sta 7+15 - 8+94 L (CB1-2)	3091	3091	932	932	4023	4023	6.59%	4.91%	Lev spr #3/buffer
S1-4	sta 8+94 - 11+50 L (CB1-1)	4325	4325	1258	1258	5583	5583	9.22%	6.82%	Lev spr #4/buffer
S1-5	sta 10+00 - 14+50 R	5838	5838	5690	5690	11528	11528	12.44%	14.08%	Lev spr #4/buffer
S2-4	sta 11+50 - 14+50 L (CB2-2)	5240	5240	1571	1571	6811	6811	11.17%	8.32%	Lev spr #5/meadow buff
S-2-2	sta 14+50 - 16+59 L	2926	0	3135	0	6061	0	0.00%	0.00%	No treatment
S2-3	sta 14+50 - 16+59 R	2926	0	3135	0	6061	0	0.00%	0.00%	No treatment
	Subtotal, Road	46912	41060	34970	28700	81882	69760	87.53%	85.20%	
	Treatment provided							88%	85%	
	Treatment required							75%	50%	
LOTS, draining to forested buffers										
	1	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	2	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	3	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	4	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	5	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	6	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	7	4200	4200	7500	7500	11700	11700	14.29%	14.29%	Forested buffer
	Subtotal, Lots	29400	29400	52500	52500	81900	81900	**100.00%**	**100.00%**	
	Treatment provided							**100%**	**100%**	
	Treatment required							95%	80%	

Level Spreader Sizing

Location	Impervious Area (SF)	(Acres)	Landscaped Area (SF)	(Acres)	HSG	Cover	Flow path length thru buffer (ft)	Minimum berm Length (ft)	
Level Spreader #1	3220	0.074	5025	0.115	A/D	Forest	75	16.3	
Level Spreader #2	3038	0.070	2387	0.055	A/D	Forest	100	12.9	
Level Spreader #3	13141	0.302	7852	0.180	A	Forest	100	23.2	
Level Spreader #4	10163	0.233	6948	0.160	A	Forest	75	21.5	
Level Spreader #5	5240	0.120	1571	0.036	A	Meadow	100	9.9	



...onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0030D

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
SACO,
MAINE
YORK COUNTY

PANEL 30 OF 135

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SACO, CITY OF	230155	0030	D

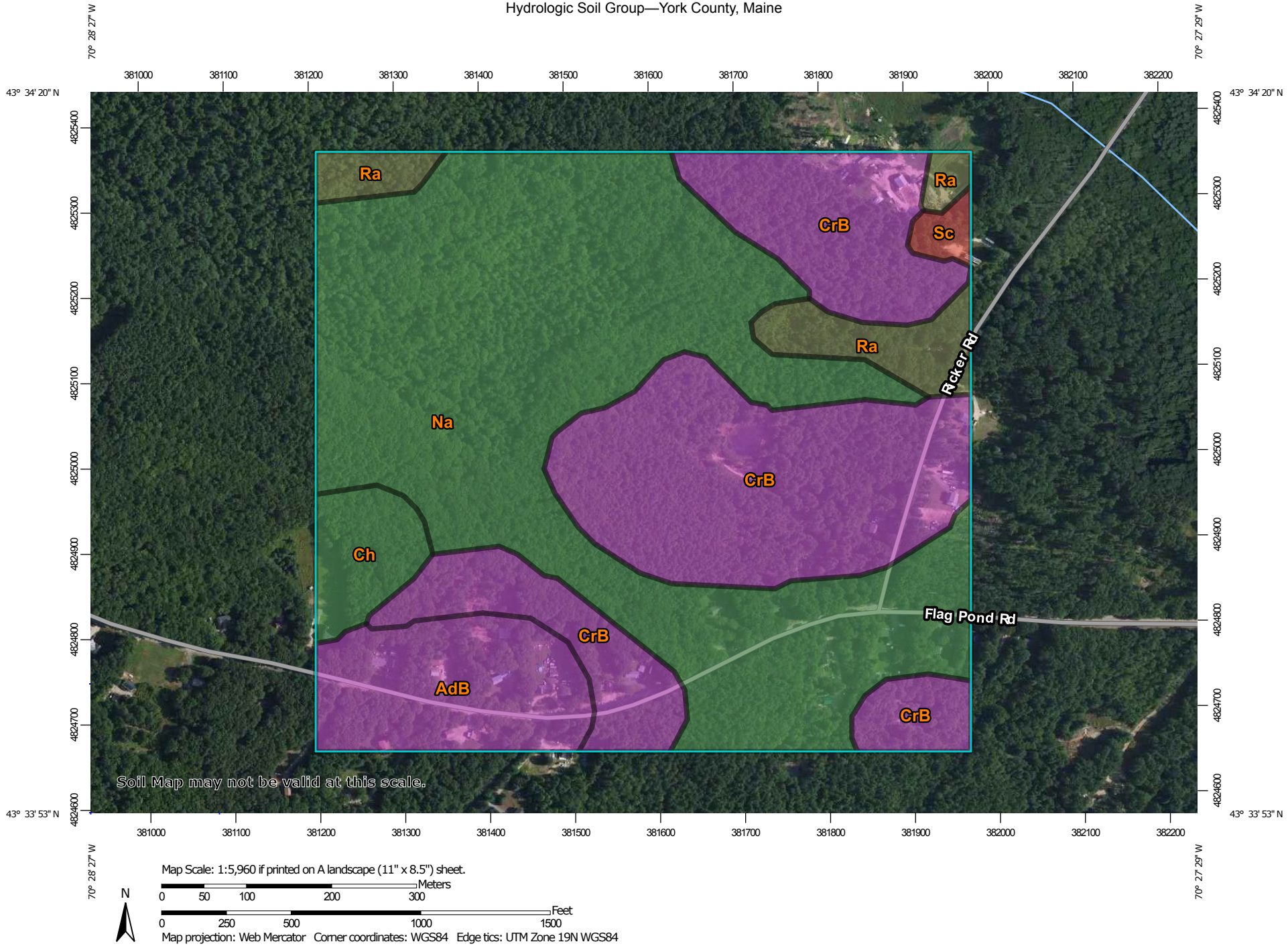
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23015500300

MAP REVISED
JANUARY 5, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Map Scale: 1:5,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

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 16, Sep 11, 2017

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

Date(s) aerial images were photographed: Jun 20, 2010—Jul 18, 2010

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AdB	Adams loamy sand, 0 to 8 percent slopes	A	11.7	8.7%
Ch	Chocorua peat	A/D	4.5	3.4%
CrB	Croghan loamy sand, 0 to 8 percent slopes	A	45.6	33.8%
Na	Naumburg sand	A/D	64.8	48.2%
Ra	Raynham silt loam	C/D	6.9	5.2%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	1.1	0.8%
Totals for Area of Interest			**134.6**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

MAINE
Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Thu Sep 13 2018 15:05:41. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
SEBAGO LAND DEVELOPERS, INC.	19981905 D	BUSINESS CORPORATION	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
03/19/1998	N/A	MAINE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

KAREN A. FOSTER
144 DRYAD WOODS RD
RAYMOND, ME 04071

Back to previous screen | New Search

Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
Certificate of Existence (more info)	Short Form without amendments ($30.00)	Long Form with amendments ($30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

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© Department of the Secretary of State

KEYBANK
P.O. BOX 94955
CLEVELAND, OH 44101-4955

Account Number:

DANIEL A FOSTER
KAREN A FOSTER
144 DRYAD WOODS RD
RAYMOND, ME 04071-6271

Key Equity Options Account Statement

03/20/18 through 04/18/18

Summary of Account Activity	
***Previous Balance**	$75,215.69
Payments	$215.69
Other Credits and Adjustments	$0.00
Advances and Other Debits	$25,000.00
Fees Charged	$.00
Interest Charged	$310.89
***New Balance**	$100,310.89
Credit Limit	$350,000.00
Available Credit	$250,000.00
Past Due Amount	$.00
Statement Closing Date	04/18/18
Days in Billing Cycle	30

Payment Information	
***New Balance**	$100,310.89
Minimum Payment Due	$310.89
Payment Due Date	05/13/18

Late Payment Warning: If we do not receive your minimum payment by 05/24/2018, you may be assessed a $30.00 late fee.

Draw Period End Date:	11/14/2018

Repayment Period Information	
Repayment Period Begin Date:	11/14/2018

*** Previous Balance and New Balance:** A Previous Balance and or New Balance with a minus sign (-) after it indicates a credit balance.

NOTE TO NEW CUSTOMERS: The FINANCE CHARGES or CLOSING COSTS financed as part of the first advance on the line are included in "Fees Charged", not in "Advances and Other Debits" OR "Interest Charged" totals.

Please see account transaction details for itemized charges.

Please send Billing Inquiries and Disputed Balance communications to: KeyBank, P.O. Box 5788, Attn: Loan Client Services, Cleveland, OH 44101-0788.

Questions? For CUSTOMER SERVICE INQUIRIES, LOST or STOLEN CHECKS or CREDIT CARDS, CALL: 1-800-KEY2YOU.

For borrower assistance, call us at 1-800-982-1102 or visit us online at www.key.com/personal/resources/borrower-assistance.jsp

Any amount over the credit limit is immediately due and payable and is included in the "Minimum Payment Due"

If you are in Bankruptcy: To the extent your original obligation was discharged, or is subject to an automatic stay of bankruptcy under Title 11 of the United States Code, this statement is for compliance and/or informational purposes only and does not constitute an attempt to collect a debt or impose personal liability for such obligation. However, if you have a secured loan, KeyBank retains rights under its security instrument, including the right to foreclose its lien.

Please detach this portion and return with your payment to insure proper credit. Retain upper portion for your records

KEY EQUITY OPTIONS

Account Number
New Balance $100,310.89
Minimum Payment Due $310.89
Payment Due Date 05/13/18

Amount Enclosed $_____

IF EXTRA PRINCIPAL REQUESTED, MINIMUM PAYMENT WILL BE HIGHER

Please enclose this coupon with your payment

DANIEL A FOSTER
KAREN A FOSTER
144 DRYAD WOODS RD
RAYMOND, ME 04071-6271

KEYBANK
P.O. BOX 94955
CLEVELAND, OH 44101-4955

EQUAL HOUSING LENDER Member FDIC

1961

196180809619610196155100310890031089B

Map #	Lot #	Owner	Co-Owner	Mailing Address	Address Line 2	City	State	Zip Code
109	028			405 FLAG POND ROAD		SACO	ME	04072
109	23-2	MELANIE BOUTIN		441 FLAG POND ROAD		SACO	ME	04072
109	23-5	ERICA TIBBETTS	SHAWN TIBBETTS	437 FLAG POND ROAD		SACO	ME	04072
109	23-4	THOMAS R. DUROSS	DEBRA L. DUROSS	449 FLAG POND ROAD		SACO	ME	04072
109	24	TRAVIS A. BROOKS		429 FLAG POND ROAD		SACO	ME	04072
109	25	BETTY ANN BROOKS		425 FLAG POND ROAD		SACO	ME	04072
109	26	JAMES E. PRINDALL, JR.	NANCY L. PRINDALL	421 FLAG POND ROAD		SACO	ME	04072
109	28-4	LUCILLE M. PELLETIER TRUSTEE		9990 SE 176TH STREET		SUMMERFIELD	FL	34491
109	28-3	LORNA J. WEST		411 FLAG POND ROAD		SACO	ME	04072
109	20	CHRISTOPHER THONET	DIEVWERTHE THONET	175 HEATH ROAD		SACO	ME	04072
109	27	ADRIAN GRIFFIN		54 NARRAGANSETT STREET		GORHAM	ME	04038
109	28-5	TERRANCE A. MERRILL	CHRISTINE M. COTE	6 RICKER ROAD		SACO	ME	04072
109	28-1	RONALD TOWNE	INGRID TOWNE	10 RICKER ROAD		SACO	ME	04072
109	28-2	JOYCE E. ELSNER		16 RICKER ROAD		SACO	ME	04072
109	37	THOMAS J. LEARY	NICOLE LYNN LEARY	9 RICKER ROAD		SACO	ME	04072
109	36	JUNE E. LEARY	WILLIAM T. RANKIN	15 RICKER ROAD		SACO	ME	04072
109	9-1	PAUL GILBERT	DONNA M. GILBERT	430 FLAG POND ROAD		SACO	ME	04072
109	9-2	SCOTT W. MCPHERSON	CAROL A. MCPHERSON	436 FLAG POND ROAD		SACO	ME	04072
109	9	CHARLENE JOHNSON		452 FLAG POND ROAD		SACO	ME	04072
109	8-1	EDWARD PENNELL		426 FLAG POND ROAD		SACO	ME	04072
109	8-2	ALAN A. PAPALE	CAROL A. PAPALE	424 FLAG POND ROAD		SACO	ME	04072
109	6	JAMES BURNHAM		18275 ROBBINS ROAD		PLEASANT VALLEY	IA	52767
109	8	NATURE CONSERVANCY OF THE	PINETREE STATE INC.	14 MAINE ST, SUITEE 401		BRUNSWICK	ME	04011
109	5-1	ROBERT W. FULLER	GENEVIEVE L. FULLER	402 FLAG POND ROAD		SACO	ME	04072
109	5-2	JENNIFER LACHANCE		396 FLAG POND ROAD		SACO	ME	04072
109	5	NORMAN BOIVIN		253 SHADY NOOK ROAD		WEST NEWFIELD	ME	04095
109	4	SHAROND R. SCHUMACHER	MARK A. VACHON	392 FLAG POND ROAD		SACO	ME	04072
110	4	RICHARD KNOX	REBECCA LYNN KNOX	20 RICKER ROAD		SACO	ME	04072
110	3	MARY E. KNOX LIVING TRUST		P.O. BOX 395		UNITY	ME	04988
110	2	KENNETH DONALD FULLER		32 RICKER ROAD		SACO	ME	04072
101	25	JAMES H. LEARY		269 FLAG POND ROAD		SACO	ME	04072

STORMWATER MANAGEMENT PLAN

Ricker Road Subdivision
Saco, Maine

The following Stormwater Management Plan has been prepared for Sebago Land Development, Inc. to evaluate stormwater runoff and erosion control for the proposed 7 lot residential subdivision to be located at the corner of Ricker Road and Flag Pond Road in Saco, Maine.

Site Calculations

Total Property Area	26.12 Ac (+/-)
Existing Impervious Area	0.44 Ac
Total New Impervious Area	1.90 Ac
New Landscaped Area	6.86 Ac
Total Developed Area	8.76 Ac

Buildable portions of proposed lots were modeled in HydroCAD using curve numbers for 2-acre lots which assumes 12% impervious area, and the remainder as landscaped area.

Existing Conditions

The development parcel is located at the intersection of Flag Pond Road and Ricker Road in Saco, Maine. The property is approximately 26.12 acres and is bounded on the east by Ricker Road, on the south by Flag Pond Road and on the north and west by undeveloped land. The existing site is covered with mixed-growth woodlands with the exception of two previously-subdivided residential lots. The site contains a shallow man-made pond about 1/3 acre in size and has been partially cleared. The development area is located within the Ricker Brook Watershed. Ricker Brook drains to the Nonesuch River. The Nonesuch River is not listed as an urban impaired watershed by MDEP. A copy of the U.S.G.S. Quadrangle Map (Old Orchard) is attached to this submittal.

The project area features topography that is relatively flat. The site generally falls from elevation 160 feet at Flag Pond Road to 138 feet as it drains toward Ricker Brook over a distance of approximately 1,400 feet. This results in an average grade of about 1.5%. The back portion of the property contains a large forested wetland.

Proposed Development

Ricker Hill Subdivision is a proposed 7 lot residential subdivision with approximately 5.2 acres of common open space. The project stormwater management system will feature a series of culverts and catch basins that will lead to one of five level spreaders, which all drain to forest and meadow buffers. The project will be accessed by a new road connecting Ricker Road and Flag Pond Road. Approximately 1,660' of new roadway will be created. The road will have a 24' wide driving surface and a 5' wide sidewalk located behind an esplanade.

Drainage Pattern

Runoff leaves the development area in two general locations. These areas are modeled as Study Points 1 and 2 in the attached stormwater analysis. Both study points are located in wetland channels located just upstream of Ricker Brook.

Study Point #1 is located just upstream of the northern tributary and handles the western and northern portion of the site.

Study Point #2 is located just upstream of the southern tributary and handles the eastern portion of the site.

The proposed development will preserve the general pre-development flow patterns.

Flooding

The development area is not located within an area of flood hazard according to the Federal Insurance Rate Map 2301550030D. See attached map.

Modeling Assumptions

The onsite stormwater facilities were sized utilizing the USDA Soil Conservation Service (SCS) TR-20 Runoff Simulation Model, as contained in the HydroCAD computer software program (Version 10.0). Runoff curve numbers were determined for each direct watershed by measuring the area of each hydrologic soil group within each type of land cover. Weighted curve numbers were then calculated using curve numbers for various cover types and hydrologic soil groups, assuming "good" conditions as defined in U.S Soil Conservation Service (SCS) publications. Times of concentration and travel times were determined from site topographic maps in accordance with SCS procedures. A maximum length of 150 feet was used for sheet flow.

All of the watersheds' peak runoff rates were analyzed for the 2, 10, 25 and 50-year frequency, 24-hour duration storm events. A Type III rainfall distribution was applied to these storms. The rainfall amounts for York County are as follows:

Storm Frequency Precipitation (in./24 hr)	
2-year	3.3
10-year	4.9
25-year	6.2
50-year	7.3

Onsite & Offsite Soils

On-site and off-site soils in the watersheds, were delineated from the York County Medium Intensity Soil Survey as shown on the Soil Data Viewer on the NRCS website (See attached map). The soil survey reports that the watershed soils are as summarized below:

Soil Type Summary Table		
Soil Symbol	Soil Name	HSG
AdB	Adams loamy sand	A
Ch	Chocorua peat	A/D
CrB	Croghan loamy sand	A
Na	Naumburg sand	A/D
Ra	Raynham silt loam	C/D
Sc	Scantic silt loam	D

Water Quantity (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project areas. HydroCAD calculations are provided with this report.

Table 1 - Stormwater Runoff Summary Table Pre-Development vs. Post-Development								
Study Point #	2Yr/24Hr (cfs)		10Yr/24Hr (cfs)		25Yr/24Hr (cfs)		50Yr/24Hr (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	10.1	10.1	20.4	20.8	30.9	30.9	42.6	42.6
2	0.4	0.4	2.0	2.0	4.3	4.3	6.7	6.7

As the above table shows, the post-development flow rate for the 2, 10, 25 and 50-year/24-hour design storm events are equal to or less than the pre-development condition for both study points, with the exception of the 10-year storm for Study Point #1. Due to the highly infiltrative A soils on site and treatment of all developed area runoff by vegetative buffers, the 0.4 cfs increase is considered negligible.

Water Quality (BMP Standard)

The water quality requirements will be met by use of stormwater buffers throughout the site. The buffers will provide treatment for the following areas:

- 88% of the roadway impervious area
- 85% of roadway developed area
- 100% of residential lots

Each residential lot will drain to a forest buffer and will therefore receive 100% treatment.

The combination of level spreaders and roadside buffers will provide the required level of treatment for the roadway, which is evaluated as a linear portion of the project. The impervious and developed treatment percentages for the roadway are detailed below:

New Impervious Area: The project will result in the creation of approximately 1,660' of new roadway. Altogether, approximately 46,912 SF (1.08 AC) of new impervious area will be created. Approximately 41,060 SF of onsite new impervious area will be treated.

Percentage of Treatment of the New Impervious Area = 87.5% (75% req'd)*

Project Developed Area: The project will result in the creation of approximately 1,660' of new roadway. Altogether, approximately 81,882 SF (1.88 AC) of new developed area will be created. Approximately 69,760 SF of onsite developed area will be treated.

Percentage of Treatment of the Developed Area = 85.2% (50% required)*

* For linear portion of the project, per DEP Ch. 500

See attached treatment area worksheets.

BMP Sizing Calculations:

Forest Buffer with Level Lip Spreader

Level Spreader #1:
The buffer contains soils that are consistent with Soil Group A/D. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* in the BMP manual shows that standard sizing for a 75' flow path requires that the berm length for a forest buffer for A/D soils, respectively must be 150' per acre of impervious area and 45' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.074 Ac
Lawn area = 0.115 Ac

Standard sizing: 150(0.074) + 45(0.115) = 11.1'+5.2' = 16.3'. Proposed L=20'

Level Spreader #2:
The buffer contains soils that are consistent with Soil Group A/D. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* in the BMP manual shows that standard sizing for a 100' flow path requires that the berm length for a forest buffer must be 150' per acre of impervious area and 45' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.070 Ac
Lawn area = 0.055 Ac

Standard sizing: 150(0.070) + 45(0.055) = 10.5'+2.5' = 13.0'. Proposed L=20'

Level Spreader #3:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* in the BMP manual shows that standard sizing for a 100' flow path requires that the berm length for a forest buffer must be 65' per acre of impervious area and 20' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.302Ac
Lawn area = 0.180 Ac

Standard sizing: 65(0.302) + 20(0.180) = 19.6'+3.6' = 23.2'. Proposed L=30'

Level Spreader #4:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* in the BMP manual shows that standard sizing for a 75' flow path requires that the berm length for a forest buffer must be 75' per acre of impervious area and 25' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.233 Ac
Lawn area = 0.160 Ac

Standard sizing: 75(0.233) + 25(0.160) = 17.5'+4' = 21.5'. Proposed L=25'

Meadow Buffer with Level Lip Spreader

Level Spreader #5:
The buffer contains soils that are consistent with Soil Group A. *Table 5.5– Berm and Flow Path Length per Acre of Impervious Area* in the BMP manual shows that standard sizing for a 100' flow path requires that the berm length for a meadow buffer must be 75' per acre of impervious area and 25' per acre of lawn.

Evaluation of the watershed shows that it contains the following:
Impervious area = 0.120 Ac
Lawn area = 0.036 Ac

Standard sizing: 75(0.120) + 25(0.036) = 9'+0.9' = 9.9'. Proposed L=20'

Summary

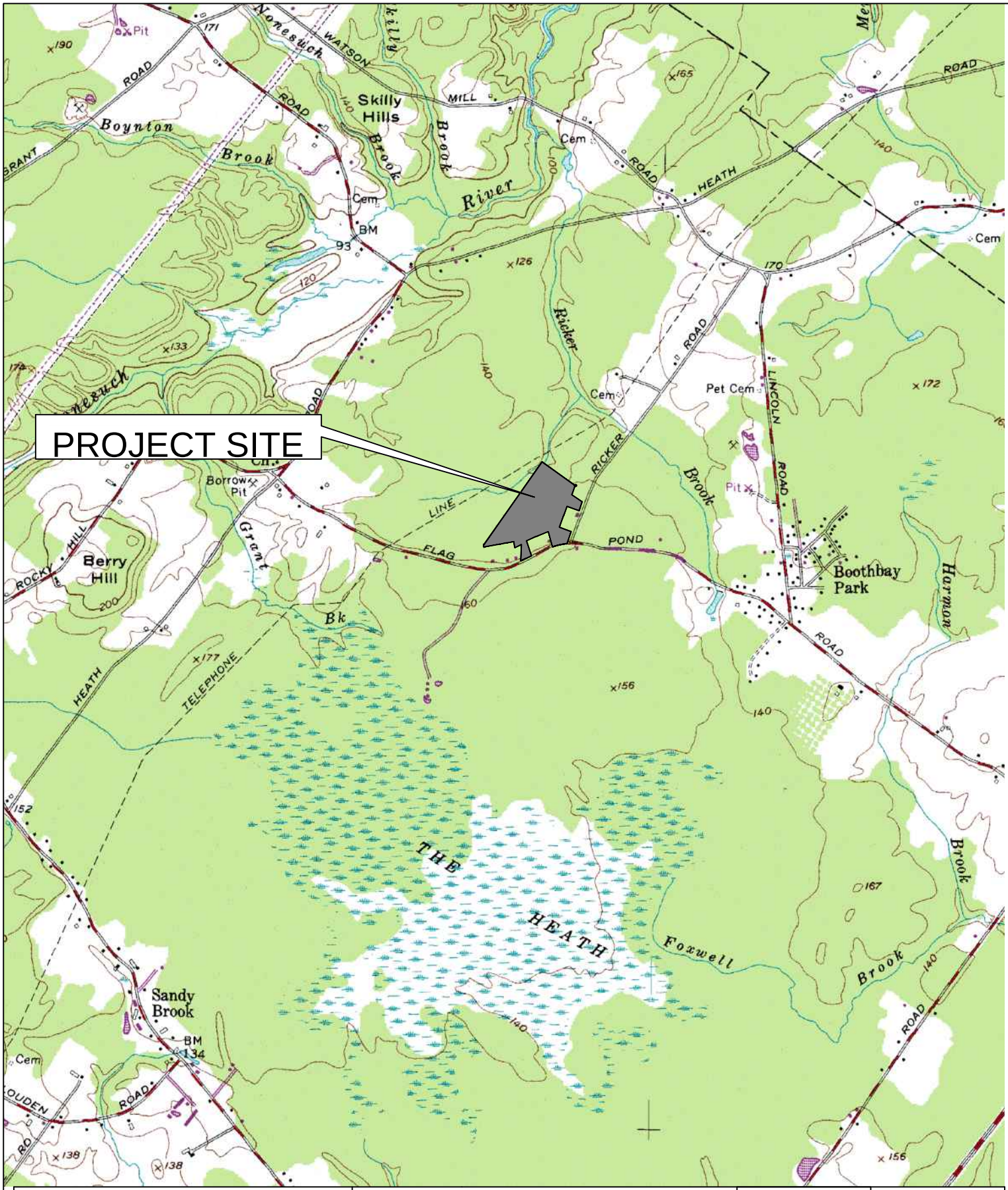
The following items are attached:

- Attachment 1: USGS Quad Map
- Attachment 2: Flood Insurance Rate Map
- Attachment 3: Medium Intensity Soil Survey
- Attachment 4: Treatment Areas
- Attachment 5: HydroCAD Calculations

- Attachment 6: Pre & Post Watershed Maps

Based on the results of this evaluation, the proposed stormwater design is not expected to cause flooding, erosion or other significant adverse effects downstream of the site.

Larry Bastian, P.E.



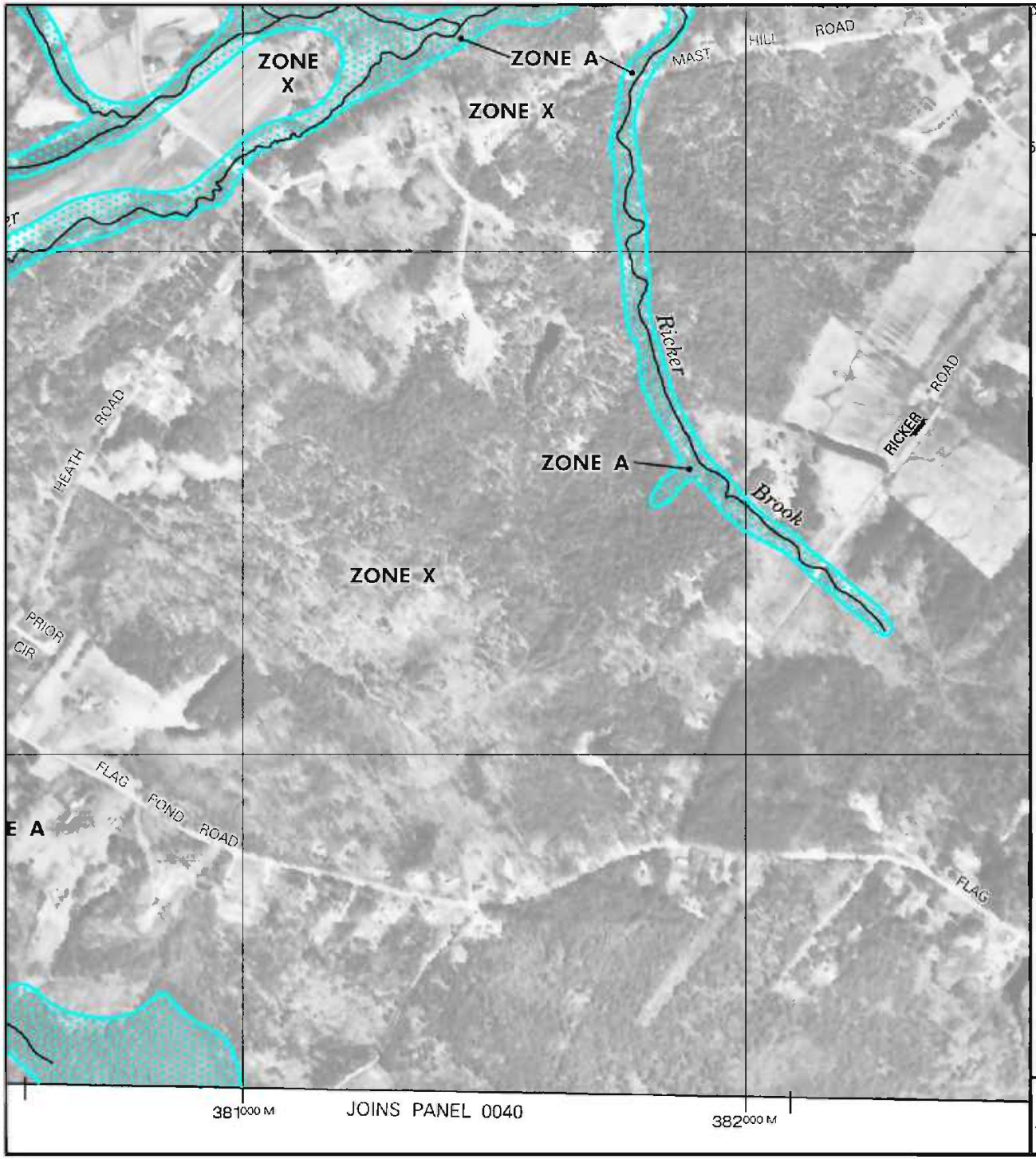
SHEET DESCRIPTION
U.S.G.S. QUADRANGLE MAP
OLD ORCHARD BEACH

PREPARED FOR
DAN FOSTER
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

TERRADYN
CONSULTANTS, LLC
P.O. Box 339
111 Elderberry Lane
New Gloucester, ME 04260
Office: (207) 926-5111
Fax: (207) 221-1317
www.terradynconsultants.com
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

JOB NO. 1722
DATE 4/19/2018
SCALE 1"=500'

FIGURE 1
OF 2



...onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0030D

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
SACO,
MAINE
YORK COUNTY

PANEL 30 OF 135

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SACO, CITY OF	230155	0030	D

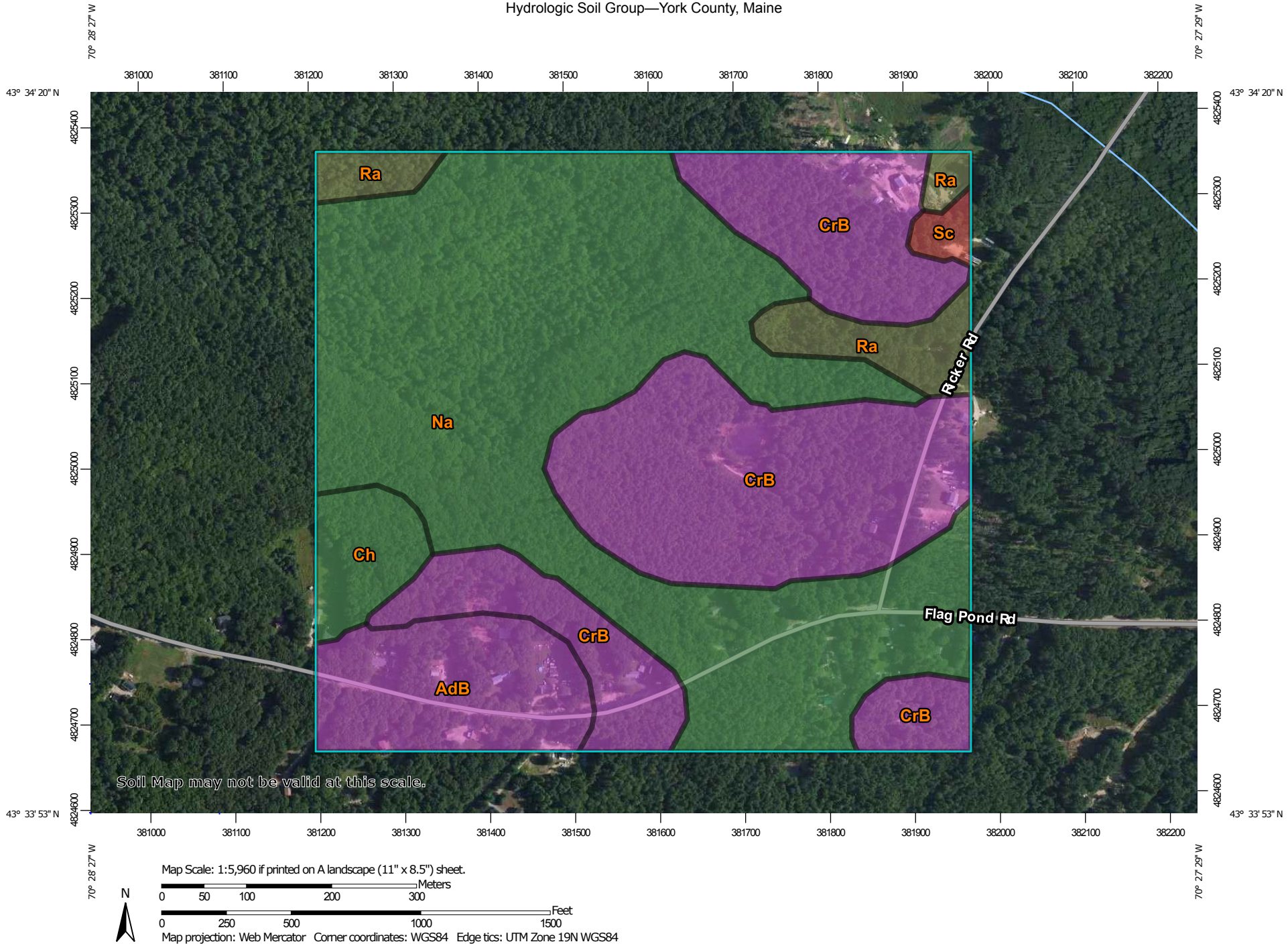
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23015500300

MAP REVISED
JANUARY 5, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Map Scale: 1:5,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

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 16, Sep 11, 2017

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

Date(s) aerial images were photographed: Jun 20, 2010—Jul 18, 2010

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AdB	Adams loamy sand, 0 to 8 percent slopes	A	11.7	8.7%
Ch	Chocorua peat	A/D	4.5	3.4%
CrB	Croghan loamy sand, 0 to 8 percent slopes	A	45.6	33.8%
Na	Naumburg sand	A/D	64.8	48.2%
Ra	Raynham silt loam	C/D	6.9	5.2%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	1.1	0.8%
Totals for Area of Interest			**134.6**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

1722 **Ricker Rd Subdivision, Saco ME**

Stormwater Treatment Areas

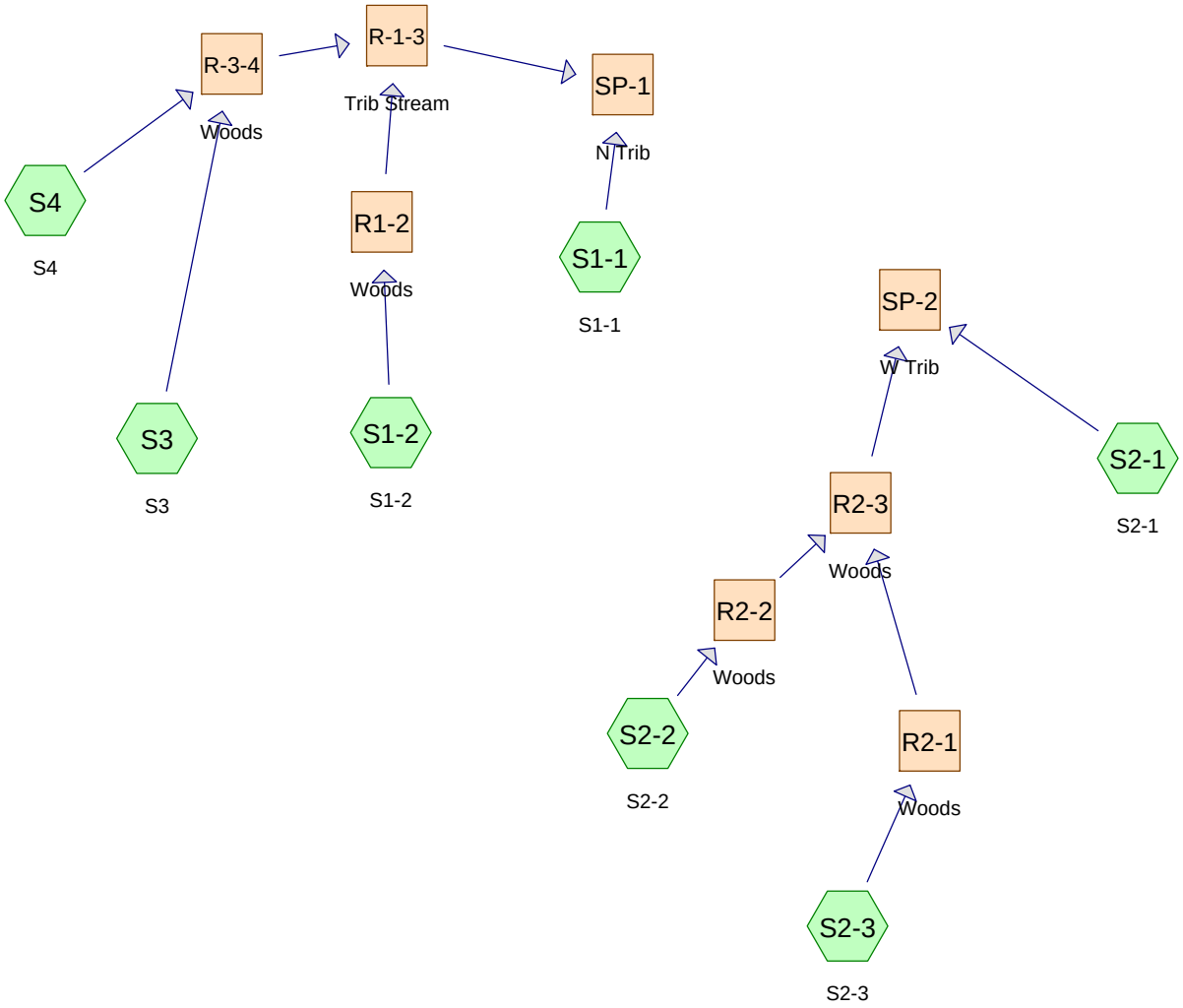
ROADWAY:

Total New Impervious Area (SF)=	46912
Total New Landscaped Area (SF)=	34970
Total Developed Area (SF) =	81882

Watershed	Location or Lot #	New Impervious Area (SF)	Total Impervious Area Treated (SF)	New Landscaped Area	Total Landscaped Area Treated (SF)	Developed Area (SF)	Total Developed Area Treated (SF)	Incremental Treatment % (Impervious)	Incremental Treatment % (Developed)	BMP
ROADWAY										
S-3C	sta 0+00 - 4+47 L	6258	6258	4917	4917	11175	11175	13.34%	13.65%	Roadside buffer
S-3B	sta 0+00 - 2+30 R	3220	3220	5025	5025	8245	8245	6.86%	10.07%	Lev spr #1/buffer
S-3A	sta 2+30 - 4+47 R	3038	3038	2387	2387	5425	5425	6.48%	6.63%	Lev spr #2/buffer
S-1C	sta 4+47 - 7+15 L (CB1)	3852	3852	1184	1184	5036	5036	8.21%	6.15%	Lev spr #3/buffer
S-1B	sta 4+47 - 10+00 R	6198	6198	5736	5736	11934	11934	13.21%	14.57%	Lev spr #3/buffer
S-1D	sta 7+15 - 8+94 L (CB2)	3091	3091	932	932	4023	4023	6.59%	4.91%	Lev spr #3/buffer
S-1E	sta 8+94 - 11+50 L (CB3))	4325	4325	1258	1258	5583	5583	9.22%	6.82%	Lev spr #4/buffer
S-1A	sta 10+00 - 14+50 R	5838	5838	5690	5690	11528	11528	12.44%	14.08%	Lev spr #4/buffer
S-2B	sta 11+50 - 14+50 L (CB4)	5240	5240	1571	1571	6811	6811	11.17%	8.32%	Lev spr #5/meadow buff
S-2C	sta 14+50 - 16+59 L	2926	0	3135	0	6061	0	0.00%	0.00%	No treatment
S-2A	sta 14+50 - 16+59 R	2926	0	3135	0	6061	0	0.00%	0.00%	No treatment
	Subtotal, Road	46912	41060	34970	28700	81882	69760	87.53%	85.20%	
	Treatment provided							88%	85%	
	Treatment required							75%	50%	
LOTS, draining to forested buffers - Developed portion of all lots drain to buffers per plan										
	1							14.29%	14.29%	Forested buffer
	2							14.29%	14.29%	Forested buffer
	3							14.29%	14.29%	Forested buffer
	4							14.29%	14.29%	Forested buffer
	5							14.29%	14.29%	Forested buffer
	6							14.29%	14.29%	Forested buffer
	7							14.29%	14.29%	Forested buffer
	Subtotal, Lots							**100.00%**	**100.00%**	
	Treatment provided							**100%**	**100%**	
	Treatment required							95%	80%	

Level Spreader Sizing

Location	Impervious Area (SF)	(Acres)	Landscaped Area (SF)	(Acres)	HSG	Cover	Flow path length thru buffer (ft)	Minimum berm Length (ft)	
Level Spreader #1	3220	0.074	5025	0.115	A/D	Forest	75	16	
Level Spreader #2	3038	0.070	2387	0.055	A/D	Forest	100	13	
Level Spreader #3	13141	0.302	7852	0.180	A	Forest	100	23	
Level Spreader #4	10163	0.233	6948	0.160	A	Forest	75	21	
Level Spreader #5	5240	0.120	1571	0.036	A	Meadow	100	10	



Subcat Reach Pond Link

Drainage Diagram for 1722 PRE

Prepared by {enter your company name here}, Printed 9/25/2018

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
21.278	30	Woods, Good, HSG A (S1-2, S2-1, S2-2, S2-3, S3, S4)
17.498	39	>75% Grass cover, Good, HSG A (S1-2, S2-1, S2-2, S2-3, S3, S4)
2.260	46	2 acre lots, 12% imp, HSG A (S2-3)
24.338	46	Lots, 12% imp, HSG A (S3, S4)
1.570	51	1 acre lots, 20% imp, HSG A (S2-3)
44.455	77	Woods, Good, HSG D (S1-1, S1-2, S2-1, S2-2, S2-3, S3, S4)
1.442	80	>75% Grass cover, Good, HSG D (S3, S4)
1.291	98	Paved (S2-1, S2-2, S4)
0.543	98	Pavement, HSG A (S2-3, S3)
0.408	98	Pond (S1-2)
115.081		**TOTAL AREA**

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=1.28"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=10.06 cfs 1.616 af

Subcatchment S1-2: S1-2 Runoff Area=501,354 sf 3.55% Impervious Runoff Depth=0.01"
Flow Length=548' Tc=36.0 min CN=40 Runoff=0.01 cfs 0.006 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=0.61"
Flow Length=406' Tc=29.3 min CN=64 Runoff=0.44 cfs 0.070 af

Subcatchment S2-2: S2-2 Runoff Area=41,137 sf 1.78% Impervious Runoff Depth=0.00"
Flow Length=135' Slope=0.0444 '/' Tc=19.5 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment S2-3: S2-3 Runoff Area=196,018 sf 18.24% Impervious Runoff Depth=0.15"
Flow Length=570' Tc=36.5 min CN=50 Runoff=0.11 cfs 0.056 af

Subcatchment S3: S3 Runoff Area=816,785 sf 6.17% Impervious Runoff Depth=0.13"
Flow Length=1,060' Tc=72.1 min CN=49 Runoff=0.33 cfs 0.200 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>0.31"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=2.82 cfs 1.632 af

Reach R-1-3: Trib Stream Avg. Depth=0.63' Max Vel=1.24 fps Inflow=3.10 cfs 1.830 af
n=0.070 L=263.0' S=0.0114 '/' Capacity=27.91 cfs Outflow=3.10 cfs 1.829 af

Reach R-3-4: Woods Avg. Depth=0.73' Max Vel=0.83 fps Inflow=3.14 cfs 1.831 af
n=0.100 L=1,063.0' S=0.0085 '/' Capacity=9.83 cfs Outflow=3.10 cfs 1.825 af

Reach R1-2: Woods Avg. Depth=0.05' Max Vel=0.22 fps Inflow=0.01 cfs 0.006 af
n=0.070 L=218.0' S=0.0092 '/' Capacity=30.85 cfs Outflow=0.01 cfs 0.006 af

Reach R2-1: Woods Avg. Depth=0.10' Max Vel=0.64 fps Inflow=0.11 cfs 0.056 af
n=0.070 L=321.0' S=0.0312 '/' Capacity=50.33 cfs Outflow=0.11 cfs 0.056 af

Reach R2-2: Woods Avg. Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.070 L=89.0' S=0.0674 '/' Capacity=74.05 cfs Outflow=0.00 cfs 0.000 af

Reach R2-3: Woods Avg. Depth=0.10' Max Vel=0.65 fps Inflow=0.11 cfs 0.056 af
n=0.070 L=152.0' S=0.0329 '/' Capacity=51.72 cfs Outflow=0.10 cfs 0.056 af

Reach SP-1: N Trib Inflow=10.06 cfs 3.445 af
Outflow=10.06 cfs 3.445 af

Reach SP-2: W Trib Inflow=0.44 cfs 0.126 af
Outflow=0.44 cfs 0.126 af

Total Runoff Area = 115.081 ac Runoff Volume = 3.579 af Average Runoff Depth = 0.37"
95.01% Pervious = 109.334 ac 4.99% Impervious = 5.747 ac

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=2.54"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=20.43 cfs 3.197 af

Subcatchment S1-2: S1-2 Runoff Area=501,354 sf 3.55% Impervious Runoff Depth=0.21"
Flow Length=548' Tc=36.0 min CN=40 Runoff=0.38 cfs 0.205 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=1.52"
Flow Length=406' Tc=29.3 min CN=64 Runoff=1.31 cfs 0.174 af

Subcatchment S2-2: S2-2 Runoff Area=41,137 sf 1.78% Impervious Runoff Depth=0.02"
Flow Length=135' Slope=0.0444 '/' Tc=19.5 min CN=32 Runoff=0.00 cfs 0.002 af

Subcatchment S2-3: S2-3 Runoff Area=196,018 sf 18.24% Impervious Runoff Depth=0.65"
Flow Length=570' Tc=36.5 min CN=50 Runoff=1.18 cfs 0.244 af

Subcatchment S3: S3 Runoff Area=816,785 sf 6.17% Impervious Runoff Depth=0.60"
Flow Length=1,060' Tc=72.1 min CN=49 Runoff=2.98 cfs 0.938 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>0.99"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=11.25 cfs 5.187 af

Reach R-1-3: Trib Stream Avg. Depth=1.22' Max Vel=1.91 fps Inflow=12.98 cfs 6.320 af
n=0.070 L=263.0' S=0.0114 '/' Capacity=27.91 cfs Outflow=12.97 cfs 6.318 af

Reach R-3-4: Woods Avg. Depth=1.42' Max Vel=1.26 fps Inflow=12.73 cfs 6.125 af
n=0.100 L=1,063.0' S=0.0085 '/' Capacity=9.83 cfs Outflow=12.66 cfs 6.115 af

Reach R1-2: Woods Avg. Depth=0.25' Max Vel=0.62 fps Inflow=0.38 cfs 0.205 af
n=0.070 L=218.0' S=0.0092 '/' Capacity=30.85 cfs Outflow=0.37 cfs 0.205 af

Reach R2-1: Woods Avg. Depth=0.32' Max Vel=1.32 fps Inflow=1.18 cfs 0.244 af
n=0.070 L=321.0' S=0.0312 '/' Capacity=50.33 cfs Outflow=1.16 cfs 0.244 af

Reach R2-2: Woods Avg. Depth=0.01' Max Vel=0.29 fps Inflow=0.00 cfs 0.002 af
n=0.070 L=89.0' S=0.0674 '/' Capacity=74.05 cfs Outflow=0.00 cfs 0.002 af

Reach R2-3: Woods Avg. Depth=0.31' Max Vel=1.34 fps Inflow=1.16 cfs 0.246 af
n=0.070 L=152.0' S=0.0329 '/' Capacity=51.72 cfs Outflow=1.16 cfs 0.246 af

Reach SP-1: N Trib Inflow=20.44 cfs 9.515 af
Outflow=20.44 cfs 9.515 af

Reach SP-2: W Trib Inflow=1.99 cfs 0.420 af
Outflow=1.99 cfs 0.420 af

Total Runoff Area = 115.081 ac Runoff Volume = 9.947 af Average Runoff Depth = 1.04"
95.01% Pervious = 109.334 ac 4.99% Impervious = 5.747 ac

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=3.65"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=29.48 cfs 4.600 af

Subcatchment S1-2: S1-2 Runoff Area=501,354 sf 3.55% Impervious Runoff Depth=0.56"
Flow Length=548' Tc=36.0 min CN=40 Runoff=2.02 cfs 0.540 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=2.41"
Flow Length=406' Tc=29.3 min CN=64 Runoff=2.16 cfs 0.276 af

Subcatchment S2-2: S2-2 Runoff Area=41,137 sf 1.78% Impervious Runoff Depth=0.16"
Flow Length=135' Slope=0.0444 '/' Tc=19.5 min CN=32 Runoff=0.02 cfs 0.013 af

Subcatchment S2-3: S2-3 Runoff Area=196,018 sf 18.24% Impervious Runoff Depth=1.24"
Flow Length=570' Tc=36.5 min CN=50 Runoff=2.77 cfs 0.466 af

Subcatchment S3: S3 Runoff Area=816,785 sf 6.17% Impervious Runoff Depth=1.17"
Flow Length=1,060' Tc=72.1 min CN=49 Runoff=7.10 cfs 1.824 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>1.71"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=21.02 cfs 8.986 af

Reach R-1-3: Trib Stream Avg. Depth=1.65' Max Vel=2.30 fps Inflow=24.53 cfs 11.338 af
n=0.070 L=263.0' S=0.0114 '/' Capacity=27.91 cfs Outflow=24.52 cfs 11.335 af

Reach R-3-4: Woods Avg. Depth=2.08' Max Vel=1.43 fps Inflow=24.00 cfs 10.811 af
n=0.100 L=1,063.0' S=0.0085 '/' Capacity=9.83 cfs Outflow=23.76 cfs 10.798 af

Reach R1-2: Woods Avg. Depth=0.56' Max Vel=1.03 fps Inflow=2.02 cfs 0.540 af
n=0.070 L=218.0' S=0.0092 '/' Capacity=30.85 cfs Outflow=2.00 cfs 0.540 af

Reach R2-1: Woods Avg. Depth=0.47' Max Vel=1.71 fps Inflow=2.77 cfs 0.466 af
n=0.070 L=321.0' S=0.0312 '/' Capacity=50.33 cfs Outflow=2.75 cfs 0.466 af

Reach R2-2: Woods Avg. Depth=0.04' Max Vel=0.51 fps Inflow=0.02 cfs 0.013 af
n=0.070 L=89.0' S=0.0674 '/' Capacity=74.05 cfs Outflow=0.02 cfs 0.013 af

Reach R2-3: Woods Avg. Depth=0.47' Max Vel=1.75 fps Inflow=2.75 cfs 0.479 af
n=0.070 L=152.0' S=0.0329 '/' Capacity=51.72 cfs Outflow=2.73 cfs 0.479 af

Reach SP-1: N Trib Inflow=30.92 cfs 15.936 af
Outflow=30.92 cfs 15.936 af

Reach SP-2: W Trib Inflow=4.32 cfs 0.755 af
Outflow=4.32 cfs 0.755 af

Total Runoff Area = 115.081 ac Runoff Volume = 16.706 af Average Runoff Depth = 1.74"
95.01% Pervious = 109.334 ac 4.99% Impervious = 5.747 ac

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=4.64"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=37.37 cfs 5.837 af

Subcatchment S1-2: S1-2 Runoff Area=501,354 sf 3.55% Impervious Runoff Depth=0.96"
Flow Length=548' Tc=36.0 min CN=40 Runoff=4.44 cfs 0.919 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=3.23"
Flow Length=406' Tc=29.3 min CN=64 Runoff=2.95 cfs 0.371 af

Subcatchment S2-2: S2-2 Runoff Area=41,137 sf 1.78% Impervious Runoff Depth=0.38"
Flow Length=135' Slope=0.0444 '/' Tc=19.5 min CN=32 Runoff=0.08 cfs 0.030 af

Subcatchment S2-3: S2-3 Runoff Area=196,018 sf 18.24% Impervious Runoff Depth=1.84"
Flow Length=570' Tc=36.5 min CN=50 Runoff=4.43 cfs 0.688 af

Subcatchment S3: S3 Runoff Area=816,785 sf 6.17% Impervious Runoff Depth=1.74"
Flow Length=1,060' Tc=72.1 min CN=49 Runoff=11.56 cfs 2.723 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>2.41"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=30.73 cfs 12.651 af

Reach R-1-3: Trib Stream Avg. Depth=1.99' Max Vel=2.56 fps Inflow=36.02 cfs 16.279 af
n=0.070 L=263.0' S=0.0114 '/' Capacity=27.91 cfs Outflow=36.01 cfs 16.276 af

Reach R-3-4: Woods Avg. Depth=2.74' Max Vel=1.50 fps Inflow=35.18 cfs 15.374 af
n=0.100 L=1,063.0' S=0.0085 '/' Capacity=9.83 cfs Outflow=34.81 cfs 15.360 af

Reach R1-2: Woods Avg. Depth=0.80' Max Vel=1.30 fps Inflow=4.44 cfs 0.919 af
n=0.070 L=218.0' S=0.0092 '/' Capacity=30.85 cfs Outflow=4.41 cfs 0.919 af

Reach R2-1: Woods Avg. Depth=0.59' Max Vel=1.98 fps Inflow=4.43 cfs 0.688 af
n=0.070 L=321.0' S=0.0312 '/' Capacity=50.33 cfs Outflow=4.40 cfs 0.688 af

Reach R2-2: Woods Avg. Depth=0.08' Max Vel=0.77 fps Inflow=0.08 cfs 0.030 af
n=0.070 L=89.0' S=0.0674 '/' Capacity=74.05 cfs Outflow=0.08 cfs 0.030 af

Reach R2-3: Woods Avg. Depth=0.59' Max Vel=2.02 fps Inflow=4.48 cfs 0.719 af
n=0.070 L=152.0' S=0.0329 '/' Capacity=51.72 cfs Outflow=4.46 cfs 0.719 af

Reach SP-1: N Trib Inflow=42.56 cfs 22.113 af
Outflow=42.56 cfs 22.113 af

Reach SP-2: W Trib Inflow=6.73 cfs 1.090 af
Outflow=6.73 cfs 1.090 af

Total Runoff Area = 115.081 ac Runoff Volume = 23.220 af Average Runoff Depth = 2.42"
95.01% Pervious = 109.334 ac 4.99% Impervious = 5.747 ac

Summary for Subcatchment S1-1: S1-1

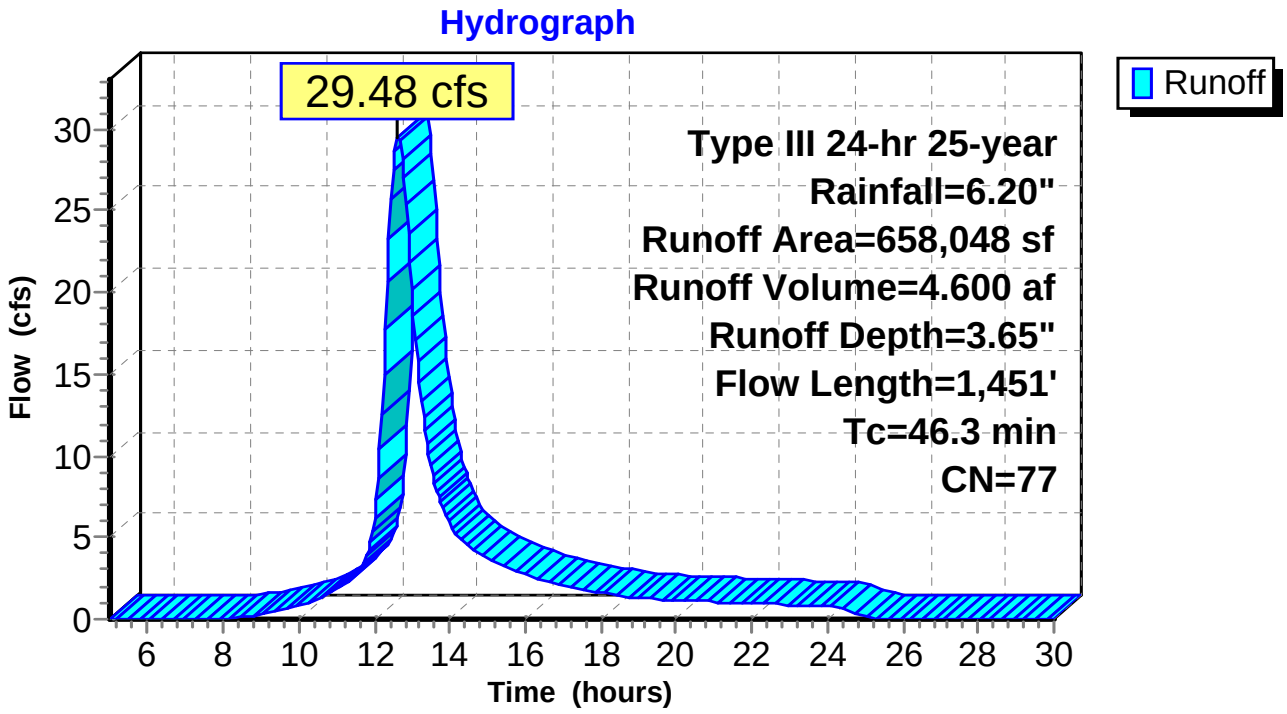
Runoff = 29.48 cfs @ 12.63 hrs, Volume= 4.600 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (sf)	CN	Description
658,048	77	Woods, Good, HSG D
658,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.0	150	0.0204	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	364	0.0330	0.91		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.6	937	0.0085	1.47	9.79	**Parabolic Channel, C-D** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.070 Sluggish weedy reaches w/pools
46.3	1,451	Total			

Subcatchment S1-1: S1-1



Summary for Subcatchment S1-2: S1-2

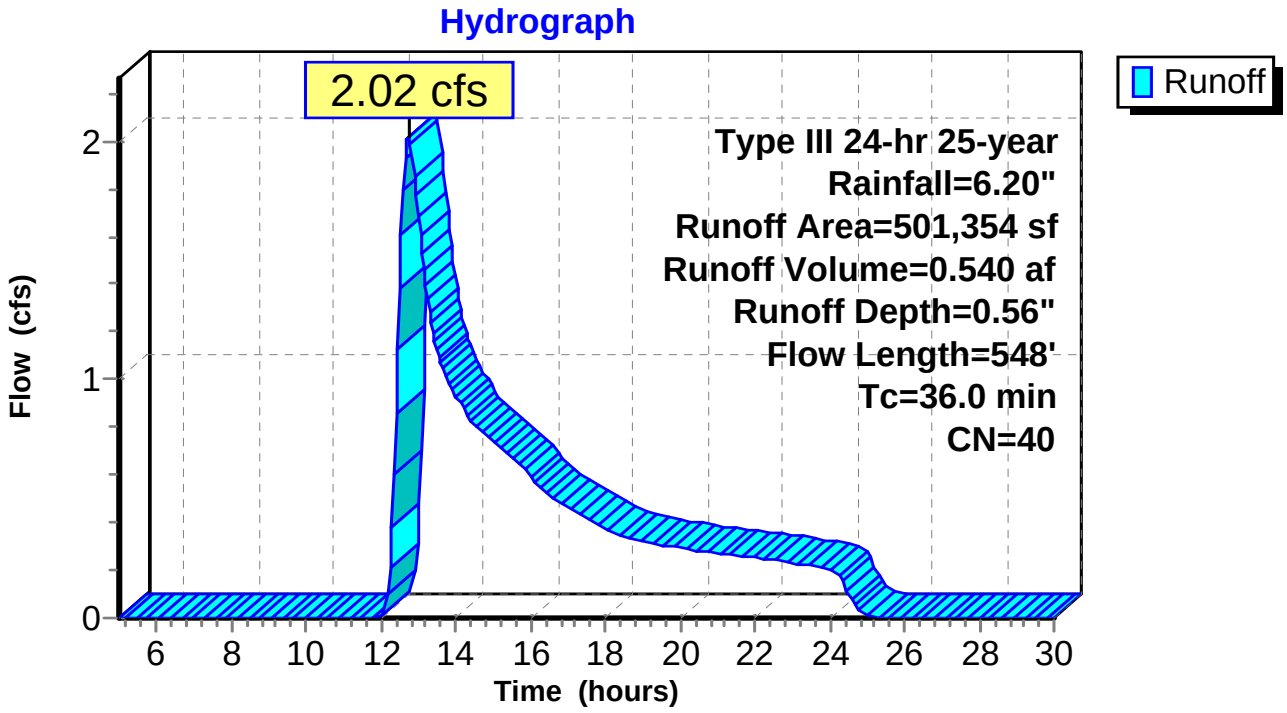
Runoff = 2.02 cfs @ 12.74 hrs, Volume= 0.540 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	51,576	77	Woods, Good, HSG D
	296,449	30	Woods, Good, HSG A
	135,554	39	>75% Grass cover, Good, HSG A
*	17,775	98	Pond
	501,354	40	Weighted Average
	483,579		96.45% Pervious Area
	17,775		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0200	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
6.8	398	0.0377	0.97		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
36.0	548	Total			

Subcatchment S1-2: S1-2



Summary for Subcatchment S2-1: S2-1

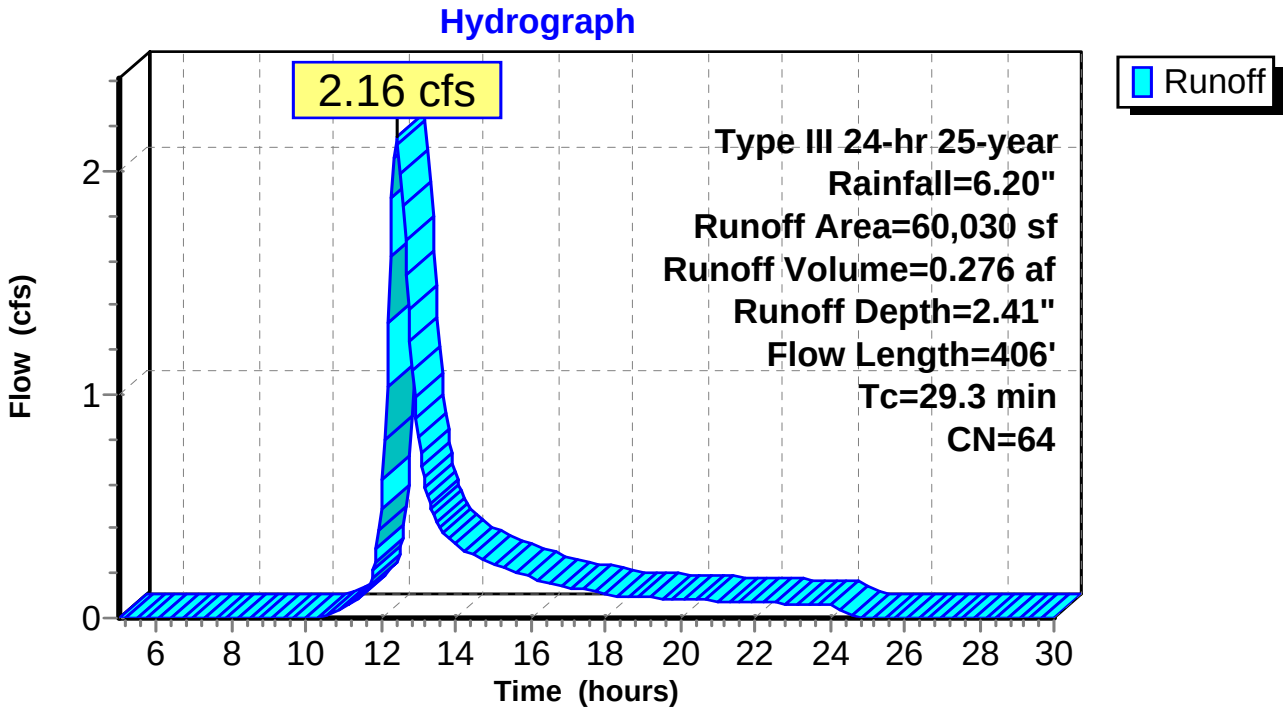
Runoff = 2.16 cfs @ 12.43 hrs, Volume= 0.276 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	524	39	>75% Grass cover, Good, HSG A
*	408	98	Paved
	42,692	77	Woods, Good, HSG D
	16,406	30	Woods, Good, HSG A
	60,030	64	Weighted Average
	59,622		99.32% Pervious Area
	408		0.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	150	0.0300	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
4.4	256	0.0377	0.97		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
29.3	406	Total			

Subcatchment S2-1: S2-1



Summary for Subcatchment S2-2: S2-2

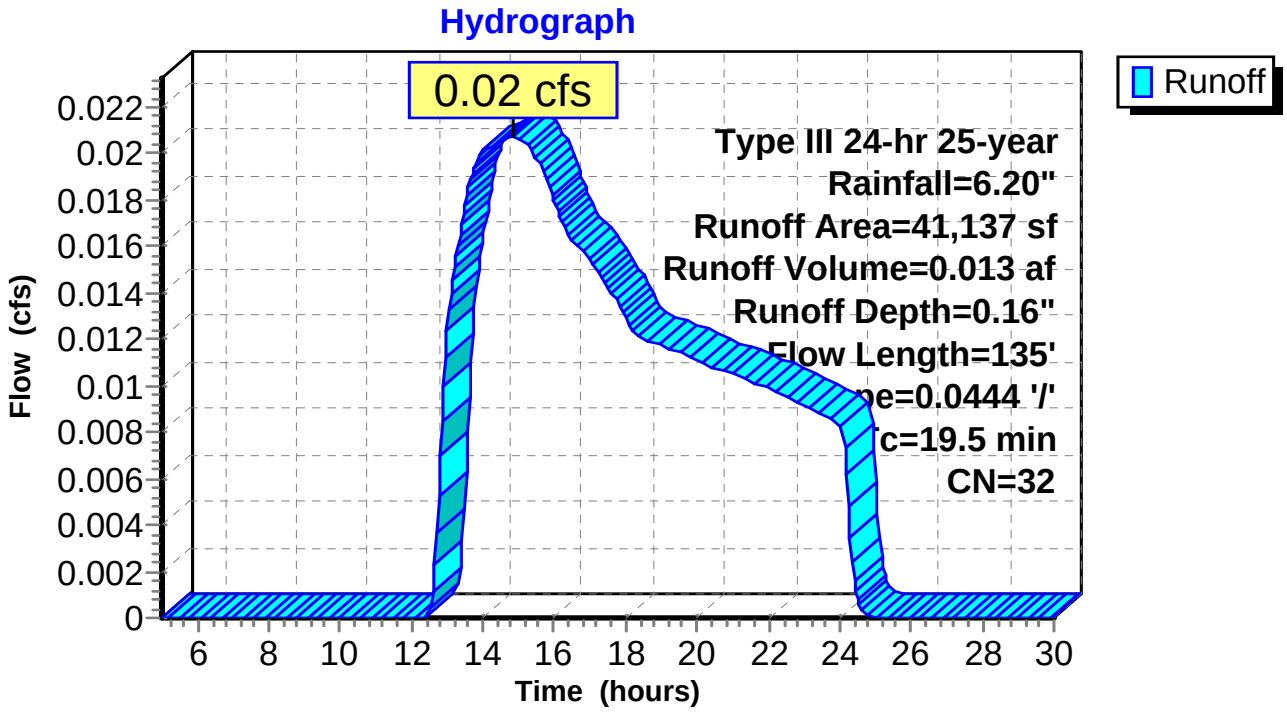
Runoff = 0.02 cfs @ 14.84 hrs, Volume= 0.013 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	987	39	>75% Grass cover, Good, HSG A
*	732	98	Paved
	709	77	Woods, Good, HSG D
	38,709	30	Woods, Good, HSG A
	41,137	32	Weighted Average
	40,405		98.22% Pervious Area
	732		1.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.5	135	0.0444	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"

Subcatchment S2-2: S2-2



Summary for Subcatchment S2-3: S2-3

Runoff = 2.77 cfs @ 12.60 hrs, Volume= 0.466 af, Depth= 1.24"

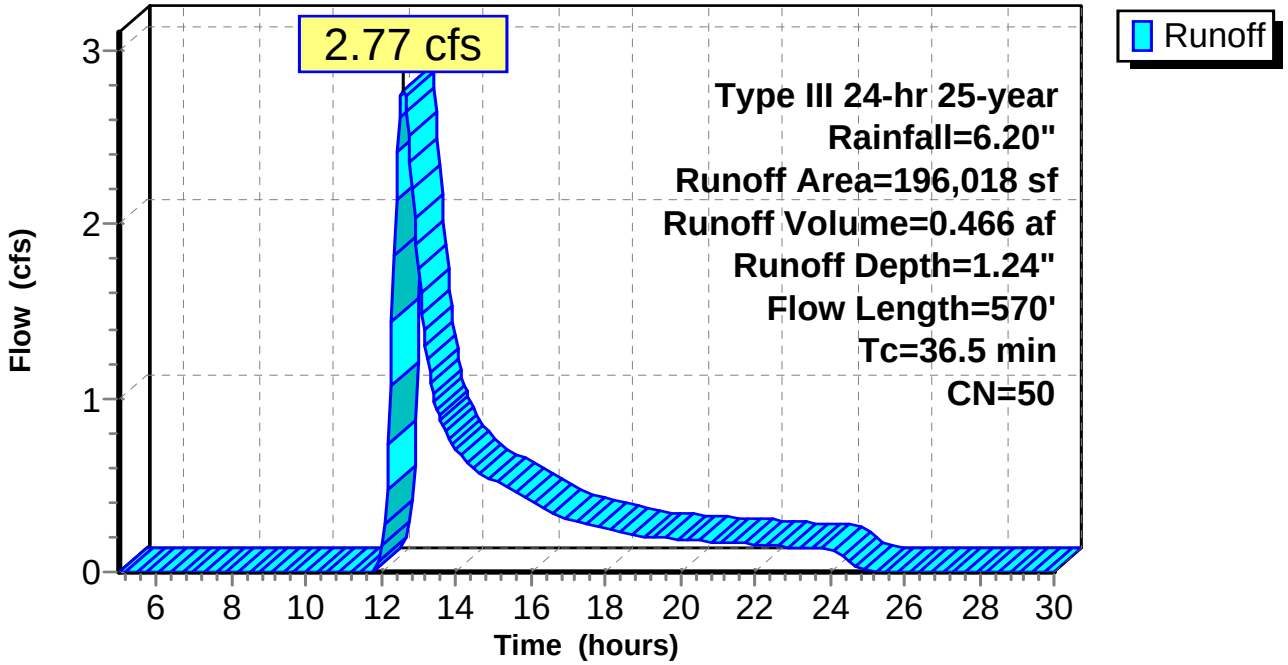
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	8,401	30	Woods, Good, HSG A
	8,608	39	>75% Grass cover, Good, HSG A
*	10,268	98	Pavement, HSG A
	98,452	46	2 acre lots, 12% imp, HSG A
	68,388	51	1 acre lots, 20% imp, HSG A
	1,901	77	Woods, Good, HSG D
	196,018	50	Weighted Average
	160,258		81.76% Pervious Area
	35,760		18.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.8	150	0.0047	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
10.4	300	0.0047	0.48		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0300	0.87		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
36.5	570	Total			

Subcatchment S2-3: S2-3

Hydrograph



Summary for Subcatchment S3: S3

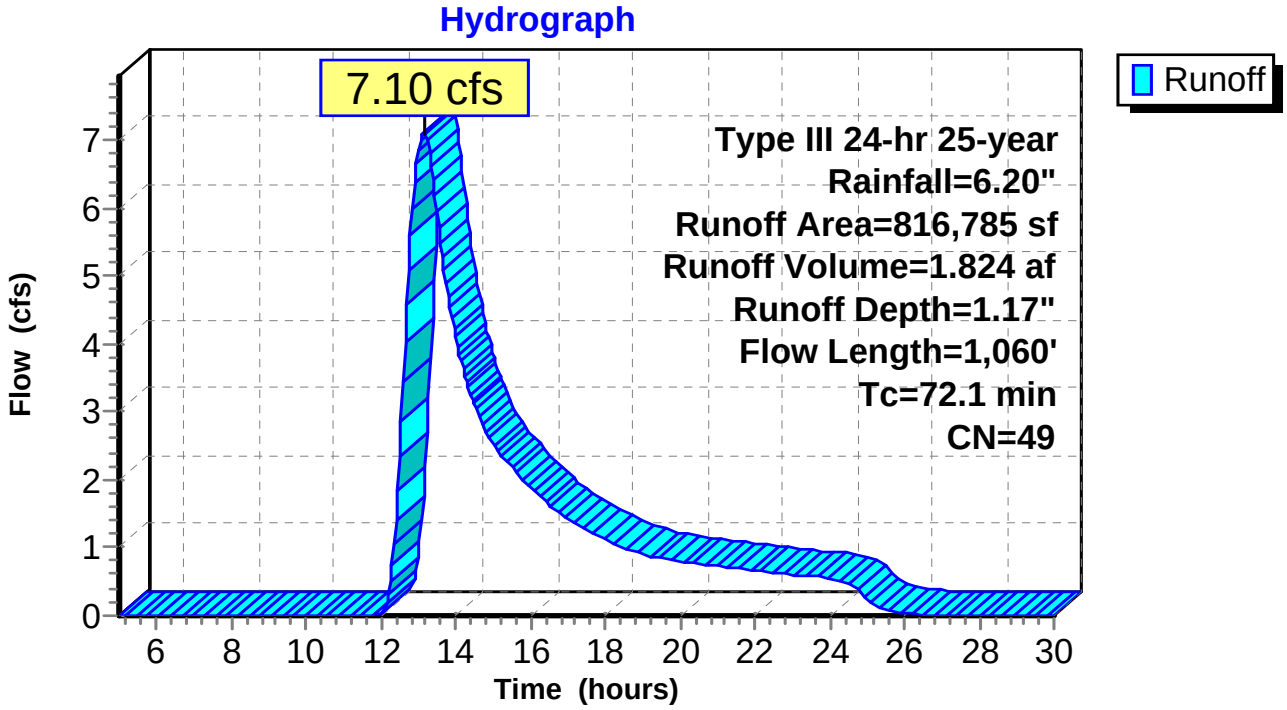
Runoff = 7.10 cfs @ 13.14 hrs, Volume= 1.824 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	198,324	77	Woods, Good, HSG D
	232,101	30	Woods, Good, HSG A
	60,342	39	>75% Grass cover, Good, HSG A
*	308,781	46	Lots, 12% imp, HSG A
*	13,369	98	Pavement, HSG A
	3,868	80	>75% Grass cover, Good, HSG D
	816,785	49	Weighted Average
	766,362		93.83% Pervious Area
	50,423		6.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.6	150	0.0100	0.06		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
33.5	910	0.0082	0.45		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
72.1	1,060	Total			

Subcatchment S3: S3



Summary for Subcatchment S4: S4

Runoff = 21.02 cfs @ 14.70 hrs, Volume= 8.986 af, Depth> 1.71"

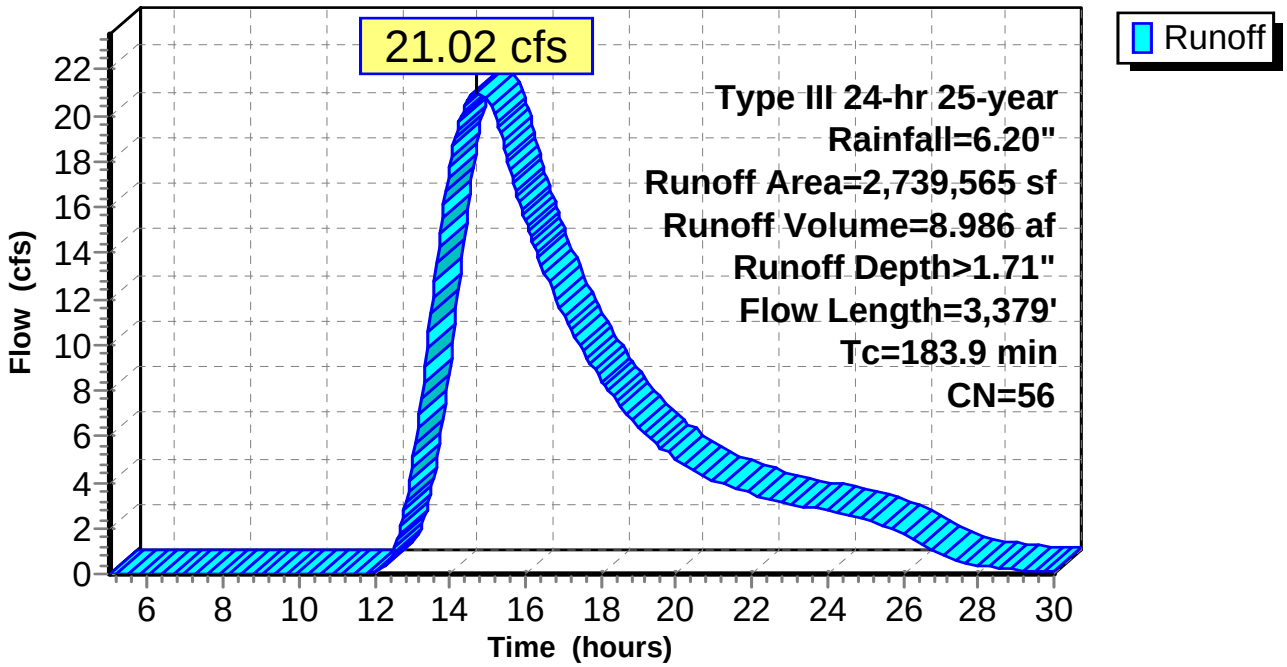
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	983,204	77	Woods, Good, HSG D
	334,784	30	Woods, Good, HSG A
	556,189	39	>75% Grass cover, Good, HSG A
*	751,373	46	Lots, 12% imp, HSG A
	58,930	80	>75% Grass cover, Good, HSG D
*	55,085	98	Paved
	2,739,565	56	Weighted Average
	2,594,315		94.70% Pervious Area
	145,250		5.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	150	0.0160	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
21.6	759	0.0070	0.59		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
132.2	1,430	0.0013	0.18		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.5	1,040	0.0100	1.11	7.43	**Parabolic Channel, D-E** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.100 Very weedy reaches w/pools
183.9	3,379	Total			

Subcatchment S4: S4

Hydrograph



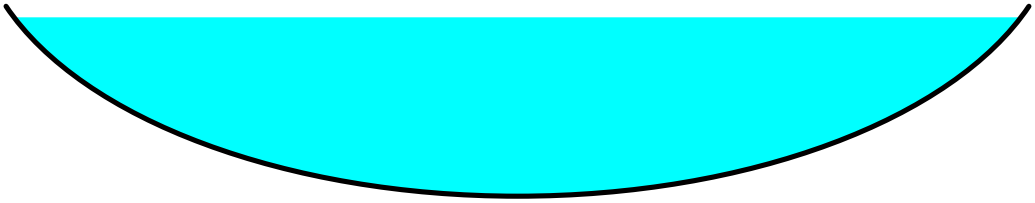
Summary for Reach R-1-3: Trib Stream

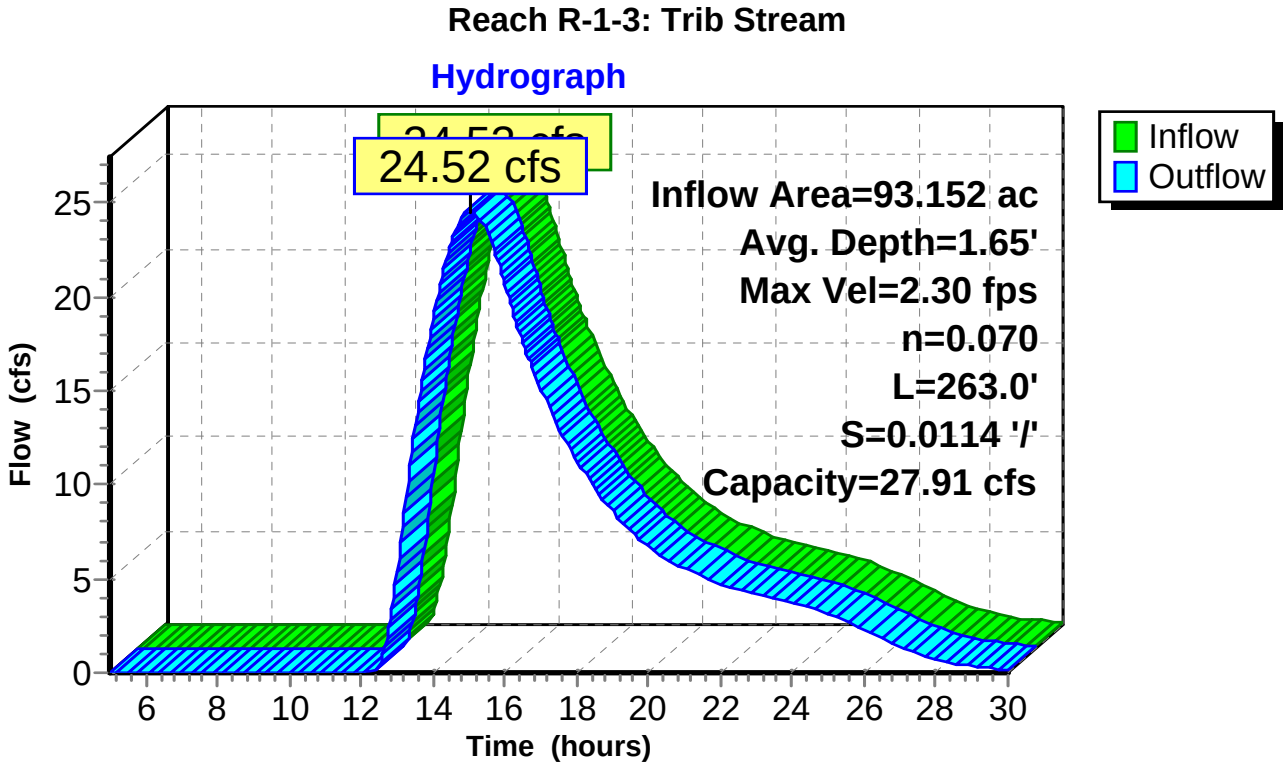
Inflow Area = 93.152 ac, 5.26% Impervious, Inflow Depth > 1.46" for 25-year event
Inflow = 24.53 cfs @ 14.96 hrs, Volume= 11.338 af
Outflow = 24.52 cfs @ 15.02 hrs, Volume= 11.335 af, Atten= 0%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 3.1 min

Peak Storage= 2,800 cf @ 14.99 hrs, Average Depth at Peak Storage= 1.65'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 27.91 cfs

10.00' x 1.75' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 263.0' Slope= 0.0114 '/'
Inlet Invert= 140.00', Outlet Invert= 137.00'





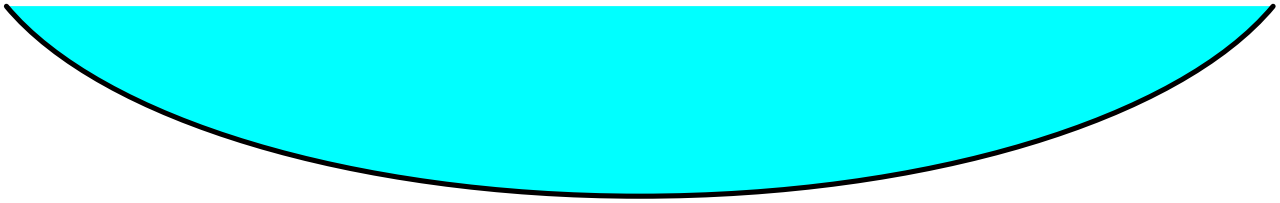
Summary for Reach R-3-4: Woods

Inflow Area = 81.643 ac, 5.50% Impervious, Inflow Depth > 1.59" for 25-year event
Inflow = 24.00 cfs @ 14.52 hrs, Volume= 10.811 af
Outflow = 23.76 cfs @ 14.98 hrs, Volume= 10.798 af, Atten= 1%, Lag= 27.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.43 fps, Min. Travel Time= 12.4 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 19.5 min

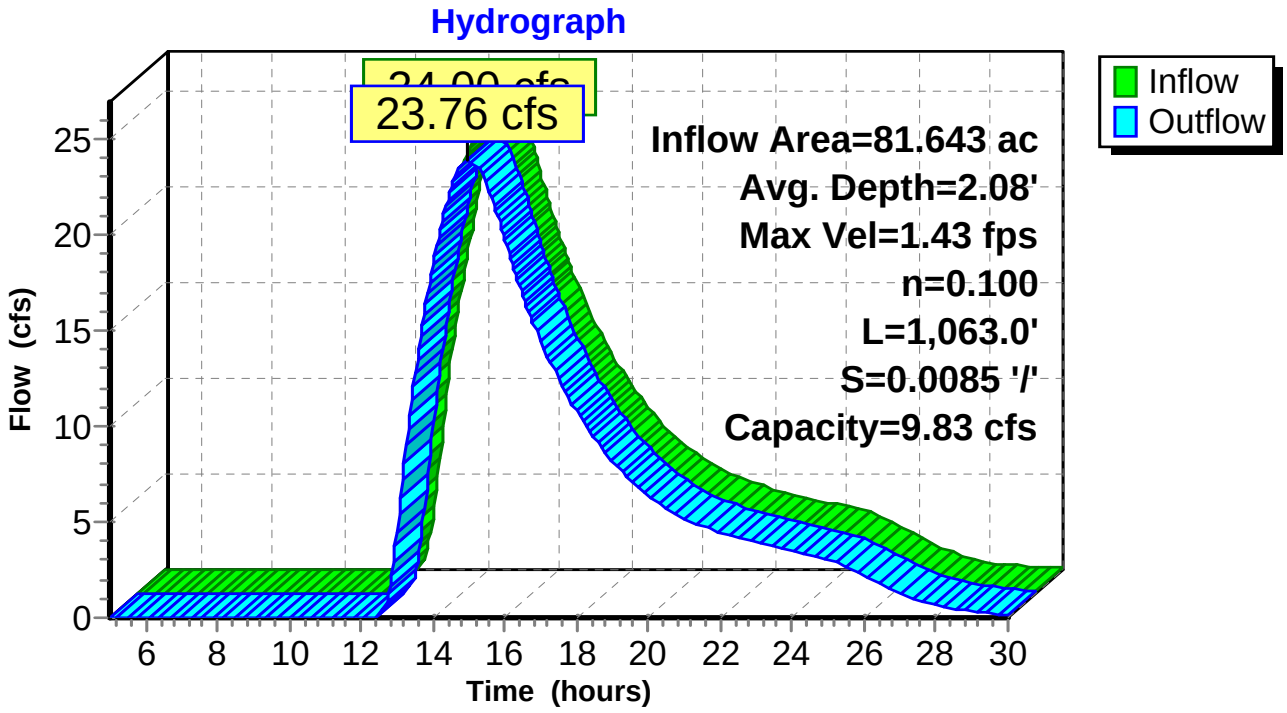
Peak Storage= 17,684 cf @ 14.77 hrs, Average Depth at Peak Storage= 2.08'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 9.83 cfs

10.00' x 1.25' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools
Length= 1,063.0' Slope= 0.0085 '/'
Inlet Invert= 149.00', Outlet Invert= 140.00'



‡

Reach R-3-4: Woods



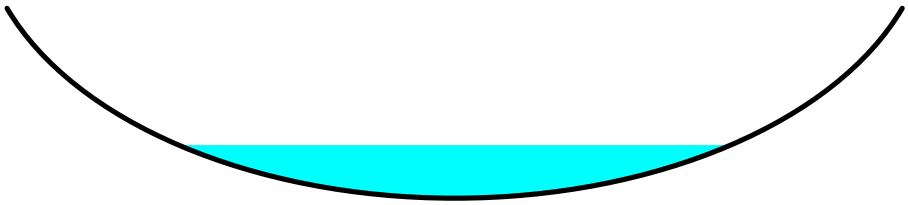
Summary for Reach R1-2: Woods

Inflow Area = 11.510 ac, 3.55% Impervious, Inflow Depth = 0.56" for 25-year event
Inflow = 2.02 cfs @ 12.74 hrs, Volume= 0.540 af
Outflow = 2.00 cfs @ 12.85 hrs, Volume= 0.540 af, Atten= 1%, Lag= 6.4 min

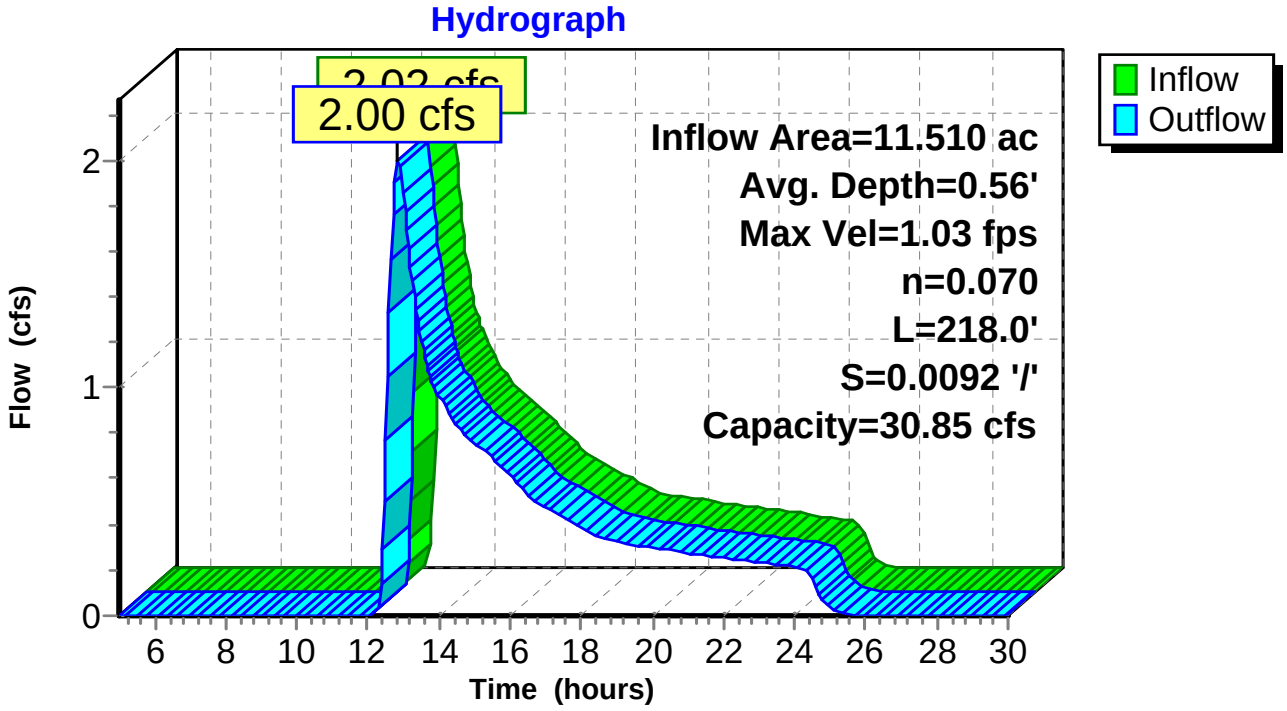
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.03 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 6.9 min

Peak Storage= 425 cf @ 12.79 hrs, Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 30.85 cfs

10.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 218.0' Slope= 0.0092 '/'
Inlet Invert= 142.00', Outlet Invert= 140.00'



Reach R1-2: Woods



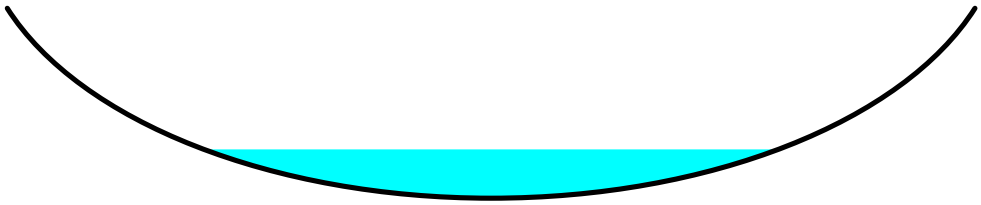
Summary for Reach R2-1: Woods

Inflow Area = 4.500 ac, 18.24% Impervious, Inflow Depth = 1.24" for 25-year event
Inflow = 2.77 cfs @ 12.60 hrs, Volume= 0.466 af
Outflow = 2.75 cfs @ 12.69 hrs, Volume= 0.466 af, Atten= 1%, Lag= 5.5 min

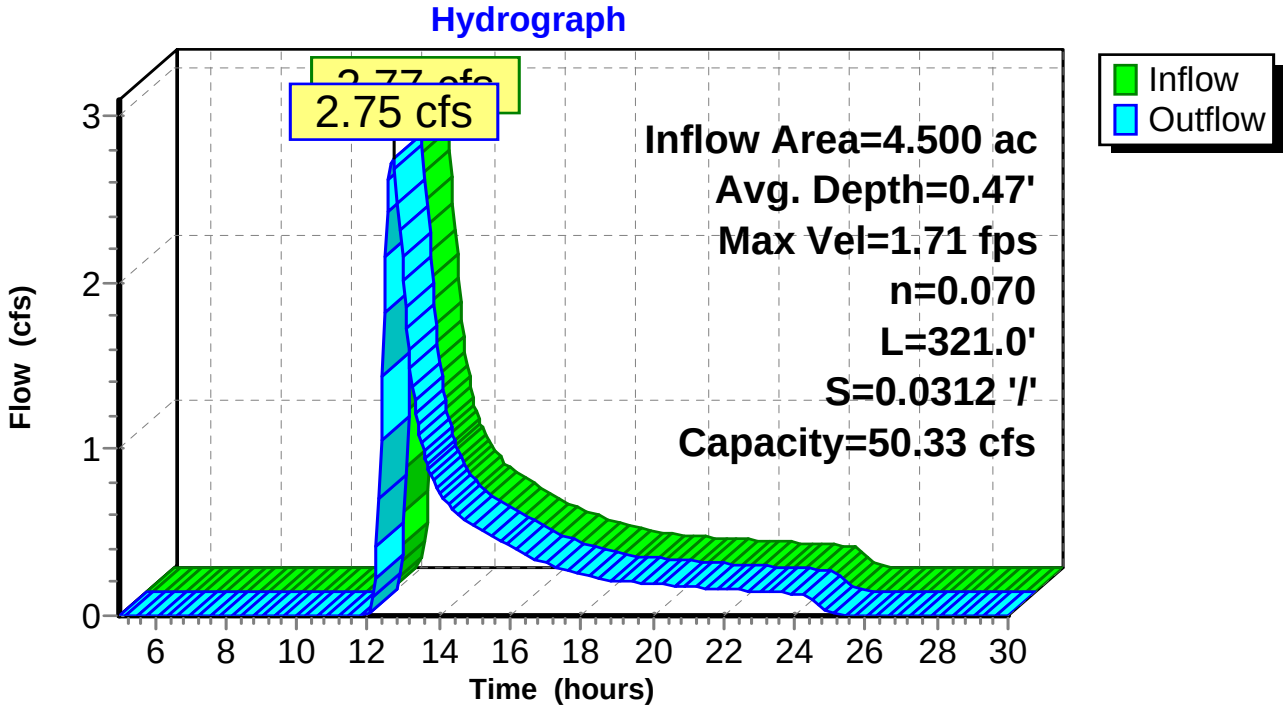
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 7.1 min

Peak Storage= 514 cf @ 12.64 hrs, Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.85', Capacity at Bank-Full= 50.33 cfs

10.00' x 1.85' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 321.0' Slope= 0.0312 '/'
Inlet Invert= 152.00', Outlet Invert= 142.00'



Reach R2-1: Woods



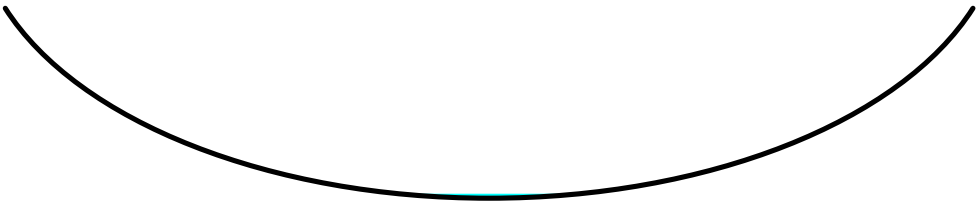
Summary for Reach R2-2: Woods

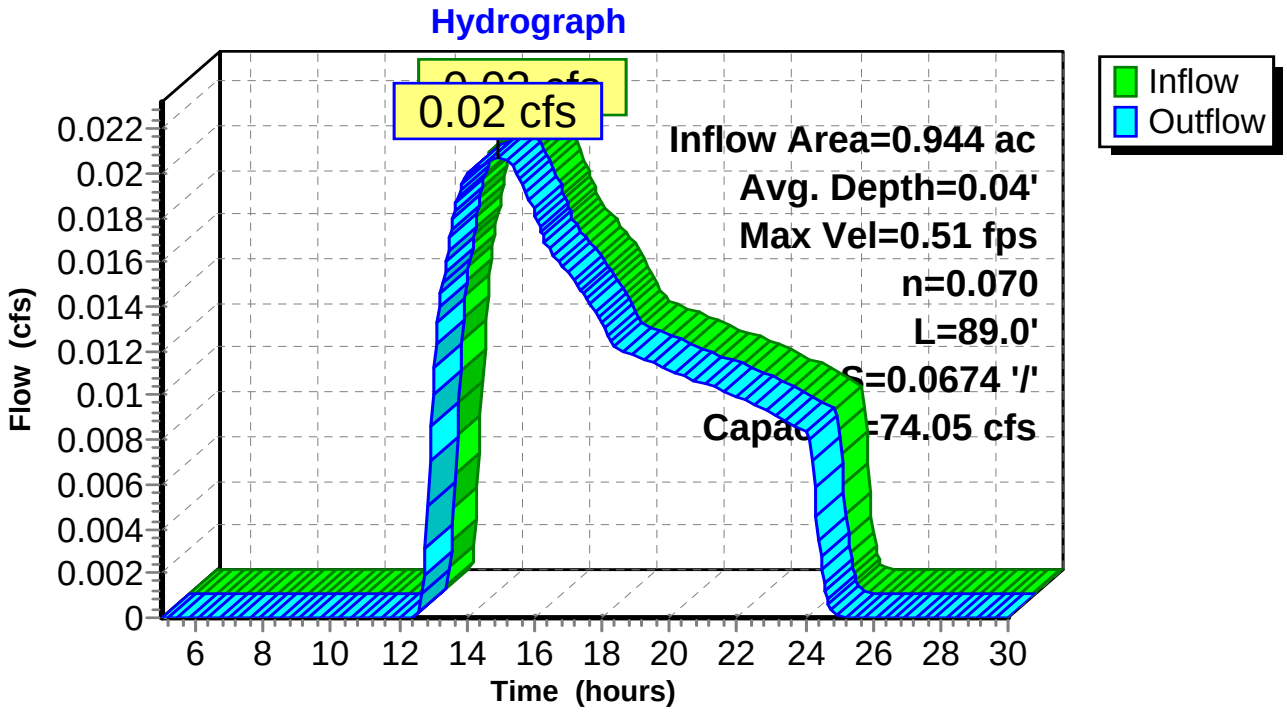
Inflow Area = 0.944 ac, 1.78% Impervious, Inflow Depth = 0.16" for 25-year event
Inflow = 0.02 cfs @ 14.84 hrs, Volume= 0.013 af
Outflow = 0.02 cfs @ 14.91 hrs, Volume= 0.013 af, Atten= 0%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.51 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.44 fps, Avg. Travel Time= 3.4 min

Peak Storage= 4 cf @ 14.87 hrs, Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.85', Capacity at Bank-Full= 74.05 cfs

10.00' x 1.85' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 89.0' Slope= 0.0674 '/'
Inlet Invert= 148.00', Outlet Invert= 142.00'





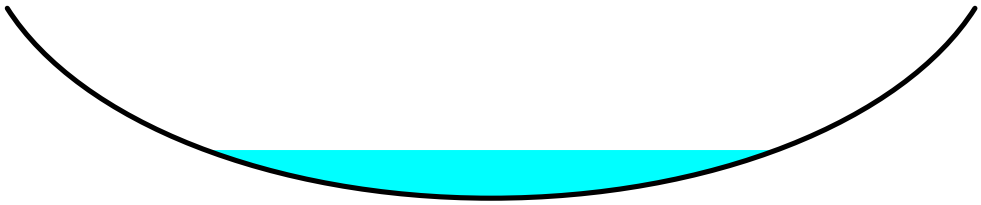
Summary for Reach R2-3: Woods

Inflow Area = 5.444 ac, 15.39% Impervious, Inflow Depth = 1.06" for 25-year event
Inflow = 2.75 cfs @ 12.69 hrs, Volume= 0.479 af
Outflow = 2.73 cfs @ 12.74 hrs, Volume= 0.479 af, Atten= 0%, Lag= 2.6 min

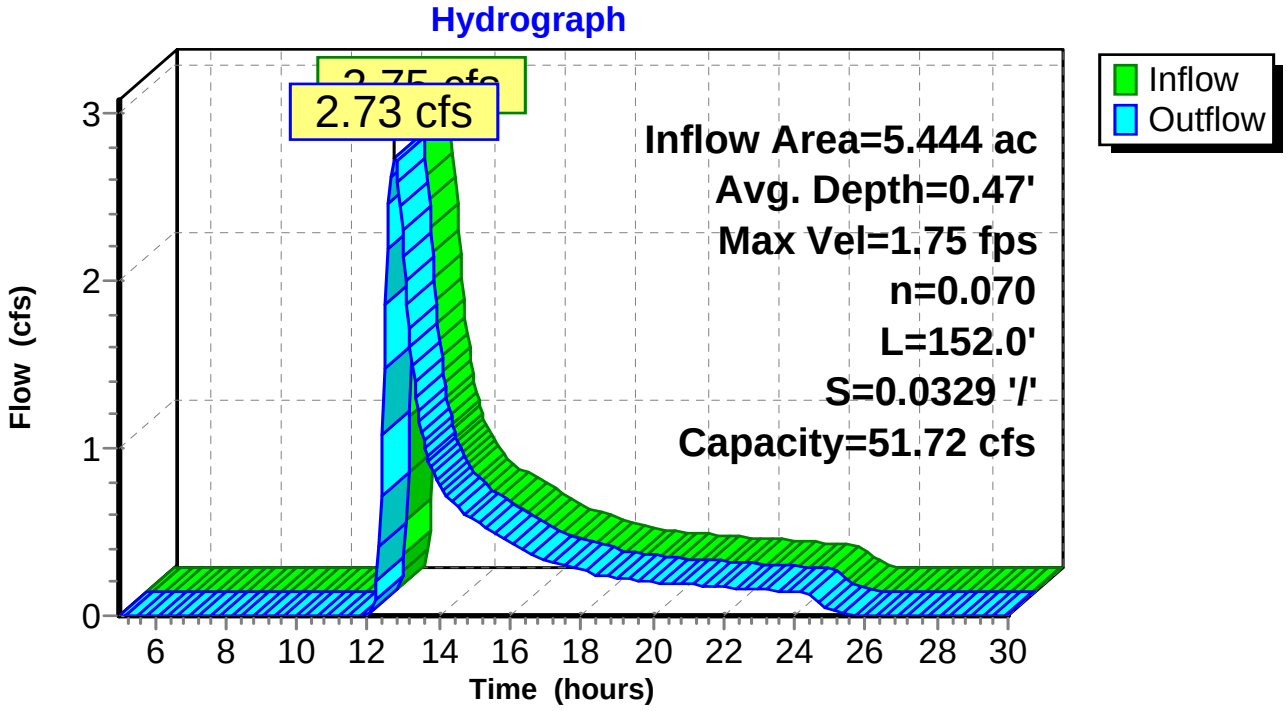
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.75 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 3.3 min

Peak Storage= 239 cf @ 12.71 hrs, Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.85', Capacity at Bank-Full= 51.72 cfs

10.00' x 1.85' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 152.0' Slope= 0.0329 '/'
Inlet Invert= 142.00', Outlet Invert= 137.00'



Reach R2-3: Woods

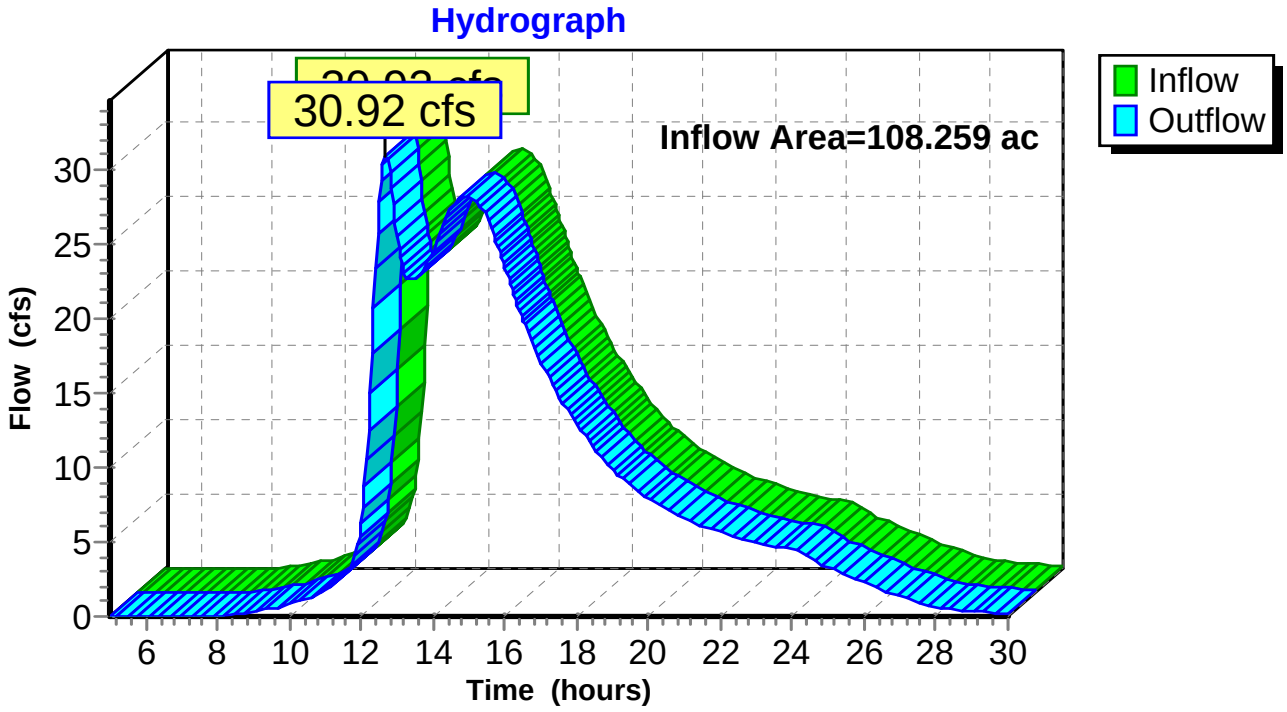


Summary for Reach SP-1: N Trib

Inflow Area = 108.259 ac, 4.53% Impervious, Inflow Depth > 1.77" for 25-year event
Inflow = 30.92 cfs @ 12.68 hrs, Volume= 15.936 af
Outflow = 30.92 cfs @ 12.68 hrs, Volume= 15.936 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach SP-1: N Trib

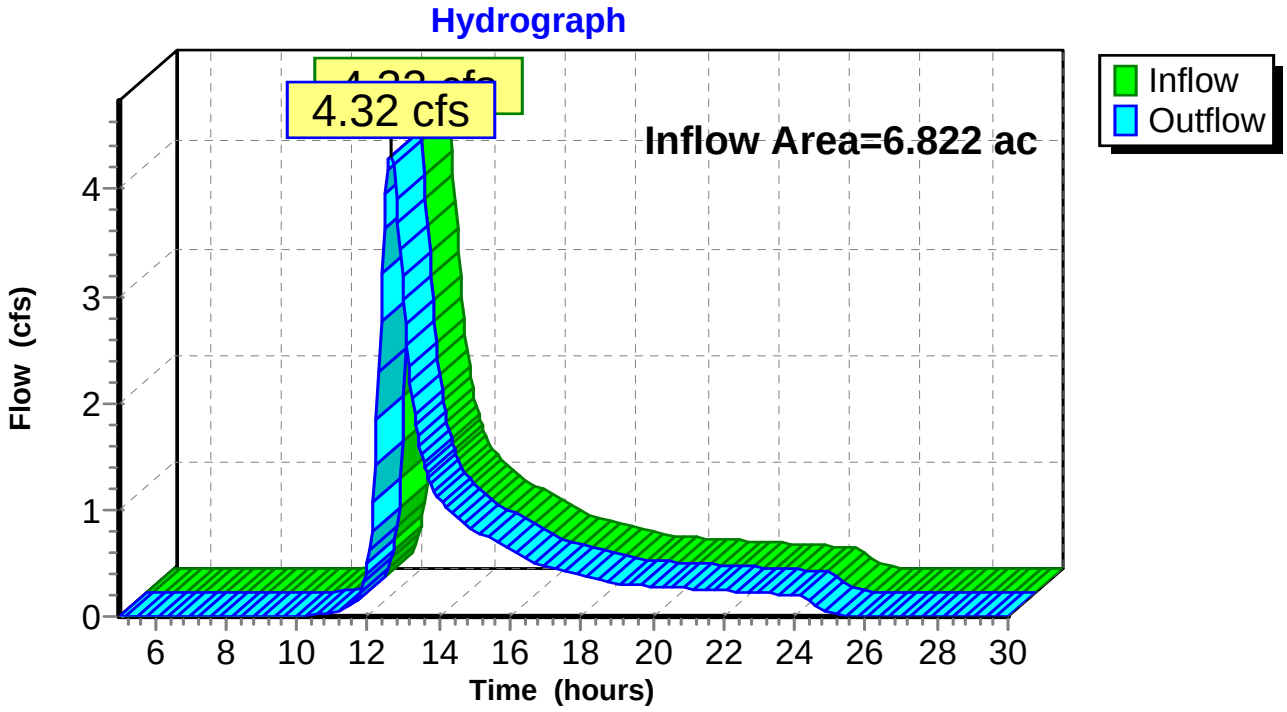


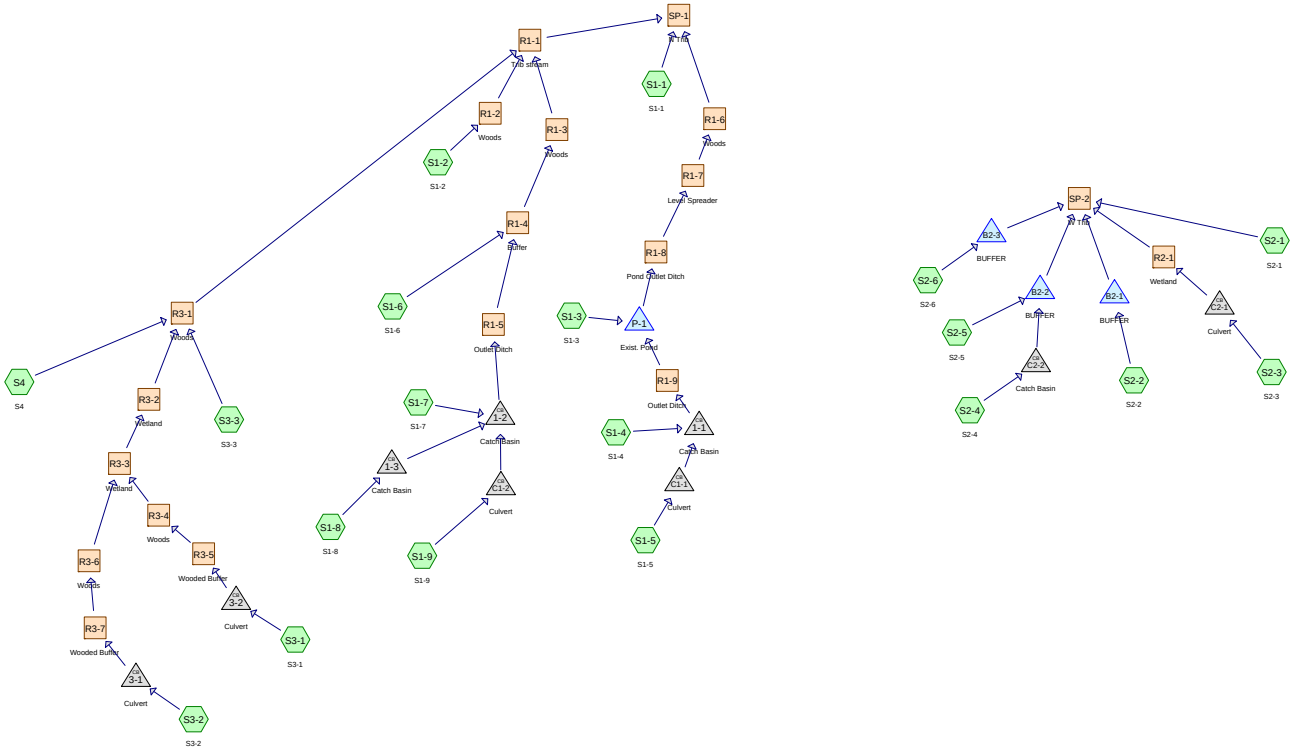
Summary for Reach SP-2: W Trib

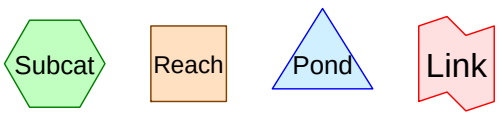
Inflow Area = 6.822 ac, 12.42% Impervious, Inflow Depth = 1.33" for 25-year event
Inflow = 4.32 cfs @ 12.64 hrs, Volume= 0.755 af
Outflow = 4.32 cfs @ 12.64 hrs, Volume= 0.755 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach SP-2: W Trib







Drainage Diagram for 1722 POST

Prepared by {enter your company name here}, Printed 9/25/2018

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
16.952	30	Woods, Good, HSG A (S1-2, S1-5, S1-6, S2-1, S2-3, S3-1, S3-2, S3-3, S4)
16.072	39	>75% Grass cover, Good, HSG A (S1-2, S1-3, S1-4, S1-5, S1-6, S1-7, S1-8, S1-9, S2-1, S2-2, S2-3, S2-4, S2-5, S3-1, S3-2, S3-3, S4)
10.314	46	2 acre lots, 12% imp, HSG A (S1-5, S1-6, S1-9, S2-2, S2-3, S2-6, S3-1, S3-3)
17.249	46	Lots, 12% imp, HSG A (S4)
7.250	51	1 acre lots, 20% imp, HSG A (S1-5, S2-3, S3-1, S3-2, S3-3)
41.912	77	Woods, Good, HSG D (S1-1, S1-2, S1-3, S2-1, S3-3, S4)
1.470	80	>75% Grass cover, Good, HSG D (S1-3, S2-2, S2-3, S4)
0.439	84	1 acre lots, 20% imp, HSG D (S3-3)
1.459	98	Paved (S2-1, S2-2, S2-4, S4)
0.401	98	Pavement (S1-4, S1-7, S1-8, S1-9)
1.017	98	Pavement, HSG A (S1-5, S2-3, S3-1, S3-2, S3-3)
0.034	98	Roof (S1-2)
0.408	98	Water Surface (S1-3)
114.977		**TOTAL AREA**

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=1.28"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=10.06 cfs 1.616 af

Subcatchment S1-2: S1-2 Runoff Area=232,539 sf 0.65% Impervious Runoff Depth=0.00"
Flow Length=548' Tc=36.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment S1-3: S1-3 Runoff Area=40,023 sf 44.41% Impervious Runoff Depth=0.99"
Flow Length=70' Slope=0.1121 '/' Tc=3.6 min CN=72 Runoff=1.06 cfs 0.076 af

Subcatchment S1-4: S1-4 Runoff Area=5,583 sf 77.47% Impervious Runoff Depth=1.84"
Flow Length=262' Tc=3.3 min CN=85 Runoff=0.30 cfs 0.020 af

Subcatchment S1-5: S1-5 Runoff Area=135,219 sf 13.18% Impervious Runoff Depth=0.06"
Flow Length=366' Tc=20.6 min CN=45 Runoff=0.02 cfs 0.014 af

Subcatchment S1-6: S1-6 Runoff Area=57,108 sf 9.91% Impervious Runoff Depth=0.04"
Flow Length=388' Tc=30.3 min CN=44 Runoff=0.01 cfs 0.005 af

Subcatchment S1-7: S1-7 Runoff Area=4,023 sf 76.83% Impervious Runoff Depth=1.77"
Flow Length=196' Tc=3.0 min CN=84 Runoff=0.21 cfs 0.014 af

Subcatchment S1-8: S1-8 Runoff Area=5,036 sf 76.49% Impervious Runoff Depth=1.77"
Flow Length=240' Tc=3.7 min CN=84 Runoff=0.25 cfs 0.017 af

Subcatchment S1-9: S1-9 Runoff Area=28,344 sf 28.81% Impervious Runoff Depth=0.31"
Flow Length=364' Tc=28.6 min CN=56 Runoff=0.07 cfs 0.017 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=0.61"
Flow Length=415' Tc=33.7 min CN=64 Runoff=0.41 cfs 0.070 af

Subcatchment S2-2: S2-2 Runoff Area=30,212 sf 18.46% Impervious Runoff Depth=0.17"
Flow Length=135' Tc=17.7 min CN=51 Runoff=0.03 cfs 0.010 af

Subcatchment S2-3: S2-3 Runoff Area=193,211 sf 19.42% Impervious Runoff Depth=0.15"
Flow Length=570' Tc=36.5 min CN=50 Runoff=0.10 cfs 0.055 af

Subcatchment S2-4: S2-4 Runoff Area=6,811 sf 76.93% Impervious Runoff Depth=1.77"
Flow Length=211' Tc=3.3 min CN=84 Runoff=0.35 cfs 0.023 af

Subcatchment S2-5: S2-5 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=33' Slope=0.0909 '/' Tc=2.2 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment S2-6: S2-6 Runoff Area=8,486 sf 12.00% Impervious Runoff Depth=0.07"
Flow Length=115' Slope=0.0261 '/' Tc=9.7 min CN=46 Runoff=0.00 cfs 0.001 af

Subcatchment S3-1: S3-1 Runoff Area=169,976 sf 17.03% Impervious Runoff Depth=0.13"
Flow Length=300' Slope=0.0033 '/' Tc=68.8 min CN=49 Runoff=0.07 cfs 0.042 af

Subcatchment S3-2: S3-2 Runoff Area=27,049 sf 26.79% Impervious Runoff Depth=0.25"
Flow Length=120' Slope=0.0100 '/' Tc=9.9 min CN=54 Runoff=0.06 cfs 0.013 af

Subcatchment S3-3: S3-3 Runoff Area=606,111 sf 10.27% Impervious Runoff Depth=0.15"
Flow Length=1,060' Tc=72.1 min CN=50 Runoff=0.30 cfs 0.173 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>0.31"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=2.82 cfs 1.632 af

Reach R1-1: Trib stream Avg. Depth=0.60' Max Vel=1.34 fps Inflow=3.11 cfs 1.902 af
n=0.070 L=285.0' S=0.0140 '/' Capacity=30.96 cfs Outflow=3.11 cfs 1.901 af

Reach R1-2: Woods Avg. Depth=0.03' Max Vel=0.16 fps Inflow=0.00 cfs 0.001 af
n=0.070 L=263.0' S=0.0110 '/' Capacity=33.71 cfs Outflow=0.00 cfs 0.001 af

Reach R1-3: Woods Avg. Depth=0.09' Max Vel=0.69 fps Inflow=0.26 cfs 0.052 af
n=0.040 L=390.0' S=0.0154 '/' Capacity=46.68 cfs Outflow=0.23 cfs 0.052 af

Reach R1-4: Buffer Avg. Depth=0.06' Max Vel=0.11 fps Inflow=0.38 cfs 0.052 af
n=0.400 L=100.0' S=0.0400 '/' Capacity=19.80 cfs Outflow=0.26 cfs 0.052 af

Reach R1-5: Outlet Ditch Avg. Depth=0.12' Max Vel=1.42 fps Inflow=0.46 cfs 0.048 af
n=0.035 L=360.0' S=0.0233 '/' Capacity=23.08 cfs Outflow=0.38 cfs 0.048 af

Reach R1-6: Woods Avg. Depth=0.05' Max Vel=0.06 fps Inflow=0.02 cfs 0.003 af
n=0.400 L=489.0' S=0.0204 '/' Capacity=4.02 cfs Outflow=0.01 cfs 0.001 af

Reach R1-7: Level Spreader Avg. Depth=0.02' Max Vel=0.05 fps Inflow=0.02 cfs 0.003 af
n=0.400 L=75.0' S=0.0400 '/' Capacity=1.55 cfs Outflow=0.02 cfs 0.003 af

Reach R1-8: Pond Outlet Ditch Avg. Depth=0.02' Max Vel=0.41 fps Inflow=0.02 cfs 0.003 af
n=0.035 L=35.0' S=0.0143 '/' Capacity=4.32 cfs Outflow=0.02 cfs 0.003 af

Reach R1-9: Outlet Ditch Avg. Depth=0.14' Max Vel=0.77 fps Inflow=0.30 cfs 0.034 af
n=0.035 L=126.0' S=0.0056 '/' Capacity=6.12 cfs Outflow=0.27 cfs 0.034 af

Reach R2-1: Wetland Avg. Depth=0.11' Max Vel=0.59 fps Inflow=0.10 cfs 0.055 af
n=0.070 L=445.0' S=0.0260 '/' Capacity=45.98 cfs Outflow=0.10 cfs 0.055 af

Reach R3-1: Woods Avg. Depth=0.74' Max Vel=0.81 fps Inflow=3.10 cfs 1.857 af
n=0.100 L=1,063.0' S=0.0080 '/' Capacity=9.55 cfs Outflow=3.06 cfs 1.849 af

Reach R3-2: Wetland Avg. Depth=0.06' Max Vel=0.27 fps Inflow=0.08 cfs 0.052 af
n=0.070 L=147.0' S=0.0102 '/' Capacity=47.33 cfs Outflow=0.08 cfs 0.052 af

Reach R3-3: Wetland Avg. Depth=0.09' Max Vel=0.21 fps Inflow=0.08 cfs 0.053 af
n=0.100 L=460.0' S=0.0087 '/' Capacity=14.04 cfs Outflow=0.08 cfs 0.052 af

Reach R3-4: Woods Avg. Depth=0.04' Max Vel=0.21 fps Inflow=0.06 cfs 0.041 af
n=0.100 L=110.0' S=0.0256 '/' Capacity=37.46 cfs Outflow=0.06 cfs 0.041 af

Reach R3-5: Wooded Buffer Avg. Depth=0.06' Max Vel=0.03 fps Inflow=0.07 cfs 0.042 af
n=0.400 L=140.0' S=0.0036 '/' Capacity=2.24 cfs Outflow=0.06 cfs 0.041 af

Reach R3-6: Woods Avg. Depth=0.03' Max Vel=0.10 fps Inflow=0.03 cfs 0.013 af
n=0.100 L=290.0' S=0.0069 '/' Capacity=19.43 cfs Outflow=0.02 cfs 0.013 af

Reach R3-7: Wooded Buffer Avg. Depth=0.03' Max Vel=0.03 fps Inflow=0.06 cfs 0.013 af
n=0.400 L=70.0' S=0.0071 '/' Capacity=3.16 cfs Outflow=0.03 cfs 0.013 af

Reach SP-1: N Trib Inflow=10.13 cfs 3.518 af
Outflow=10.13 cfs 3.518 af

Reach SP-2: W Trib Inflow=0.41 cfs 0.125 af
Outflow=0.41 cfs 0.125 af

Pond 1-1: Catch Basin Peak Elev=151.61' Inflow=0.30 cfs 0.034 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0050 '/' Outflow=0.30 cfs 0.034 af

Pond 1-2: Catch Basin Peak Elev=155.03' Inflow=0.46 cfs 0.048 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0100 '/' Outflow=0.46 cfs 0.048 af

Pond 1-3: Catch Basin Peak Elev=155.85' Inflow=0.25 cfs 0.017 af
12.0" Round Culvert n=0.012 L=177.0' S=0.0049 '/' Outflow=0.25 cfs 0.017 af

Pond 3-1: Culvert Peak Elev=157.43' Inflow=0.06 cfs 0.013 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=0.06 cfs 0.013 af

Pond 3-2: Culvert Peak Elev=157.39' Inflow=0.07 cfs 0.042 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=0.07 cfs 0.042 af

Pond B2-1: BUFFER Peak Elev=148.00' Storage=3 cf Inflow=0.03 cfs 0.010 af
Discarded=0.03 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.010 af

Pond B2-2: BUFFER Peak Elev=148.04' Storage=109 cf Inflow=0.35 cfs 0.023 af
Discarded=0.15 cfs 0.023 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.023 af

Pond B2-3: BUFFER Peak Elev=148.00' Storage=0 cf Inflow=0.00 cfs 0.001 af
Discarded=0.00 cfs 0.001 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.001 af

Pond C1-1: Culvert Peak Elev=151.58' Inflow=0.02 cfs 0.014 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=0.02 cfs 0.014 af

Pond C1-2: Culvert Peak Elev=155.01' Inflow=0.07 cfs 0.017 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=0.07 cfs 0.017 af

Pond C2-1: Culvert Peak Elev=150.92' Inflow=0.10 cfs 0.055 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=0.10 cfs 0.055 af

Pond C2-2: Catch Basin Peak Elev=150.55' Inflow=0.35 cfs 0.023 af
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.35 cfs 0.023 af

Pond P-1: Exist. Pond Peak Elev=150.75' Storage=67,446 cf Inflow=1.27 cfs 0.110 af
Outflow=0.02 cfs 0.003 af

Total Runoff Area = 114.977 ac Runoff Volume = 3.798 af Average Runoff Depth = 0.40"
92.90% Pervious = 106.812 ac 7.10% Impervious = 8.164 ac

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=2.54"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=20.43 cfs 3.197 af

Subcatchment S1-2: S1-2 Runoff Area=232,539 sf 0.65% Impervious Runoff Depth=0.18"
Flow Length=548' Tc=36.0 min CN=39 Runoff=0.14 cfs 0.080 af

Subcatchment S1-3: S1-3 Runoff Area=40,023 sf 44.41% Impervious Runoff Depth=2.12"
Flow Length=70' Slope=0.1121 '/' Tc=3.6 min CN=72 Runoff=2.41 cfs 0.162 af

Subcatchment S1-4: S1-4 Runoff Area=5,583 sf 77.47% Impervious Runoff Depth=3.28"
Flow Length=262' Tc=3.3 min CN=85 Runoff=0.53 cfs 0.035 af

Subcatchment S1-5: S1-5 Runoff Area=135,219 sf 13.18% Impervious Runoff Depth=0.41"
Flow Length=366' Tc=20.6 min CN=45 Runoff=0.46 cfs 0.106 af

Subcatchment S1-6: S1-6 Runoff Area=57,108 sf 9.91% Impervious Runoff Depth=0.37"
Flow Length=388' Tc=30.3 min CN=44 Runoff=0.14 cfs 0.040 af

Subcatchment S1-7: S1-7 Runoff Area=4,023 sf 76.83% Impervious Runoff Depth=3.18"
Flow Length=196' Tc=3.0 min CN=84 Runoff=0.37 cfs 0.024 af

Subcatchment S1-8: S1-8 Runoff Area=5,036 sf 76.49% Impervious Runoff Depth=3.18"
Flow Length=240' Tc=3.7 min CN=84 Runoff=0.45 cfs 0.031 af

Subcatchment S1-9: S1-9 Runoff Area=28,344 sf 28.81% Impervious Runoff Depth=0.99"
Flow Length=364' Tc=28.6 min CN=56 Runoff=0.36 cfs 0.054 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=1.52"
Flow Length=415' Tc=33.7 min CN=64 Runoff=1.23 cfs 0.174 af

Subcatchment S2-2: S2-2 Runoff Area=30,212 sf 18.46% Impervious Runoff Depth=0.70"
Flow Length=135' Tc=17.7 min CN=51 Runoff=0.27 cfs 0.041 af

Subcatchment S2-3: S2-3 Runoff Area=193,211 sf 19.42% Impervious Runoff Depth=0.65"
Flow Length=570' Tc=36.5 min CN=50 Runoff=1.17 cfs 0.241 af

Subcatchment S2-4: S2-4 Runoff Area=6,811 sf 76.93% Impervious Runoff Depth=3.18"
Flow Length=211' Tc=3.3 min CN=84 Runoff=0.62 cfs 0.041 af

Subcatchment S2-5: S2-5 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=0.18"
Flow Length=33' Slope=0.0909 '/' Tc=2.2 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment S2-6: S2-6 Runoff Area=8,486 sf 12.00% Impervious Runoff Depth=0.46"
Flow Length=115' Slope=0.0261 '/' Tc=9.7 min CN=46 Runoff=0.04 cfs 0.007 af

Subcatchment S3-1: S3-1 Runoff Area=169,976 sf 17.03% Impervious Runoff Depth=0.60"
Flow Length=300' Slope=0.0033 '/' Tc=68.8 min CN=49 Runoff=0.64 cfs 0.195 af

Subcatchment S3-2: S3-2 Runoff Area=27,049 sf 26.79% Impervious Runoff Depth=0.87"
Flow Length=120' Slope=0.0100 '/' Tc=9.9 min CN=54 Runoff=0.41 cfs 0.045 af

Subcatchment S3-3: S3-3 Runoff Area=606,111 sf 10.27% Impervious Runoff Depth=0.65"
Flow Length=1,060' Tc=72.1 min CN=50 Runoff=2.51 cfs 0.756 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>0.99"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=11.25 cfs 5.187 af

Reach R1-1: Trib stream Avg. Depth=1.17' Max Vel=2.06 fps Inflow=13.20 cfs 6.399 af
n=0.070 L=285.0' S=0.0140 '/' Capacity=30.96 cfs Outflow=13.20 cfs 6.397 af

Reach R1-2: Woods Avg. Depth=0.15' Max Vel=0.48 fps Inflow=0.14 cfs 0.080 af
n=0.070 L=263.0' S=0.0110 '/' Capacity=33.71 cfs Outflow=0.13 cfs 0.080 af

Reach R1-3: Woods Avg. Depth=0.14' Max Vel=0.93 fps Inflow=0.63 cfs 0.149 af
n=0.040 L=390.0' S=0.0154 '/' Capacity=46.68 cfs Outflow=0.62 cfs 0.149 af

Reach R1-4: Buffer Avg. Depth=0.10' Max Vel=0.16 fps Inflow=0.77 cfs 0.149 af
n=0.400 L=100.0' S=0.0400 '/' Capacity=19.80 cfs Outflow=0.63 cfs 0.149 af

Reach R1-5: Outlet Ditch Avg. Depth=0.17' Max Vel=1.76 fps Inflow=0.86 cfs 0.109 af
n=0.035 L=360.0' S=0.0233 '/' Capacity=23.08 cfs Outflow=0.76 cfs 0.109 af

Reach R1-6: Woods Avg. Depth=0.33' Max Vel=0.19 fps Inflow=0.40 cfs 0.196 af
n=0.400 L=489.0' S=0.0204 '/' Capacity=4.02 cfs Outflow=0.37 cfs 0.195 af

Reach R1-7: Level Spreader Avg. Depth=0.11' Max Vel=0.17 fps Inflow=0.41 cfs 0.196 af
n=0.400 L=75.0' S=0.0400 '/' Capacity=1.55 cfs Outflow=0.40 cfs 0.196 af

Reach R1-8: Pond Outlet Ditch Avg. Depth=0.14' Max Vel=1.21 fps Inflow=0.41 cfs 0.196 af
n=0.035 L=35.0' S=0.0143 '/' Capacity=4.32 cfs Outflow=0.41 cfs 0.196 af

Reach R1-9: Outlet Ditch Avg. Depth=0.21' Max Vel=0.97 fps Inflow=0.55 cfs 0.141 af
n=0.035 L=126.0' S=0.0056 '/' Capacity=6.12 cfs Outflow=0.55 cfs 0.141 af

Reach R2-1: Wetland Avg. Depth=0.33' Max Vel=1.23 fps Inflow=1.17 cfs 0.241 af
n=0.070 L=445.0' S=0.0260 '/' Capacity=45.98 cfs Outflow=1.13 cfs 0.241 af

Reach R3-1: Woods Avg. Depth=1.46' Max Vel=1.24 fps Inflow=13.01 cfs 6.181 af
n=0.100 L=1,063.0' S=0.0080 '/' Capacity=9.55 cfs Outflow=12.91 cfs 6.170 af

Reach R3-2: Wetland Avg. Depth=0.17' Max Vel=0.49 fps Inflow=0.60 cfs 0.238 af
n=0.070 L=147.0' S=0.0102 '/' Capacity=47.33 cfs Outflow=0.59 cfs 0.238 af

Reach R3-3: Wetland Avg. Depth=0.23' Max Vel=0.40 fps Inflow=0.63 cfs 0.239 af
n=0.100 L=460.0' S=0.0087 '/' Capacity=14.04 cfs Outflow=0.60 cfs 0.238 af

Reach R3-4: Woods Avg. Depth=0.10' Max Vel=0.40 fps Inflow=0.53 cfs 0.194 af
n=0.100 L=110.0' S=0.0256 '/' Capacity=37.46 cfs Outflow=0.53 cfs 0.194 af

Reach R3-5: Wooded Buffer Avg. Depth=0.22' Max Vel=0.08 fps Inflow=0.64 cfs 0.195 af
n=0.400 L=140.0' S=0.0036 '/' Capacity=2.24 cfs Outflow=0.53 cfs 0.194 af

Reach R3-6: Woods Avg. Depth=0.09' Max Vel=0.18 fps Inflow=0.27 cfs 0.045 af
n=0.100 L=290.0' S=0.0069 '/' Capacity=19.43 cfs Outflow=0.18 cfs 0.045 af

Reach R3-7: Wooded Buffer Avg. Depth=0.12' Max Vel=0.07 fps Inflow=0.41 cfs 0.045 af
n=0.400 L=70.0' S=0.0071 '/' Capacity=3.16 cfs Outflow=0.27 cfs 0.045 af

Reach SP-1: N Trib Inflow=20.85 cfs 9.789 af
Outflow=20.85 cfs 9.789 af

Reach SP-2: W Trib Inflow=2.04 cfs 0.419 af
Outflow=2.04 cfs 0.419 af

Pond 1-1: Catch Basin Peak Elev=151.72' Inflow=0.55 cfs 0.141 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0050 '/' Outflow=0.55 cfs 0.141 af

Pond 1-2: Catch Basin Peak Elev=155.16' Inflow=0.86 cfs 0.109 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0100 '/' Outflow=0.86 cfs 0.109 af

Pond 1-3: Catch Basin Peak Elev=155.95' Inflow=0.45 cfs 0.031 af
12.0" Round Culvert n=0.012 L=177.0' S=0.0049 '/' Outflow=0.45 cfs 0.031 af

Pond 3-1: Culvert Peak Elev=157.65' Inflow=0.41 cfs 0.045 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=0.41 cfs 0.045 af

Pond 3-2: Culvert Peak Elev=157.69' Inflow=0.64 cfs 0.195 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=0.64 cfs 0.195 af

Pond B2-1: BUFFER Peak Elev=148.00' Storage=24 cf Inflow=0.27 cfs 0.041 af
Discarded=0.27 cfs 0.041 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.041 af

Pond B2-2: BUFFER Peak Elev=148.09' Storage=242 cf Inflow=0.62 cfs 0.042 af
Discarded=0.15 cfs 0.038 af Primary=0.25 cfs 0.004 af Outflow=0.40 cfs 0.042 af

Pond B2-3: BUFFER Peak Elev=148.00' Storage=4 cf Inflow=0.04 cfs 0.007 af
Discarded=0.04 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.007 af

Pond C1-1: Culvert Peak Elev=151.88' Inflow=0.46 cfs 0.106 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=0.46 cfs 0.106 af

Pond C1-2: Culvert Peak Elev=155.20' Inflow=0.36 cfs 0.054 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=0.36 cfs 0.054 af

Pond C2-1: Culvert Peak Elev=151.34' Inflow=1.17 cfs 0.241 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=1.17 cfs 0.241 af

Pond C2-2: Catch Basin Peak Elev=150.67' Inflow=0.62 cfs 0.041 af
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.62 cfs 0.041 af

Pond P-1: Exist. Pond Peak Elev=150.81' Storage=68,517 cf Inflow=2.80 cfs 0.304 af
Outflow=0.41 cfs 0.196 af

Total Runoff Area = 114.977 ac Runoff Volume = 10.418 af Average Runoff Depth = 1.09"
92.90% Pervious = 106.812 ac 7.10% Impervious = 8.164 ac

Summary for Subcatchment S1-1: S1-1

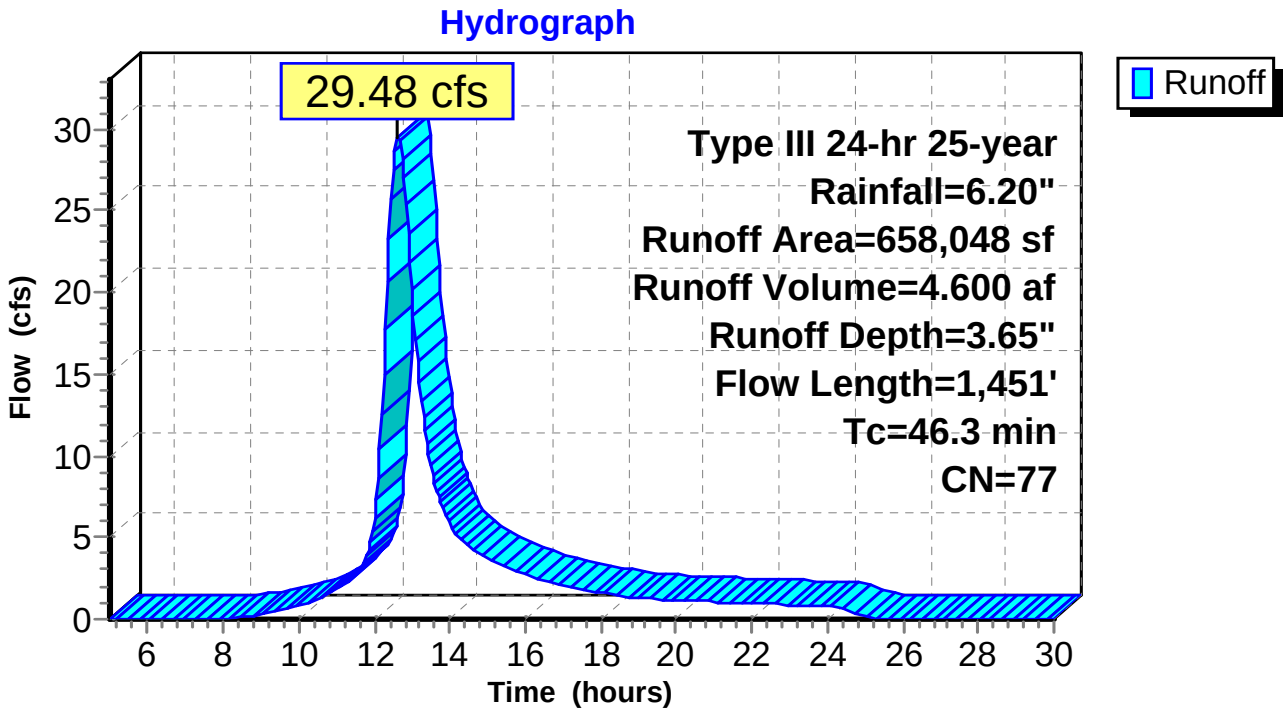
Runoff = 29.48 cfs @ 12.63 hrs, Volume= 4.600 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (sf)	CN	Description
658,048	77	Woods, Good, HSG D
658,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.0	150	0.0204	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	364	0.0330	0.91		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.6	937	0.0085	1.47	9.79	**Parabolic Channel, C-D** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.070 Sluggish weedy reaches w/pools
46.3	1,451	Total			

Subcatchment S1-1: S1-1



Summary for Subcatchment S1-2: S1-2

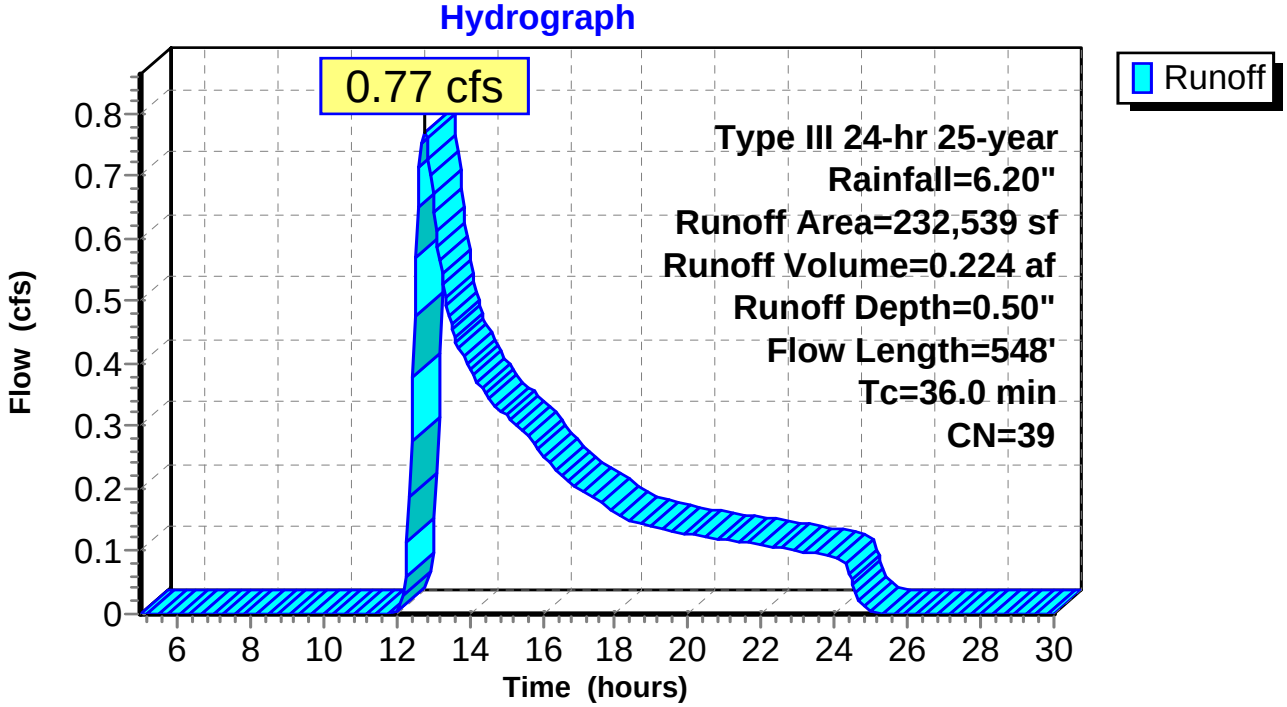
Runoff = 0.77 cfs @ 12.77 hrs, Volume= 0.224 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	42,011	77	Woods, Good, HSG D
	174,556	30	Woods, Good, HSG A
	14,472	39	>75% Grass cover, Good, HSG A
*	1,500	98	Roof
	232,539	39	Weighted Average
	231,039		99.35% Pervious Area
	1,500		0.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0200	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
6.8	398	0.0377	0.97		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
36.0	548	Total			

Subcatchment S1-2: S1-2



Summary for Subcatchment S1-3: S1-3

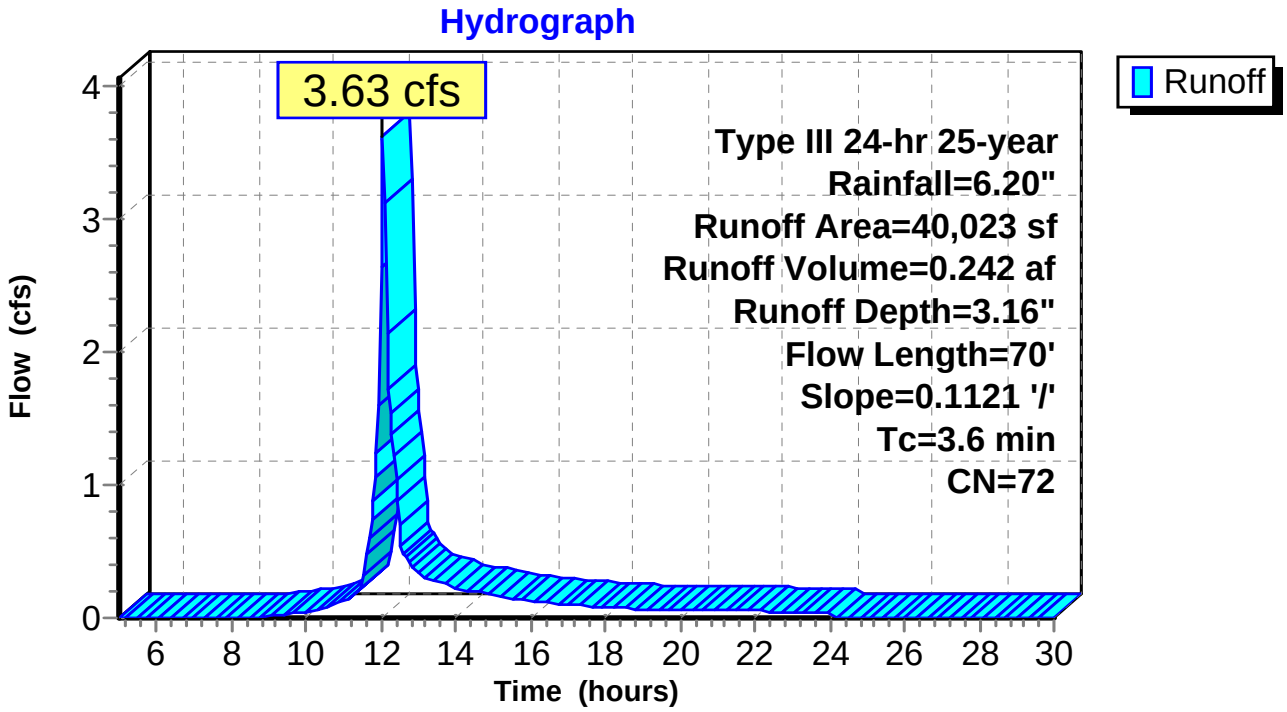
Runoff = 3.63 cfs @ 12.06 hrs, Volume= 0.242 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	15,826	39	>75% Grass cover, Good, HSG A
	3,217	77	Woods, Good, HSG D
	3,205	80	>75% Grass cover, Good, HSG D
*	17,775	98	Water Surface
	40,023	72	Weighted Average
	22,248		55.59% Pervious Area
	17,775		44.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.1121	0.32		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"

Subcatchment S1-3: S1-3



Summary for Subcatchment S1-4: S1-4

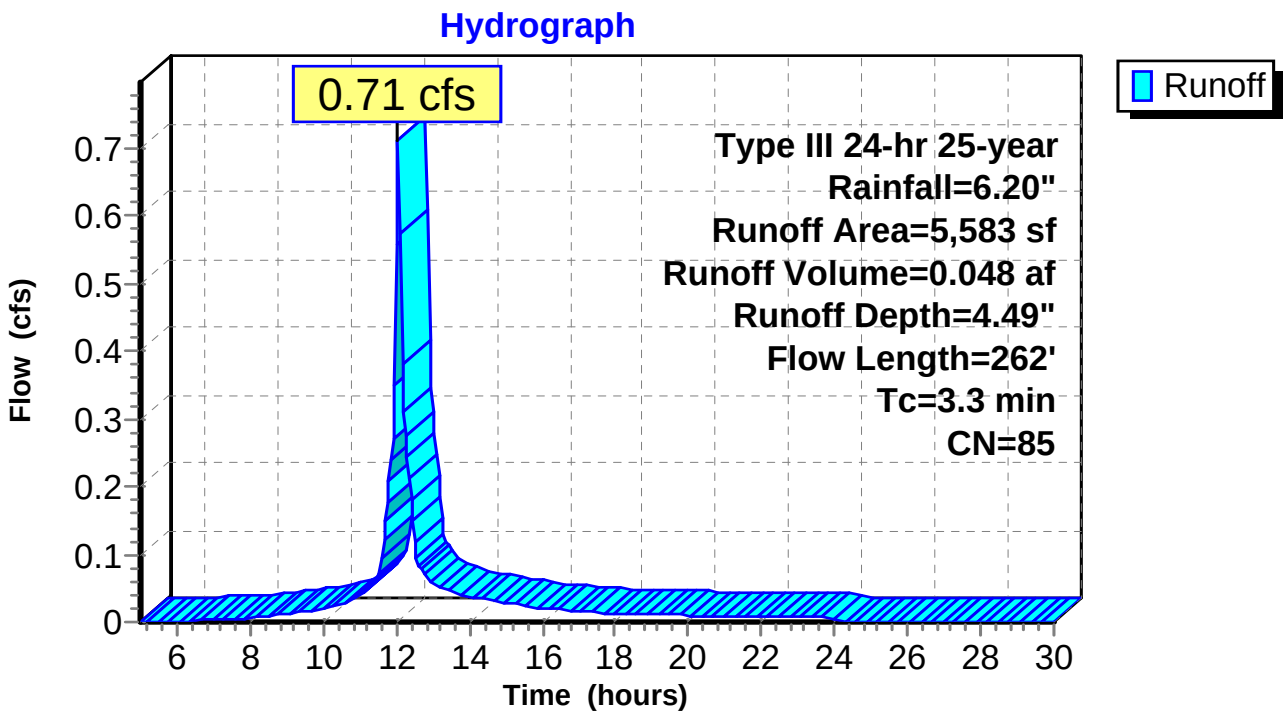
Runoff = 0.71 cfs @ 12.05 hrs, Volume= 0.048 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	1,258	39	>75% Grass cover, Good, HSG A
*	4,325	98	Pavement
	5,583	85	Weighted Average
	1,258		22.53% Pervious Area
	4,325		77.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0157	0.74		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.30"
1.1	7	0.0214	0.10		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.30"
2.0	248	0.0100	2.03		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.3	262	Total			

Subcatchment S1-4: S1-4



Summary for Subcatchment S1-5: S1-5

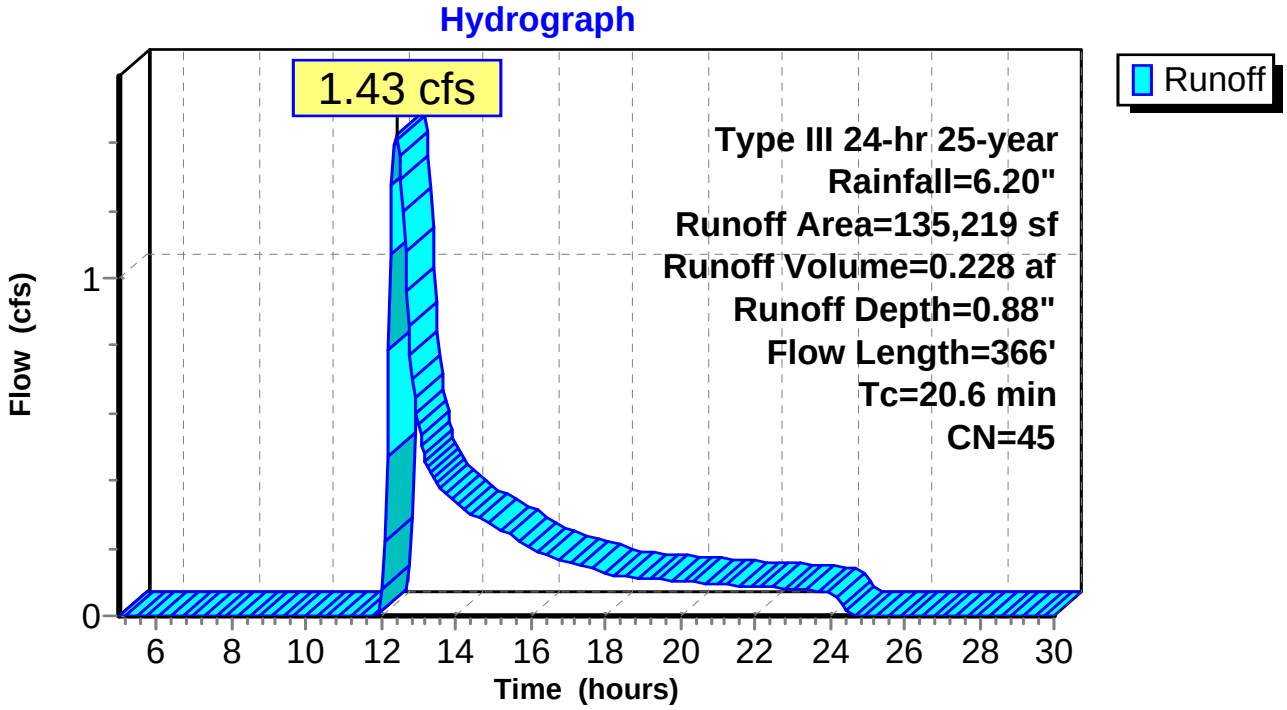
Runoff = 1.43 cfs @ 12.41 hrs, Volume= 0.228 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	25,447	30	Woods, Good, HSG A
	5,690	39	>75% Grass cover, Good, HSG A
*	5,838	98	Pavement, HSG A
	2,457	51	1 acre lots, 20% imp, HSG A
	95,787	46	2 acre lots, 12% imp, HSG A
	135,219	45	Weighted Average
	117,395		86.82% Pervious Area
	17,824		13.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	150	0.0083	0.13		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
1.6	216	0.0231	2.28		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
20.6	366	Total			

Subcatchment S1-5: S1-5



Summary for Subcatchment S1-6: S1-6

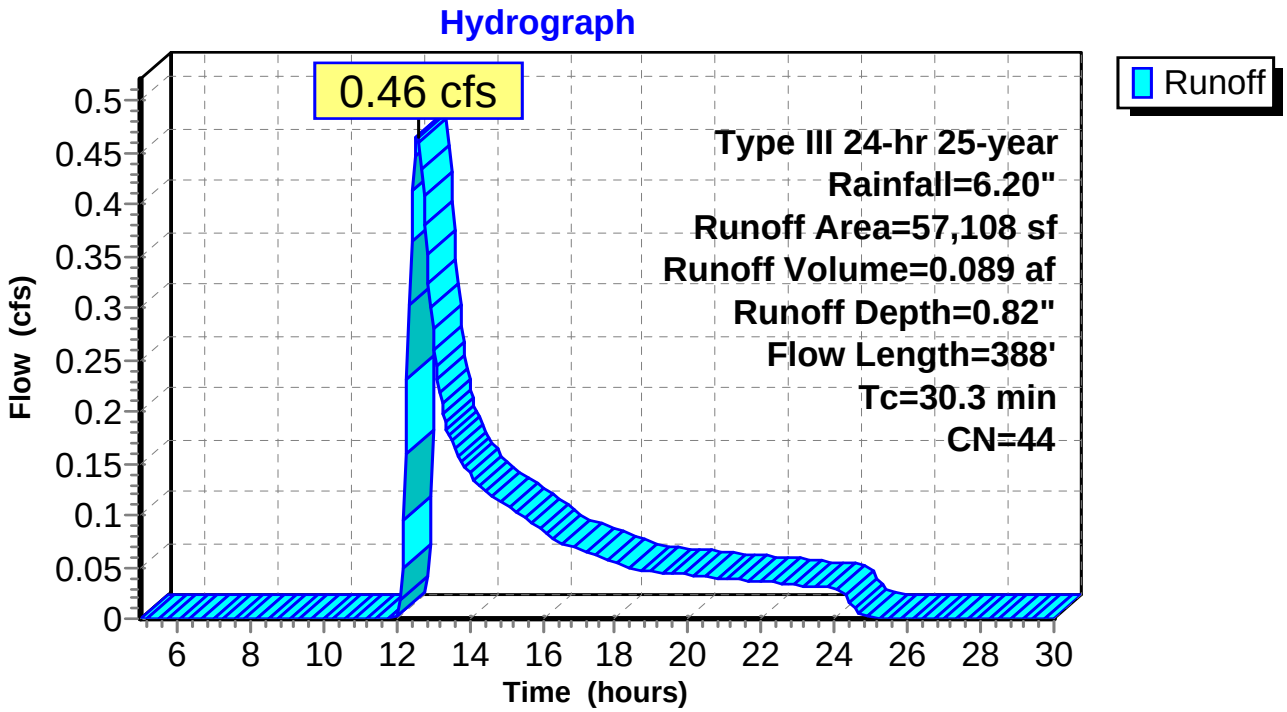
Runoff = 0.46 cfs @ 12.58 hrs, Volume= 0.089 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (sf)	CN	Description
1,878	39	>75% Grass cover, Good, HSG A
8,064	30	Woods, Good, HSG A
47,166	46	2 acre lots, 12% imp, HSG A
57,108	44	Weighted Average
51,448		90.09% Pervious Area
5,660		9.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	80	0.0130	0.06		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
5.3	70	0.0430	0.22		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.30"
1.9	122	0.0245	1.10		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
2.1	116	0.0331	0.91		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
30.3	388	Total			

Subcatchment S1-6: S1-6



Summary for Subcatchment S1-7: S1-7

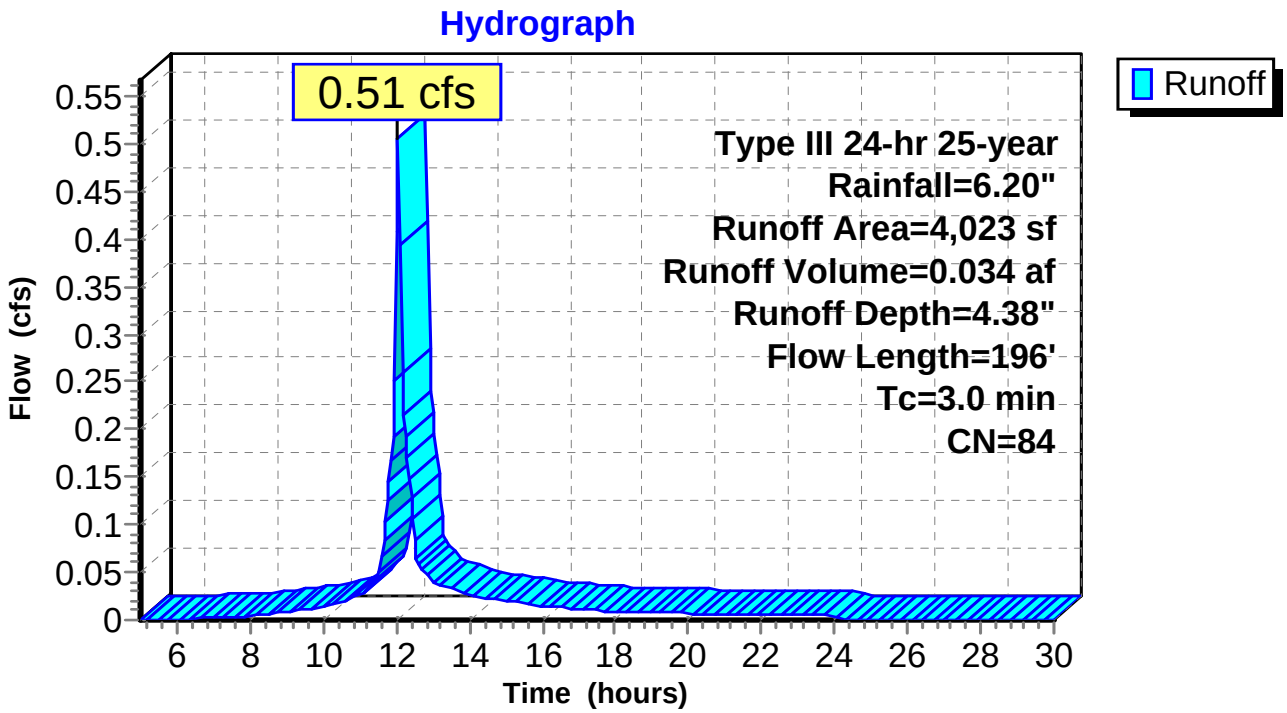
Runoff = 0.51 cfs @ 12.05 hrs, Volume= 0.034 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	932	39	>75% Grass cover, Good, HSG A
*	3,091	98	Pavement
	4,023	84	Weighted Average
	932		23.17% Pervious Area
	3,091		76.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	8	0.0113	0.67		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.30"
1.3	8	0.0188	0.10		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.30"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.0	196	Total			

Subcatchment S1-7: S1-7



Summary for Subcatchment S1-8: S1-8

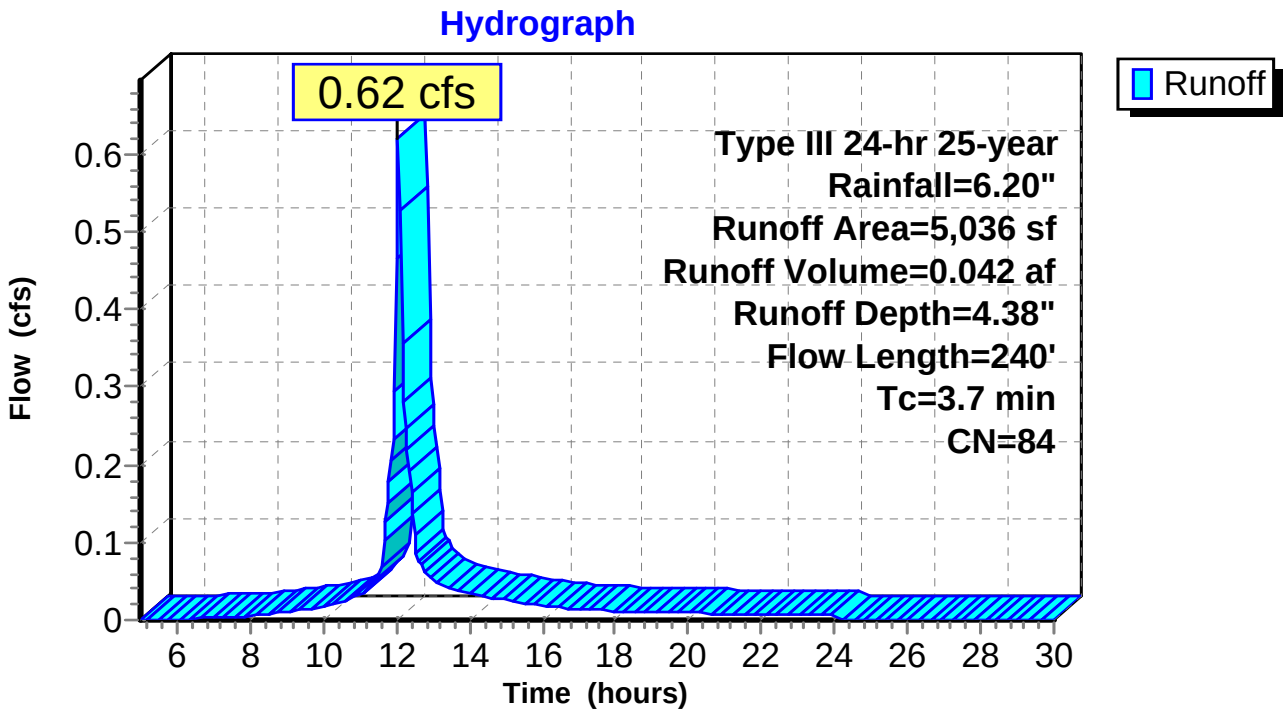
Runoff = 0.62 cfs @ 12.06 hrs, Volume= 0.042 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	1,184	39	>75% Grass cover, Good, HSG A
*	3,852	98	Pavement
	5,036	84	Weighted Average
	1,184		23.51% Pervious Area
	3,852		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0114	0.66		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.30"
1.3	7	0.0143	0.09		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.30"
2.2	226	0.0072	1.72		**Shallow Concentrated Flow, gutter line** Paved Kv= 20.3 fps
3.7	240	Total			

Subcatchment S1-8: S1-8



Summary for Subcatchment S1-9: S1-9

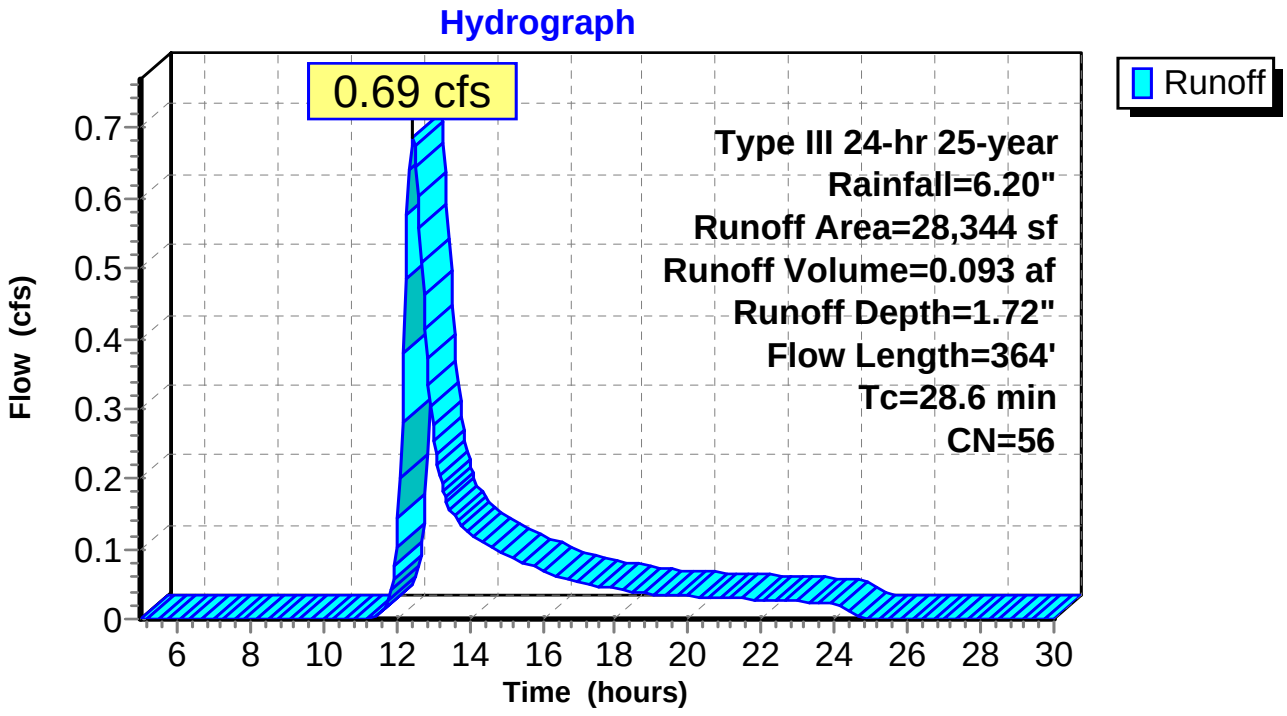
Runoff = 0.69 cfs @ 12.45 hrs, Volume= 0.093 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	5,736	39	>75% Grass cover, Good, HSG A
*	6,198	98	Pavement
	16,410	46	2 acre lots, 12% imp, HSG A
	28,344	56	Weighted Average
	20,177		71.19% Pervious Area
	8,167		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5	150	0.0036	0.09		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
2.1	214	0.0130	1.71		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.6	364	Total			

Subcatchment S1-9: S1-9



Summary for Subcatchment S2-1: S2-1

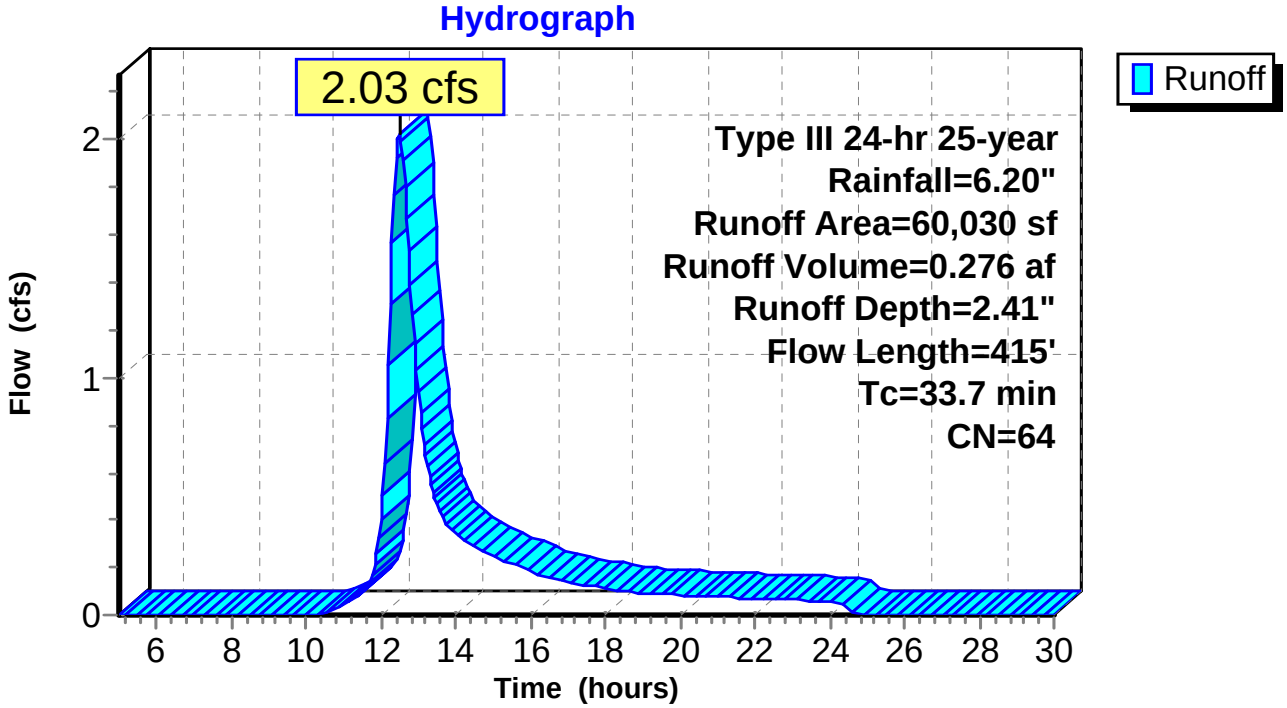
Runoff = 2.03 cfs @ 12.50 hrs, Volume= 0.276 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	524	39	>75% Grass cover, Good, HSG A
*	408	98	Paved
	42,692	77	Woods, Good, HSG D
	16,406	30	Woods, Good, HSG A
	60,030	64	Weighted Average
	59,622		99.32% Pervious Area
	408		0.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0200	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
4.5	265	0.0377	0.97		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
33.7	415	Total			

Subcatchment S2-1: S2-1



Summary for Subcatchment S2-2: S2-2

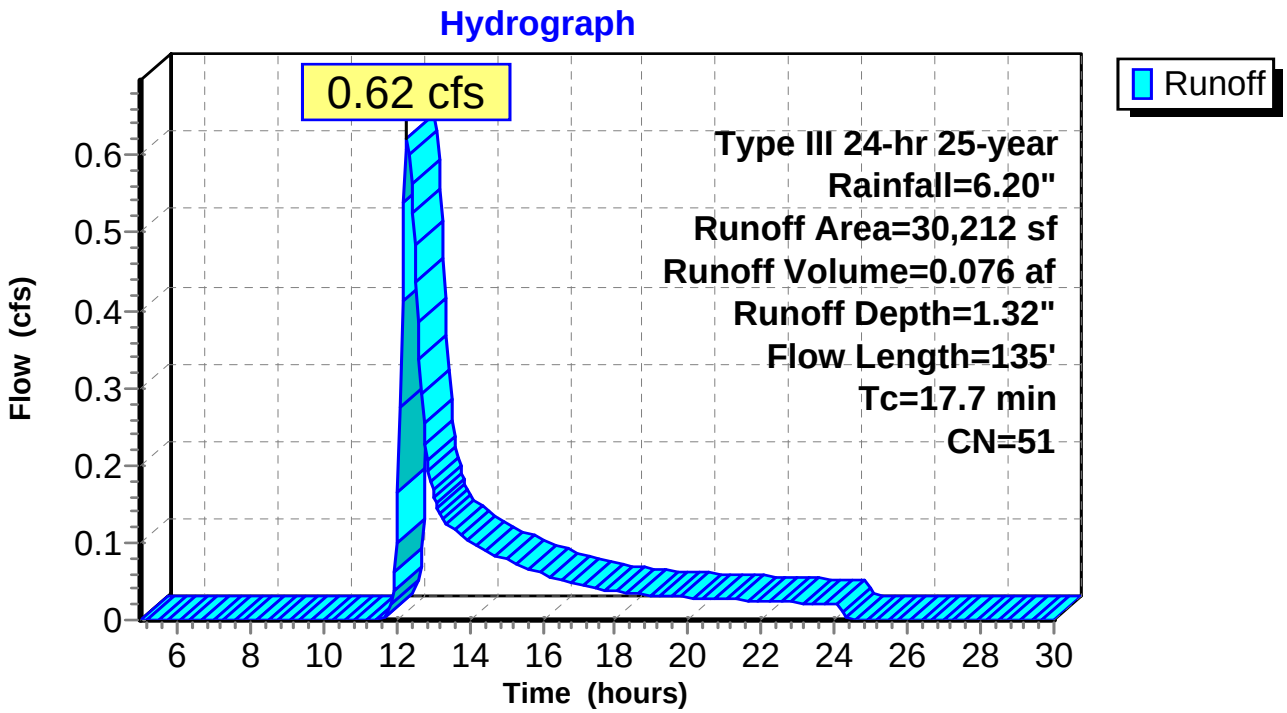
Runoff = 0.62 cfs @ 12.29 hrs, Volume= 0.076 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	578	80	>75% Grass cover, Good, HSG D
	3,701	39	>75% Grass cover, Good, HSG A
*	2,802	98	Paved
	23,131	46	2 acre lots, 12% imp, HSG A
	30,212	51	Weighted Average
	24,634		81.54% Pervious Area
	5,578		18.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	68	0.0588	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
13.1	67	0.0299	0.09		**Sheet Flow, B-C** Woods: Light underbrush n= 0.400 P2= 3.30"
17.7	135	Total			

Subcatchment S2-2: S2-2



Summary for Subcatchment S2-3: S2-3

Runoff = 2.73 cfs @ 12.60 hrs, Volume= 0.459 af, Depth= 1.24"

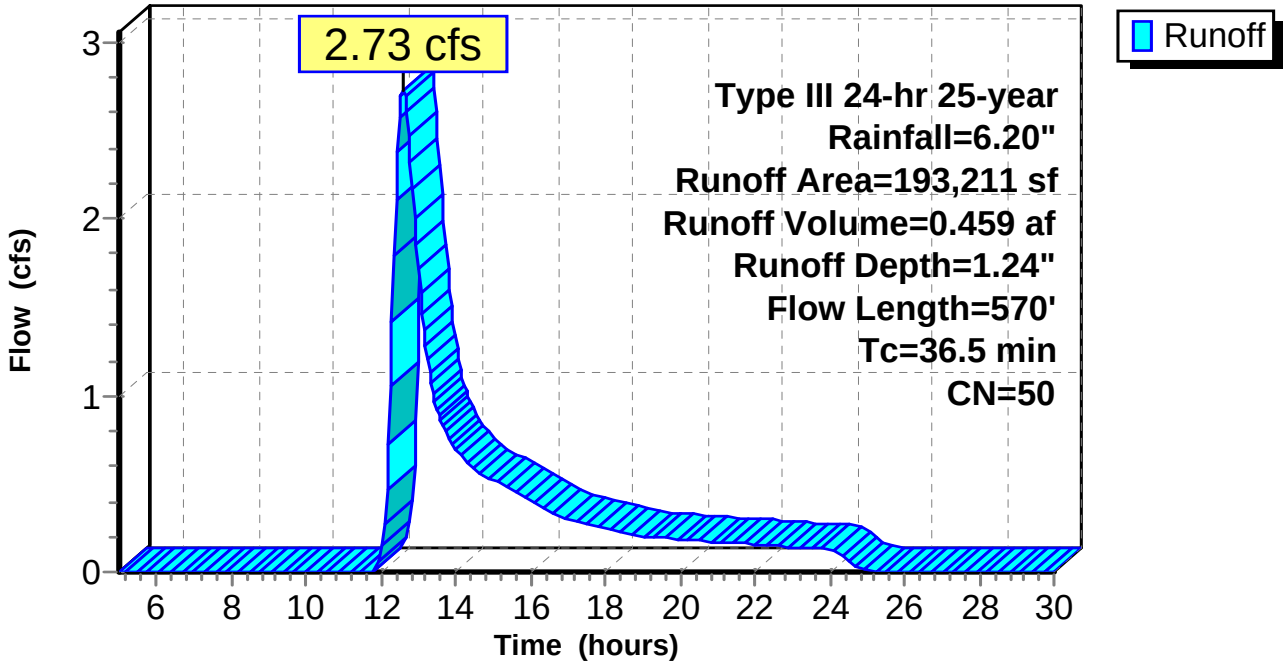
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	6,506	30	Woods, Good, HSG A
	9,790	39	>75% Grass cover, Good, HSG A
*	12,694	98	Pavement, HSG A
	96,900	46	2 acre lots, 12% imp, HSG A
	66,000	51	1 acre lots, 20% imp, HSG A
	1,321	80	>75% Grass cover, Good, HSG D
	193,211	50	Weighted Average
	155,689		80.58% Pervious Area
	37,522		19.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.8	150	0.0047	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
10.4	300	0.0047	0.48		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0300	0.87		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
36.5	570	Total			

Subcatchment S2-3: S2-3

Hydrograph



Summary for Subcatchment S2-4: S2-4

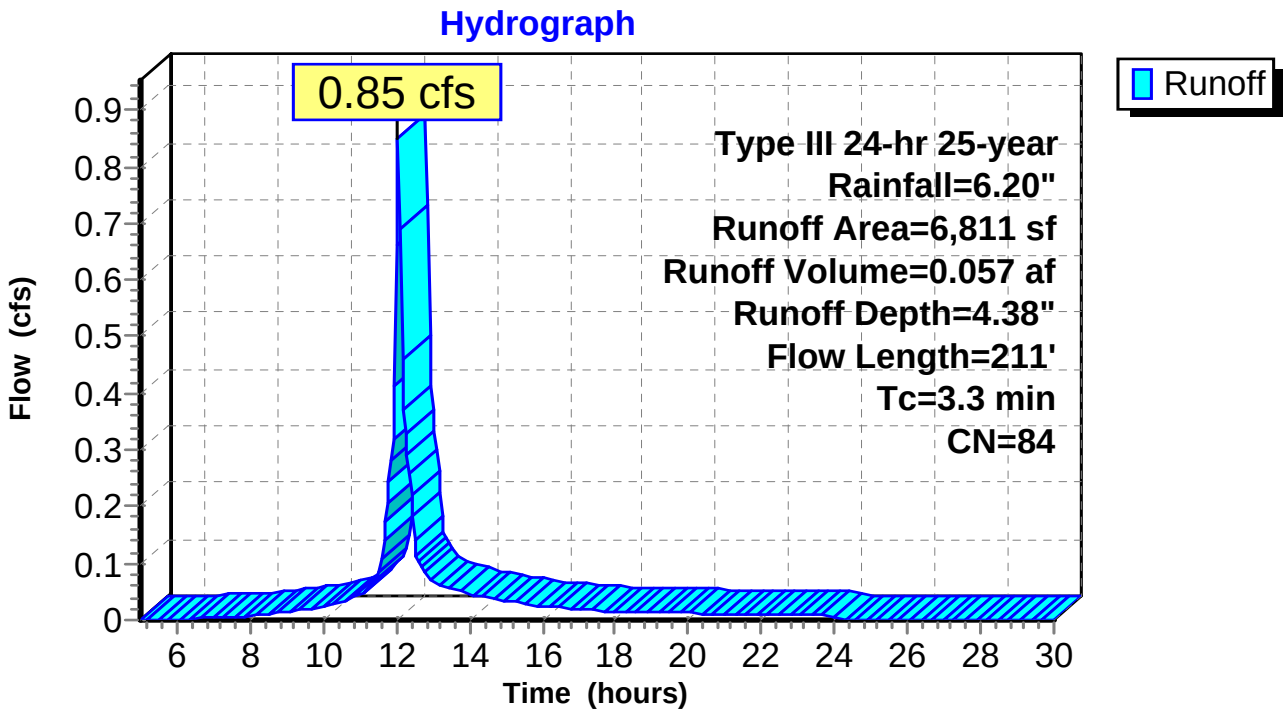
Runoff = 0.85 cfs @ 12.05 hrs, Volume= 0.057 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
*	5,240	98	Paved
	1,571	39	>75% Grass cover, Good, HSG A
	6,811	84	Weighted Average
	1,571		23.07% Pervious Area
	5,240		76.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	8	0.0162	0.77		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.30"
1.5	8	0.0138	0.09		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.30"
1.6	195	0.0102	2.05		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.3	211	Total			

Subcatchment S2-4: S2-4



Summary for Subcatchment S2-5: S2-5

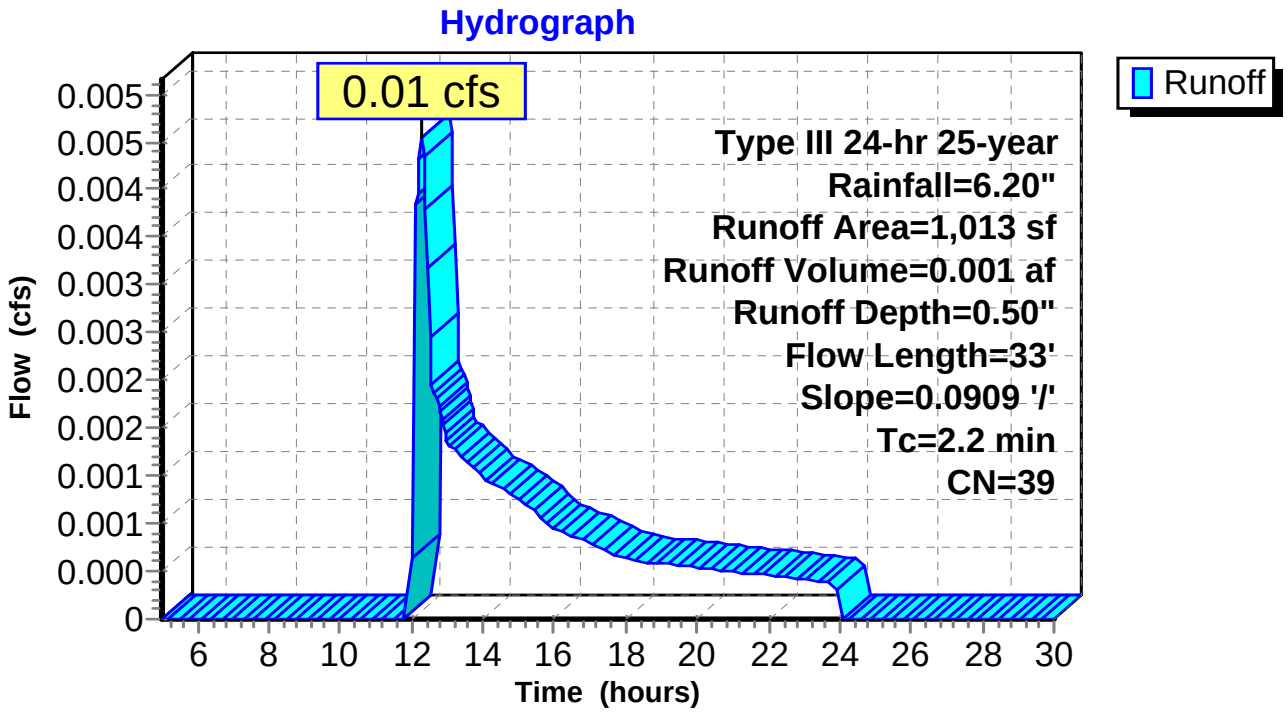
Runoff = 0.01 cfs @ 12.27 hrs, Volume= 0.001 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (sf)	CN	Description
1,013	39	>75% Grass cover, Good, HSG A
1,013		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0909	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"

Subcatchment S2-5: S2-5



Summary for Subcatchment S2-6: S2-6

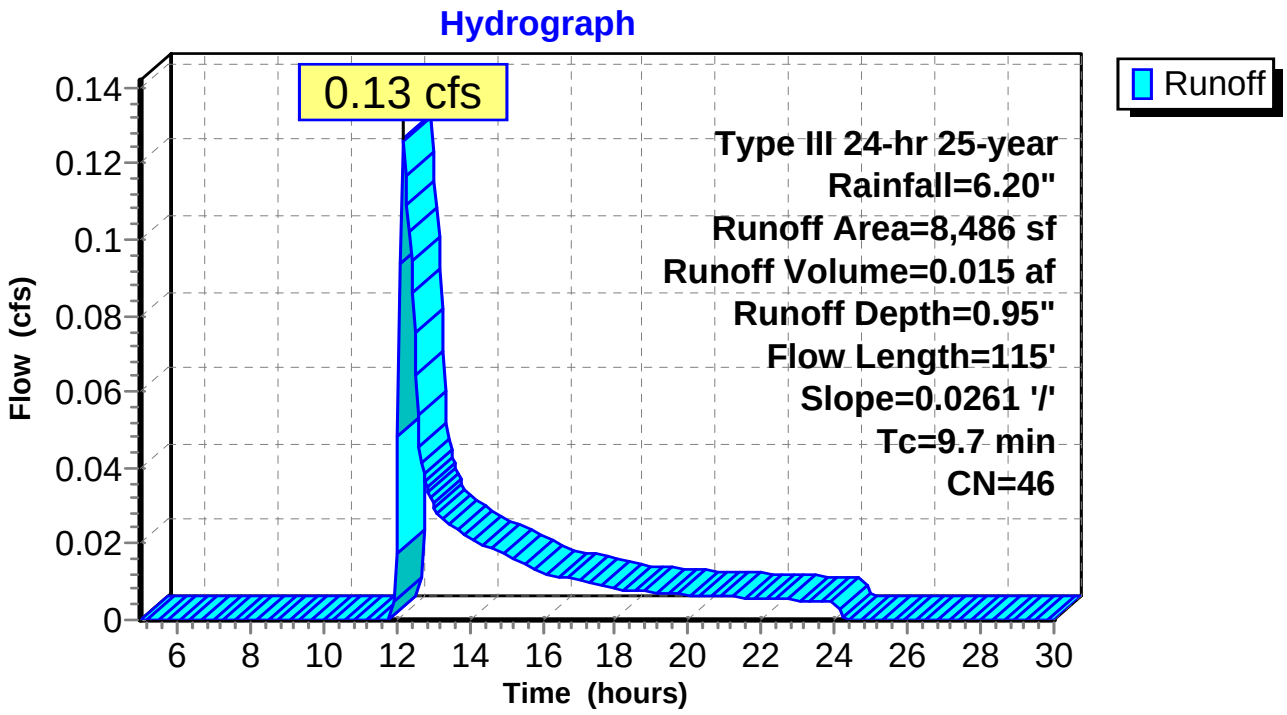
Runoff = 0.13 cfs @ 12.18 hrs, Volume= 0.015 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (sf)	CN	Description
8,486	46	2 acre lots, 12% imp, HSG A
7,468		88.00% Pervious Area
1,018		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	115	0.0261	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"

Subcatchment S2-6: S2-6



Summary for Subcatchment S3-1: S3-1

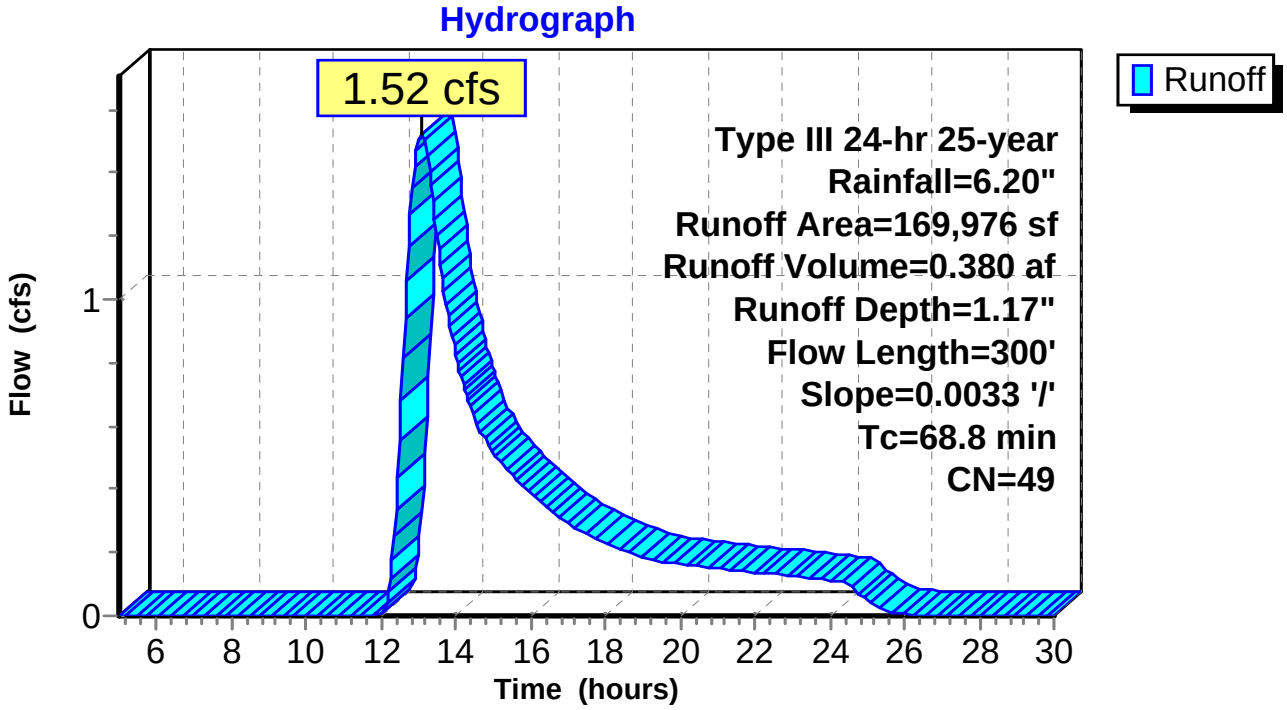
Runoff = 1.52 cfs @ 13.08 hrs, Volume= 0.380 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	9,517	30	Woods, Good, HSG A
	6,292	39	>75% Grass cover, Good, HSG A
*	5,627	98	Pavement, HSG A
	68,793	51	1 acre lots, 20% imp, HSG A
	79,747	46	2 acre lots, 12% imp, HSG A
	169,976	49	Weighted Average
	141,021		82.97% Pervious Area
	28,955		17.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	150	0.0033	0.04		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
8.7	150	0.0033	0.29		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
68.8	300	Total			

Subcatchment S3-1: S3-1



Summary for Subcatchment S3-2: S3-2

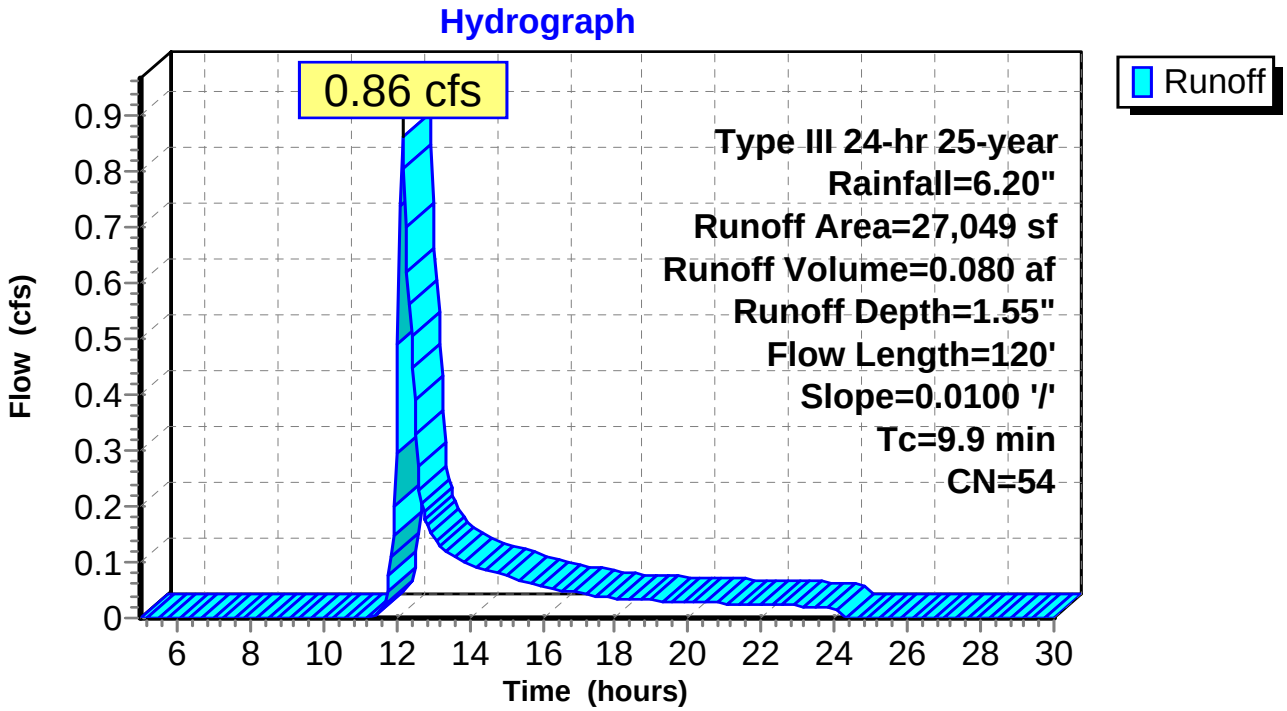
Runoff = 0.86 cfs @ 12.16 hrs, Volume= 0.080 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	2,575	30	Woods, Good, HSG A
	5,025	39	>75% Grass cover, Good, HSG A
*	4,197	98	Pavement, HSG A
	15,252	51	1 acre lots, 20% imp, HSG A
	27,049	54	Weighted Average
	19,802		73.21% Pervious Area
	7,247		26.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	60	0.0100	0.12		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
1.4	60	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
9.9	120	Total			

Subcatchment S3-2: S3-2



Summary for Subcatchment S3-3: S3-3

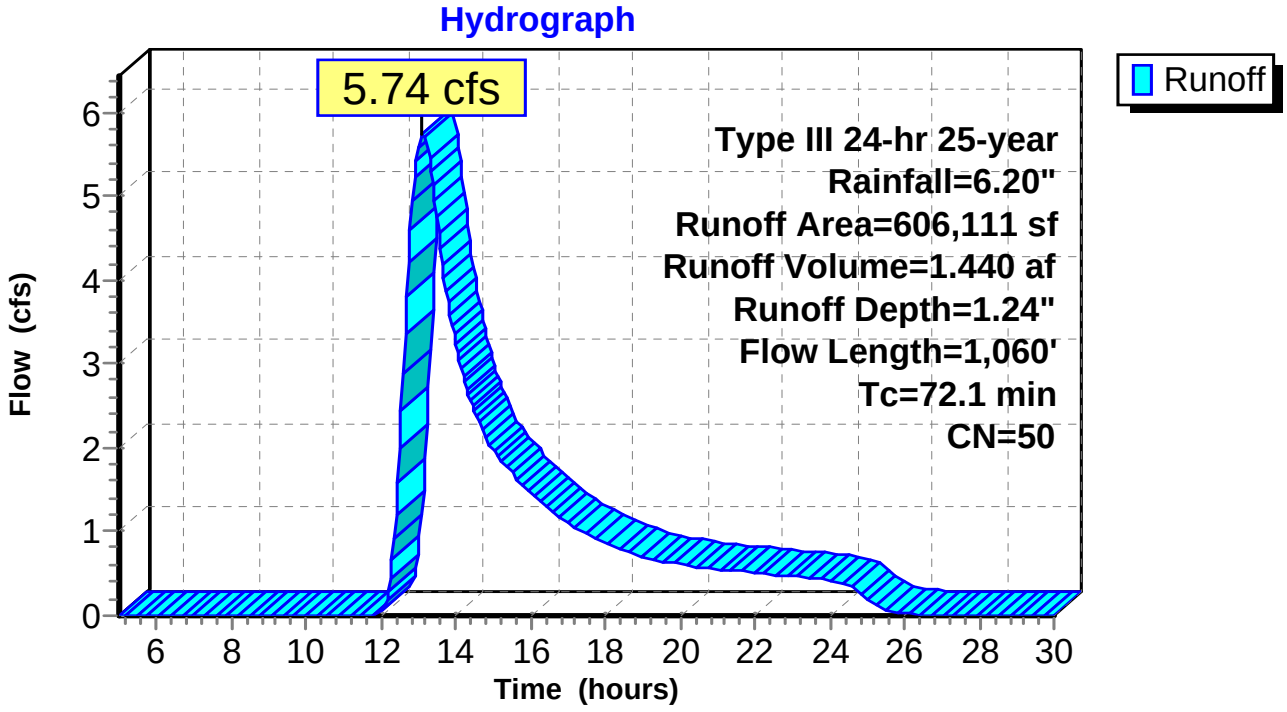
Runoff = 5.74 cfs @ 13.12 hrs, Volume= 1.440 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	160,572	30	Woods, Good, HSG A
	69,002	39	>75% Grass cover, Good, HSG A
*	15,941	98	Pavement, HSG A
	163,296	51	1 acre lots, 20% imp, HSG A
	96,516	77	Woods, Good, HSG D
	81,651	46	2 acre lots, 12% imp, HSG A
	19,133	84	1 acre lots, 20% imp, HSG D
	606,111	50	Weighted Average
	543,886		89.73% Pervious Area
	62,225		10.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.6	150	0.0100	0.06		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.30"
33.5	910	0.0082	0.45		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
72.1	1,060	Total			

Subcatchment S3-3: S3-3



Summary for Subcatchment S4: S4

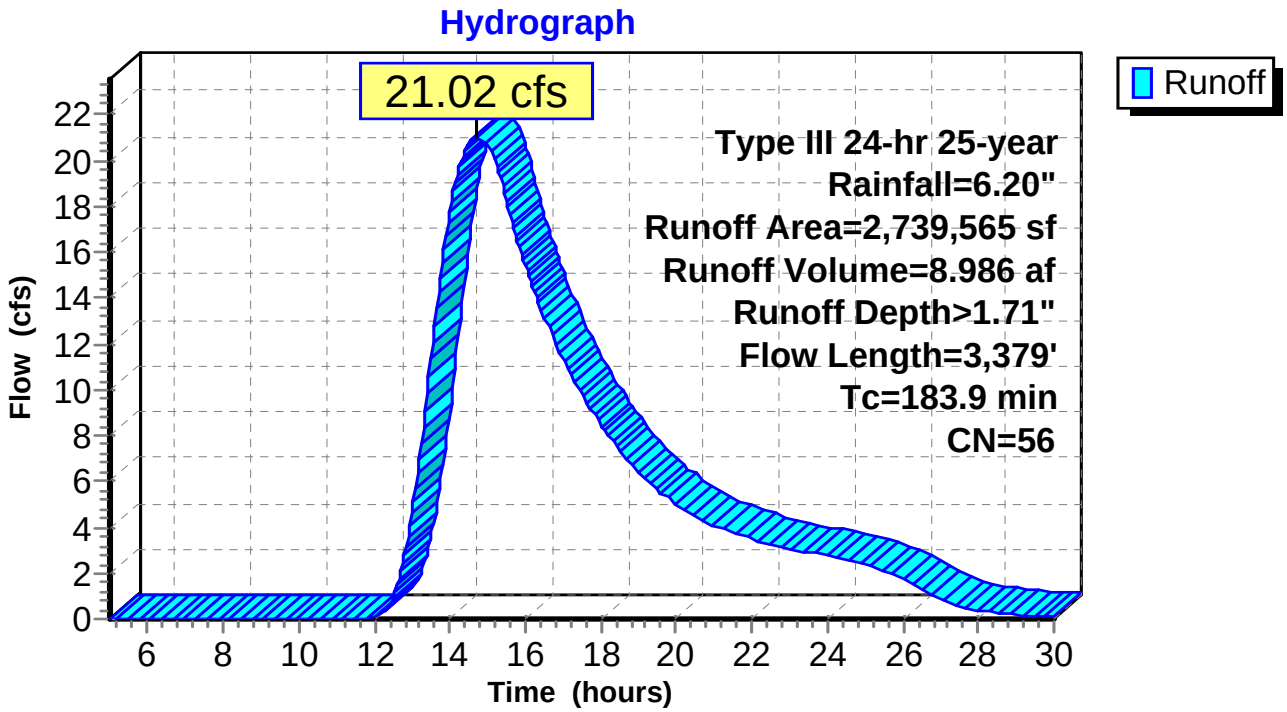
Runoff = 21.02 cfs @ 14.70 hrs, Volume= 8.986 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (sf)	CN	Description
	983,204	77	Woods, Good, HSG D
	334,784	30	Woods, Good, HSG A
	556,189	39	>75% Grass cover, Good, HSG A
*	751,373	46	Lots, 12% imp, HSG A
	58,930	80	>75% Grass cover, Good, HSG D
*	55,085	98	Paved
	2,739,565	56	Weighted Average
	2,594,315		94.70% Pervious Area
	145,250		5.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	150	0.0160	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.30"
21.6	759	0.0070	0.59		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
132.2	1,430	0.0013	0.18		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.5	1,040	0.0100	1.11	7.43	**Parabolic Channel, D-E** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.100 Very weedy reaches w/pools
183.9	3,379	Total			

Subcatchment S4: S4



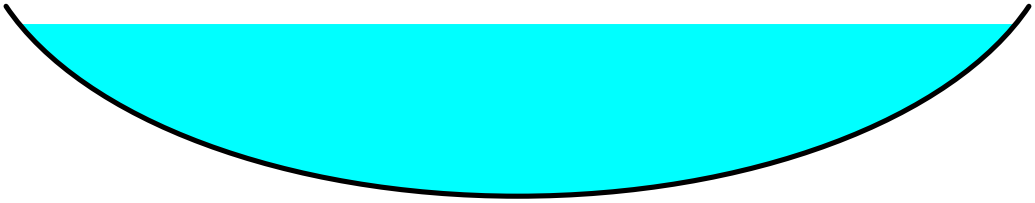
Summary for Reach R1-1: Trib stream

Inflow Area = 88.837 ac, 6.87% Impervious, Inflow Depth > 1.53" for 25-year event
Inflow = 25.06 cfs @ 14.96 hrs, Volume= 11.353 af
Outflow = 25.06 cfs @ 15.01 hrs, Volume= 11.351 af, Atten= 0%, Lag= 3.3 min

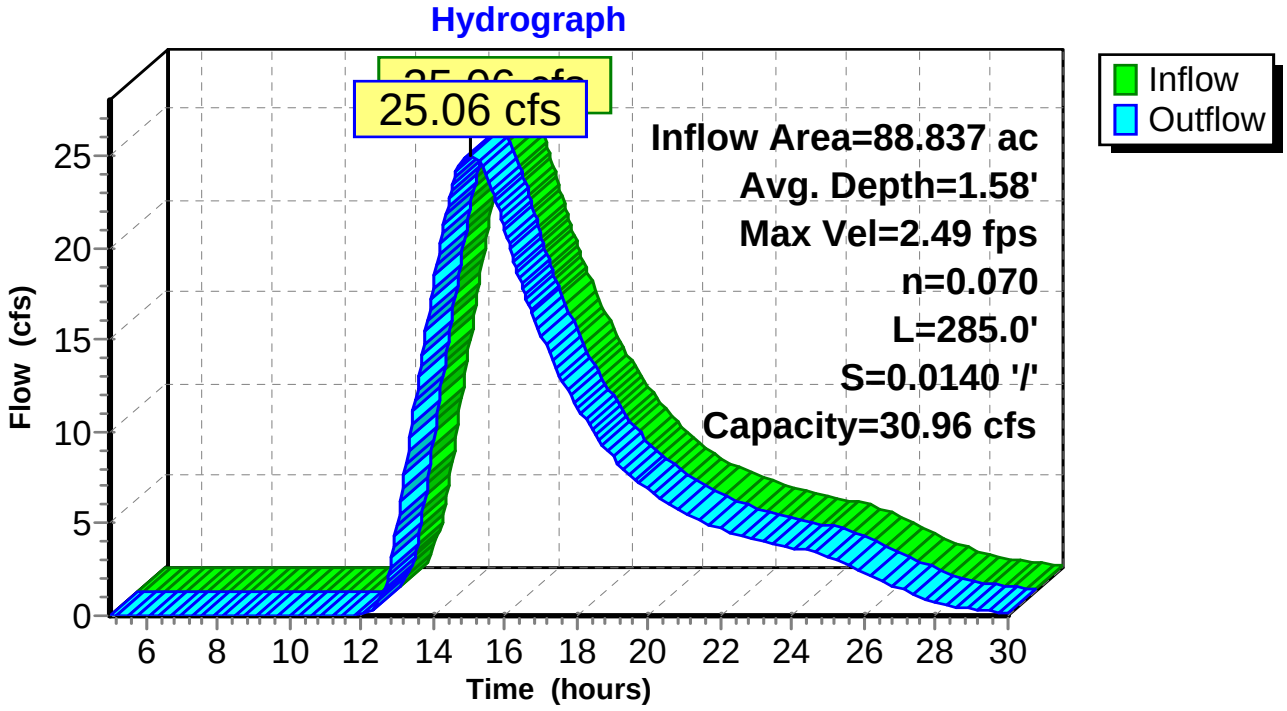
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.49 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.8 min

Peak Storage= 2,864 cf @ 14.98 hrs, Average Depth at Peak Storage= 1.58'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 30.96 cfs

10.00' x 1.75' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 285.0' Slope= 0.0140 '/'
Inlet Invert= 140.00', Outlet Invert= 136.00'



Reach R1-1: Trib stream



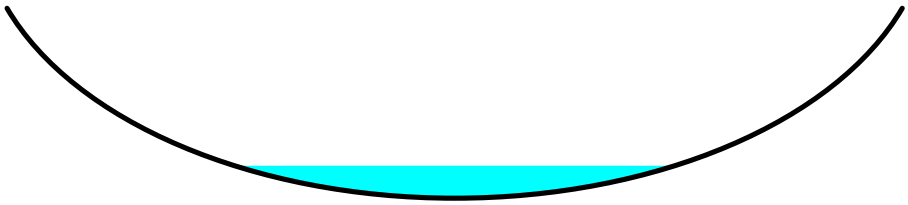
Summary for Reach R1-2: Woods

Inflow Area = 5.338 ac, 0.65% Impervious, Inflow Depth = 0.50" for 25-year event
Inflow = 0.77 cfs @ 12.77 hrs, Volume= 0.224 af
Outflow = 0.75 cfs @ 12.94 hrs, Volume= 0.224 af, Atten= 2%, Lag= 10.1 min

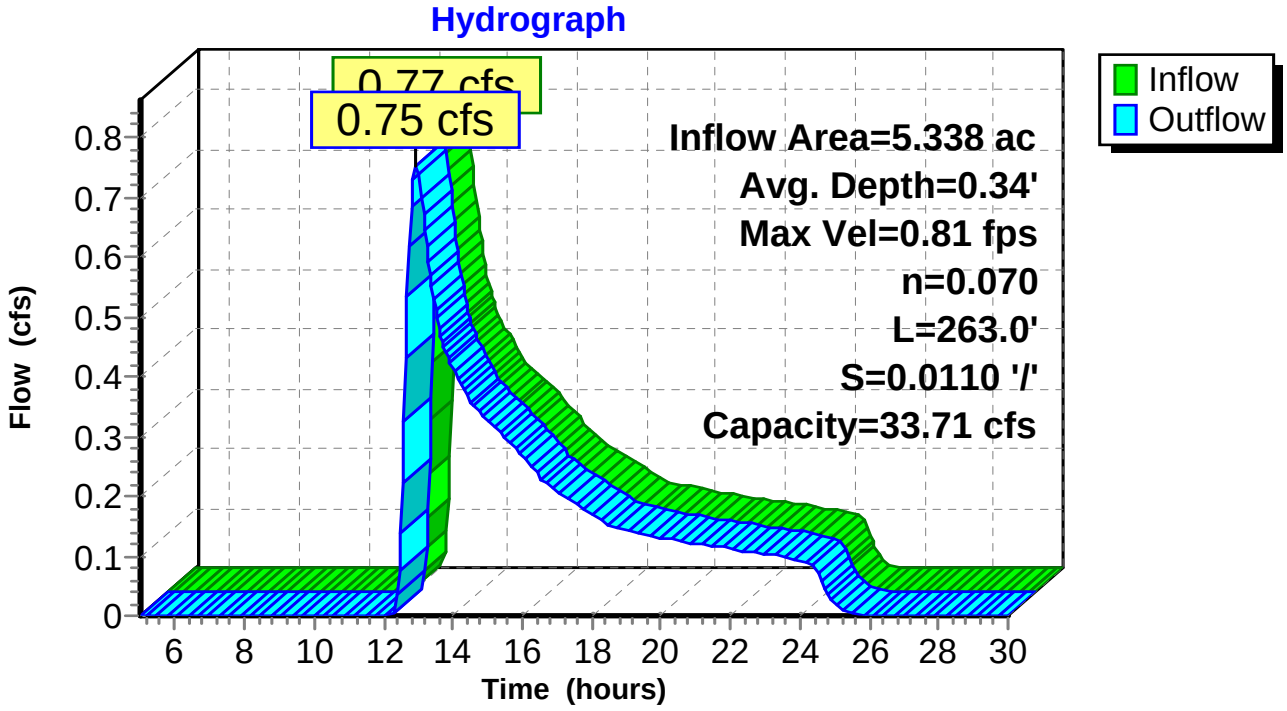
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.81 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.44 fps, Avg. Travel Time= 10.0 min

Peak Storage= 244 cf @ 12.85 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.71 cfs

10.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 263.0' Slope= 0.0110 '/'
Inlet Invert= 142.00', Outlet Invert= 139.12'



Reach R1-2: Woods



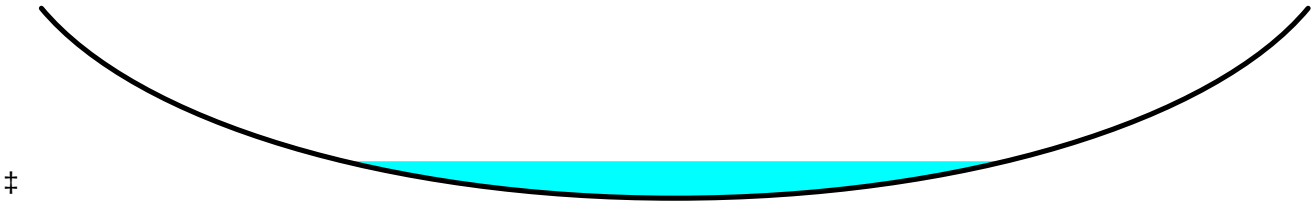
Summary for Reach R1-3: Woods

Inflow Area = 2.170 ac, 21.98% Impervious, Inflow Depth = 1.43" for 25-year event
Inflow = 1.35 cfs @ 12.70 hrs, Volume= 0.258 af
Outflow = 1.33 cfs @ 12.86 hrs, Volume= 0.258 af, Atten= 2%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.17 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 14.5 min

Peak Storage= 441 cf @ 12.76 hrs, Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 46.68 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.040
Length= 390.0' Slope= 0.0154 '/'
Inlet Invert= 146.00', Outlet Invert= 140.00'



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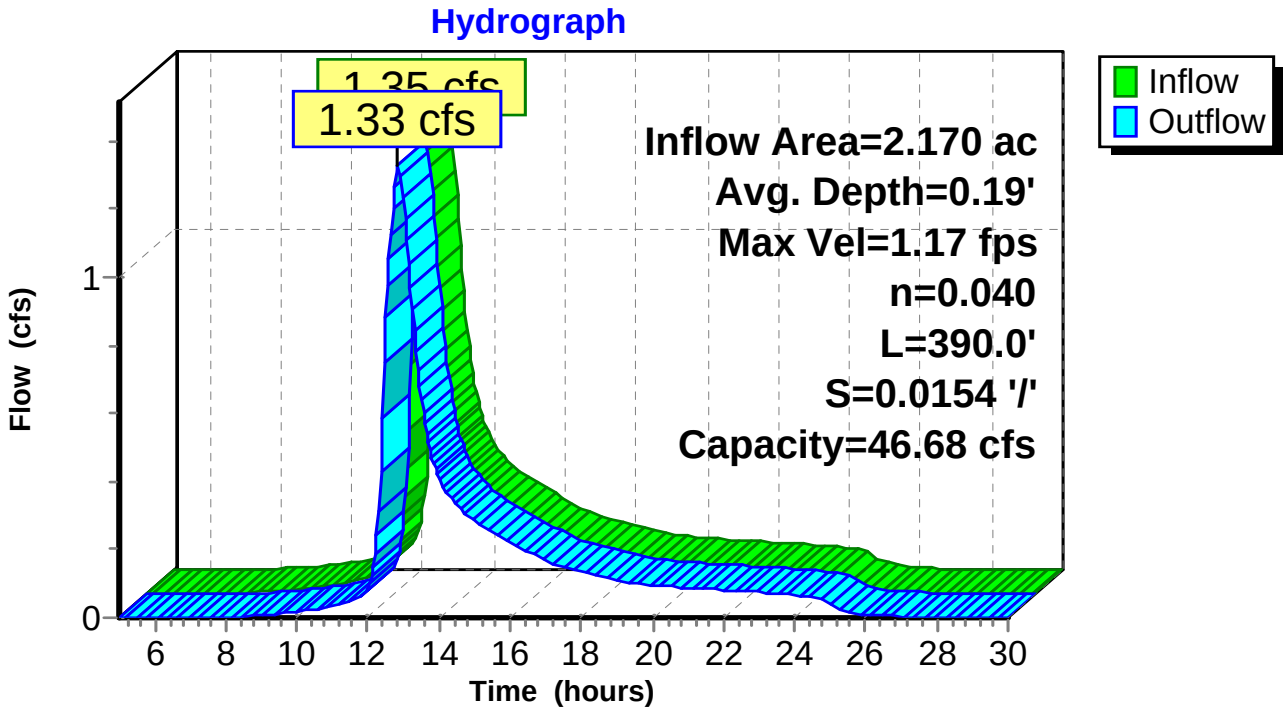
Reach R1-3: Woods



Summary for Reach R1-4: Buffer

Inflow Area = 2.170 ac, 21.98% Impervious, Inflow Depth = 1.43" for 25-year event
Inflow = 1.40 cfs @ 12.49 hrs, Volume= 0.258 af
Outflow = 1.35 cfs @ 12.70 hrs, Volume= 0.258 af, Atten= 4%, Lag= 12.5 min

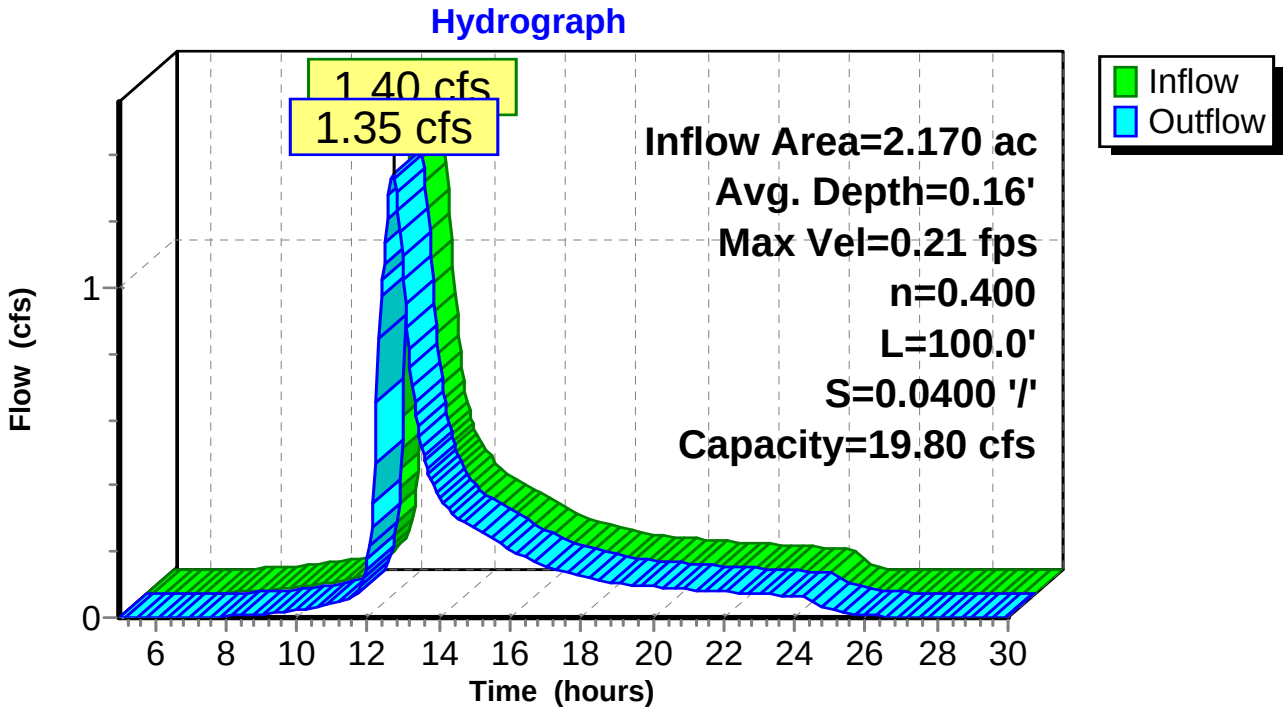
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.21 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 25.2 min

Peak Storage= 646 cf @ 12.57 hrs, Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.75', Capacity at Bank-Full= 19.80 cfs

40.00' x 0.75' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 55.00'
Length= 100.0' Slope= 0.0400 '/'
Inlet Invert= 150.00', Outlet Invert= 146.00'

‡

Reach R1-4: Buffer



Summary for Reach R1-5: Outlet Ditch

Inflow Area = 0.859 ac, 40.40% Impervious, Inflow Depth = 2.36" for 25-year event
Inflow = 1.27 cfs @ 12.06 hrs, Volume= 0.169 af
Outflow = 1.17 cfs @ 12.15 hrs, Volume= 0.169 af, Atten= 8%, Lag= 5.4 min

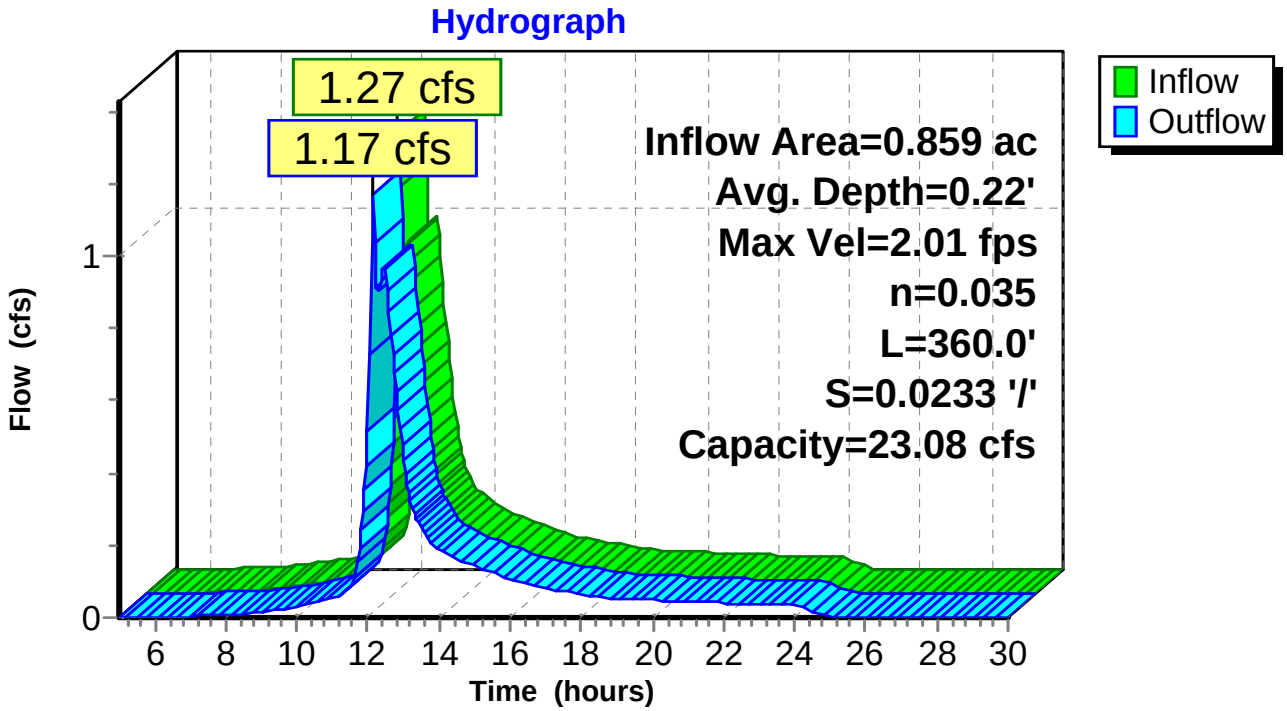
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 8.7 min

Peak Storage= 210 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 23.08 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 360.0' Slope= 0.0233 '/'
Inlet Invert= 154.40', Outlet Invert= 146.00'

‡

Reach R1-5: Outlet Ditch



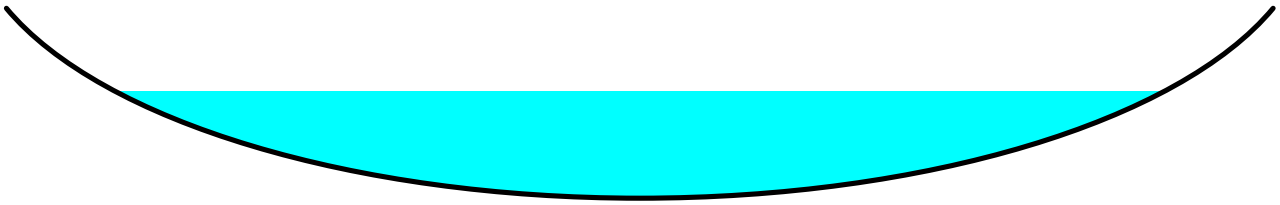
Summary for Reach R1-6: Woods

Inflow Area = 4.151 ac, 22.08% Impervious, Inflow Depth > 1.19" for 25-year event
Inflow = 1.51 cfs @ 12.87 hrs, Volume= 0.410 af
Outflow = 1.17 cfs @ 13.86 hrs, Volume= 0.409 af, Atten= 23%, Lag= 59.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 29.6 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 52.6 min

Peak Storage= 2,070 cf @ 13.37 hrs, Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.02 cfs

15.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 489.0' Slope= 0.0204 '/'
Inlet Invert= 147.00', Outlet Invert= 137.00'



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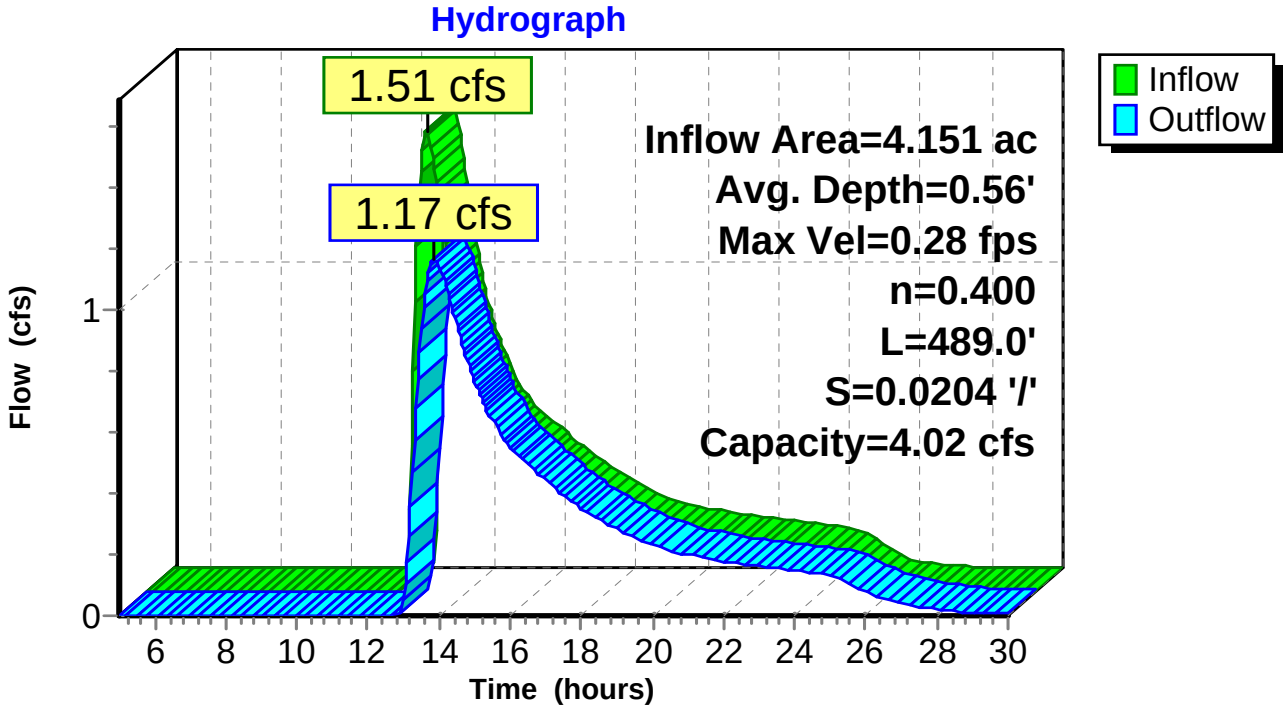
Reach R1-6: Woods



Summary for Reach R1-7: Level Spreader

Inflow Area = 4.151 ac, 22.08% Impervious, Inflow Depth = 1.19" for 25-year event
Inflow = 1.52 cfs @ 12.74 hrs, Volume= 0.411 af
Outflow = 1.51 cfs @ 12.87 hrs, Volume= 0.410 af, Atten= 1%, Lag= 8.0 min

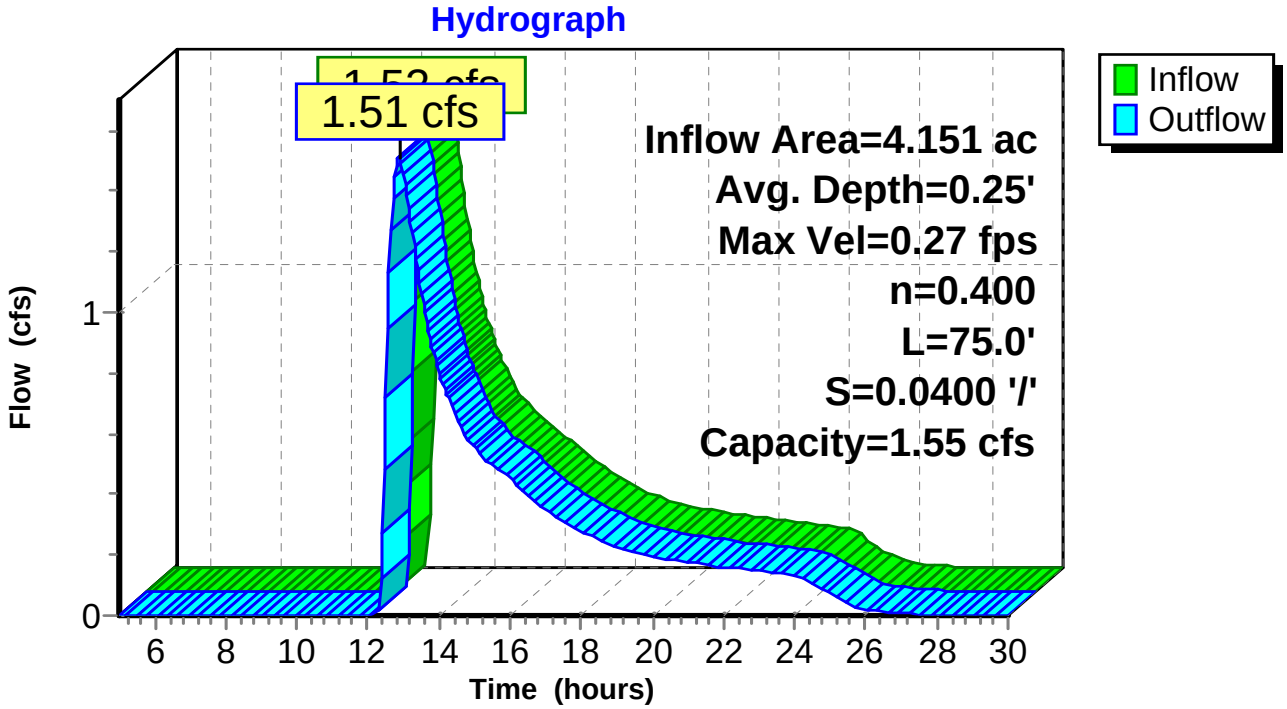
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.27 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 10.5 min

Peak Storage= 416 cf @ 12.79 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.25', Capacity at Bank-Full= 1.55 cfs

20.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 75.0' Slope= 0.0400 '/'
Inlet Invert= 150.00', Outlet Invert= 147.00'

‡

Reach R1-7: Level Spreader



Summary for Reach R1-8: Pond Outlet Ditch

Inflow Area = 4.151 ac, 22.08% Impervious, Inflow Depth = 1.19" for 25-year event
Inflow = 1.52 cfs @ 12.73 hrs, Volume= 0.411 af
Outflow = 1.52 cfs @ 12.74 hrs, Volume= 0.411 af, Atten= 0%, Lag= 0.5 min

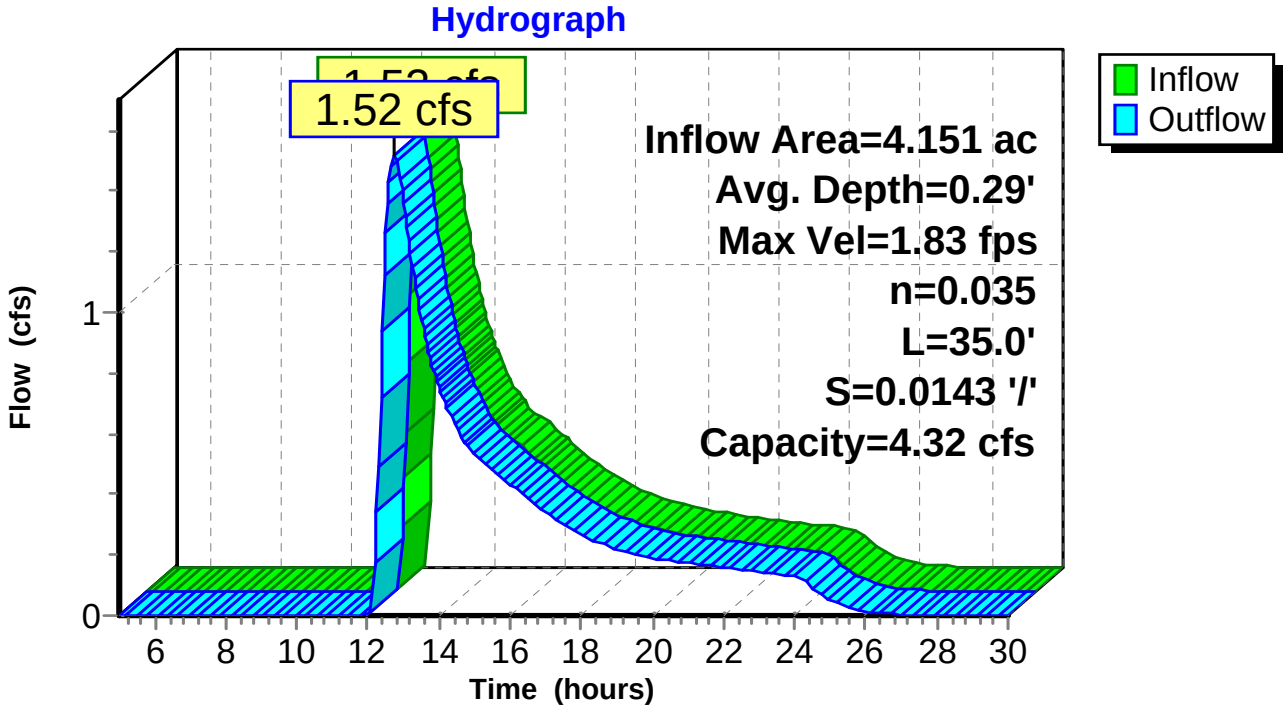
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.83 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.73 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 4.32 cfs

2.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 5.00'
Length= 35.0' Slope= 0.0143 '/'
Inlet Invert= 150.50', Outlet Invert= 150.00'

‡

Reach R1-8: Pond Outlet Ditch



Summary for Reach R1-9: Outlet Ditch

Inflow Area = 3.232 ac, 15.73% Impervious, Inflow Depth = 1.03" for 25-year event
Inflow = 1.62 cfs @ 12.38 hrs, Volume= 0.276 af
Outflow = 1.60 cfs @ 12.43 hrs, Volume= 0.276 af, Atten= 1%, Lag= 3.0 min

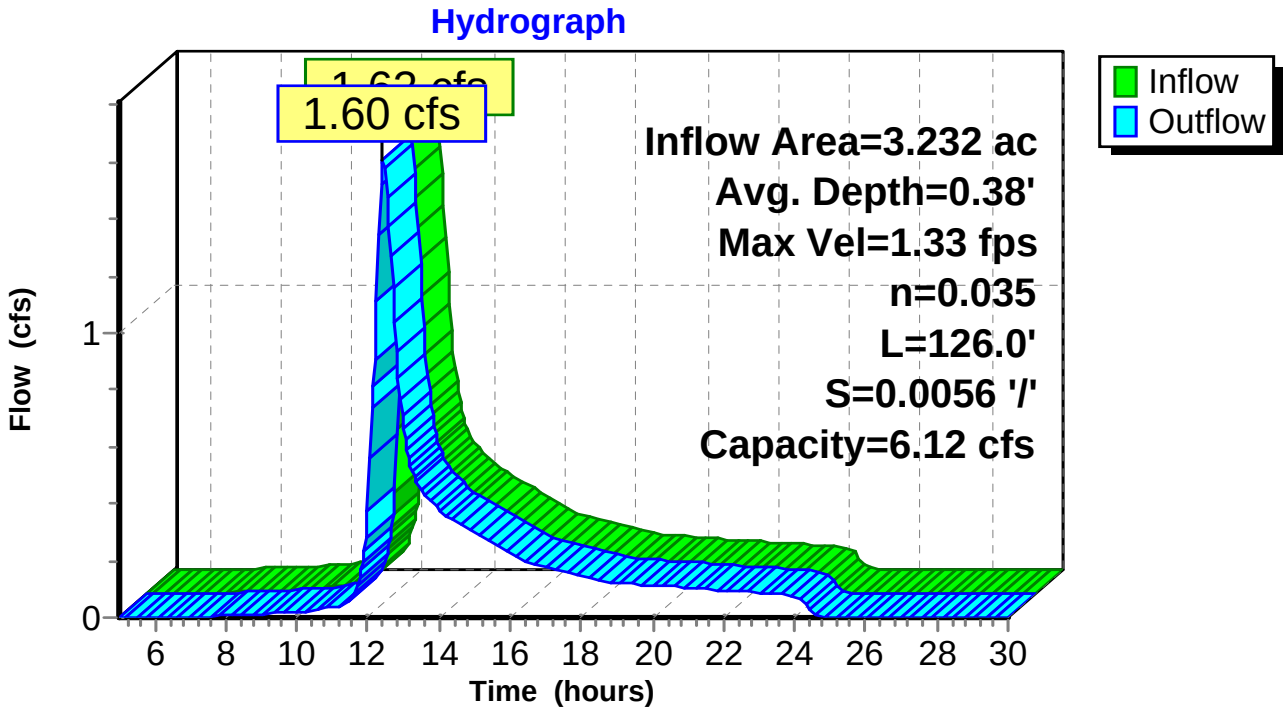
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 4.2 min

Peak Storage= 153 cf @ 12.40 hrs, Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 0.75', Capacity at Bank-Full= 6.12 cfs

2.00' x 0.75' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 6.50'
Length= 126.0' Slope= 0.0056 '/'
Inlet Invert= 151.20', Outlet Invert= 150.50'

‡

Reach R1-9: Outlet Ditch



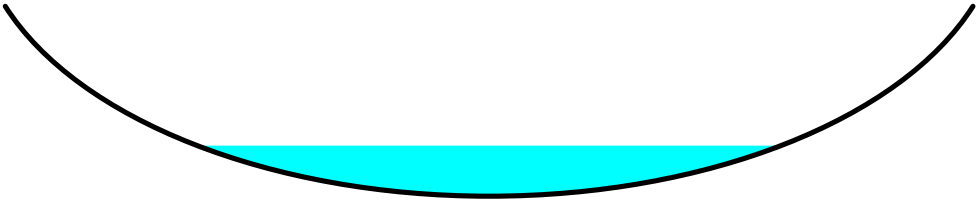
Summary for Reach R2-1: Wetland

Inflow Area = 4.436 ac, 19.42% Impervious, Inflow Depth = 1.24" for 25-year event
Inflow = 2.73 cfs @ 12.60 hrs, Volume= 0.459 af
Outflow = 2.67 cfs @ 12.74 hrs, Volume= 0.459 af, Atten= 2%, Lag= 8.3 min

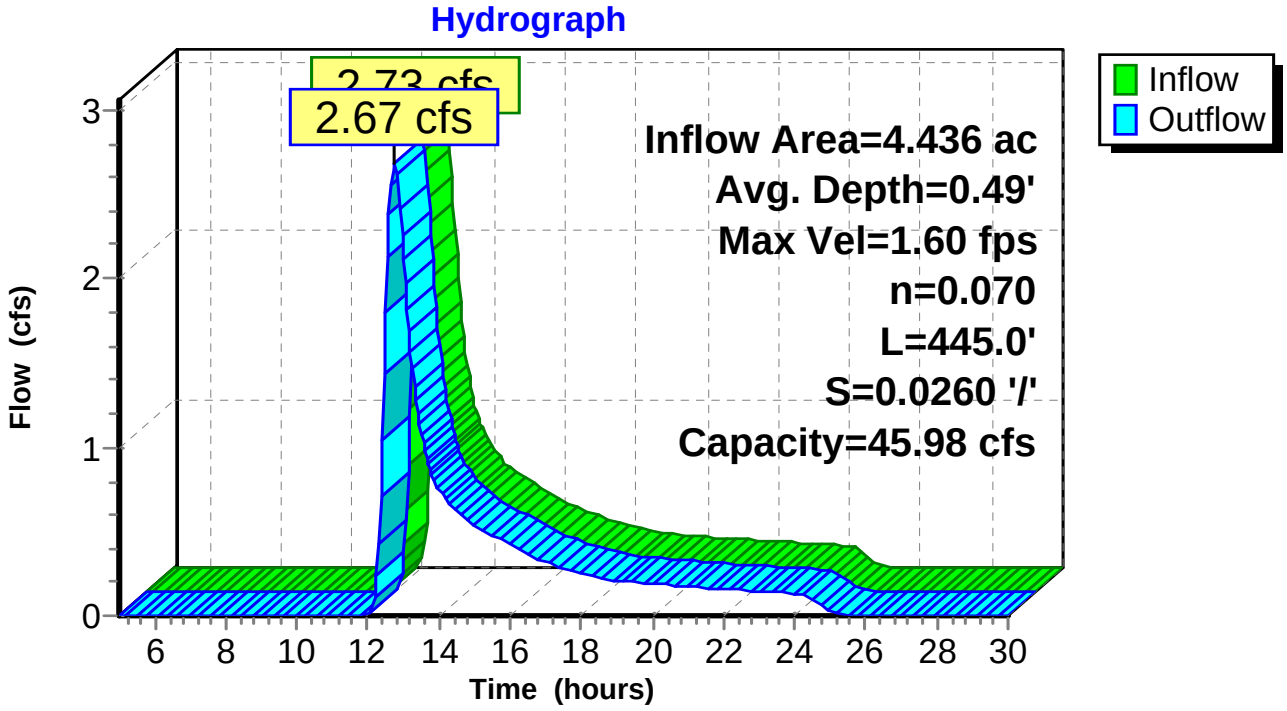
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.60 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 11.0 min

Peak Storage= 747 cf @ 12.66 hrs, Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.85', Capacity at Bank-Full= 45.98 cfs

10.00' x 1.85' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 445.0' Slope= 0.0260 '/'
Inlet Invert= 150.00', Outlet Invert= 138.43'



Reach R2-1: Wetland



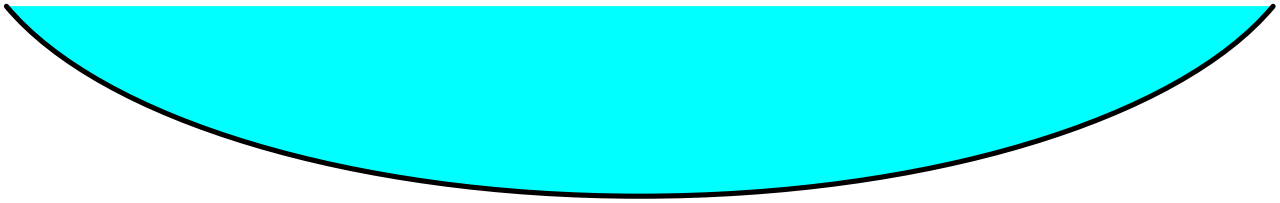
Summary for Reach R3-1: Woods

Inflow Area = 81.329 ac, 6.88% Impervious, Inflow Depth > 1.61" for 25-year event
Inflow = 24.75 cfs @ 14.52 hrs, Volume= 10.884 af
Outflow = 24.45 cfs @ 14.97 hrs, Volume= 10.871 af, Atten= 1%, Lag= 26.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.40 fps, Min. Travel Time= 12.7 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 19.9 min

Peak Storage= 18,568 cf @ 14.76 hrs, Average Depth at Peak Storage= 2.17'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 9.55 cfs

10.00' x 1.25' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools
Length= 1,063.0' Slope= 0.0080 '/'
Inlet Invert= 148.50', Outlet Invert= 140.00'



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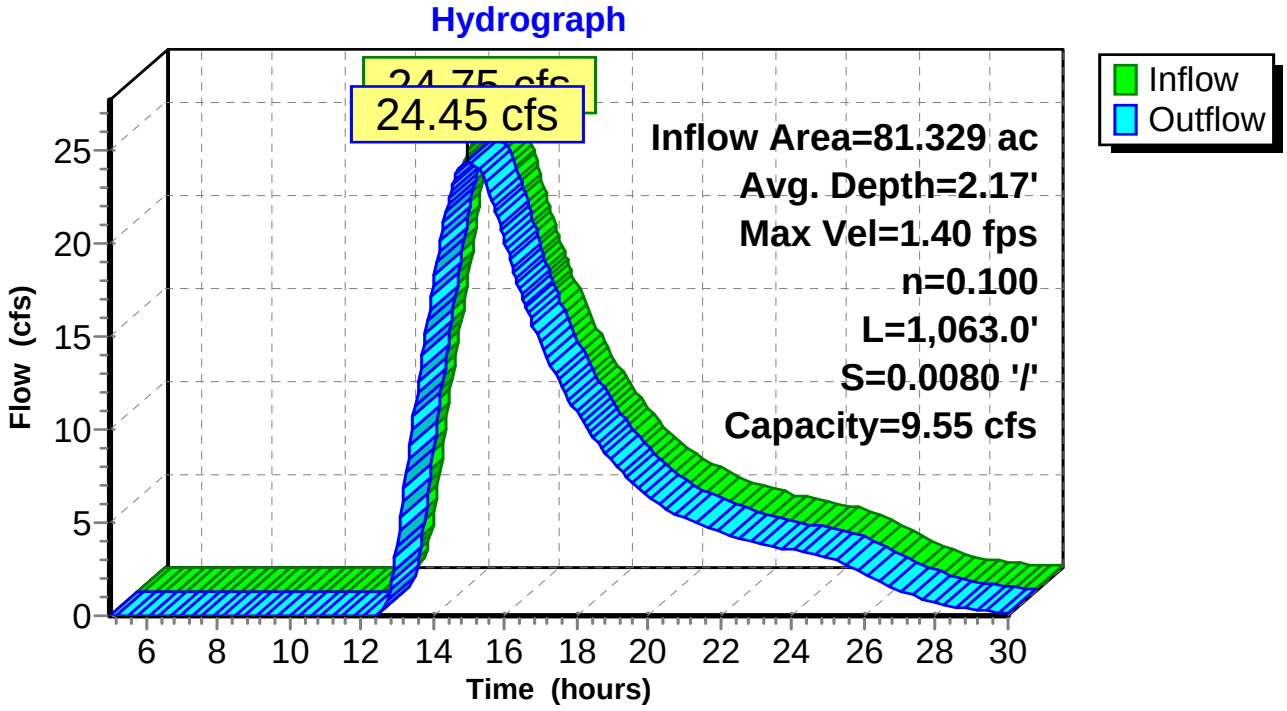
Reach R3-1: Woods



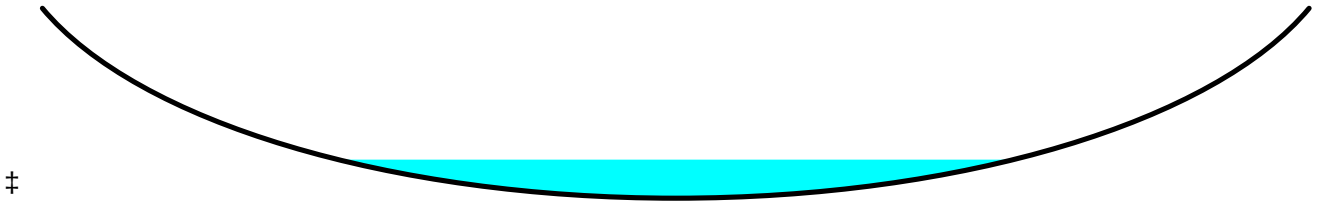
Summary for Reach R3-2: Wetland

Inflow Area = 4.523 ac, 18.37% Impervious, Inflow Depth > 1.21" for 25-year event
Inflow = 1.48 cfs @ 14.22 hrs, Volume= 0.458 af
Outflow = 1.48 cfs @ 14.32 hrs, Volume= 0.458 af, Atten= 0%, Lag= 6.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.65 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 6.8 min

Peak Storage= 333 cf @ 14.26 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 47.33 cfs

30.00' x 1.25' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 147.0' Slope= 0.0102 '/'
Inlet Invert= 150.00', Outlet Invert= 148.50'



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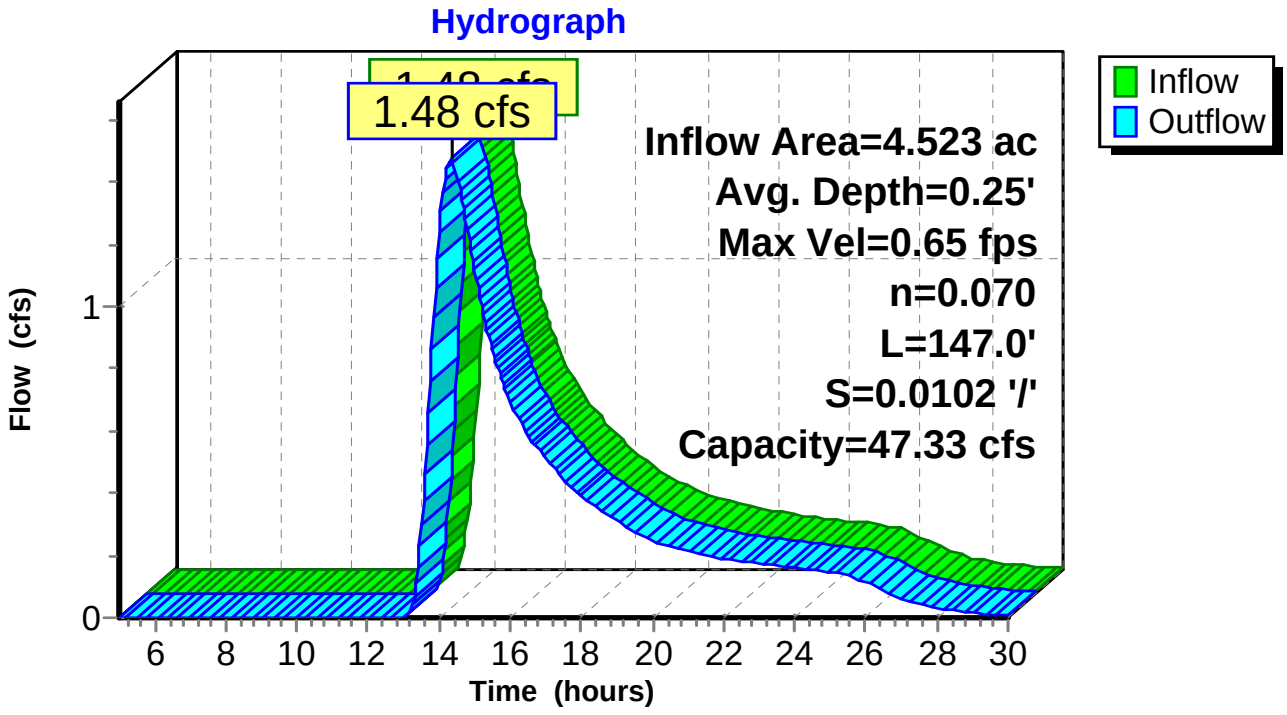
Reach R3-2: Wetland



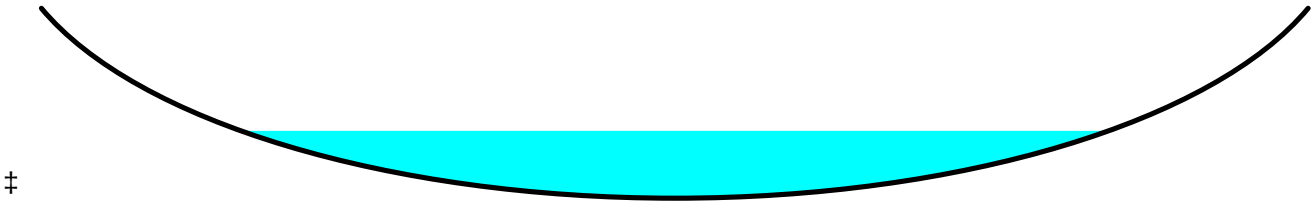
Summary for Reach R3-3: Wetland

Inflow Area = 4.523 ac, 18.37% Impervious, Inflow Depth > 1.22" for 25-year event
Inflow = 1.55 cfs @ 13.77 hrs, Volume= 0.459 af
Outflow = 1.48 cfs @ 14.22 hrs, Volume= 0.458 af, Atten= 5%, Lag= 26.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.53 fps, Min. Travel Time= 14.5 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 26.9 min

Peak Storage= 1,291 cf @ 13.97 hrs, Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 14.04 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools
Length= 460.0' Slope= 0.0087 '/'
Inlet Invert= 154.00', Outlet Invert= 150.00'



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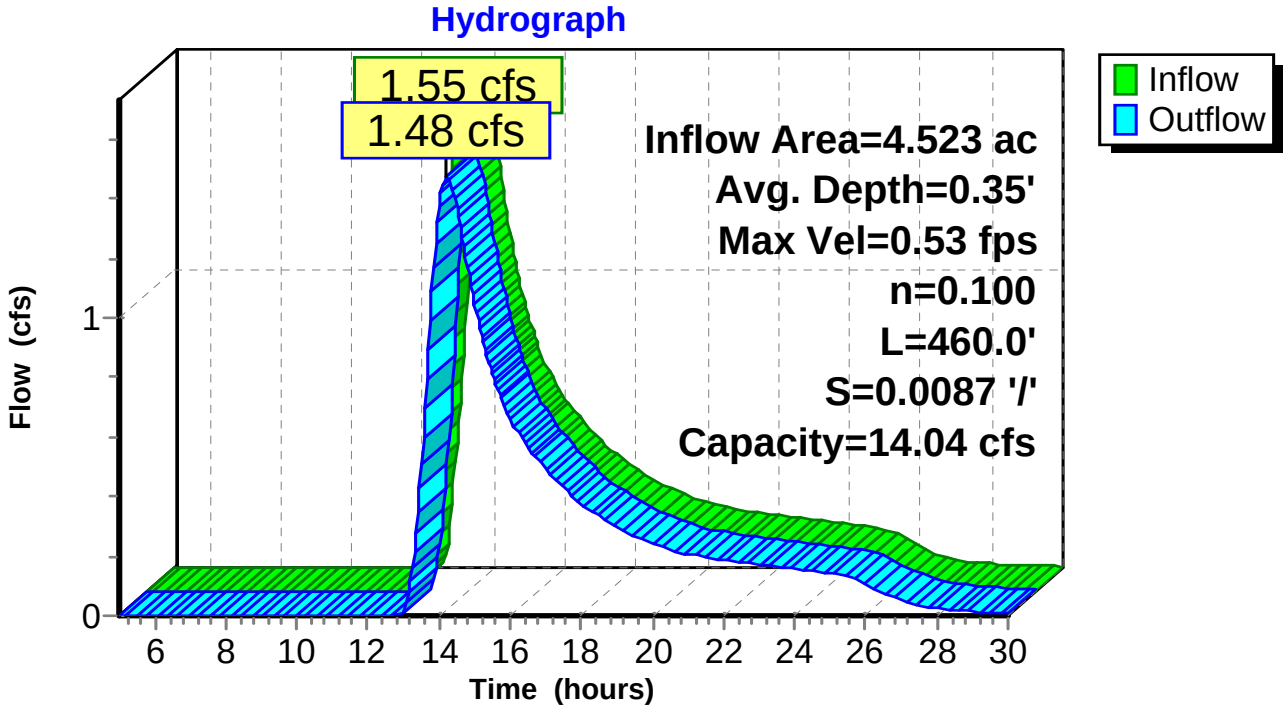
Reach R3-3: Wetland



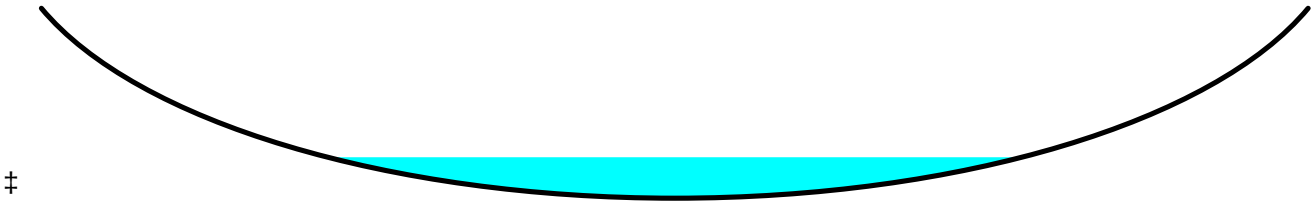
Summary for Reach R3-4: Woods

Inflow Area = 3.902 ac, 17.03% Impervious, Inflow Depth > 1.16" for 25-year event
Inflow = 1.35 cfs @ 13.72 hrs, Volume= 0.379 af
Outflow = 1.34 cfs @ 13.82 hrs, Volume= 0.379 af, Atten= 0%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 6.6 min

Peak Storage= 275 cf @ 13.77 hrs, Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.75', Capacity at Bank-Full= 37.46 cfs

50.00' x 0.75' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 110.0' Slope= 0.0256 '/'
Inlet Invert= 156.82', Outlet Invert= 154.00'



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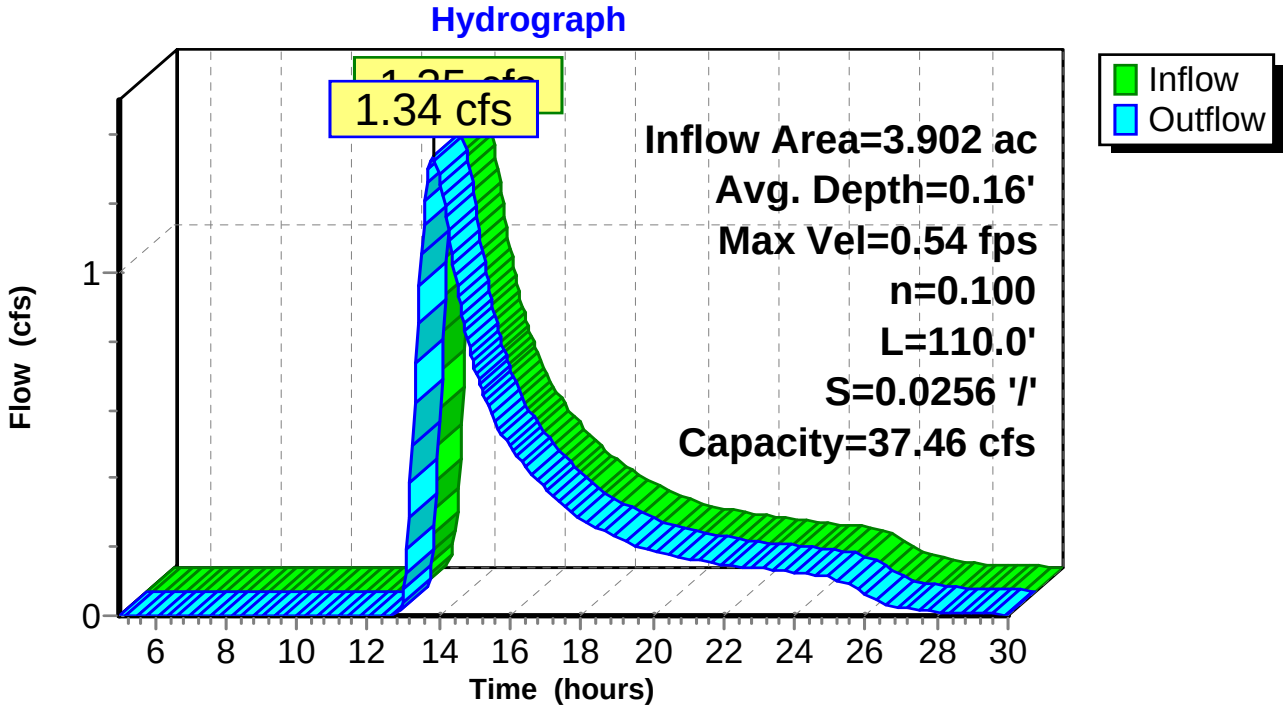
Reach R3-4: Woods



Summary for Reach R3-5: Wooded Buffer

Inflow Area = 3.902 ac, 17.03% Impervious, Inflow Depth = 1.17" for 25-year event
Inflow = 1.52 cfs @ 13.08 hrs, Volume= 0.380 af
Outflow = 1.35 cfs @ 13.72 hrs, Volume= 0.379 af, Atten= 12%, Lag= 38.4 min

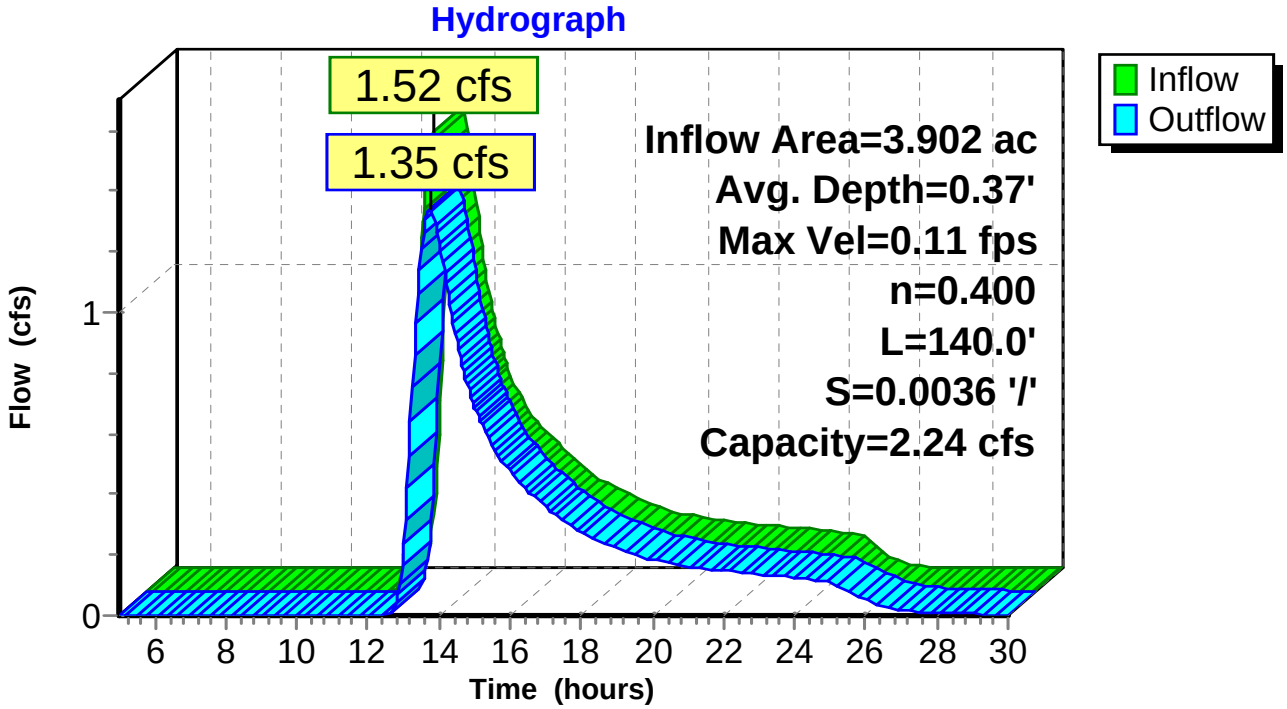
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.11 fps, Min. Travel Time= 21.8 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 48.9 min

Peak Storage= 1,761 cf @ 13.36 hrs, Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 2.24 cfs

30.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 140.0' Slope= 0.0036 '/'
Inlet Invert= 157.00', Outlet Invert= 156.50'

‡

Reach R3-5: Wooded Buffer



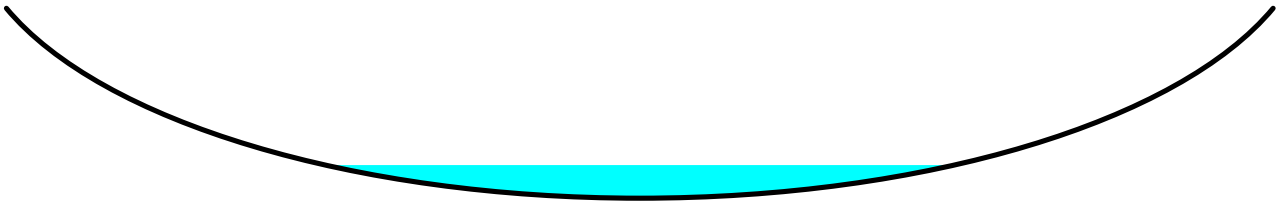
Summary for Reach R3-6: Woods

Inflow Area = 0.621 ac, 26.79% Impervious, Inflow Depth > 1.55" for 25-year event
Inflow = 0.63 cfs @ 12.50 hrs, Volume= 0.080 af
Outflow = 0.44 cfs @ 13.10 hrs, Volume= 0.080 af, Atten= 30%, Lag= 36.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.24 fps, Min. Travel Time= 20.0 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 45.9 min

Peak Storage= 525 cf @ 12.77 hrs, Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.75', Capacity at Bank-Full= 19.43 cfs

50.00' x 0.75' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 290.0' Slope= 0.0069 '/'
Inlet Invert= 156.00', Outlet Invert= 154.00'



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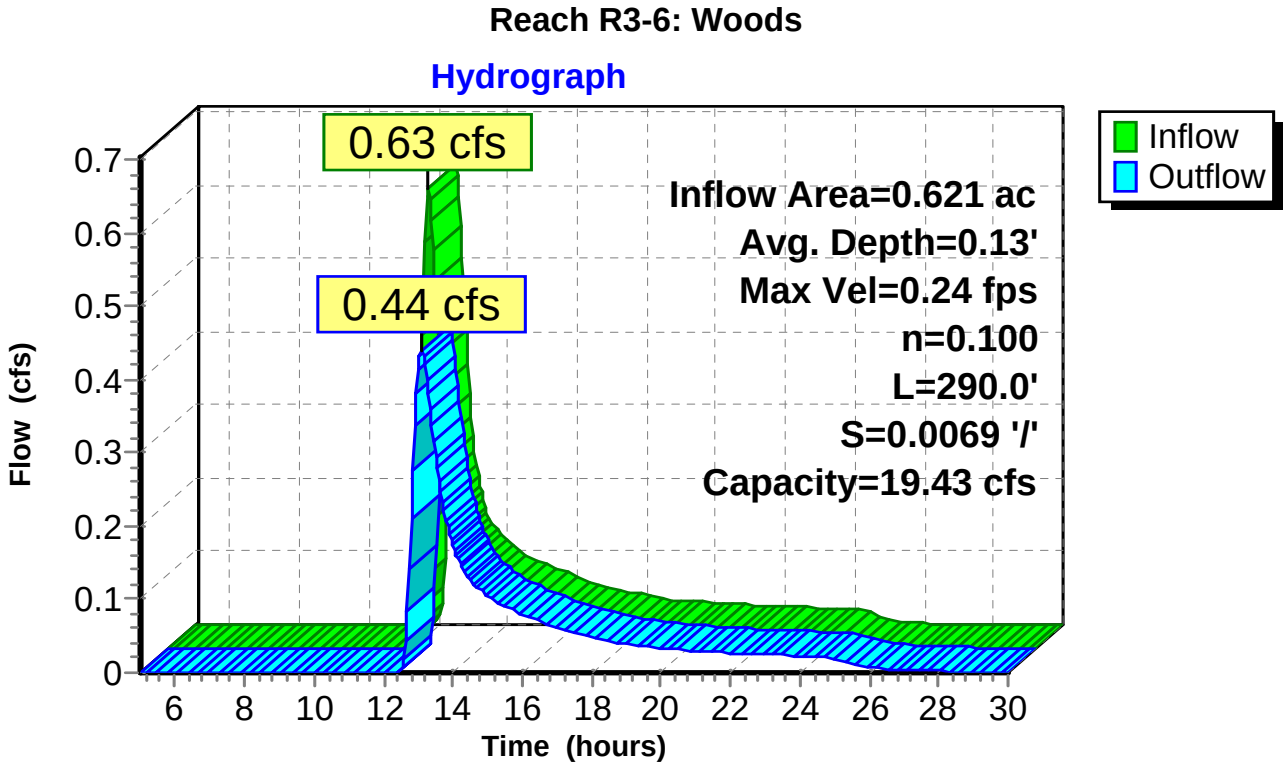


Summary for Reach R3-7: Wooded Buffer

Inflow Area = 0.621 ac, 26.79% Impervious, Inflow Depth = 1.55" for 25-year event
Inflow = 0.86 cfs @ 12.16 hrs, Volume= 0.080 af
Outflow = 0.63 cfs @ 12.50 hrs, Volume= 0.080 af, Atten= 27%, Lag= 20.2 min

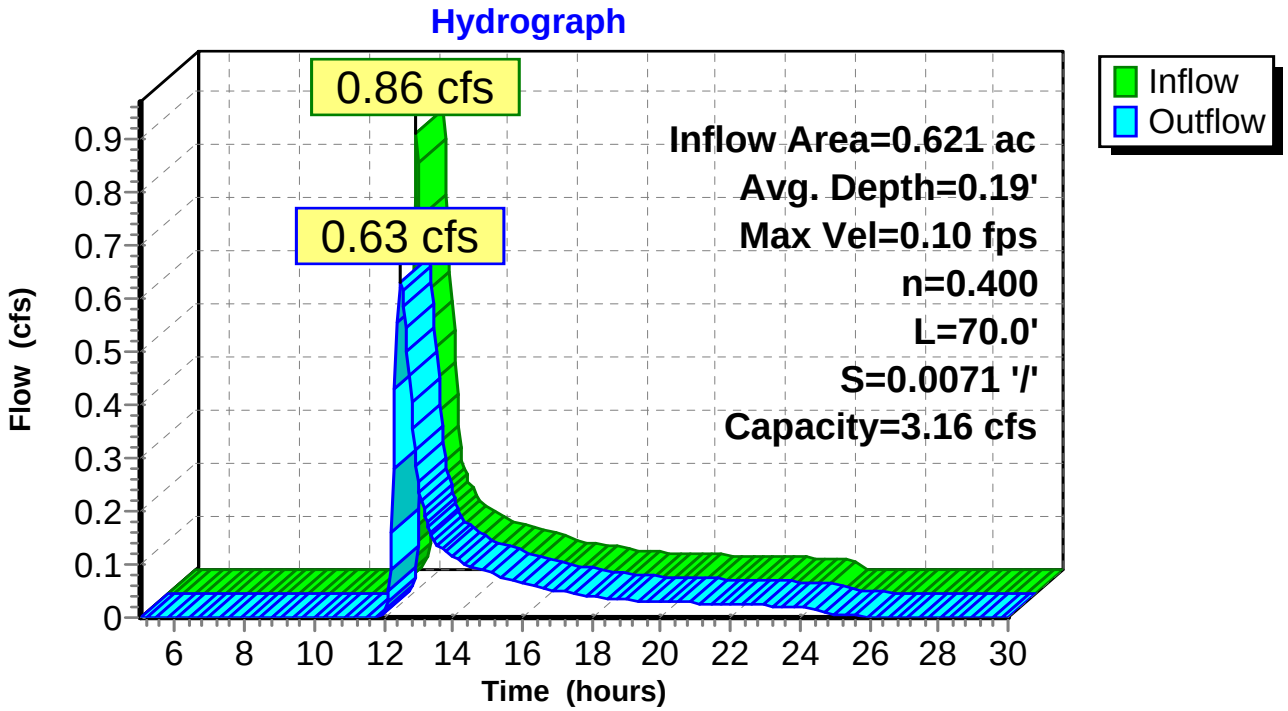
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.10 fps, Min. Travel Time= 11.5 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 38.3 min

Peak Storage= 435 cf @ 12.30 hrs, Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 3.16 cfs

30.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 70.0' Slope= 0.0071 '/'
Inlet Invert= 157.00', Outlet Invert= 156.50'

‡

Reach R3-7: Wooded Buffer

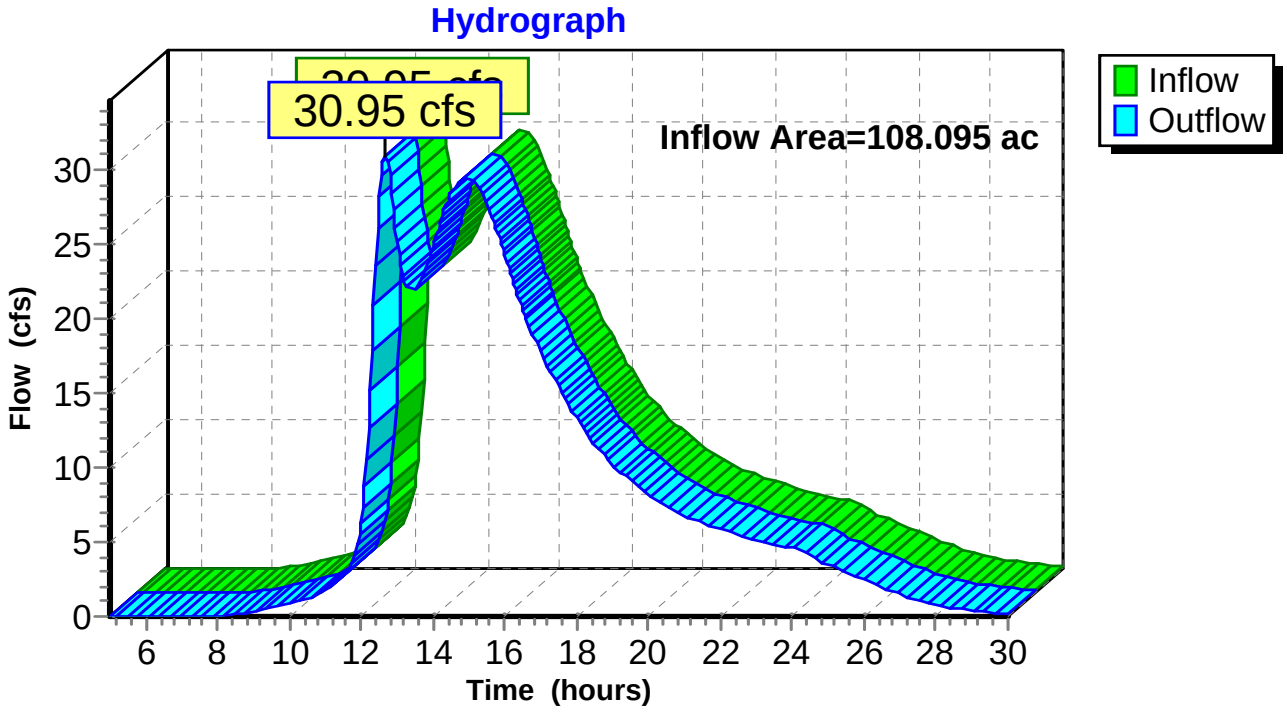


Summary for Reach SP-1: N Trib

Inflow Area = 108.095 ac, 6.50% Impervious, Inflow Depth > 1.82" for 25-year event
Inflow = 30.95 cfs @ 12.67 hrs, Volume= 16.360 af
Outflow = 30.95 cfs @ 12.67 hrs, Volume= 16.360 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach SP-1: N Trib

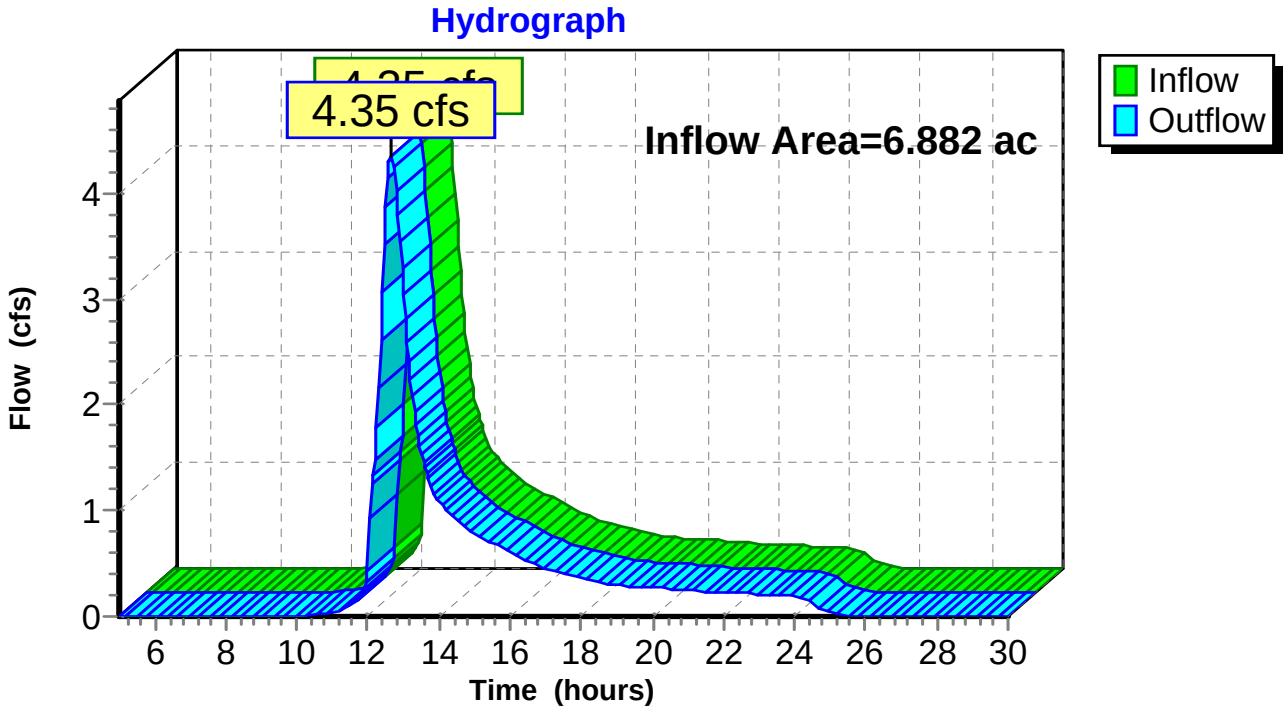


Summary for Reach SP-2: W Trib

Inflow Area = 6.882 ac, 16.60% Impervious, Inflow Depth = 1.30" for 25-year event
Inflow = 4.35 cfs @ 12.66 hrs, Volume= 0.746 af
Outflow = 4.35 cfs @ 12.66 hrs, Volume= 0.746 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach SP-2: W Trib



Summary for Pond 1-1: Catch Basin

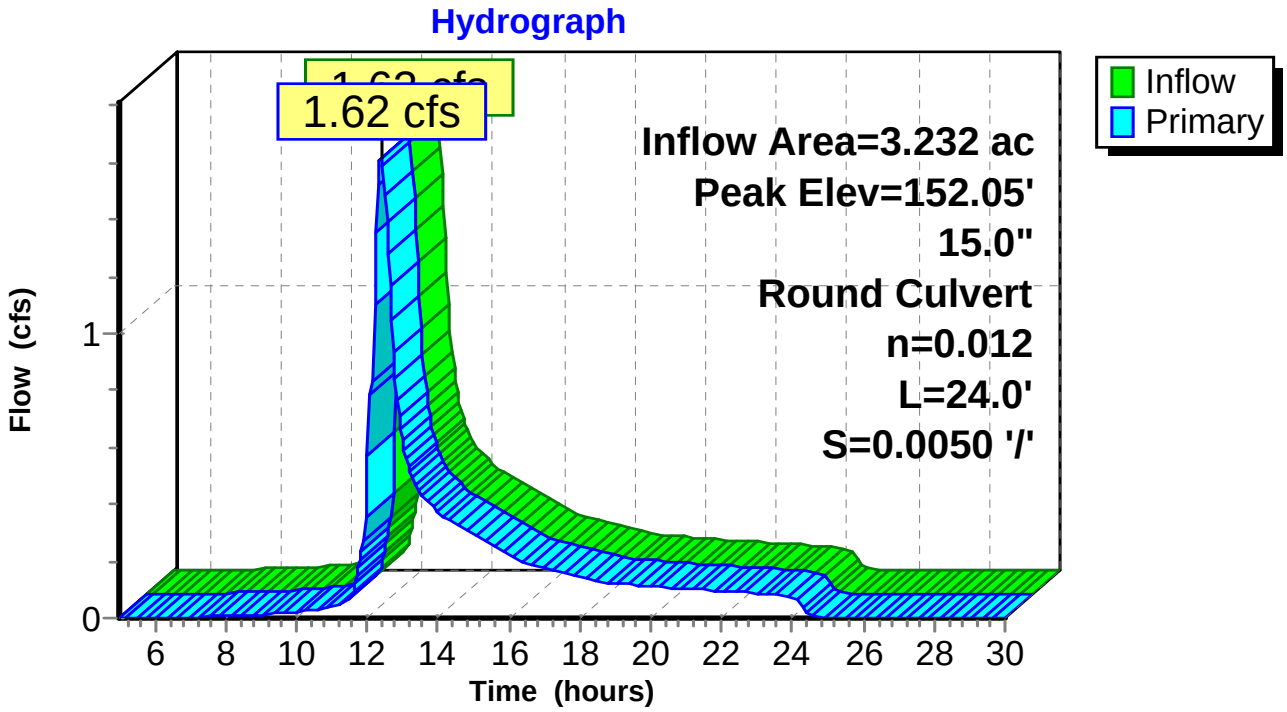
Inflow Area = 3.232 ac, 15.73% Impervious, Inflow Depth = 1.03" for 25-year event
Inflow = 1.62 cfs @ 12.38 hrs, Volume= 0.276 af
Outflow = 1.62 cfs @ 12.38 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.38 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 152.05' @ 12.38 hrs
Flood Elev= 156.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.32'	**15.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Outlet Invert= 151.20' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.61 cfs @ 12.38 hrs HW=152.05' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.61 cfs @ 3.10 fps)

Pond 1-1: Catch Basin



Summary for Pond 1-2: Catch Basin

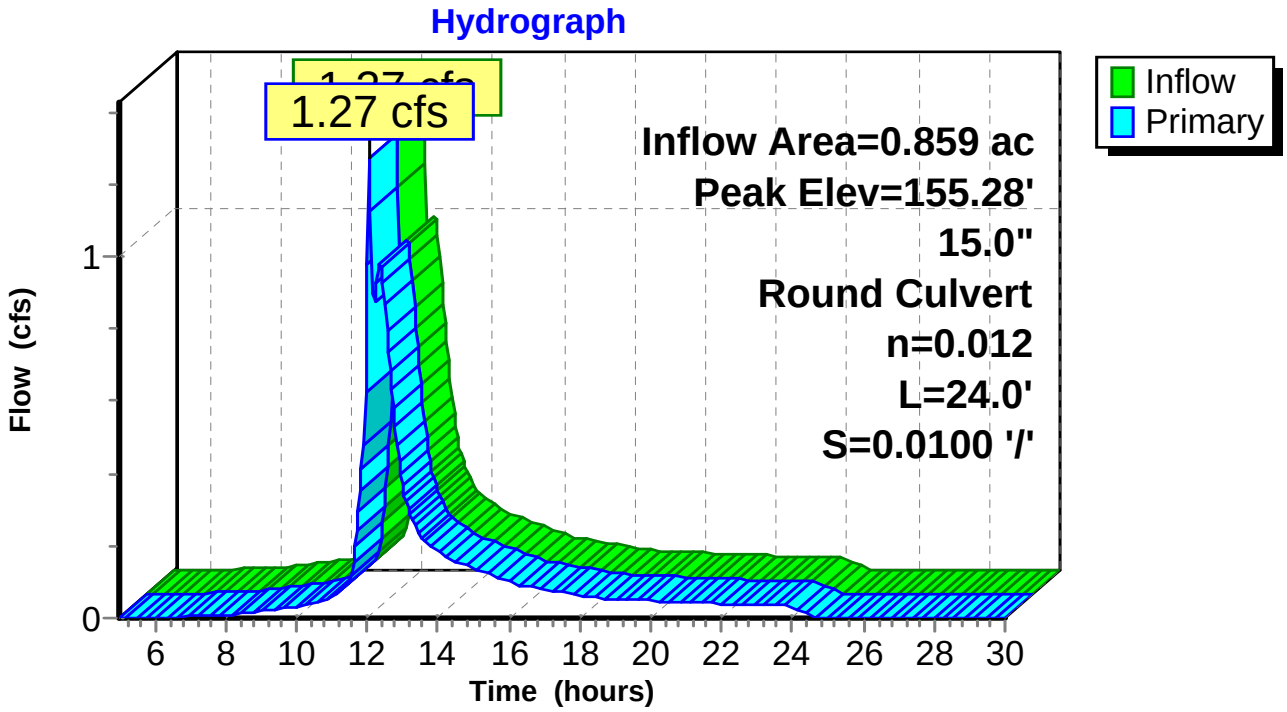
Inflow Area = 0.859 ac, 40.40% Impervious, Inflow Depth = 2.36" for 25-year event
Inflow = 1.27 cfs @ 12.06 hrs, Volume= 0.169 af
Outflow = 1.27 cfs @ 12.06 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.06 hrs, Volume= 0.169 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 155.28' @ 12.06 hrs
Flood Elev= 158.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.70'	**15.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Outlet Invert= 154.46' S= 0.0100 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.24 cfs @ 12.06 hrs HW=155.27' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.24 cfs @ 3.36 fps)

Pond 1-2: Catch Basin



Summary for Pond 1-3: Catch Basin

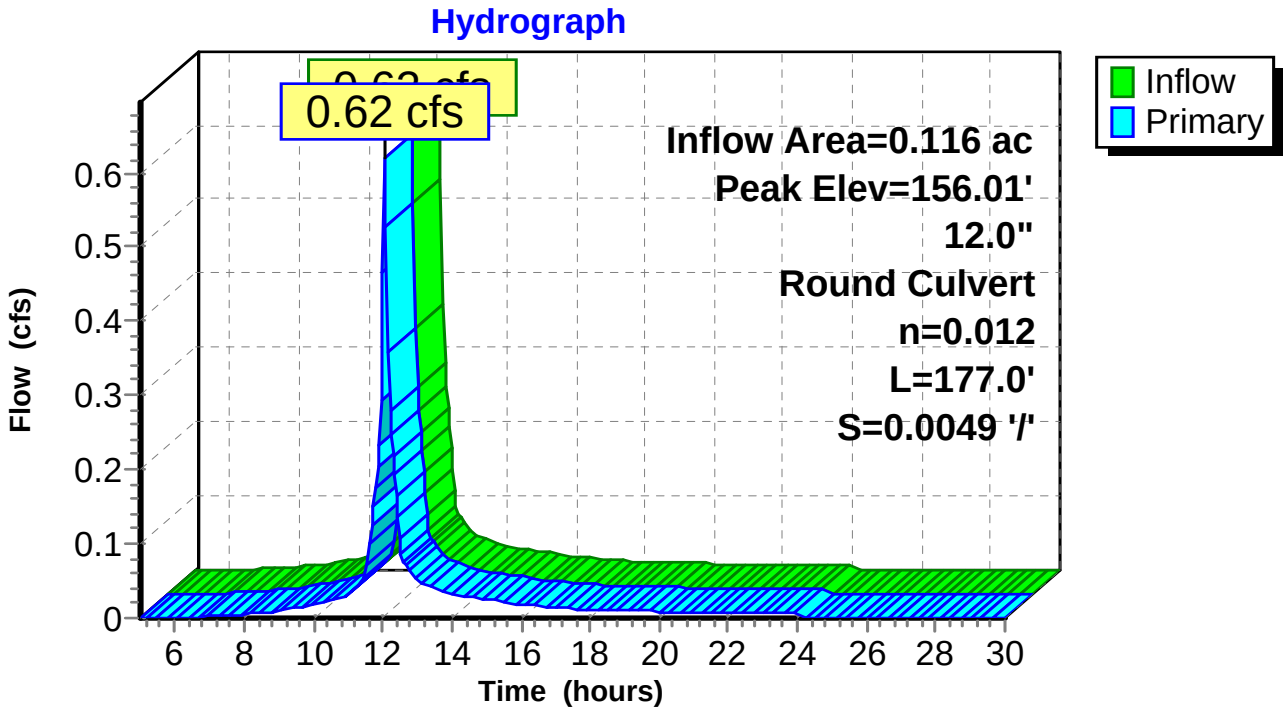
Inflow Area = 0.116 ac, 76.49% Impervious, Inflow Depth = 4.38" for 25-year event
Inflow = 0.62 cfs @ 12.06 hrs, Volume= 0.042 af
Outflow = 0.62 cfs @ 12.06 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.06 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 156.01' @ 12.06 hrs
Flood Elev= 160.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.57'	**12.0" Round Culvert** L= 177.0' CMP, square edge headwall, Ke= 0.500 Outlet Invert= 154.70' S= 0.0049 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=0.61 cfs @ 12.06 hrs HW=156.01' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.61 cfs @ 2.70 fps)

Pond 1-3: Catch Basin



Summary for Pond 3-1: Culvert

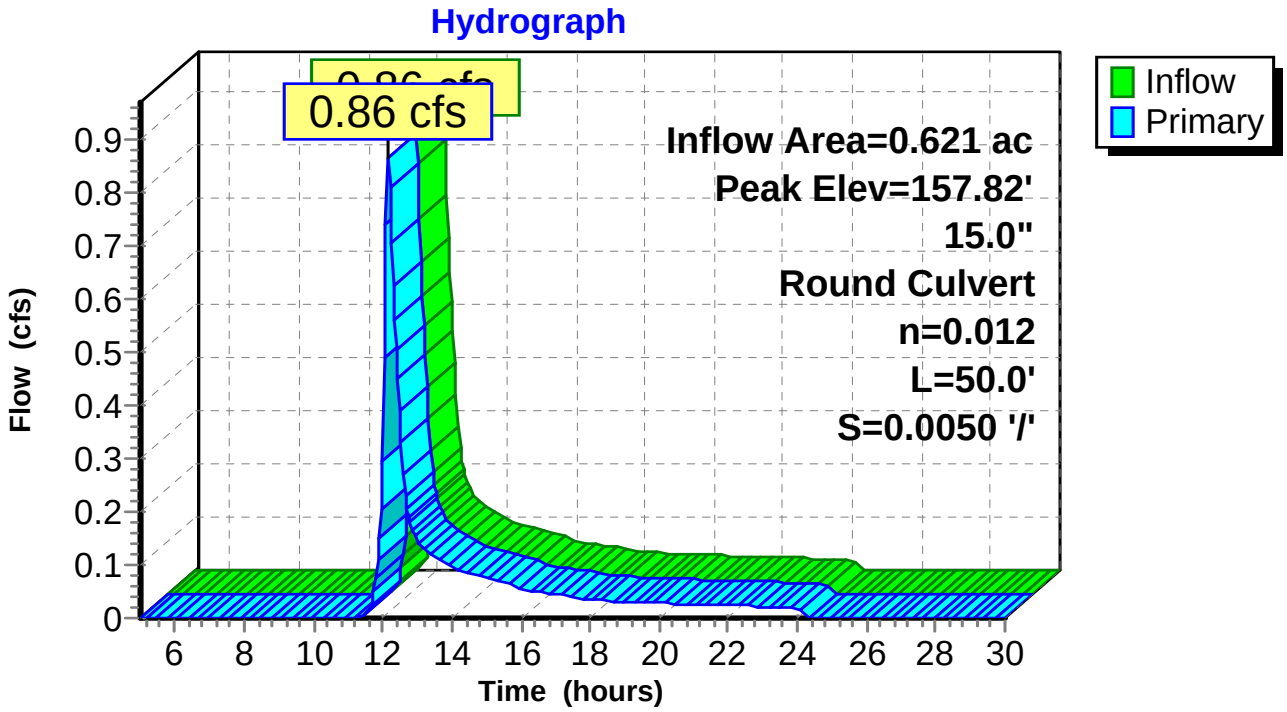
Inflow Area = 0.621 ac, 26.79% Impervious, Inflow Depth = 1.55" for 25-year event
Inflow = 0.86 cfs @ 12.16 hrs, Volume= 0.080 af
Outflow = 0.86 cfs @ 12.16 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.16 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 157.82' @ 12.16 hrs
Flood Elev= 159.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	157.30'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 157.05' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=0.85 cfs @ 12.16 hrs HW=157.81' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.85 cfs @ 2.64 fps)

Pond 3-1: Culvert



Summary for Pond 3-2: Culvert

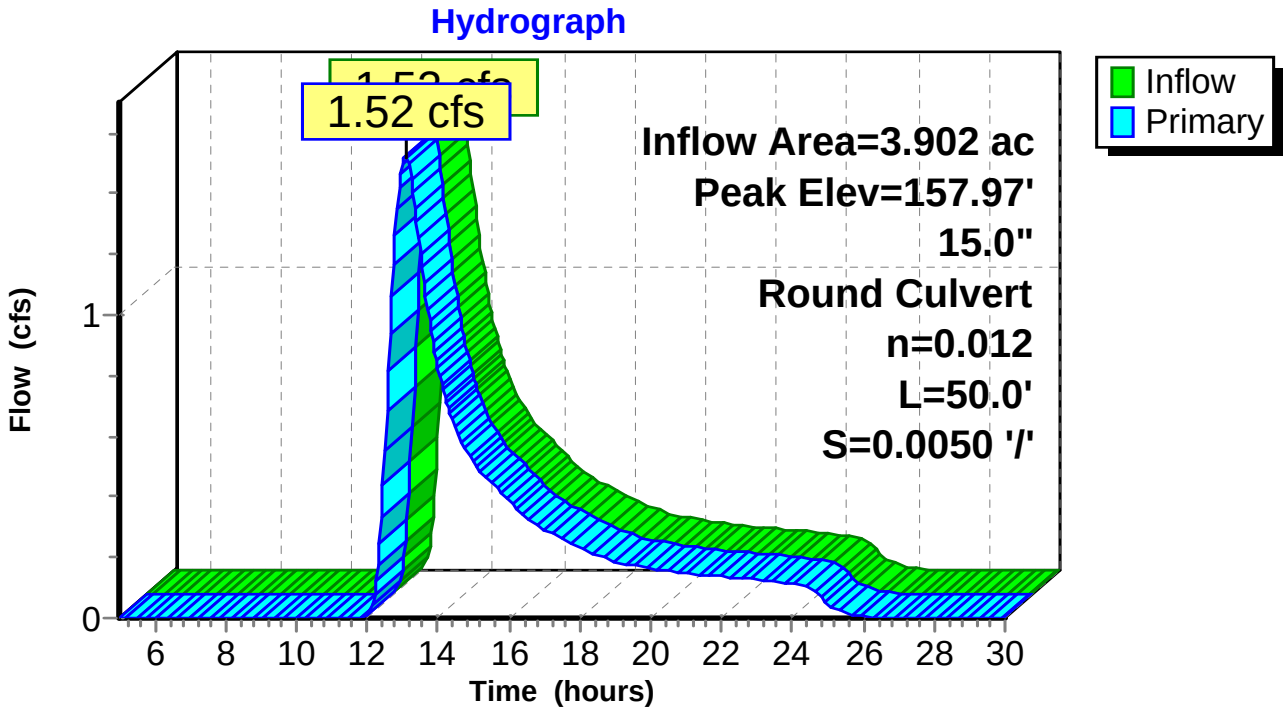
Inflow Area = 3.902 ac, 17.03% Impervious, Inflow Depth = 1.17" for 25-year event
Inflow = 1.52 cfs @ 13.08 hrs, Volume= 0.380 af
Outflow = 1.52 cfs @ 13.08 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 13.08 hrs, Volume= 0.380 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 157.97' @ 13.08 hrs
Flood Elev= 159.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	157.25'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 157.00' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.52 cfs @ 13.08 hrs HW=157.97' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.52 cfs @ 3.02 fps)

Pond 3-2: Culvert



Summary for Pond B2-1: BUFFER

Inflow Area = 0.694 ac, 18.46% Impervious, Inflow Depth = 1.32" for 25-year event
Inflow = 0.62 cfs @ 12.29 hrs, Volume= 0.076 af
Outflow = 0.60 cfs @ 12.34 hrs, Volume= 0.076 af, Atten= 4%, Lag= 3.0 min
Discarded = 0.60 cfs @ 12.34 hrs, Volume= 0.076 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 148.01' @ 12.34 hrs Surf.Area= 10,787 sf Storage= 59 cf

Plug-Flow detention time= 1.5 min calculated for 0.076 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (900.0 - 898.5)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	5,394 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

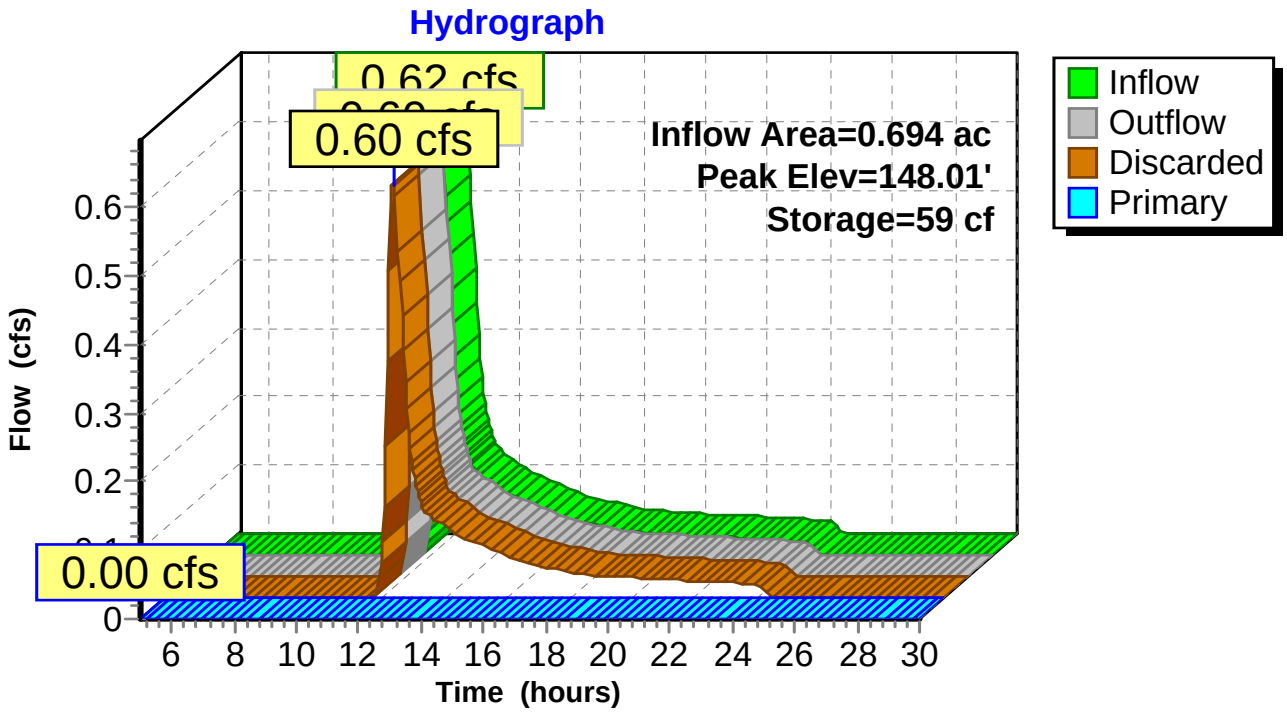
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	10,787	0	0
148.50	10,787	5,394	5,394

Device	Routing	Invert	Outlet Devices
#1	Primary	148.07'	**308.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	148.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 144.00'

Discarded OutFlow Max=0.60 cfs @ 12.34 hrs HW=148.01' (Free Discharge)
↑**2=Exfiltration** (Controls 0.60 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=148.00' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2-1: BUFFER



Summary for Pond B2-2: BUFFER

Inflow Area = 0.180 ac, 66.97% Impervious, Inflow Depth = 3.88" for 25-year event
Inflow = 0.85 cfs @ 12.05 hrs, Volume= 0.058 af
Outflow = 0.74 cfs @ 12.10 hrs, Volume= 0.058 af, Atten= 13%, Lag= 3.1 min
Discarded = 0.15 cfs @ 12.10 hrs, Volume= 0.047 af
Primary = 0.59 cfs @ 12.10 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 148.11' @ 12.10 hrs Surf.Area= 2,612 sf Storage= 288 cf

Plug-Flow detention time= 6.3 min calculated for 0.058 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (808.5 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	1,306 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

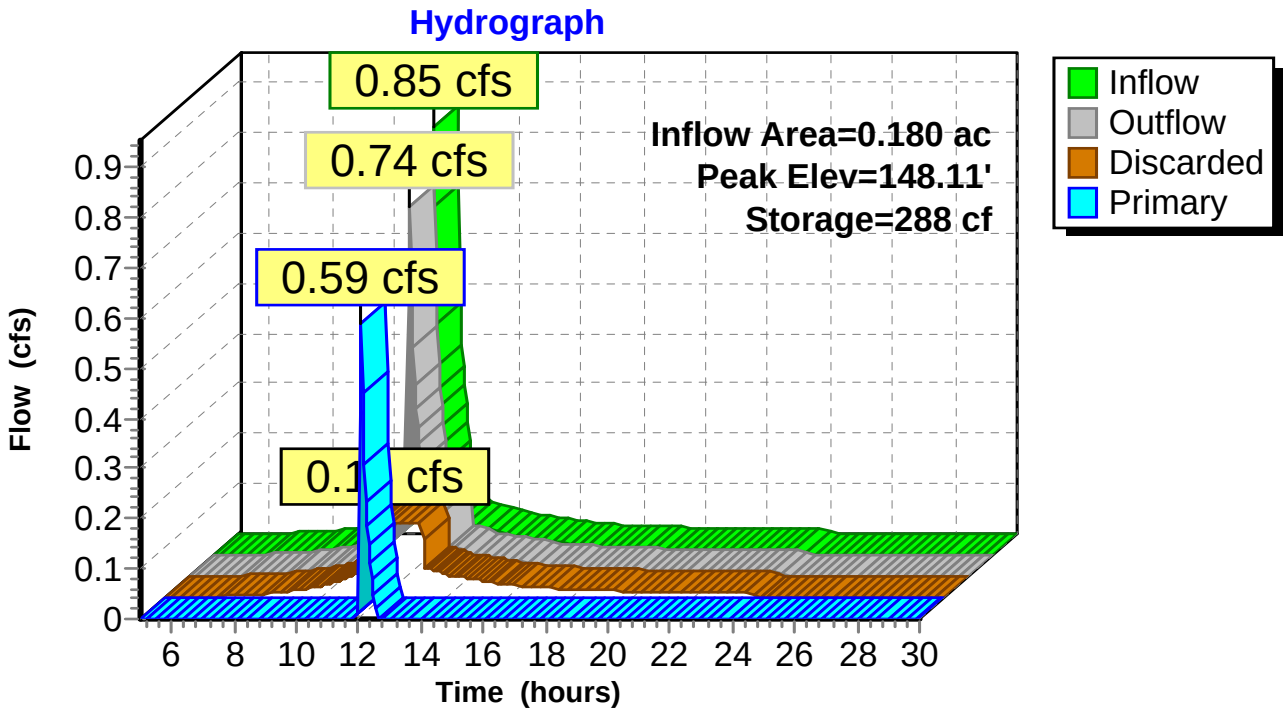
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	2,612	0	0
148.50	2,612	1,306	1,306

Device	Routing	Invert	Outlet Devices
#1	Primary	148.07'	**30.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	148.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 145.00'

Discarded OutFlow Max=0.15 cfs @ 12.10 hrs HW=148.11' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.58 cfs @ 12.10 hrs HW=148.11' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 0.49 fps)

Pond B2-2: BUFFER



Summary for Pond B2-3: BUFFER

Inflow Area = 0.195 ac, 12.00% Impervious, Inflow Depth = 0.95" for 25-year event
Inflow = 0.13 cfs @ 12.18 hrs, Volume= 0.015 af
Outflow = 0.11 cfs @ 12.28 hrs, Volume= 0.015 af, Atten= 12%, Lag= 6.1 min
Discarded = 0.11 cfs @ 12.28 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 148.01' @ 12.28 hrs Surf.Area= 2,000 sf Storage= 15 cf

Plug-Flow detention time= 1.6 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (913.1 - 911.6)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	1,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

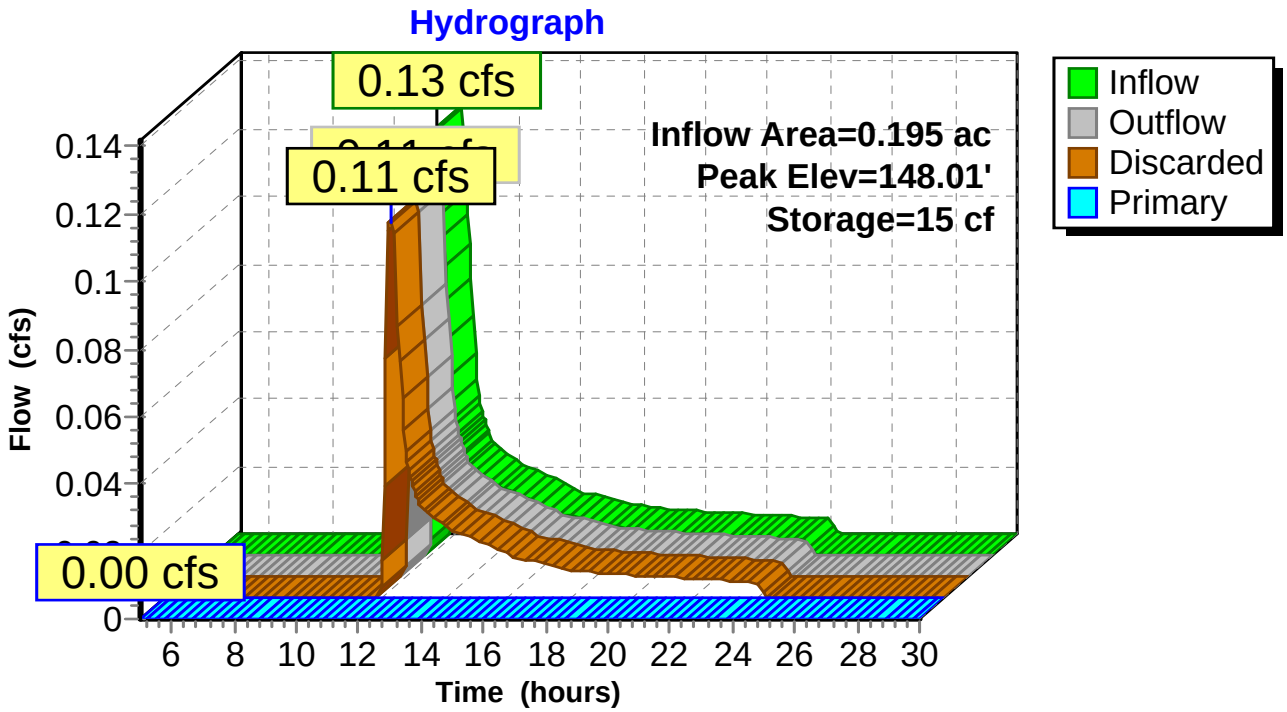
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	2,000	0	0
148.50	2,000	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.07'	**58.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	148.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 144.00'

Discarded OutFlow Max=0.11 cfs @ 12.28 hrs HW=148.01' (Free Discharge)
↑**2=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=148.00' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2-3: BUFFER



Summary for Pond C1-1: Culvert

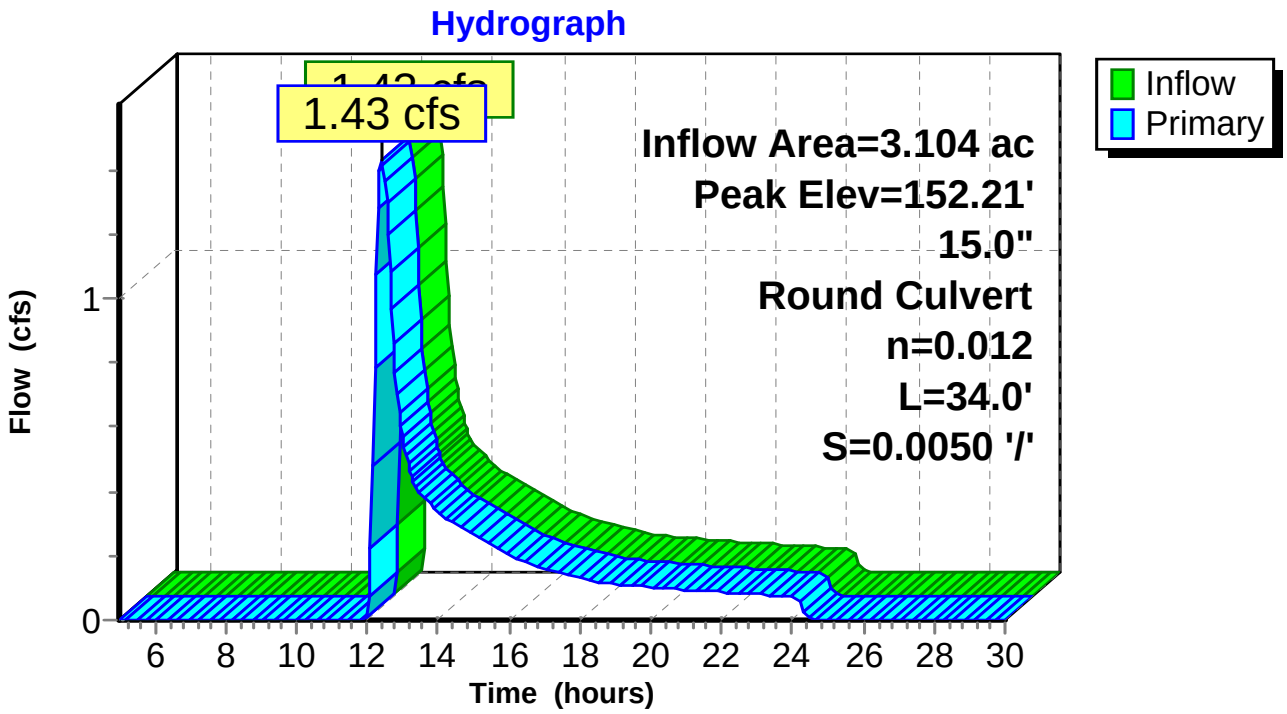
Inflow Area = 3.104 ac, 13.18% Impervious, Inflow Depth = 0.88" for 25-year event
Inflow = 1.43 cfs @ 12.41 hrs, Volume= 0.228 af
Outflow = 1.43 cfs @ 12.41 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 12.41 hrs, Volume= 0.228 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 152.21' @ 12.41 hrs
Flood Elev= 154.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**15.0" Round Culvert** L= 34.0' CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 151.33' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.43 cfs @ 12.41 hrs HW=152.21' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.43 cfs @ 2.88 fps)

Pond C1-1: Culvert



Summary for Pond C1-2: Culvert

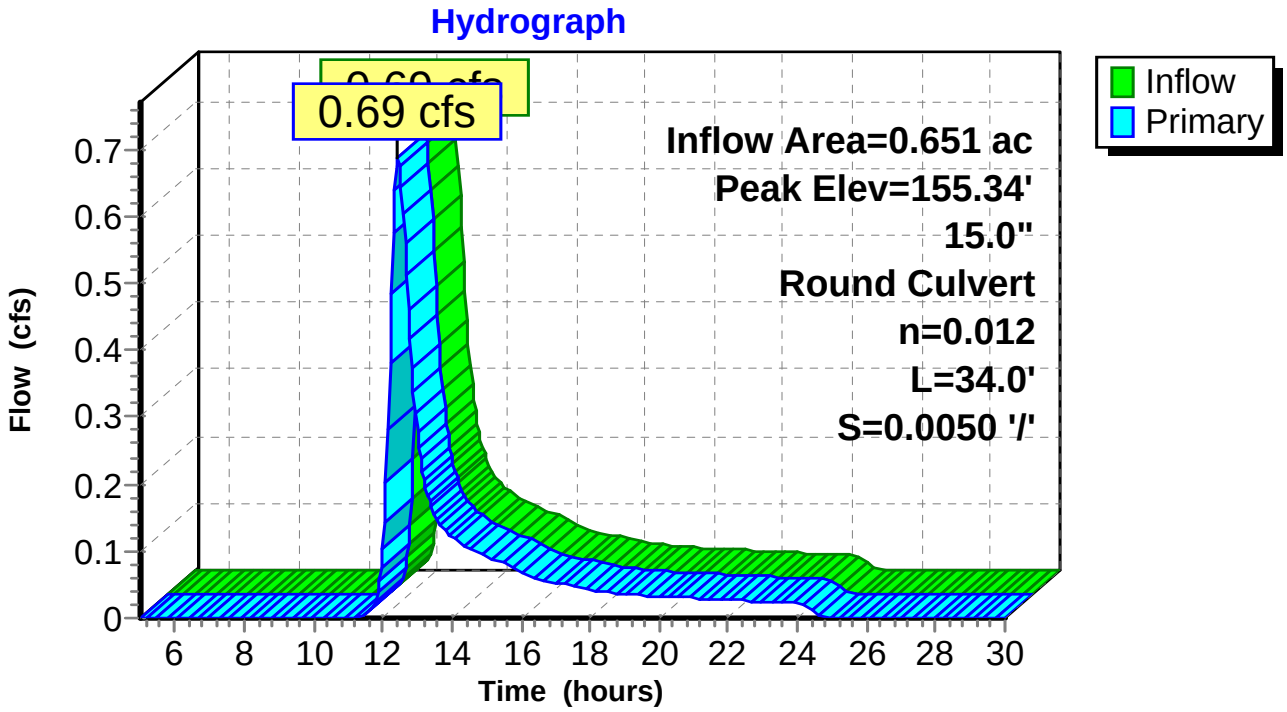
Inflow Area = 0.651 ac, 28.81% Impervious, Inflow Depth = 1.72" for 25-year event
Inflow = 0.69 cfs @ 12.45 hrs, Volume= 0.093 af
Outflow = 0.69 cfs @ 12.45 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.45 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 155.34' @ 12.45 hrs
Flood Elev= 158.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.87'	**15.0" Round Culvert** L= 34.0' CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 154.70' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=0.69 cfs @ 12.45 hrs HW=155.34' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.69 cfs @ 2.44 fps)

Pond C1-2: Culvert



Summary for Pond C2-1: Culvert

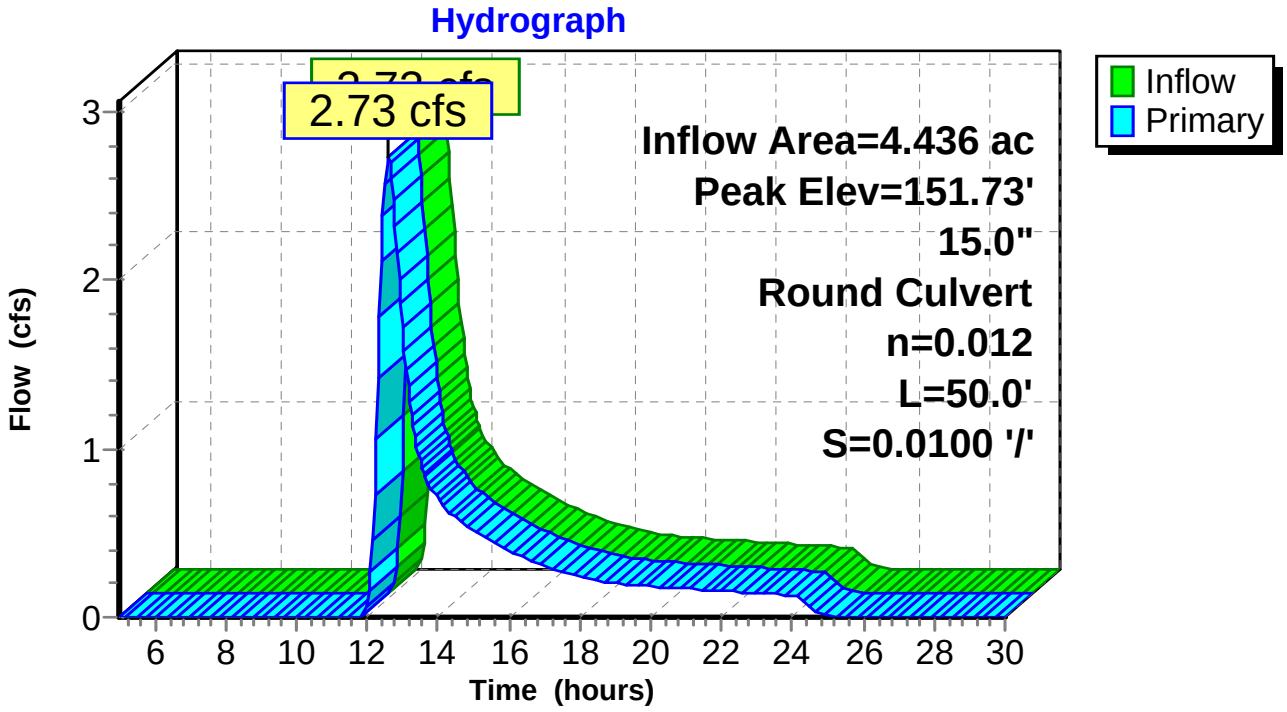
Inflow Area = 4.436 ac, 19.42% Impervious, Inflow Depth = 1.24" for 25-year event
Inflow = 2.73 cfs @ 12.60 hrs, Volume= 0.459 af
Outflow = 2.73 cfs @ 12.60 hrs, Volume= 0.459 af, Atten= 0%, Lag= 0.0 min
Primary = 2.73 cfs @ 12.60 hrs, Volume= 0.459 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 151.73' @ 12.60 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.75'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 150.25' S= 0.0100 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=2.73 cfs @ 12.60 hrs HW=151.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.73 cfs @ 2.65 fps)

Pond C2-1: Culvert



Summary for Pond C2-2: Catch Basin

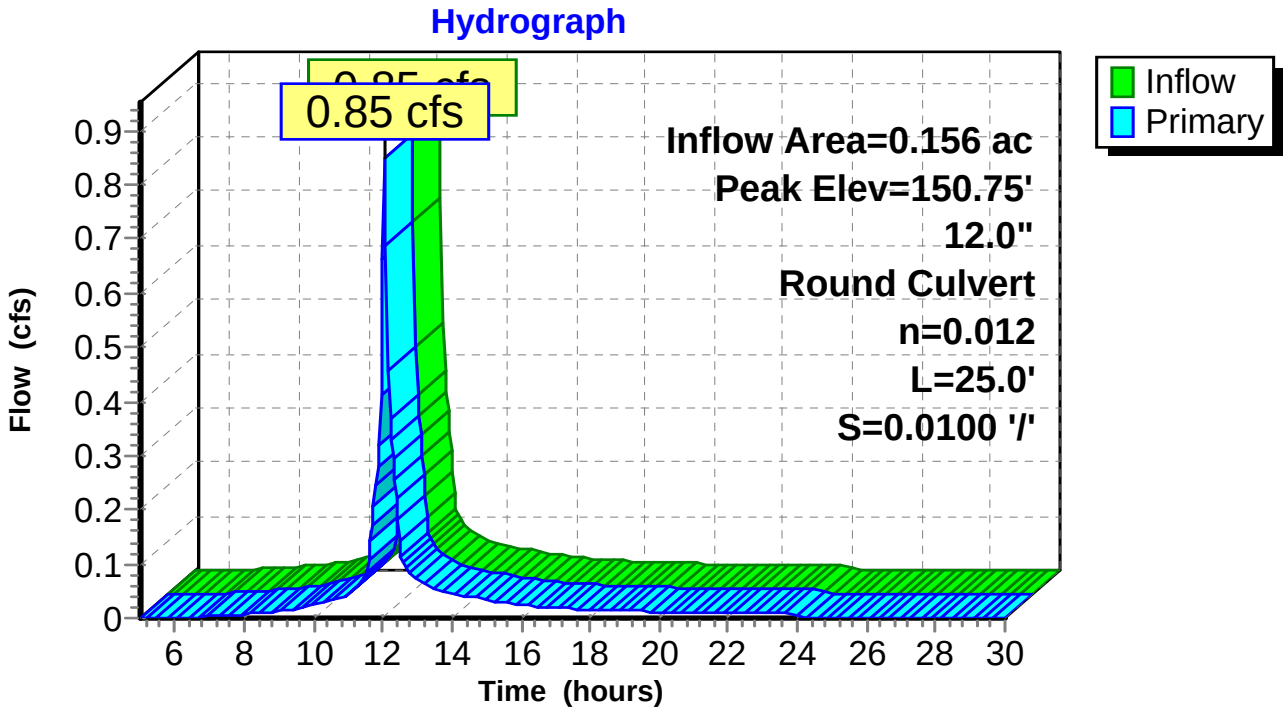
Inflow Area = 0.156 ac, 76.93% Impervious, Inflow Depth = 4.38" for 25-year event
Inflow = 0.85 cfs @ 12.05 hrs, Volume= 0.057 af
Outflow = 0.85 cfs @ 12.05 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.05 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 150.75' @ 12.05 hrs
Flood Elev= 154.56'

Device	Routing	Invert	Outlet Devices
#1	Primary	150.25'	**12.0" Round Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Outlet Invert= 150.00' S= 0.0100 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=0.84 cfs @ 12.05 hrs HW=150.75' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.84 cfs @ 3.18 fps)

Pond C2-2: Catch Basin



Summary for Pond P-1: Exist. Pond

Inflow Area = 4.151 ac, 22.08% Impervious, Inflow Depth = 1.50" for 25-year event
Inflow = 4.23 cfs @ 12.06 hrs, Volume= 0.518 af
Outflow = 1.52 cfs @ 12.73 hrs, Volume= 0.411 af, Atten= 64%, Lag= 39.9 min
Primary = 1.52 cfs @ 12.73 hrs, Volume= 0.411 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Starting Elev= 150.50' Surf.Area= 18,545 sf Storage= 62,705 cf
Peak Elev= 150.90' @ 12.73 hrs Surf.Area= 19,168 sf Storage= 70,338 cf (7,633 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 86.7 min (958.4 - 871.7)

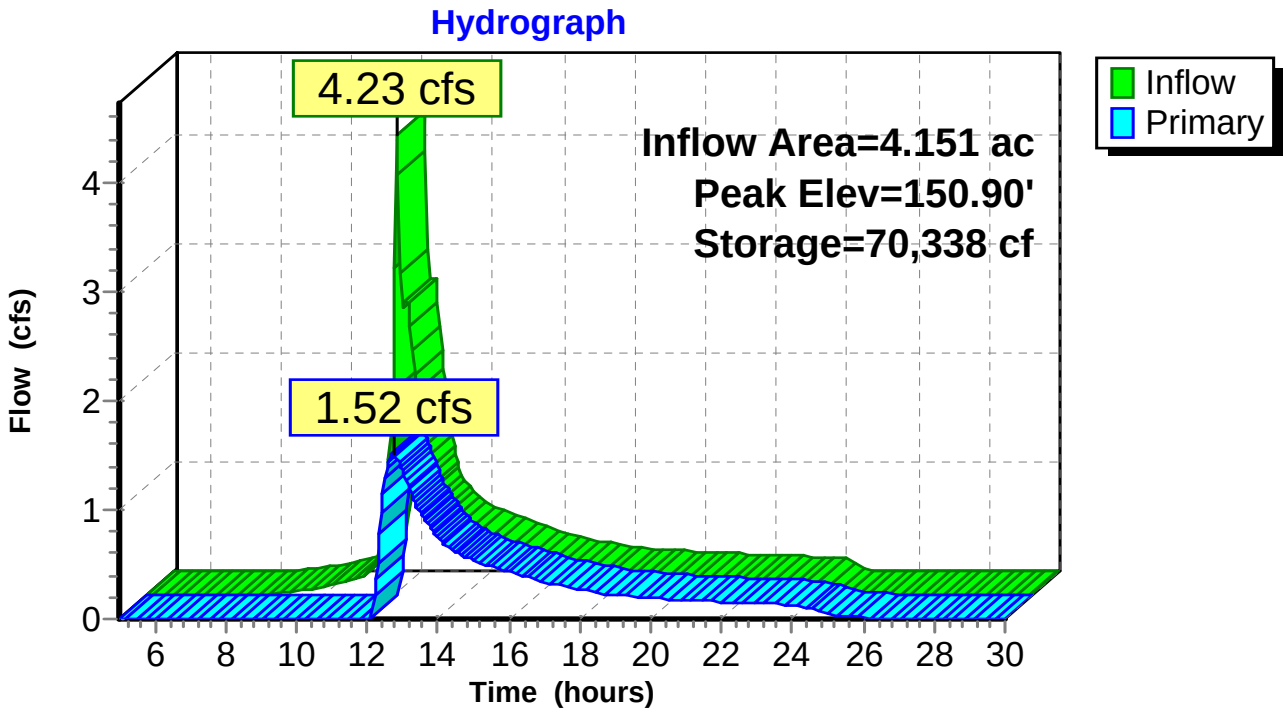
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	81,828 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	100	0	0
150.00	17,775	53,625	53,625
151.00	19,315	18,545	72,170
151.50	19,315	9,658	81,828

Device	Routing	Invert	Outlet Devices
#1	Primary	150.75'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.51 cfs @ 12.73 hrs HW=150.90' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.51 cfs @ 0.98 fps)

Pond P-1: Exist. Pond



Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=3.65"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=29.48 cfs 4.600 af

Subcatchment S1-2: S1-2 Runoff Area=232,539 sf 0.65% Impervious Runoff Depth=0.50"
Flow Length=548' Tc=36.0 min CN=39 Runoff=0.77 cfs 0.224 af

Subcatchment S1-3: S1-3 Runoff Area=40,023 sf 44.41% Impervious Runoff Depth=3.16"
Flow Length=70' Slope=0.1121 '/' Tc=3.6 min CN=72 Runoff=3.63 cfs 0.242 af

Subcatchment S1-4: S1-4 Runoff Area=5,583 sf 77.47% Impervious Runoff Depth=4.49"
Flow Length=262' Tc=3.3 min CN=85 Runoff=0.71 cfs 0.048 af

Subcatchment S1-5: S1-5 Runoff Area=135,219 sf 13.18% Impervious Runoff Depth=0.88"
Flow Length=366' Tc=20.6 min CN=45 Runoff=1.43 cfs 0.228 af

Subcatchment S1-6: S1-6 Runoff Area=57,108 sf 9.91% Impervious Runoff Depth=0.82"
Flow Length=388' Tc=30.3 min CN=44 Runoff=0.46 cfs 0.089 af

Subcatchment S1-7: S1-7 Runoff Area=4,023 sf 76.83% Impervious Runoff Depth=4.38"
Flow Length=196' Tc=3.0 min CN=84 Runoff=0.51 cfs 0.034 af

Subcatchment S1-8: S1-8 Runoff Area=5,036 sf 76.49% Impervious Runoff Depth=4.38"
Flow Length=240' Tc=3.7 min CN=84 Runoff=0.62 cfs 0.042 af

Subcatchment S1-9: S1-9 Runoff Area=28,344 sf 28.81% Impervious Runoff Depth=1.72"
Flow Length=364' Tc=28.6 min CN=56 Runoff=0.69 cfs 0.093 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=2.41"
Flow Length=415' Tc=33.7 min CN=64 Runoff=2.03 cfs 0.276 af

Subcatchment S2-2: S2-2 Runoff Area=30,212 sf 18.46% Impervious Runoff Depth=1.32"
Flow Length=135' Tc=17.7 min CN=51 Runoff=0.62 cfs 0.076 af

Subcatchment S2-3: S2-3 Runoff Area=193,211 sf 19.42% Impervious Runoff Depth=1.24"
Flow Length=570' Tc=36.5 min CN=50 Runoff=2.73 cfs 0.459 af

Subcatchment S2-4: S2-4 Runoff Area=6,811 sf 76.93% Impervious Runoff Depth=4.38"
Flow Length=211' Tc=3.3 min CN=84 Runoff=0.85 cfs 0.057 af

Subcatchment S2-5: S2-5 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=33' Slope=0.0909 '/' Tc=2.2 min CN=39 Runoff=0.01 cfs 0.001 af

Subcatchment S2-6: S2-6 Runoff Area=8,486 sf 12.00% Impervious Runoff Depth=0.95"
Flow Length=115' Slope=0.0261 '/' Tc=9.7 min CN=46 Runoff=0.13 cfs 0.015 af

Subcatchment S3-1: S3-1 Runoff Area=169,976 sf 17.03% Impervious Runoff Depth=1.17"
Flow Length=300' Slope=0.0033 '/' Tc=68.8 min CN=49 Runoff=1.52 cfs 0.380 af

Subcatchment S3-2: S3-2 Runoff Area=27,049 sf 26.79% Impervious Runoff Depth=1.55"
Flow Length=120' Slope=0.0100 '/' Tc=9.9 min CN=54 Runoff=0.86 cfs 0.080 af

Subcatchment S3-3: S3-3 Runoff Area=606,111 sf 10.27% Impervious Runoff Depth=1.24"
Flow Length=1,060' Tc=72.1 min CN=50 Runoff=5.74 cfs 1.440 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>1.71"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=21.02 cfs 8.986 af

Reach R1-1: Trib stream Avg. Depth=1.58' Max Vel=2.49 fps Inflow=25.06 cfs 11.353 af
n=0.070 L=285.0' S=0.0140 '/' Capacity=30.96 cfs Outflow=25.06 cfs 11.351 af

Reach R1-2: Woods Avg. Depth=0.34' Max Vel=0.81 fps Inflow=0.77 cfs 0.224 af
n=0.070 L=263.0' S=0.0110 '/' Capacity=33.71 cfs Outflow=0.75 cfs 0.224 af

Reach R1-3: Woods Avg. Depth=0.19' Max Vel=1.17 fps Inflow=1.35 cfs 0.258 af
n=0.040 L=390.0' S=0.0154 '/' Capacity=46.68 cfs Outflow=1.33 cfs 0.258 af

Reach R1-4: Buffer Avg. Depth=0.16' Max Vel=0.21 fps Inflow=1.40 cfs 0.258 af
n=0.400 L=100.0' S=0.0400 '/' Capacity=19.80 cfs Outflow=1.35 cfs 0.258 af

Reach R1-5: Outlet Ditch Avg. Depth=0.22' Max Vel=2.01 fps Inflow=1.27 cfs 0.169 af
n=0.035 L=360.0' S=0.0233 '/' Capacity=23.08 cfs Outflow=1.17 cfs 0.169 af

Reach R1-6: Woods Avg. Depth=0.56' Max Vel=0.28 fps Inflow=1.51 cfs 0.410 af
n=0.400 L=489.0' S=0.0204 '/' Capacity=4.02 cfs Outflow=1.17 cfs 0.409 af

Reach R1-7: Level Spreader Avg. Depth=0.25' Max Vel=0.27 fps Inflow=1.52 cfs 0.411 af
n=0.400 L=75.0' S=0.0400 '/' Capacity=1.55 cfs Outflow=1.51 cfs 0.410 af

Reach R1-8: Pond Outlet Ditch Avg. Depth=0.29' Max Vel=1.83 fps Inflow=1.52 cfs 0.411 af
n=0.035 L=35.0' S=0.0143 '/' Capacity=4.32 cfs Outflow=1.52 cfs 0.411 af

Reach R1-9: Outlet Ditch Avg. Depth=0.38' Max Vel=1.33 fps Inflow=1.62 cfs 0.276 af
n=0.035 L=126.0' S=0.0056 '/' Capacity=6.12 cfs Outflow=1.60 cfs 0.276 af

Reach R2-1: Wetland Avg. Depth=0.49' Max Vel=1.60 fps Inflow=2.73 cfs 0.459 af
n=0.070 L=445.0' S=0.0260 '/' Capacity=45.98 cfs Outflow=2.67 cfs 0.459 af

Reach R3-1: Woods Avg. Depth=2.17' Max Vel=1.40 fps Inflow=24.75 cfs 10.884 af
n=0.100 L=1,063.0' S=0.0080 '/' Capacity=9.55 cfs Outflow=24.45 cfs 10.871 af

Reach R3-2: Wetland Avg. Depth=0.25' Max Vel=0.65 fps Inflow=1.48 cfs 0.458 af
n=0.070 L=147.0' S=0.0102 '/' Capacity=47.33 cfs Outflow=1.48 cfs 0.458 af

Reach R3-3: Wetland Avg. Depth=0.35' Max Vel=0.53 fps Inflow=1.55 cfs 0.459 af
n=0.100 L=460.0' S=0.0087 '/' Capacity=14.04 cfs Outflow=1.48 cfs 0.458 af

Reach R3-4: Woods Avg. Depth=0.16' Max Vel=0.54 fps Inflow=1.35 cfs 0.379 af
n=0.100 L=110.0' S=0.0256 '/' Capacity=37.46 cfs Outflow=1.34 cfs 0.379 af

Reach R3-5: Wooded Buffer Avg. Depth=0.37' Max Vel=0.11 fps Inflow=1.52 cfs 0.380 af
n=0.400 L=140.0' S=0.0036 '/' Capacity=2.24 cfs Outflow=1.35 cfs 0.379 af

Reach R3-6: Woods Avg. Depth=0.13' Max Vel=0.24 fps Inflow=0.63 cfs 0.080 af
n=0.100 L=290.0' S=0.0069 '/' Capacity=19.43 cfs Outflow=0.44 cfs 0.080 af

Reach R3-7: Wooded Buffer Avg. Depth=0.19' Max Vel=0.10 fps Inflow=0.86 cfs 0.080 af
n=0.400 L=70.0' S=0.0071 '/' Capacity=3.16 cfs Outflow=0.63 cfs 0.080 af

Reach SP-1: N Trib Inflow=30.95 cfs 16.360 af
Outflow=30.95 cfs 16.360 af

Reach SP-2: W Trib Inflow=4.35 cfs 0.746 af
Outflow=4.35 cfs 0.746 af

Pond 1-1: Catch Basin Peak Elev=152.05' Inflow=1.62 cfs 0.276 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0050 '/' Outflow=1.62 cfs 0.276 af

Pond 1-2: Catch Basin Peak Elev=155.28' Inflow=1.27 cfs 0.169 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0100 '/' Outflow=1.27 cfs 0.169 af

Pond 1-3: Catch Basin Peak Elev=156.01' Inflow=0.62 cfs 0.042 af
12.0" Round Culvert n=0.012 L=177.0' S=0.0049 '/' Outflow=0.62 cfs 0.042 af

Pond 3-1: Culvert Peak Elev=157.82' Inflow=0.86 cfs 0.080 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=0.86 cfs 0.080 af

Pond 3-2: Culvert Peak Elev=157.97' Inflow=1.52 cfs 0.380 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=1.52 cfs 0.380 af

Pond B2-1: BUFFER Peak Elev=148.01' Storage=59 cf Inflow=0.62 cfs 0.076 af
Discarded=0.60 cfs 0.076 af Primary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.076 af

Pond B2-2: BUFFER Peak Elev=148.11' Storage=288 cf Inflow=0.85 cfs 0.058 af
Discarded=0.15 cfs 0.047 af Primary=0.59 cfs 0.011 af Outflow=0.74 cfs 0.058 af

Pond B2-3: BUFFER Peak Elev=148.01' Storage=15 cf Inflow=0.13 cfs 0.015 af
Discarded=0.11 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.015 af

Pond C1-1: Culvert Peak Elev=152.21' Inflow=1.43 cfs 0.228 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=1.43 cfs 0.228 af

Pond C1-2: Culvert Peak Elev=155.34' Inflow=0.69 cfs 0.093 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=0.69 cfs 0.093 af

Pond C2-1: Culvert Peak Elev=151.73' Inflow=2.73 cfs 0.459 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=2.73 cfs 0.459 af

Pond C2-2: Catch Basin Peak Elev=150.75' Inflow=0.85 cfs 0.057 af
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.85 cfs 0.057 af

Pond P-1: Exist. Pond Peak Elev=150.90' Storage=70,338 cf Inflow=4.23 cfs 0.518 af
Outflow=1.52 cfs 0.411 af

Total Runoff Area = 114.977 ac Runoff Volume = 17.373 af Average Runoff Depth = 1.81"
92.90% Pervious = 106.812 ac 7.10% Impervious = 8.164 ac

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: S1-1 Runoff Area=658,048 sf 0.00% Impervious Runoff Depth=4.64"
Flow Length=1,451' Tc=46.3 min CN=77 Runoff=37.37 cfs 5.837 af

Subcatchment S1-2: S1-2 Runoff Area=232,539 sf 0.65% Impervious Runoff Depth=0.88"
Flow Length=548' Tc=36.0 min CN=39 Runoff=1.79 cfs 0.391 af

Subcatchment S1-3: S1-3 Runoff Area=40,023 sf 44.41% Impervious Runoff Depth=4.09"
Flow Length=70' Slope=0.1121 '/' Tc=3.6 min CN=72 Runoff=4.70 cfs 0.313 af

Subcatchment S1-4: S1-4 Runoff Area=5,583 sf 77.47% Impervious Runoff Depth>5.54"
Flow Length=262' Tc=3.3 min CN=85 Runoff=0.87 cfs 0.059 af

Subcatchment S1-5: S1-5 Runoff Area=135,219 sf 13.18% Impervious Runoff Depth=1.38"
Flow Length=366' Tc=20.6 min CN=45 Runoff=2.62 cfs 0.357 af

Subcatchment S1-6: S1-6 Runoff Area=57,108 sf 9.91% Impervious Runoff Depth=1.29"
Flow Length=388' Tc=30.3 min CN=44 Runoff=0.87 cfs 0.141 af

Subcatchment S1-7: S1-7 Runoff Area=4,023 sf 76.83% Impervious Runoff Depth>5.43"
Flow Length=196' Tc=3.0 min CN=84 Runoff=0.62 cfs 0.042 af

Subcatchment S1-8: S1-8 Runoff Area=5,036 sf 76.49% Impervious Runoff Depth>5.43"
Flow Length=240' Tc=3.7 min CN=84 Runoff=0.76 cfs 0.052 af

Subcatchment S1-9: S1-9 Runoff Area=28,344 sf 28.81% Impervious Runoff Depth=2.42"
Flow Length=364' Tc=28.6 min CN=56 Runoff=1.01 cfs 0.131 af

Subcatchment S2-1: S2-1 Runoff Area=60,030 sf 0.68% Impervious Runoff Depth=3.23"
Flow Length=415' Tc=33.7 min CN=64 Runoff=2.76 cfs 0.371 af

Subcatchment S2-2: S2-2 Runoff Area=30,212 sf 18.46% Impervious Runoff Depth=1.93"
Flow Length=135' Tc=17.7 min CN=51 Runoff=0.99 cfs 0.112 af

Subcatchment S2-3: S2-3 Runoff Area=193,211 sf 19.42% Impervious Runoff Depth=1.84"
Flow Length=570' Tc=36.5 min CN=50 Runoff=4.37 cfs 0.679 af

Subcatchment S2-4: S2-4 Runoff Area=6,811 sf 76.93% Impervious Runoff Depth>5.43"
Flow Length=211' Tc=3.3 min CN=84 Runoff=1.04 cfs 0.071 af

Subcatchment S2-5: S2-5 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=33' Slope=0.0909 '/' Tc=2.2 min CN=39 Runoff=0.01 cfs 0.002 af

Subcatchment S2-6: S2-6 Runoff Area=8,486 sf 12.00% Impervious Runoff Depth=1.47"
Flow Length=115' Slope=0.0261 '/' Tc=9.7 min CN=46 Runoff=0.24 cfs 0.024 af

Subcatchment S3-1: S3-1 Runoff Area=169,976 sf 17.03% Impervious Runoff Depth=1.74"
Flow Length=300' Slope=0.0033 '/' Tc=68.8 min CN=49 Runoff=2.48 cfs 0.567 af

Subcatchment S3-2: S3-2 Runoff Area=27,049 sf 26.79% Impervious Runoff Depth=2.22"
Flow Length=120' Slope=0.0100 '/' Tc=9.9 min CN=54 Runoff=1.30 cfs 0.115 af

Subcatchment S3-3: S3-3 Runoff Area=606,111 sf 10.27% Impervious Runoff Depth=1.84"
Flow Length=1,060' Tc=72.1 min CN=50 Runoff=9.20 cfs 2.129 af

Subcatchment S4: S4 Runoff Area=2,739,565 sf 5.30% Impervious Runoff Depth>2.41"
Flow Length=3,379' Tc=183.9 min CN=56 Runoff=30.73 cfs 12.651 af

Reach R1-1: Trib stream Avg. Depth=1.91' Max Vel=2.78 fps Inflow=36.76 cfs 16.200 af
n=0.070 L=285.0' S=0.0140 '/' Capacity=30.96 cfs Outflow=36.75 cfs 16.197 af

Reach R1-2: Woods Avg. Depth=0.50' Max Vel=1.05 fps Inflow=1.79 cfs 0.391 af
n=0.070 L=263.0' S=0.0110 '/' Capacity=33.71 cfs Outflow=1.76 cfs 0.391 af

Reach R1-3: Woods Avg. Depth=0.24' Max Vel=1.35 fps Inflow=2.13 cfs 0.366 af
n=0.040 L=390.0' S=0.0154 '/' Capacity=46.68 cfs Outflow=2.09 cfs 0.366 af

Reach R1-4: Buffer Avg. Depth=0.20' Max Vel=0.25 fps Inflow=2.20 cfs 0.366 af
n=0.400 L=100.0' S=0.0400 '/' Capacity=19.80 cfs Outflow=2.13 cfs 0.366 af

Reach R1-5: Outlet Ditch Avg. Depth=0.25' Max Vel=2.18 fps Inflow=1.65 cfs 0.225 af
n=0.035 L=360.0' S=0.0233 '/' Capacity=23.08 cfs Outflow=1.52 cfs 0.225 af

Reach R1-6: Woods Avg. Depth=0.77' Max Vel=0.34 fps Inflow=2.95 cfs 0.622 af
n=0.400 L=489.0' S=0.0204 '/' Capacity=4.02 cfs Outflow=2.31 cfs 0.620 af

Reach R1-7: Level Spreader Avg. Depth=0.38' Max Vel=0.33 fps Inflow=2.98 cfs 0.622 af
n=0.400 L=75.0' S=0.0400 '/' Capacity=1.55 cfs Outflow=2.95 cfs 0.622 af

Reach R1-8: Pond Outlet Ditch Avg. Depth=0.41' Max Vel=2.23 fps Inflow=2.99 cfs 0.622 af
n=0.035 L=35.0' S=0.0143 '/' Capacity=4.32 cfs Outflow=2.98 cfs 0.622 af

Reach R1-9: Outlet Ditch Avg. Depth=0.52' Max Vel=1.57 fps Inflow=2.88 cfs 0.416 af
n=0.035 L=126.0' S=0.0056 '/' Capacity=6.12 cfs Outflow=2.85 cfs 0.416 af

Reach R2-1: Wetland Avg. Depth=0.61' Max Vel=1.84 fps Inflow=4.37 cfs 0.679 af
n=0.070 L=445.0' S=0.0260 '/' Capacity=45.98 cfs Outflow=4.30 cfs 0.679 af

Reach R3-1: Woods Avg. Depth=2.86' Max Vel=1.47 fps Inflow=36.25 cfs 15.459 af
n=0.100 L=1,063.0' S=0.0080 '/' Capacity=9.55 cfs Outflow=35.83 cfs 15.443 af

Reach R3-2: Wetland Avg. Depth=0.32' Max Vel=0.76 fps Inflow=2.48 cfs 0.679 af
n=0.070 L=147.0' S=0.0102 '/' Capacity=47.33 cfs Outflow=2.47 cfs 0.679 af

Reach R3-3: Wetland Avg. Depth=0.45' Max Vel=0.62 fps Inflow=2.57 cfs 0.680 af
n=0.100 L=460.0' S=0.0087 '/' Capacity=14.04 cfs Outflow=2.48 cfs 0.679 af

Reach R3-4: Woods Avg. Depth=0.21' Max Vel=0.63 fps Inflow=2.27 cfs 0.566 af
n=0.100 L=110.0' S=0.0256 '/' Capacity=37.46 cfs Outflow=2.26 cfs 0.566 af

Reach R3-5: Wooded Buffer Avg. Depth=0.50' Max Vel=0.13 fps Inflow=2.48 cfs 0.567 af
n=0.400 L=140.0' S=0.0036 '/' Capacity=2.24 cfs Outflow=2.27 cfs 0.566 af

Reach R3-6: Woods Avg. Depth=0.16' Max Vel=0.28 fps Inflow=1.01 cfs 0.115 af
n=0.100 L=290.0' S=0.0069 '/' Capacity=19.43 cfs Outflow=0.73 cfs 0.115 af

Reach R3-7: Wooded Buffer Avg. Depth=0.26' Max Vel=0.12 fps Inflow=1.30 cfs 0.115 af
n=0.400 L=70.0' S=0.0071 '/' Capacity=3.16 cfs Outflow=1.01 cfs 0.115 af

Reach SP-1: N Trib Inflow=42.56 cfs 22.654 af
Outflow=42.56 cfs 22.654 af

Reach SP-2: W Trib Inflow=6.71 cfs 1.067 af
Outflow=6.71 cfs 1.067 af

Pond 1-1: Catch Basin Peak Elev=152.36' Inflow=2.88 cfs 0.416 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0050 '/' Outflow=2.88 cfs 0.416 af

Pond 1-2: Catch Basin Peak Elev=155.37' Inflow=1.65 cfs 0.225 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0100 '/' Outflow=1.65 cfs 0.225 af

Pond 1-3: Catch Basin Peak Elev=156.06' Inflow=0.76 cfs 0.052 af
12.0" Round Culvert n=0.012 L=177.0' S=0.0049 '/' Outflow=0.76 cfs 0.052 af

Pond 3-1: Culvert Peak Elev=157.96' Inflow=1.30 cfs 0.115 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=1.30 cfs 0.115 af

Pond 3-2: Culvert Peak Elev=158.22' Inflow=2.48 cfs 0.567 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=2.48 cfs 0.567 af

Pond B2-1: BUFFER Peak Elev=148.04' Storage=416 cf Inflow=0.99 cfs 0.112 af
Discarded=0.61 cfs 0.112 af Primary=0.00 cfs 0.000 af Outflow=0.61 cfs 0.112 af

Pond B2-2: BUFFER Peak Elev=148.12' Storage=312 cf Inflow=1.06 cfs 0.072 af
Discarded=0.15 cfs 0.056 af Primary=0.80 cfs 0.017 af Outflow=0.95 cfs 0.072 af

Pond B2-3: BUFFER Peak Elev=148.06' Storage=115 cf Inflow=0.24 cfs 0.024 af
Discarded=0.11 cfs 0.024 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.024 af

Pond C1-1: Culvert Peak Elev=152.52' Inflow=2.62 cfs 0.357 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=2.62 cfs 0.357 af

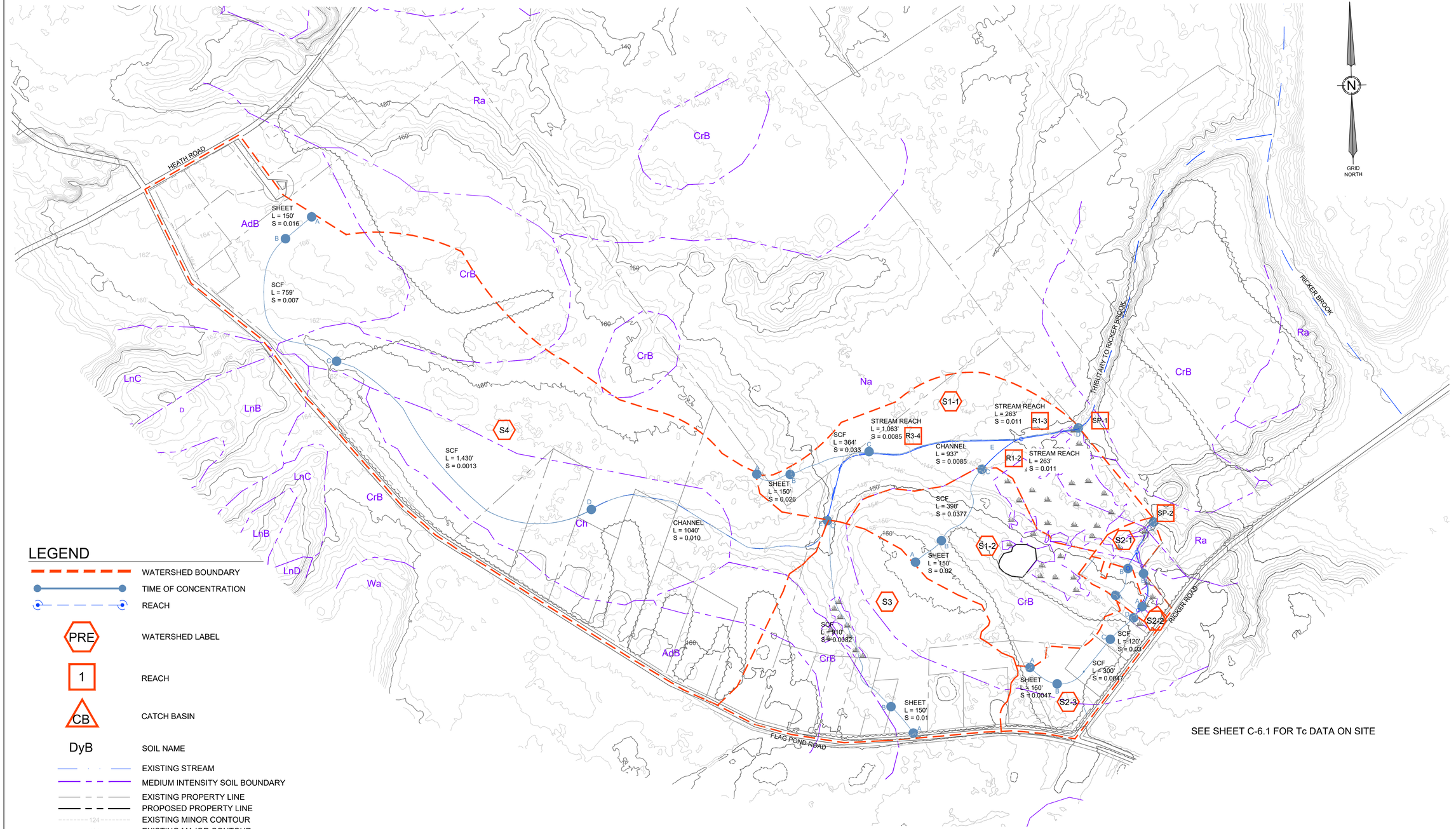
Pond C1-2: Culvert Peak Elev=155.45' Inflow=1.01 cfs 0.131 af
15.0" Round Culvert n=0.012 L=34.0' S=0.0050 '/' Outflow=1.01 cfs 0.131 af

Pond C2-1: Culvert Peak Elev=152.25' Inflow=4.37 cfs 0.679 af
15.0" Round Culvert n=0.012 L=50.0' S=0.0100 '/' Outflow=4.37 cfs 0.679 af

Pond C2-2: Catch Basin Peak Elev=150.81' Inflow=1.04 cfs 0.071 af
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=1.04 cfs 0.071 af

Pond P-1: Exist. Pond Peak Elev=150.99' Storage=72,021 cf Inflow=5.72 cfs 0.729 af
Outflow=2.99 cfs 0.622 af

Total Runoff Area = 114.977 ac Runoff Volume = 24.042 af Average Runoff Depth = 2.51"
92.90% Pervious = 106.812 ac 7.10% Impervious = 8.164 ac



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- PRE — WATERSHED LABEL
- 1 — REACH
- CB — CATCH BASIN
- DyB — SOIL NAME
- EXISTING STREAM
- MEDIUM INTENSITY SOIL BOUNDARY
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- 124 — EXISTING MINOR CONTOUR
- 124 — EXISTING MAJOR CONTOUR
- 124 — PROPOSED CONTOUR
- SD — EXISTING STORMDRAIN
- SD — PROPOSED STORMDRAIN
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING BUILDING
- WETLAND AREA

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
PROFESSIONAL ENGINEER
LICENSED

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	BY
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	LRB

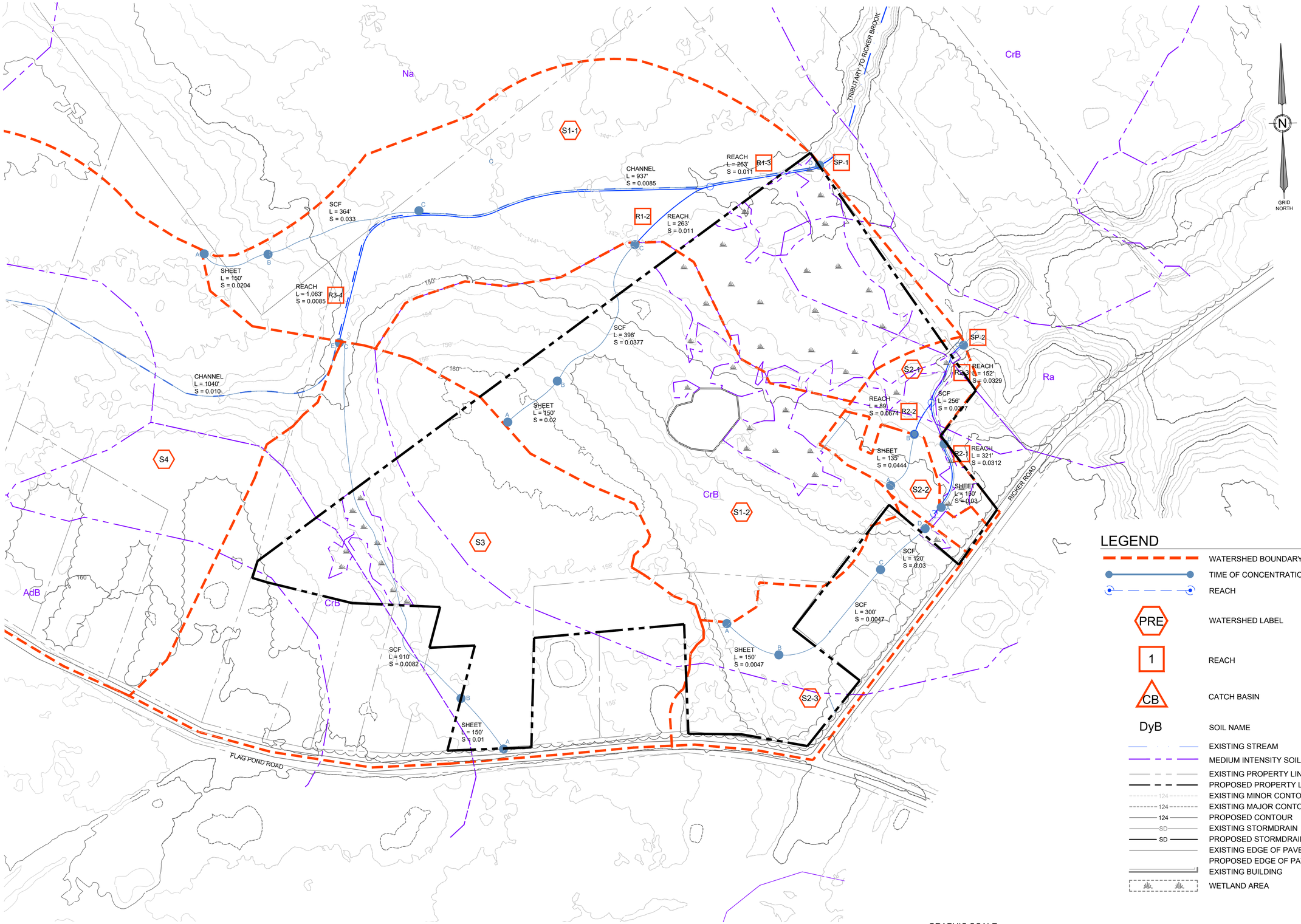
TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
565 CONGRESS STREET SUITE 310 PORTLAND, ME 04102
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

PROJECT:
RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE:
OVERALL WATERSHED MAP

PREPARED FOR:
SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	1" = 200'
DESIGNED:	MTW
JOB NO:	1722
FILE:	
SHEET	C-6.0



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- PRE — WATERSHED LABEL
- 1 — REACH
- CB — CATCH BASIN
- DyB — SOIL NAME
- EXISTING STREAM
- MEDIUM INTENSITY SOIL BOUNDARY
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- 124 — EXISTING MINOR CONTOUR
- 124 — EXISTING MAJOR CONTOUR
- 124 — PROPOSED CONTOUR
- SD — EXISTING STORMDRAIN
- SD — PROPOSED STORMDRAIN
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING BUILDING
- WETLAND AREA

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APP'D BY
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	LRB

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565 CONGRESS STREET, SUITE 410, PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

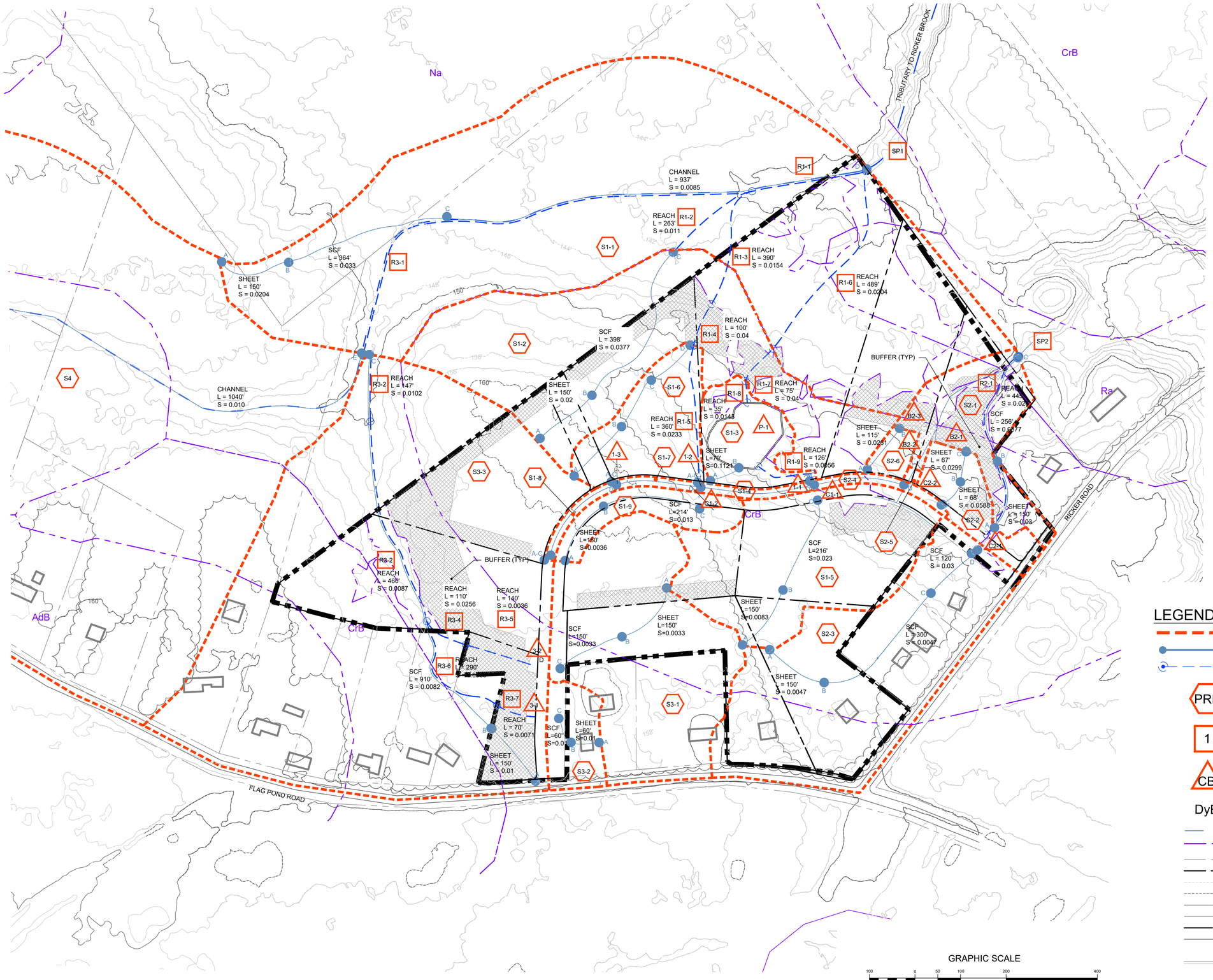
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

PROJECT: RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE: PRE-DEVELOPMENT WATERSHED MAP

PREPARED FOR: SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	1" = 100'
DESIGNED:	MTW
JOB NO:	1722
FILE:	
SHEET	C-6.1



GRID NORTH

S1-8			
SEGMENT	TYPE	LENGTH	SLOPE
A-B	SHEET	7'	0.0114
B-C	SHEET	7'	0.0143
C-D	SCF	226'	0.0072
S1-7			
A-B	SHEET	8'	0.0113
B-C	SHEET	8'	0.0188
C-D	SCF	180'	0.01
S1-4			
A-B	SHEET	7'	0.0157
B-C	SHEET	7'	0.0214
C-D	SCF	248'	0.01
S2-4			
A-B	SHEET	8'	0.0162
B-C	SHEET	8'	0.0138
C-D	SCF	195'	0.0102

LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- PRE — WATERSHED LABEL
- 1 — REACH
- CB — POND/CATCH BASIN
- DyB — SOIL NAME
- EXISTING STREAM
- MEDIUM INTENSITY SOIL BOUNDARY
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- 124 — EXISTING MINOR CONTOUR
- 124 — EXISTING MAJOR CONTOUR
- 124 — PROPOSED CONTOUR
- SD — EXISTING STORMDRAIN
- SD — PROPOSED STORMDRAIN
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING
- PROPOSED PAVED AREA
- WETLAND AREA
- PROPOSED BUFFER

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APPD BY
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	LRB

TERRADYN CONSULTANTS, LLC
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565 CONGRESS STREET SUITE 310 PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

PROJECT: RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE: POST-DEVELOPMENT WATERSHED MAP

PREPARED FOR: SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	1" = 100'
DESIGNED:	MTW
JOB NO:	1722
FILE:	
SHEET	C-6.2

1722

November 7, 2018

Mr. Zach Mosher, Planner
City of Saco
300 Main Street
Saco, ME 04072

Response to City Staff Review Comments
Ricker Road Subdivision
Ricker Road & Flag Pond Road

Dear Zach:

Terradyn Consultants, LLC is pleased to provide this response to comments that were raised by City of Saco staff in their review of the Preliminary Subdivision application and plans for the Ricker Road Subdivision submitted on September 25, 2018. We have listed the comments from each reviewer below. Our responses are directly below each comment and are shown in *italics.*

Reviewer: Joseph Laverriere, City Engineer - Comments dated October 15, 2018

Comments repeated from May 8, 2018 review:

1. Is the applicant requesting any waivers from the Subdivision Regulations?

   No.

2. How were the wetlands located that are shown on the sketch plan? Has the City's wetland peer review consultant reviewed and accepted the wetlands delineation and vernal pool assessment as contained on the existing conditions plan?

   Wetland s were delineated by Longview Partners in summer 2017.

3. The net residential area calculations did not include any areas designated as isolated; however, there are several small pockets that do not appear readily accessible. This is an item that should be reviewed with the Planning Board.

   The upland pockets within the wetlands on Lot 1, Lot 2 and the open space lot are now deducted in the net residential calculations. The table is revised on the Subdivision Plan.

4. When were the other five parcels identified as lots 28-1 through 28-5 on tax map 109 broken out of this parcel?

LOT #	*Latest Sale Date (York Co. Registry of Deeds)*
28-1	*4/21/1993*
28-2	*9/20/1985*
28-3	*1/4/1985*
28-4	*10/2/2001*
28-5	*5/2/1996*

5. The application states a seven-lot subdivision; however, is the actual count nine lots and include the two "existing" lots that were most recently broken out last year?

   The two existing lots are included in the net residential calculations and considered part of the subdivision.

6. Provide available sight line distances at the proposed intersection onto Ricker Road and Flag Pond Road. This information should be provided on the roadway plan along with the posted speed limits.

   Ricker Road: Sight distance 450' left & 560' right. No posted speed limit
   Flag Pond Road: Sight distance 620' left & 600' right. 35 mph speed limit

7. What is the applicant's proposal for future ownership of the open space lot?

   Ownership and maintenance of the open space shall be assigned to the subdivision homeowners' association. This is now noted on thed Subdivision Plan.

Additional comments based upon our review of the recent application materials submitted on September 25, 2018:

1. Any waivers granted by the Planning Board should be noted on the Final Subdivision Plan.

   Not applicable

2. Provided vertical datum basis for the benchmark.

   The project surveyor, Wayne T. Wood & Co. will set a benchmark on site referenced to City of Saco datum.

3. Provide conversion information for site specific local datum elevation to City datum (NAVD 1988).

   The LiDAR topo used for design is referenced to NAVD 1988, so no conversion is necessary.

4. Since this project will disturb in excess of 1 acre, then it will be subject to the requirements of a Maine General Construction Permit (MGCP). The applicant is

required to obtain said permit and comply with all requirements. In accordance with the MGCP, the erosion control requirements for this project need to include specific requirements for inspection frequency, maintaining weekly inspection records, etc. These written inspection logs need to be maintained onsite and available for viewing during site inspections.

Comment acknowledged

5. All work within the public right-of-way shall be subject to the terms and conditions of a Street Opening Permit to be issued by DPW. The developer shall be responsible for applying and obtaining a Street Opening Permit prior to the start of any work within the public right-of-way.

   Comment acknowledged

   As part of the Street Opening Permit, the developer shall be responsible for the restoration and maintenance of all surfaces for a one-year period.

   Comment acknowledged

6. The United States Postal Service is requiring the installation of centralized mail box for delivery and no longer delivering to individual mail boxes. The proposed location of the centralized mailbox shall be shown on the plans for review and approved by the Department of Public Works.

   A community mailbox has been added to the plan in the open space near the Flag Pond Road intersection.

7. The areas suitable for installation of onsite water supply well within each lot should be shown on the Subdivision Plan.

   Well inclusion areas and septic system inclusion areas are now shown on the Subdivision Plan. These areas are delineated to maintain minimum 100' separation between drilled wells and wastewater disposal fields.

   In addition, we will submit additional soil test pits for septic systems on Lots 1, 5 and 7 in order to confirm the well inclusion and septic system inclusion areas on those lots.

8. A geohydrologic study has not been performed as part of the preliminary subdivision application materials. The Planning Board has required this study for several recent subdivisions in the rural portion of the City. The need to perform this study should be reviewed with the Planning Board; however, it is anticipated the Board may require some form of geohydrologic assessment as part of this project.

   Comment acknowledged

9. The thresholds for development within each of the lots will require some form of deed restriction or covenant. The language for these development restrictions should be submitted to the Planning Department for review and approval.

The following language for this deed restriction is submitted for review: The total area of impervious surfaces on each of Lots 1 through 7 shall not exceed 5,000 square feet. The total developed area (including impervious surfaces) on each of Lots 3 through 7 shall not exceed 20,000 square feet. The total developed area on Lots 1 and 2 shall be less than 20,000 square feet as limited by stormwater buffers, easements and wetland areas shown on the Subdivision Plan.

10. As part of the building permit process, the applicant shall submit a plot plan for each lot that shall include the location and footprint for the house, location of driveway and proposed grading. Any site constraints (i.e. wetlands, buffers, easements, etc.) shall be shown on the plot plan as well as summary demonstrating conformance with the development thresholds established for each lot. We would also recommend consideration be given to making the plot plan requirement as a Condition of Approval.

    Comment acknowledged

11. What is the applicant's proposal for future ownership of the open space lot? A note should be added to the Subdivision Plan indicating the ownership entity for the open space lot.

    Ownership and maintenance responsibility for the open space lot will be assigned to a subdivision Homeowners' Association. A note has been added to the Subdivision Plan.

12. All easements shown on the Subdivision Plan shall clearly identify, by name, the entity that is being granted the easement. Several of the easements should be conveyed to the City; however, others are not to be conveyed to the City (i.e. forested buffer easements that benefit individual lots, etc.).

    Easement and Stormwater Buffer Notes have been added to the Subdivision Plan to specify the easement grantees.

13. A grading easement to the City needs to be provided along the frontage of all lots for maintenance of the roadside drainage ditch, etc. The extent of the grading easement shall extend a minimum of 5' beyond the limit of grading.

    The grading easement to be conveyed to the City is now shown on the Subdivision Plan.

14. The future right-of-way connecting to the abutting land of Temm should be identified as being conveyed to the City of Saco.

    The future ROW is now noted as being conveyed to the City.

15. The buffer areas should be marked in the field prior to the start of construction.

    A note stating this requirement has been added to the Subdivision Plan.

16. Draft language for the buffer deed restrictions shall be submitted to the City for review and approval. As a condition of approval, a copy of the recorded deed restrictions shall be provided to the City prior to the start of construction.

Draft deed restrictions for forested buffer and meadow buffers are attached to this letter for review by the City.

17. The layout of the fire cistern tank is not the preferred layout of the Saco Fire Department. Recommend consideration for modifying design to provide preferred layout.

    The layout of the cistern has been revised to the City's preferred layout.

18. Typical roadway detail shall be revised to specify 1-½" thick layer of 9.5mm hot bituminous pavement surface and 2" thick layer of 12.5 mm hot bituminous pavement binder.

    The roadway detail has been revised.

19. The depth of the roadside ditches shall be designed to provide 2' of cover over the top of all driveway culverts.

    Lots 1, 2, 5, 6 and 7 on the sidewalk side of the road do not require culverts. Culverts for lots 3 and 4 shall be 12" diameter and shall have 2' of cover over top of pipe. The ditches and road fill depth along the front of these two lots are over 3' deep and will allow sufficient cover to be placed.

20. All roadway cross culverts should be provided with 3' of cover over the top of pipe at all locations, where possible, and certainly no less than 2' in all other locations.

    The enclosed storm drain pipes are designed with minimum 3' of cover. The 15" cross culverts are designed with minimum 2' of cover, measured at the edge of pavement towards the inlet.

21. The location of the fire cistern tank needs to be reviewed with the Saco DPW and Fire Department.

    The fire cistern location has been relocated near the Flag Pond Road intersection as suggested in Fire Department review comments dated 10/17/2018.

22. The fire cistern tank shall be installed in accordance with the Saco Fire Department standards. A manufacturer's submittal for the fire cistern tank and appurtenances shall be submitted to the Saco Fire Department for review and approval prior to ordering the structure.

    A note stating this requirement has been added to the Subdivision Plan.

23. The fire cistern tank shall be installed prior to the issuance of any building permits. A note to this affect should be included on the Subdivision Plan as well as included as a condition of approval.

    A note stating this requirement has been added to the Subdivision Plan.

24. What is the applicant's proposal for street lighting? Street lights should be installed at the proposed intersection with Ricker Road and Flag Pond Road, as well as, at Station

6+25 +/- and Station 13+00 +/- and perhaps in the vicinity of the centralized mailbox if that does not correspond with any of these locations.

Street lights are now shown on Sheet C-2.0 at the locations noted.

25. Prior to the start of construction, the applicant shall submit a copy of the CMP electrical plan for the development and the applicant shall confer with the DPW for the location of an electrical service and meter set to serve the street light system.

    Comment acknowledged.

26. The rate of curvature for the vertical curve between Stations 1+50 and 7+50 should be shorten to improve gutter flow along the curbline.

    The road profile and grading plan has been revised to improved gutter line flow and a catch basin has been added at station 5+75.

Reviewer: D. Lambert - Comments dated October 11, 2018

The forested buffer will need to be clearly delineated on the ground so that we can assure that the no-cut is observed.

The forested stormwater buffers will be marked in the field prior to construction to prevent cutting of trees. Buffers will be marked with survey pins following construction.

The only test pit on lot 1 is within the forested buffer which is not acceptable as the trees will need to be cleared to install a leach field.

Another test pit will be provided on Lot 1, outside of the forested buffer.

Reviewer: C. Huntress - Comments dated October 11, 2018

Street lights at the intersection – On each curve and at the cul-de-sac.

Street lights have been added to the plan as requested by the City Engineer.

The two plans do not match as to road design, one shows a cul-de-sac and the other is a connection to Flag Pond Road. Which road system is being implemented.

The new road connecting Flag Pond Road and Ricker Road is the proposed plan.

Reviewer: D. Pendelton, Fire Department - Comments dated October 17, 2018

What is the length of the proposed road?

1,659'

The preferred layout for the paved apron adjacent to the fire cistern is perpendicular. Can a perpendicular apron be created instead of a parallel bump out?

The cistern plan is changed to the perpendicular layout.

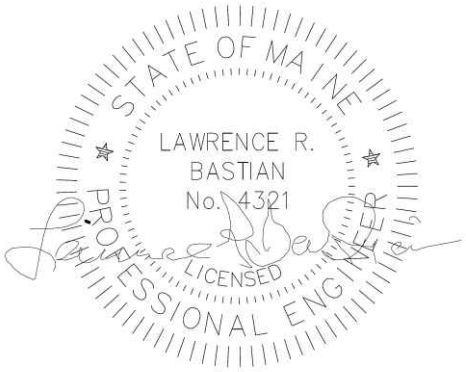
Is there room at the Ricker Road intersection or the Flag Pond Road intersection to consider locating the fire cistern there?

The plan is revised to show the fire cistern near the Flag Pond Road intersection.

A revised plan set incorporating the revisions noted above is included with this letter.

We are hopeful that this application can be placed on the agenda for the November 20, 2018 Planning Board Meeting. Thank you for your consideration, and please call us if you have any questions as you review the enclosed information.

Sincerely,
TERRADYN CONSULTANTS LLC



Larry Bastian, P.E.

Enclosures: As noted above

cc. Dan Foster, Sebago Land Developers, Inc

DRAFT Stormwater Buffer Deed Restrictions
Ricker Road Subdivision, Saco

REFERENCE: Maine DEP Chapter 500, Stormwater Management
APPENDIX G. Suggested templates for deed restrictions and conservation easements for use under the Stormwater Management Law

1. **Forested buffer, limited disturbance**

DECLARATION OF RESTRICTIONS (Forested Buffer, Limited Disturbance)

THIS DECLARATION OF RESTRICTIONS is made this _____day of _____, 20___, by _____ , _____,
(name) (street address)
_____, _____County, Maine, _____, (herein referred to as the
(city or town) (county) (zip code)
"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near Flag Pond Road & Ricker Road_____, Saco_____ .
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in Saco_____, Maine
(town)
described in a deed from_____ to _____dated
(name) (name of Declarant)
_____, 20____, and recorded in Book ____ Page ____ at the _____County Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") described as follows: (Note: Insert description of restricted buffer area location here)

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area**. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

   a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material may be placed, stored or dumped on the Restricted Buffer Area, nor may the topography of the area be altered or manipulated in any way;

   b. Any removal of trees or other vegetation within the Restricted Buffer Area must be limited to the following:

      (i) No purposefully cleared openings may be created and an evenly distributed stand of trees and other vegetation must be maintained. An "evenly distributed stand of trees" is defined as maintaining a minimum rating score of 24 points in any 25 foot by 50 foot rectangle (1,250 square feet) area, as determined by the rating scheme in Table 11:

Table 11.
Point System for Determining an Evenly Distributed Stand of Trees

Diameter of tree at 4½ feet above ground level	Points
2 - 4 inches	1
4 - 8 inches	2
8 - 12 inches	4
>12 inches	8

      Where existing trees and other vegetation result in a rating score less than 24 points, no trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;

      (ii) No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;

   c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors, or fence;

   d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;

e. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement**. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect**. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. **Amendment**. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. **Effective Provisions of Declaration**. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. **Severability**. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. **Governing Law**. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

_____
(NAME)

STATE OF MAINE_____ County, _____, 20__.
(County) (date)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

_____
Notary Public

_____

3. Meadow buffer

DECLARATION OF RESTRICTIONS (Non-Wooded Meadow Buffer)

THIS DECLARATION OF RESTRICTIONS is made this _____day of _____, 20___, by _____, _____
(name) (street address)
_____, _____County, Maine,_____, (herein referred to as the
(city or town) (county) (zip code)
"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near Flag Pond Road and Ricker Road_____, Saco_____ .
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in Saco_____, Maine
(town)
described in a deed from _____ to _____, dated
(name) (name of Declarant)
_____, 20____, and recorded in Book ____ Page ____ at the _____County Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") described as follows: (Note: Insert description of restricted buffer location here)

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

DRAFT Stormwater Buffer Deed Restrictions
Ricker Road Subdivision, Saco

1. **Restrictions on Restricted Buffer Area**. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

    a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Restricted Buffer Area, nor may the topography or the natural mineral soil of the area be altered or manipulated in any way;

    b. A dense cover of grassy vegetation must be maintained over the Restricted Buffer Area, except that shrubs, trees and other woody vegetation may also be planted or allowed to grow in the area. The Restricted Buffer Area may not be maintained as a lawn or used as a pasture. If vegetation in the Restricted Buffer Area is mowed, it may be mown no more than two times per year.

    c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors;

    d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area, except for vehicles used in mowing;

    e. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

    Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement**. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect**. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. **Amendment**. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. **Effective Provisions of Declaration**. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. **Severability**. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. **Governing Law**. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

_____
(NAME)

STATE OF MAINE, _____, County, dated _____, 20__ .
(County)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

_____
Notary Public

_____

RICKER ROAD SUBDIVISION

RICKER ROAD, SACO, MAINE

PREPARED BY:

CIVIL ENGINEER:
TERRADYN CONSULTANTS, LLC
41 CAMPUS DR. SUITE 101
NEW GLOUCESTER, MAINE 04260
(207)926-5111

SURVEYOR:
WAYNE T. WOOD & CO.
30 WOOD DRIVE
GRAY, MAINE 04039
(207) 657-3330

SEPTIC EVALUATION:
HARRIS SEPTIC SOLUTIONS
WINDHAM, MAINE 04062
(207) 892-2435

APPLICANT / OWNER:

SEBAGO LAND DEVELOPMENT, INC.
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

PROJECT PARCEL SITE

CITY OF SACO TAX ASSESSOR'S MAP & LOT NUMBERS

MAP	LOT
109	28

LOCUS MAP
1"=800'

LOCATION MAP
1" = 200'

SHEET INDEX

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- 124 EXISTING MINOR CONTOUR
- 124 EXISTING MAJOR CONTOUR
- 124 PROPOSED CONTOUR
- SD EXISTING STORMDRAIN
- SD PROPOSED STORMDRAIN
- S EXISTING SANITARY SEWER
- S PROPOSED SANITARY SEWER
- W EXISTING WATER LINE
- W PROPOSED WATER LINE
- UD EXISTING UNDERDRAIN
- UD PROPOSED UNDERDRAIN
- OHE EXISTING OVERHEAD ELECTRIC & TELEPHONE
- OHE PROPOSED OVERHEAD ELECTRIC & TELEPHONE
- UGE EXISTING UNDERGROUND ELECTRIC & TELEPHONE
- UGE PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- SD EXISTING EDGE OF PAVEMENT
- SD PROPOSED EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- EXISTING CURB
- PROPOSED CURB
- EDGE OF WATER
- EXISTING TREE LINE
- PROPOSED TREE LINE
- CHAIN LINK FENCE
- PROPOSED FENCE
- EXISTING GUARDRAIL
- PROPOSED GUARDRAIL
- SF SILT FENCE
- EXISTING VALVE
- PROPOSED VALVE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING TRANSFORMER
- PROPOSED TRANSFORMER
- EXISTING LIGHT POLE
- PROPOSED LIGHT POLE
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- + 30.20 EXISTING SPOT GRADE
- × 30.20 PROPOSED SPOT GRADE
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING BUILDING
- PROPOSED BUILDING
- WETLAND AREA
- PROPOSED PAVEMENT
- RIPRAP
- PROPOSED WETLAND ALTERATION AREA
- FUTURE RIGHT OF WAY EASEMENT
- PROPOSED DRAINAGE EASEMENT
- PROPOSED FORESTED BUFFER
- PROPOSED MEADOW BUFFER

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APP'D BY
2	11/08/2018	RESPONSE TO CITY REVIEW COMMENTS	LRB
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

Permitting

PROJECT:
RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE:
COVER SHEET AND LOCATION MAP

PREPARED FOR:
SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	
DESIGNED:	MTW
JOB NO:	1722
FILE:	
SHEET	C-0.0

NOTES

1. Owner of record is Norman Bovin by deed recorded in the York County Registry of Deeds in book 17,186 page 519.
2. All bearings are referenced to Magnetic North of the year 1984 as per the plan in reference 1 and calculated from angles of an actual on the ground survey.
3. This property is shown as Lot 28 on the Saco Tax Map 109 and is in the C-1 zoning district.

PLAN REFERENCES

1. "Plan Showing A Boundary Survey Made For Barbara & Derwood Sawtelle" dated April 28, 2004 by Dow & Coulombe, Inc.
2. "Standard Boundary Survey On Ricker Road, Saco, Maine made for Stanley E. & Mary E. Knox and Ann L. Beote" dated May 1997 by Downeast Surveying & Development recorded in the York County Registry of Deeds in plan book 234 on page 30.

State of Maine, York ss.
Registry of Deeds
Received_____,20____
at___h____m____ and recorded in
Plan Book_____Page_____
Attest:_____
Register

LEGEND

◎	5/8" Capped Rebar (#1328) to be Set
●	Iron Pipe or Pin Found as Noted
	Hardwood Tree as Noted
■	Granite Monument Found as Noted
▲	Fence Post Found as Noted
⌀	Utility Pole
	Existing Building
N/F	Now or Formerly of
(4581/109)	Deed Book and Page Reference
YCRD	York County Registry of Deeds

0 100 200 300

STATE OF MAINE
WAYNE T. WOOD
1328
PROFESSIONAL LAND SURVEYOR

Plan of Land
On
Ricker Road & Flag Pond Road
In
Saco, Maine
For
Dan Foster
144 Dryad Woods Rd. ~ Raymond, ME 04071

WAYNE WOOD &CO.
Gray, Maine 04039 (207)657-3330

Drawn By: KLW/WTW	Date
Scale: 1" = 100'	April 2017
Checked By: WTW	Job No.
Field Crew: JW/BR	216159

GENERAL NOTES

1. THE RECORD OWNER AND APPLICANT IS SEBAGO LAND DEVELOPERS INC. BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 17576, PAGE 493.

2. THE PROPERTY IS LOCATED AT THE INTERSECTION OF FLAG POND ROAD AND RICKER ROAD IN SACO, MAINE. IT IS DESCRIBED AS LOT 28 ON CITY OF SACO ASSESSOR'S TAX MAP 109.

3. TOTAL AREA OF PARCEL: . . . . . 26.12 AC.

4. SPACE AND BULK INFORMATION FOR CONSERVATION DISTRICT (C-1):

TRADITIONAL SUBDIVISION:	
MIN. LOT AREA:	80,000 S.F. (UNSEWERED)
MIN. STREET FRONTAGE:	200 FT.
MIN. FRONT SETBACK:	30 FT
MIN. SIDE SETBACK:	25 FT
MIN. REAR SETBACK:	25 FT
MAX. LOT COVERAGE:	20%
MAX. BUILDING HEIGHT:	35 FT.

5. THE OUTER BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THIS PLAN IS BASED ON A PLAN ENTITLED "PLAN OF LAND ON RICKER ROAD & FLAG POND ROAD IN SACO, MAINE FOR DAN FOSTER 144 DRYAD WOODS ROAD, RAYMOND, ME 04071", BY WAYNE T. WOOD & CO., 30 WOOD DR., GRAY, MAINE, DATED, APRIL 2017.

6. SITE ENGINEERING PROVIDED BY LAWRENCE R. BASTAIN, P.E. #4321 OF TERRADYN CONSULTANTS, LLC, 41 CAMPUS DRIVE, SUITE 101, NEW GLOUCESTER, MAINE.

7. THE PROPOSED LOTS WILL BE SERVED BY INDIVIDUAL DRINKING WATER WELLS AND ON SITE SUBSURFACE WASTEWATER DISPOSAL SYSTEMS.

8. THE PROJECT REQUIRES A NATURAL RESOURCE PROTECTION ACT (NRPA) TIER 1 WETLAND ALTERATION PERMIT. TOTAL WETLAND IMPACTS ARE 9,813 S.F. NO ADDITIONAL WETLAND IMPACTS SHALL BE CREATED WITHOUT THE APPROVAL OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

9. WETLAND BOUNDARIES DEPICTED ON THIS PLAN WERE DELINEATED BY LONGVIEW PARTNERS, LLC IN JUNE, 2016.

10. LONGVIEW PARTNERS, LLC. PERFORMED SITE INVESTIGATIONS FOR THE PRESENCE OF VERNAL POOL HABITAT ON 4/19/2017 AND 5/4/2017. NO VERNAL POOL HABITAT WAS FOUND.

11. TEST PITS WERE CONDUCTED BY HARRIS SEPTIC SOLUTIONS, INC. WINDHAM, MAINE TO DETERMINE THE SUITABILITY OF SOIL FOR SUBSURFACE WASTEWATER DISPOSAL SYSTEMS.

12. DRILLED WELLS ON EACH LOT SHALL BE SET BACK MINIMUM 100' FROM THE NEAREST SUBSURFACE WASTEWATER DISPOSAL SYSTEM, IN ACCORDANCE WITH MAINE WASTEWATER DISPOSAL RULES.

13. HHE-200 WASTEWATER DISPOSAL SYSTEM DESIGNS SHALL BE SUBMITTED WITH BUILDING PERMIT APPLICATIONS FOR EACH LOT.

14. PROPOSED DRIVEWAY LOCATIONS SHALL BE REVIEWED AND APPROVED BY THE SACO DEPARTMENT OF PUBLIC WORKS AS PART OF THE BUILDING PERMIT REVIEW PROCESS. DRIVEWAY CULVERTS SHALL BE INSTALLED PER CITY OF SACO REQUIREMENTS. MINIMUM CULVERT SIZES FOR EACH LOT SHALL BE 12".

15. THE CITY OF SACO HAS THE RIGHT TO ACCESS, REPAIR AND MAINTAIN PUBLIC INFRASTRUCTURE (ABOVE AND BELOW GROUND SURFACE) WITHIN THE EASEMENT AREAS SHOWN. NO BUILDING, STRUCTURE, OR PERMANENT OBSTRUCTIONS (I.E. FENCES, RETAINING WALLS, TREES, ETC.) SHALL BE ERECTED WITHIN SAID EASEMENTS WITHOUT PRIOR CONSENT BY THE CITY OF SACO. THE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR ALL COSTS TO REMOVE NON-PERMITTED ACTIVITIES WITHIN THE EASEMENT AREAS.

16. FAILURE TO COMMENCE SUBSTANTIAL CONSTRUCTION OF THE SUBDIVISION WITHIN TWO YEARS OF THE DATE OF APPROVAL AND SIGNING OF THE PLAN SHALL RENDER THE PLAN NULL AND VOID. SUBSTANTIAL COMPLETION SHALL MEAN THE COMPLETION OF THE ROAD BASE. BEFORE THE TWO YEARS EXPIRES, THE OWNER MAY APPLY TO THE PLANNING BOARD FOR A TWO-YEAR EXTENSION OF THE SUBDIVISION APPROVAL IF THIS CONDITION HAS NOT BEEN MET. THE BOARD MAY REQUIRE THAT THE SUBDIVISION MEET ANY NEW REGULATIONS OR ORDINANCES.

17. ALL ROAD AND INFRASTRUCTURE CONSTRUCTION SHALL BE COMPLETED PER THE APPROVED PLAN NO LATER THAN THIRTY-SIX (36) MONTHS AFTER THE POSTING OF THE FINANCIAL GUARANTEE AS DESCRIBED IN ARTICLE 8 OF THE CITY OF SACO SUBDIVISION REGULATIONS. AFTER THAT DATE, THE DEVELOPER SHALL BE CONSIDERED TO BE IN DEFAULT, AND THE CITY AT ITS DISCRETION SHALL HAVE ACCESS TO THE FUNDS TO FINISH CONSTRUCTION. ALL ROADS AND INFRASTRUCTURE INTENDED FOR CITY ACCEPTANCE SHALL BE OFFERED TO THE CITY AS OUTLINED IN SECTION 11.25 OF THE CITY OF SACO SUBDIVISION REGULATIONS AND IN SECTION 186-37 OF CITY CODE WITHIN NINETY (90) DAYS AFTER THE END OF SAID 36 MONTH PERIOD. PRIOR TO THE END OF SAID 36 MONTH PERIOD, THE OWNER MAY APPLY TO THE PLANNING BOARD FOR A SINGLE ONE-YEAR EXTENSION OF THE COMPLETION REQUIREMENT. THE EXTENSION REQUEST SHALL INCLUDE VERIFICATION THAT THE EXISTING FINANCIAL GUARANTEE IS SUFFICIENT TO GUARANTEE COMPLETION OF THE SUBDIVISION. THE BOARD MAY REQUIRE AN INCREASE OF THE FINANCIAL GUARANTEE IF WARRANTED BY CHANGING ECONOMIC OR OTHER CIRCUMSTANCES, BUT IN NO CASE SHALL THE AMOUNT OF THE FINANCIAL GUARANTEE EXCEED 150% OF THE COST OF REMAINING IMPROVEMENTS. THE EXTENSION REQUEST SHALL BE GRANTED IF THE APPLICANT CAN DEMONSTRATE TO THE BOARD'S SATISFACTION WHY COMPLETION CANNOT NOT OCCUR WITHIN 36 MONTHS OF THE POSTING OF THE FINANCIAL GUARANTEE.

18. UNTIL THE STORMWATER FACILITIES ARE OFFERED AND ACCEPTED BY THE CITY OF SACO, THE OWNER SHALL BE REQUIRED TO PERFORM ROUTINE INSPECTION AND MAINTENANCE OF THE STORMWATER FACILITIES AS OUTLINED IN THE OPERATIONS AND MAINTENANCE MANUAL DEVELOPED SPECIFICALLY FOR THE SITE. A COPY OF THE ANNUAL INSPECTION AND MAINTENANCE REPORT, INCLUDING INSPECTION LOGS, SHALL BE SUBMITTED ANNUALLY (BY JULY 15TH OF EACH YEAR) TO THE CITY OF SACO PUBLIC WORKS DEPARTMENT.

19. LOTS 8 & 9 ARE LOTS OF RECORD THAT WERE DIVIDED AND SOLD WITHIN THE LAST 5 YEARS.

20. THE TOTAL IMPERVIOUS AREA ON LOT 1 THROUGH 7 SHALL NOT EXCEED 5,000 SF. PER LOT TOTAL DEVELOPED AREA ON EACH OF THESE LOTS SHALL NOT EXCEED 20,000 SF.

21. OWNERSHIP AND MAINTENANCE OF THE OPEN SPACE SHALL BE THE RESPONSIBILITY OF THE SUBDIVISION HOMEOWNERS' ASSOCIATION.

22. ALL STORMWATER BUFFERS SHALL BE STAKED ALONG THE ROAD RIGHT-OF-WAY AND ON EACH LOT PRIOR TO STARTING ANY CONSTRUCTION WITHIN 100' OF THE BUFFER.

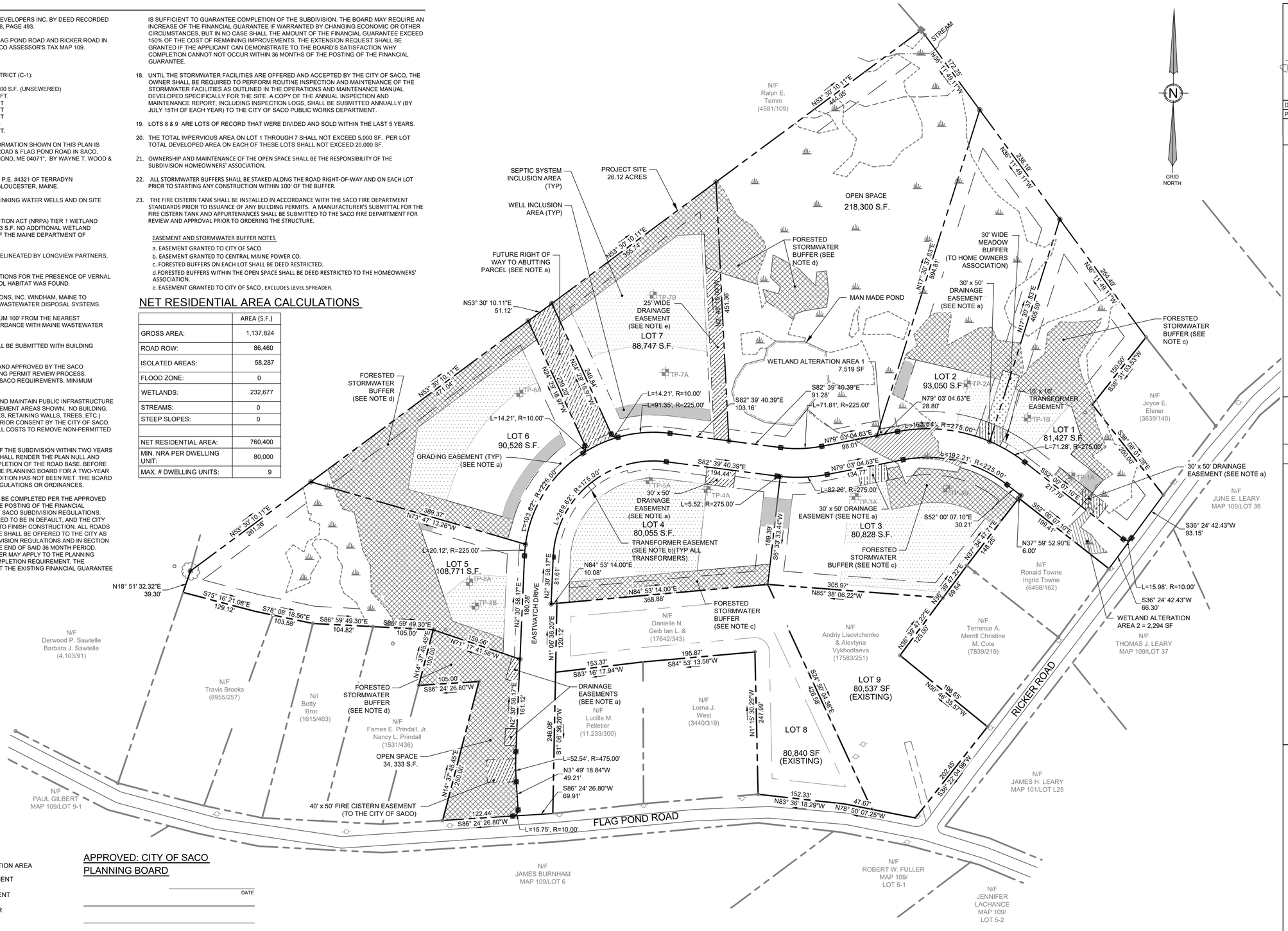
23. THE FIRE CISTERN TANK SHALL BE INSTALLED IN ACCORDANCE WITH THE SACO FIRE DEPARTMENT STANDARDS PRIOR TO ISSUANCE OF ANY BUILDING PERMITS. A MANUFACTURER'S SUBMITTAL FOR THE FIRE CISTERN TANK AND APPURTENANCES SHALL BE SUBMITTED TO THE SACO FIRE DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO ORDERING THE STRUCTURE.

EASEMENT AND STORMWATER BUFFER NOTES

a. EASEMENT GRANTED TO CITY OF SACO
b. EASEMENT GRANTED TO CENTRAL MAINE POWER CO.
c. FORESTED BUFFERS ON EACH LOT SHALL BE DEED RESTRICTED.
d. FORESTED BUFFERS WITHIN THE OPEN SPACE SHALL BE DEED RESTRICTED TO THE HOMEOWNERS' ASSOCIATION.
e. EASEMENT GRANTED TO CITY OF SACO , EXCLUDES LEVEL SPREADER.

NET RESIDENTIAL AREA CALCULATIONS

	AREA (S.F.)
GROSS AREA:	1,137,824
ROAD ROW:	86,460
ISOLATED AREAS:	58,287
FLOOD ZONE:	0
WETLANDS:	232,677
STREAMS:	0
STEEP SLOPES:	0
NET RESIDENTIAL AREA:	760,400
MIN. NRA PER DWELLING UNIT:	80,000
MAX. # DWELLING UNITS:	9



LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- STONE WALL
- STREAM
- TP-A TEST PIT
- EXISTING MONUMENT
- PROPOSED MONUMENT
- EXISTING IRON PIPE
- EXISTING REBAR
- EXISTING DRILL HOLE
- PROPOSED IRON PIPE
- EDGE OF WATER
- WETLAND AREA
- PROPOSED WETLAND ALTERATION AREA
- FUTURE RIGHT OF WAY EASEMENT
- PROPOSED DRAINAGE EASEMENT
- PROPOSED FORESTED BUFFER
- PROPOSED MEADOW BUFFER
- PROPOSED WELL INCLUSION AREA
- PROPOSED SEPTIC SYSTEM INCLUSION AREA

APPROVED: CITY OF SACO
PLANNING BOARD

_____ DATE

_____

_____

_____

_____

_____

_____

_____

STATE OF MAINE

_____ COUNTY SS REGISTRY OF DEEDS
RECEIVED _____, 20___
AT ___h ___m _____M. AND RECORDED IN
PLAN BOOK _____ PAGE _____

ATTEST _____ REGISTRAR

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

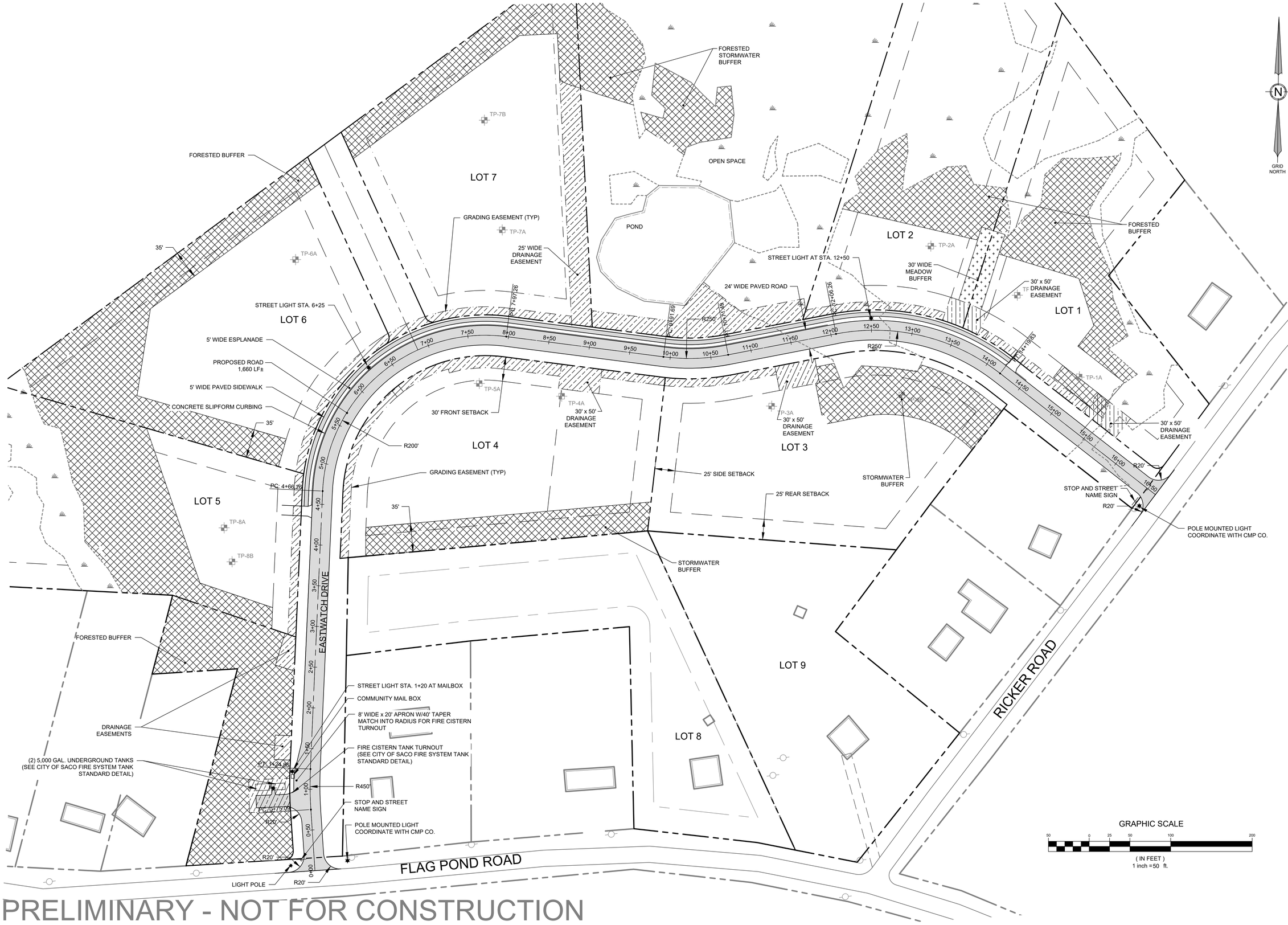
STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APP'D BY
2	11/06/2018	RESPONSE TO CITY REVIEW COMMENTS	LRB
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
565 CONGRESS STREET SUITE 310 PORTLAND, ME 04102
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

PROJECT:	RICKER ROAD SUBDIVISION RICKER ROAD, SACO, MAINE
SHEET TITLE:	SUBDIVISION PLAN
PREPARED FOR:	SEBAGO LAND DEVELOPERS, INC 144 DRYAD WOODS ROAD RAYMOND, MAINE 04071
DATE:	9/14/2018
SCALE:	1"=80'
DESIGNED:	MTW
JOB NO:	1722
FILE:	1722-SB
SHEET	C-1.0



PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

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565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

TERRADYN
CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

PROJECT:
RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

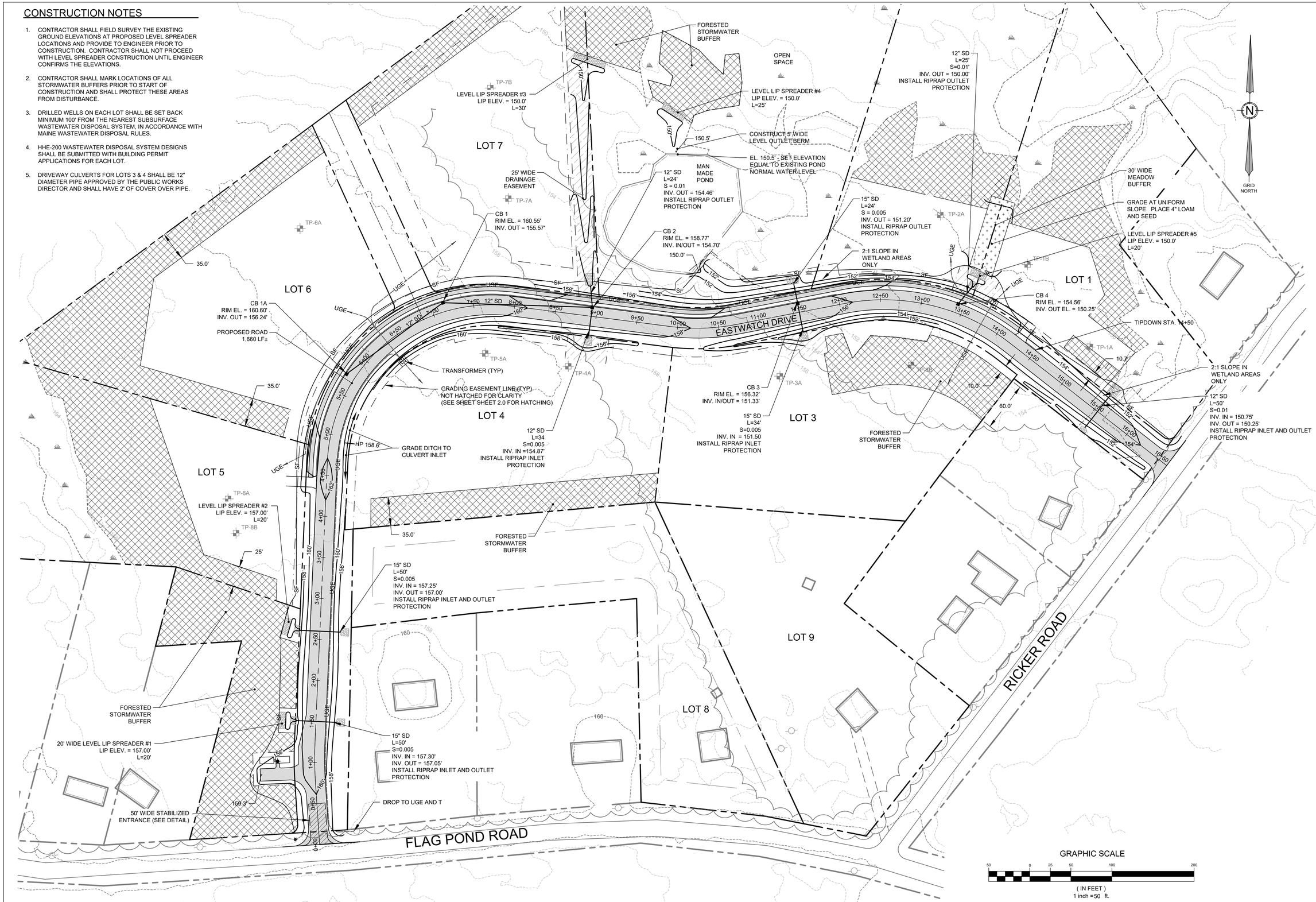
SHEET TITLE:
SITE LAYOUT PLAN

PREPARED FOR:
SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	1"=50'
DESIGNED:	MTW
JOB NO:	1722
FILE:	1722-S
SHEET	C-2.0

CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD SURVEY THE EXISTING GROUND ELEVATIONS AT PROPOSED LEVEL SPREADER LOCATIONS AND PROVIDE TO ENGINEER PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOT PROCEED WITH LEVEL SPREADER CONSTRUCTION UNTIL ENGINEER CONFIRMS THE ELEVATIONS.
2. CONTRACTOR SHALL MARK LOCATIONS OF ALL STORMWATER BUFFERS PRIOR TO START OF CONSTRUCTION AND SHALL PROTECT THESE AREAS FROM DISTURBANCE.
3. DRILLED WELLS ON EACH LOT SHALL BE SET BACK MINIMUM 100' FROM THE NEAREST SUBSURFACE WASTEWATER DISPOSAL SYSTEM, IN ACCORDANCE WITH MAINE WASTEWATER DISPOSAL RULES.
4. HHE-200 WASTEWATER DISPOSAL SYSTEM DESIGNS SHALL BE SUBMITTED WITH BUILDING PERMIT APPLICATIONS FOR EACH LOT.
5. DRIVEWAY CULVERTS FOR LOTS 3 & 4 SHALL BE 12" DIAMETER PIPE APPROVED BY THE PUBLIC WORKS DIRECTOR AND SHALL HAVE 2' OF COVER OVER PIPE.



PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APPD BY
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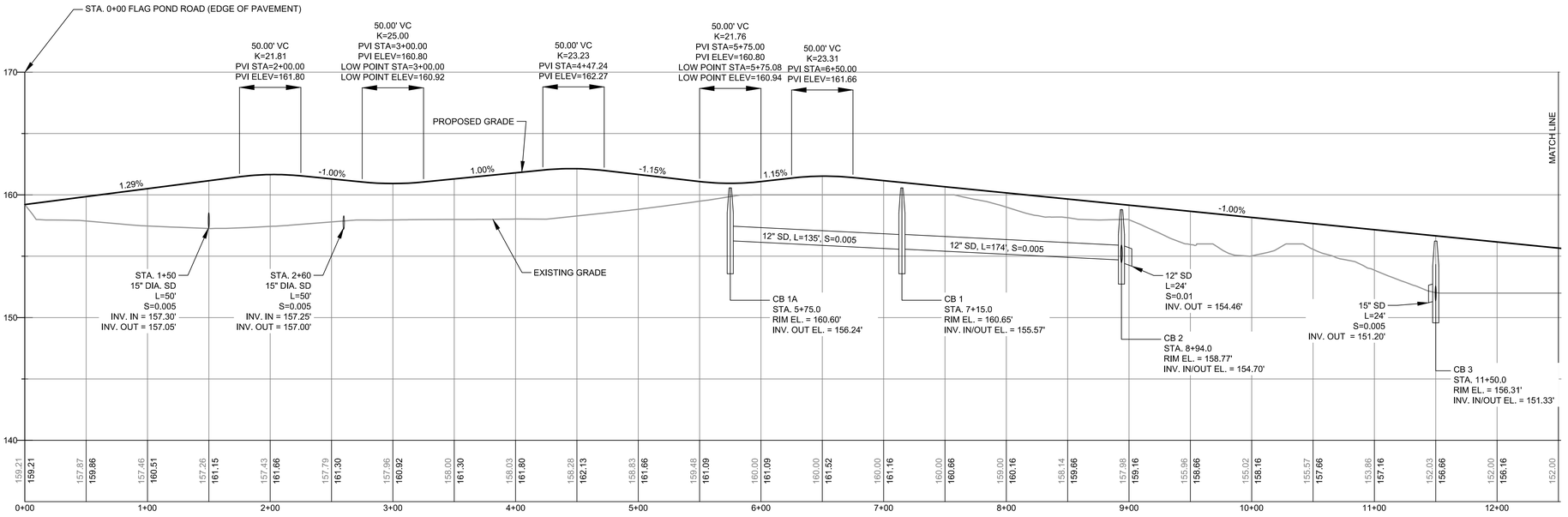
TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 310 PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

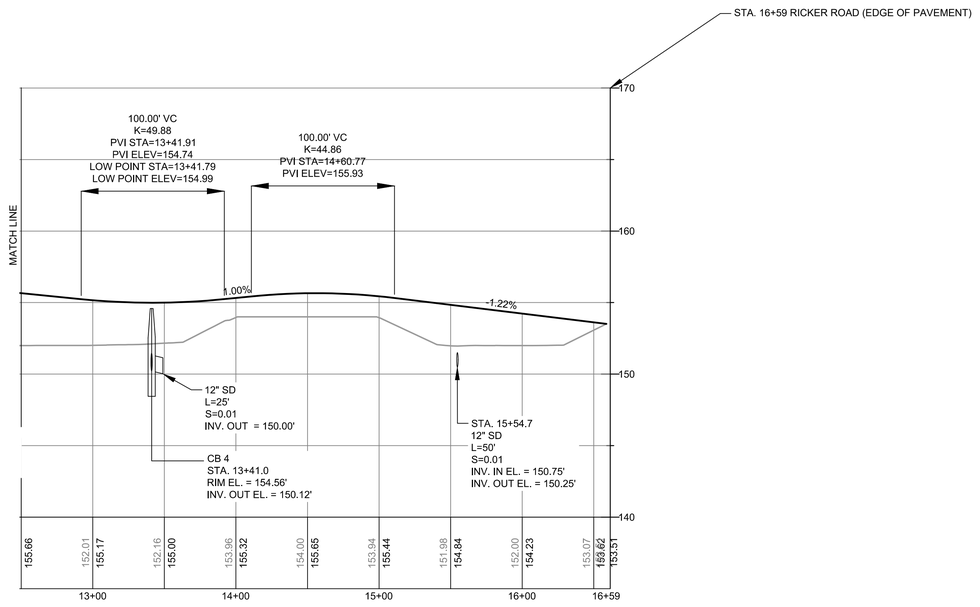
PROJECT: RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE: GRADING & UTILITIES

PREPARED FOR: SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	1"=50'
DESIGNED:	MTW
JOB NO:	1722
FILE: 1722-G&E	
SHEET	C-3.0





PROFILE - EASTWATCH DRIVE
1 inch = 50 ft. HORIZONTAL
1 inch = 5 ft. VERTICAL

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APP'D BY
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1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
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OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

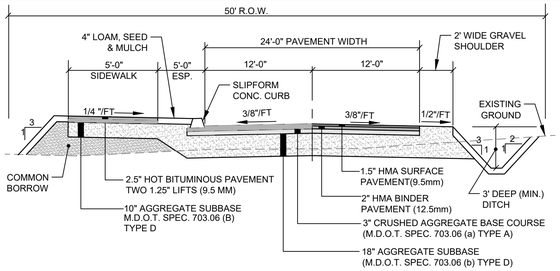
PROJECT: RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE: PROFILE - EASTWATCH DRIVE

PREPARED FOR: SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

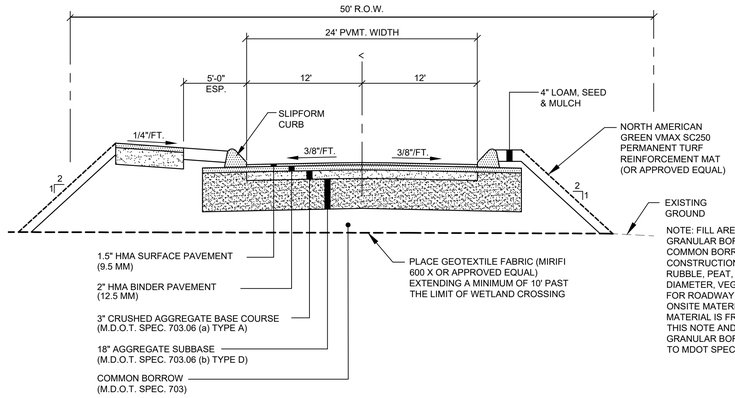
DATE:	9/14/2018
SCALE:	AS NOTED
DESIGNED:	MTW
JOB NO:	1722
FILE:	1722-B.DWG

SHEET C-4.0



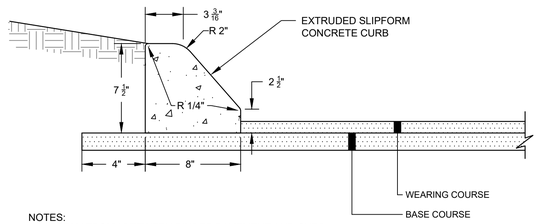
NOTES:
1. ALL CONSTRUCTION MATERIALS AND METHODS SHALL ADHERE TO ARTICLE 11 OF THE CITY OF SACO SUBDIVISION ORDINANCE AND MAINEDOT STANDARD SPECIFICATIONS.
2. THE MINIMUM DITCH DEPTH IS 3', AT DRIVEWAY LOCATIONS WITH CULVERTS GREATER THAN 12" IN DIA., THE DEPTH OF DITCH SHALL BE INCREASED TO PROVIDE AT LEAST 24" COVER OVER THE CULVERT.
3. THE PROPOSED ROADWAY IS INTENDED TO BE OFFERED TO THE CITY OF SACO FOR ACCEPTANCE AS A PUBLIC STREET.

TYPICAL ROAD SECTION
NOT TO SCALE



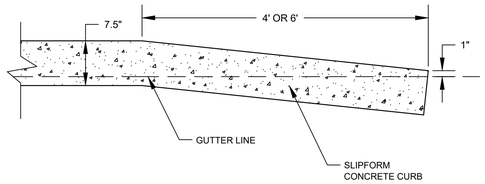
NOTE: FILL AREAS BENEATH DRIVING SURFACE SHALL BE GRANULAR BORROW. ALL OTHER FILL AREAS SHALL BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUB-GRADE CONSTRUCTION. EXCAVATED ONSITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. GRANULAR BORROW AND COMMON BORROW SHALL ADHERE TO MDOT SPECIFICATIONS 703.19 AND 703.18 RESPECTIVELY.

TYPICAL ROAD SECTION AT WETLAND CROSSING
NOT TO SCALE

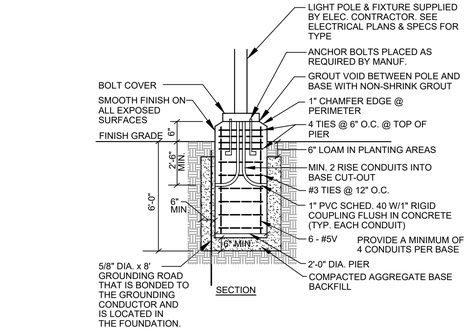


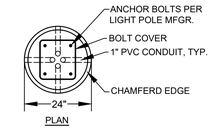
NOTES:
1. APPLY EPOXY BETWEEN BINDER PAVEMENT AND CURB
2. 1" TO 2" SLUMP
3. 5% TO 7% AIR ENTRAINMENT
4. 4,000 PSI CONCRETE WITH FIBER REINFORCEMENT

SLOPED SLIPFORM CONCRETE CURB DETAIL
NOT TO SCALE



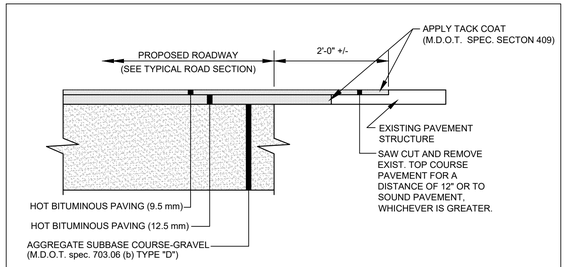
SLIPFORM CURB TIPDOWN DETAIL
NOT TO SCALE



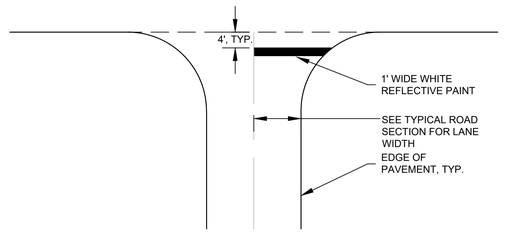


NOTES:
1. CONCRETE f'c=4000 psi.
2. REINF. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" AGG., 6 +/- 1% ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
5. EXPOSED CONCRETE TO BE PAINTED WITH 2 COATS OF ACRYLIC PAINT. COLOR TO MATCH POLE COLOR.
6. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.

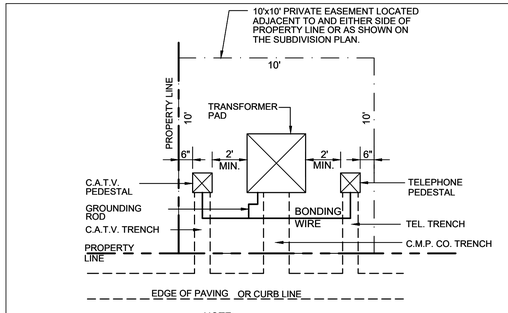
LIGHT POLE BASE
NOT TO SCALE



TYPICAL PAVEMENT JOINT
NOT TO SCALE

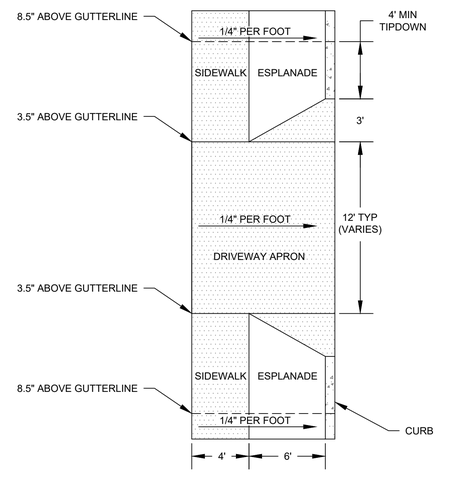


STOP BAR DETAIL
NOT TO SCALE

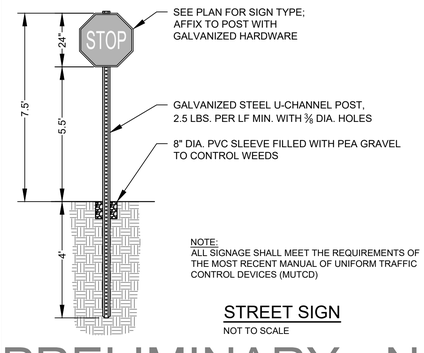


NOTE:
TRANSFORMER PAD AND COVER TO BE FIBERGLASS MEETING CENTRAL MAINE POWER SPECIFICATIONS.

TRANSFORMER DETAIL
NOT TO SCALE

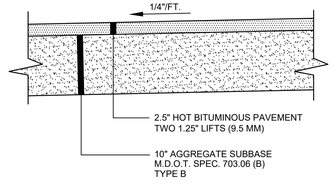


DRIVEWAY APRON LAYOUT DETAIL
NOT TO SCALE

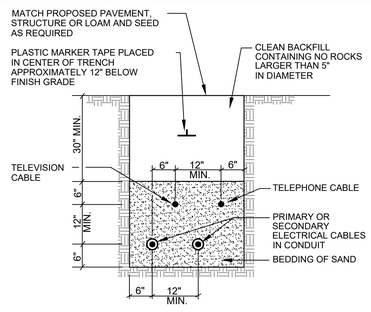


NOTE:
ALL SIGNAGE SHALL MEET THE REQUIREMENTS OF THE MOST RECENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

STREET SIGN
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE



CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

LAWRENCE R. BASTIAN
No. 14321
STATE OF MAINE
LICENSED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APPD BY
2	11/06/2018	RESPONSE TO CITY REVIEW COMMENTS	LRB
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
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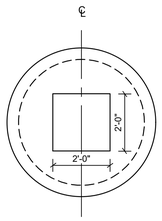
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

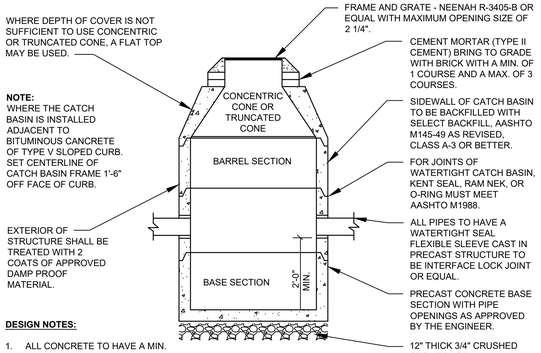
PROJECT: RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE
SHEET TITLE: SITE & UTILITY DETAILS
PREPARED FOR: SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	N.T.S.
DESIGNED:	MTW
JOB NO:	1722
FILE:1623-DETAILS.dwg	

SHEET C-5.0



PLAN VIEW



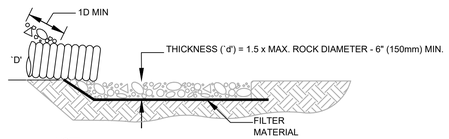
SECTION VIEW

NOTE:
CASCADE GRATES SHALL BE INSTALLED ON GRADIENT OF GUTTER IF PROFILE GRADE EXCEEDS 5% GRATES SHALL BE DEPRESSED 2" BELOW NORMAL GUTTER GRADE UNLESS THIS DEPRESSION ITERFERES WITH TRAFFIC. PARALLEL BAR GRATES SHALL BE INSTALLED ON A LEVEL GRADIENT.

DESIGN NOTES:

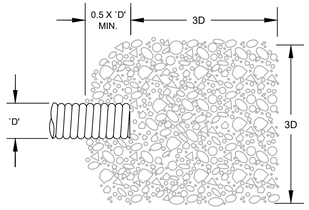
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF..

TYPICAL CATCH BASIN
NOT TO SCALE



NOTE:
1. GEOTEXTILE FILTER FABRIC BENEATH STONE BASED ON UNDISTURBED SOILS, OR 6" OF 4" MINUS BAN RUN GRAVEL FREE OF FINES, CLAYS, SILTS.
2. GEOTEXTILE TO BE MIRAFI 600X OR APPROVED EQUAL.

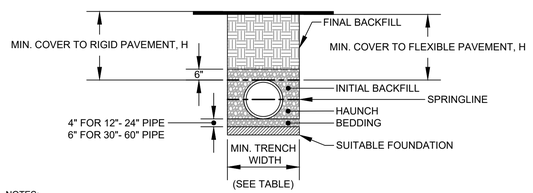
SECTION



PLAN

NOTES:
1. IN DEFINED CHANNELS, APRON SHALL EXTEND FULL WIDTH OF BOTTOM AND ONE FOOT ABOVE MAX. HEADWATER OR UP TO BANK FULL, WHICHEVER IS LESS.

PIPE INLET PROTECTION
NOT TO SCALE



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

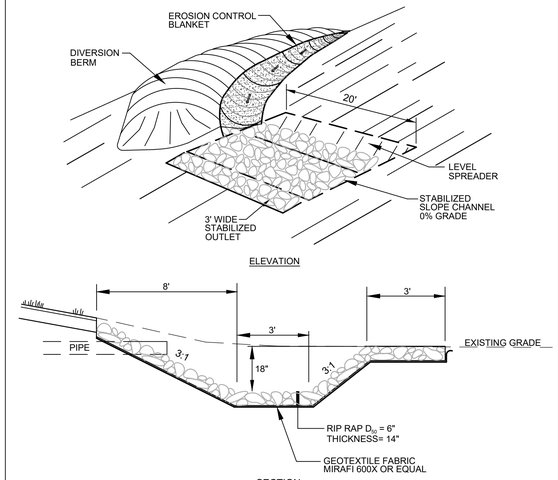
PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

TYPICAL TRENCH DETAIL
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS:

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO ENSURE UNIFORM SPREADING OF RUNOFF.

2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL - NOT ON FILL MATERIAL.

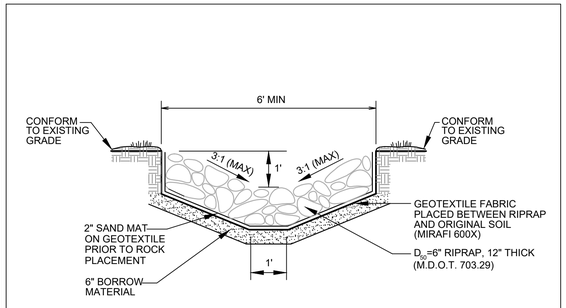
3. DIVERSION BERM SHALL BE CONSTRUCTED OF COMMON BORROW MATERIAL MEETING M.D.O.T. spec 703.18. MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 90% MAX. DRY DENSITY.

4. THE ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A ONE PERCENT GRADE AT LEAST 20 FEET BEFORE ENTERING INTO THE SPREADER.

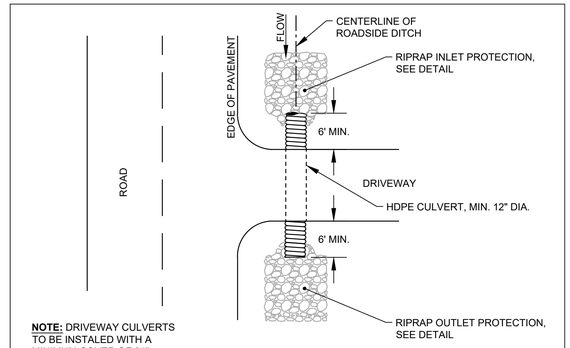
5. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RECONCENTRATE IMMEDIATELY BELOW THE SPREADER.

6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.

DITCH TURNOUT/ LEVEL SPREADER
NOT TO SCALE

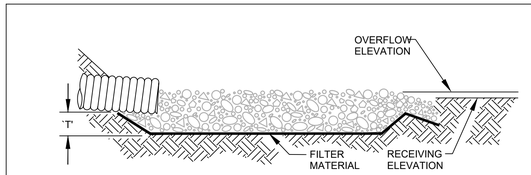


RIPRAP SWALE
NOT TO SCALE



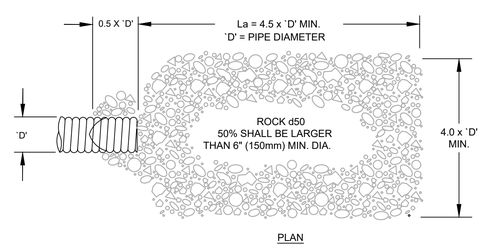
NOTE: DRIVEWAY CULVERTS TO BE INSTALED WITH A MINIMUM COVER OF 24". ADJUST DITCH GRADING IF NECESSARY

DRIVEWAY CULVERT
NOT TO SCALE



THICKNESS (`T') = 1.5 x MAX. ROCK DIAMETER - 6" (150mm) MIN.

SECTION



PLAN

PIPE OUTLET PROTECTION SIZING TABLE

PIPE SIZE (IN)	LENGTH (FT)	WIDTH (FT)
6	2.5	2.0
12	5.0	4.0
15	6.25	5.0
18	7.5	6.0
24	10.0	8.0
30	13.0	10.0
36	15.0	12.0
42	17.5	14.0
48	20.0	16.0
60	25.0	20.0

NOTES:
1. `La' = LENGTH OF APRON. DISTANCE `La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC (MIRAFI 600X OR APPROVED EQUAL) OR 6" (150mm) THICK MINIMUM GRADED GRAVEL LAYER.

PIPE OUTLET PROTECTION
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APPD BY
2	11/06/2018	RESPONSE TO CITY REVIEW COMMENTS	LRB
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

TERRADYN CONSULTANTS, LLC
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

PROJECT:
RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE:
DRAINAGE DETAILS

PREPARED FOR:
SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	N.T.S.
DESIGNED:	MTW
JOB NO:	1722
FILE:1722-DETAILS.dwg	

SHEET C-5.1

EROSION AND SEDIMENT CONTROL PLAN

INTRODUCTION:
A PERSON WHO CONDUCTS, OR CAUSES TO BE CONDUCTED, AN ACTIVITY THAT INVOLVES FILLING, DISPLACING OR EXPOSING SOIL OR OTHER EARTHEN MATERIALS SHALL TAKE MEASURES TO PREVENT UNREASONABLE EROSION OF SOIL OR SEDIMENT BEYOND THE PROJECT SITE OR INTO A PROTECTED NATURAL RESOURCE AS DEFINED IN 38 MRSA § 480-B. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN. THE SITE MUST BE MAINTAINED TO PREVENT UNREASONABLE EROSION AND SEDIMENTATION. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE.

GENERAL REQUIREMENTS
A. POLLUTION PREVENTION: MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

TEMPORARY EROSION CONTROL BMPS
A. SEDIMENT BARRIERS. PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE EDGE OF ANY DOWNGRADIENT DISTURBED AREA AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE PROPOSED DISTURBED AREA. MAINTAIN THE SEDIMENT BARRIERS UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.

B. CONSTRUCTION ENTRANCE: PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE SHALL RE CONSTRUCTED AT THE INTERSECTION WITH THE PROPOSED ACCESS DRIVE AND THE EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

C. INLET PROTECTION: PRIOR TO DISTURBANCE, INSTALL SILT SACK SEDIMENT BARRIERS OR OTHER INLET PROTECTION AT CATCH BASIN INLETS RECEIVING RUNOFF FROM DISTURBED AREAS. INLET PROTECTION SHALL BE INSPECTED WEEKLY AND SEDIMENT SHALL BE REMOVED AND LEGALLY DISPOSED OF WHEN IT REACHES 1/2 OF THE HEIGHT OR DEPTH OF THE BARRIER.

D. RIPRAP: SINCE RIPRAP IS USED WHERE EROSION POTENTIAL IS HIGH, CONSTRUCTION MUST BE SEQUENCED SO THAT THE RIPRAP IS PUT IN PLACE WITH THE MINIMUM DELAY. DISTURBANCE OF AREAS WHERE RIPRAP IS TO BE PLACED SHOULD BE UNDERTAKEN ONLY WHEN FINAL PREPARATION AND PLACEMENT OF THE RIPRAP CAN FOLLOW IMMEDIATELY BEHIND THE INITIAL DISTURBANCE. WHERE RIPRAP IS USED FOR OUTLET PROTECTION, THE RIPRAP SHOULD BE PLACED BEFORE OR IN CONJUNCTION WITH THE CONSTRUCTION OF THE PIPE OR CHANNEL SO THAT IT IS IN PLACE WHEN THE PIPE OR CHANNEL BEGINS TO OPERATE. MAINTAIN TEMPORARY RIPRAP, SUCH AS TEMPORARY CHECK DAMS UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.

E. TEMPORARY STABILIZATION. STABILIZE WITH TEMPORARY SEEDING, MULCH, OR OTHER NON-ERODABLE COVER ANY EXPOSED SOILS THAT WILL REMAIN UNWORKED FOR MORE THAN 7 DAYS EXCEPT, STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OR PRIOR TO A PREDICTED STORM EVENT, WHICHEVER COMES FIRST. IF HAY OR STRAW MULCH IS USED, THE APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SF OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. HAY MULCH MUST BE KEPT MOIST OR ANCHORED TO PREVENT WIND BLOWING. AN EROSION CONTROL BLANKET OR MAT SHALL BE USED AT THE BASE OF GRASSED WATERWAYS, STEEP SLOPES (15% OR GREATER) AND ON ANY DISTURBED SOIL WITHIN 100 FEET OF LAKES, STREAMS AND WETLANDS. GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING, ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE SECOND PHASE, AND SO ON.

F. TEMPORARY SEDIMENT SUMP: THE PROPOSED GRAVEL WETLAND SHALL BE EXCAVATED TO SUBGRADE DEPTH AND USED AS A SEDIMENT SUMP DURING CONSTRUCTION OF THE ROAD. THE RIPRAP SWALE, INTERNAL BERM AND SPILLWAY, EMBANKMENT, AND RIPRAP EMERGENCY SPILLWAY SHALL BE CONSTRUCTED PRIOR TO GRUBBING FOR THE ROADWAY CONSTRUCTION. WHEN THE ROADWAY AND ROADSIDE SWALES ARE STABILIZED, ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN, AND THE GRAVEL WETLAND SHALL BE COMPLETED IN ACCORDANCE WITH THE DETAILS LOCATED IN THE PLAN SET. IF THE BASIN MUST BE DEWATERED FOR CONSTRUCTION, SEDIMENT LADEN WATER SHALL BE PUMPED THROUGH A DIRTBAG SEDIMENT REMOVAL DEVICE.

PERMANENT STABILIZATION
IF AN AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

A. SEEDED AREAS. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS AN 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

B. SODDED AREAS. 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. PERMANENT MULCH. 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. RIPRAP. FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. DETAILS ARE PROVIDED IN THE PLAN SET.

E. PAVED AREAS. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED.

F. DITCHES, CHANNELS, AND SWALES. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIPRAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN-CUTTING OF THE CHANNEL.

GENERAL CONSTRUCTION REQUIREMENTS
THE FOLLOWING EROSION CONTROL MEASURES SHALL BE FOLLOWED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION OF THIS PROJECT:

A. ALL TOPSOIL SHALL BE COLLECTED, STOCKPILED, SEEDED WITH RYE AT 3 POUNDS/1,000 SF AND MULCHED, AND REUSED AS REQUIRED. SILT FENCING SHALL BE PLACED DOWN GRADIENT FROM THE STOCKPILED LOAM. STOCKPILE TO BE LOCATED BY DESIGNATION OF THE OWNER AND INSPECTING ENGINEER.

B. THE INSPECTING ENGINEER AT HIS/HER DISCRETION, MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES AND/OR SUPPLEMENTAL VEGETATIVE PROVISIONS TO MAINTAIN STABILITY OF EARTHWORKS AND FINISH GRADED AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANY SUPPLEMENTAL MEASURES AS DIRECTED BY THE INSPECTING ENGINEER. FAILURE TO COMPLY WITH THE ENGINEER'S DIRECTIONS WILL RESULT IN DISCONTINUATION OF CONSTRUCTION ACTIVITIES.

C. EROSION CONTROL MESH SHALL BE APPLIED IN ACCORDANCE WITH THE PLANS OVER ALL FINISH SEEDED AREAS AS SPECIFIED ON THE DESIGN PLANS.

D. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE ADEQUATELY STABILIZED.

E. ALL EROSION, AND SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE DETAILS PROVIDED ON THE PLANS AND MANUFACTURER'S RECOMMENDATIONS.

F. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL.

G. REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

PERMANENT VEGETATION
PERMANENT VEGETATIVE COVER SHOULD BE ESTABLISHED ON DISTURBED AREAS WHERE PERMANENT, LONG LIVED VEGETATIVE COVER IS NEEDED TO STABILIZE THE SOIL, TO REDUCE DAMAGES FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE ENVIRONMENT.

PERMANENT LAWN SEED MIXTURE SHALL CONTAIN THE FOLLOWING PERCENTAGES OF SEED TYPES:
- 50% BARON BLUEGRASS
- 35% PENNLAWN FESCUE
- 15% MANHATTAN II PERENNIAL RYE

SEE THE PROJECT SPECIFICATIONS FOR ADDITIONAL SEED REQUIREMENTS.

SEEDBED PREPARATION
A. GRADE AS FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.

B. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS SUCH AS THOSE OFFERED BY THE UNIVERSITY OF MAINE SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P2O5-K2O) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT
A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQ. FT.).

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE D. REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.

D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.

E. PERMANENT SEEDING SHOULD BE MADE 45 DAYS PRIOR TO THE FIRST KILLING FROST OR AS A DORMANT SEEDING WITH MULCH AFTER THE FIRST KILLING FROST AND BEFORE SNOWFALL. WHEN CROWN VETCH IS SEEDED IN LATER SUMMER, AT LEAST 35% OF THE SEED SHOULD BE HARD SEED (UNSCARIFIED). IF SEEDING CANNOT BE DONE WITHIN THE SEEDING DATES, MULCH ACCORDING TO THE TEMPORARY MULCHING BMP AND OVERWINTER STABILIZATION AND CONSTRUCTION TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

F. FOLLOWING SEED BED PREPARATION, SWALE AREAS, FILL AREAS AND BACK SLOPES SHALL BE SEEDED AT A RATE OF 3 LBS./1,000 S.F. WITH A MIXTURE OF 35% CREEPING RED N. FESCUE, 6% RED TOP, 24% KENTUCKY BLUEGRASS, 10% PERENNIAL RYEGRASS, 20% ANNUAL RYEGRASS AND 5% WHITE DUTCH CLOVER.

G. AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING.

H. AREAS WHICH CANNOT BE SEEDED WITHIN THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION AND THE AREA SHOULD BE SEEDED AT THE BEGINNING OF THE GROWING SEASON.

WINTER CONSTRUCTION
"WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 15. IF DISTURBED AREAS ARE NOT STABILIZED WITH PERMANENT MEASURES BY NOVEMBER 1 OR NEW SOIL DISTURBANCE OCCURS AFTER NOVEMBER 1, BUT BEFORE APRIL 15, THEN THESE AREAS MUST BE PROTECTED AND RUNOFF FROM THEM MUST BE CONTROLLED BY ADDITIONAL MEASURES AND RESTRICTIONS.

A. PERMANENT STABILIZATION CONSISTS OF AT LEAST 90% VEGETATION, PAVEMENT/GRAVEL BASE OR RIPRAP.

B. DO NOT EXPOSE SLOPES OR LEAVE SLOPES EXPOSED OVER THE WINTER OR FOR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY PROTECTED WITH MULCH.

C. APPLY HAY MULCH AT TWICE THE STANDARD RATE (150 LBS. PER 1,000 SF). THE MULCH MUST BE THICK ENOUGH SUCH THAT THE GROUND SURFACE WILL NOT BE VISIBLE AND MUST BE ANCHORED.

D. USE MULCH AND MULCH NETTING OR AN EROSION CONTROL MULCH BLANKET OR ALL SLOPES GREATER THAN 8 % OR OTHER AREAS EXPOSED TO DIRECT WIND.

E. INSTALL AN EROSION CONTROL BLANKET IN ALL DRAINAGEWAYS (BOTTOM AND SIDES) WITH A SLOPE GREATER THAN 3 %.

F. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

G. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SO THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

H. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.

I. TEMPORARY MULCH MUST BE APPLIED WITHIN 7 DAYS OF SOIL EXPOSURE OR PRIOR TO ANY STORM EVENT, BUT AFTER EVERY WORKDAY IN AREAS WITHIN 100 FEET FROM A PROTECTED NATURAL RESOURCE.

J. AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE PERMANENTLY MULCHED THAT SAME DAY.

K. IF SNOWFALL IS GREATER THAN 1 INCH (FRESH OR CUMULATIVE), THE SNOW SHALL BE REMOVED FROM THE AREAS DUE TO BE SEEDED AND MULCHED.

L. LOAM SHALL BE FREE OF FROZEN CLUMPS BEFORE IT IS APPLIED.

M. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, 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 DEPARTMENT.

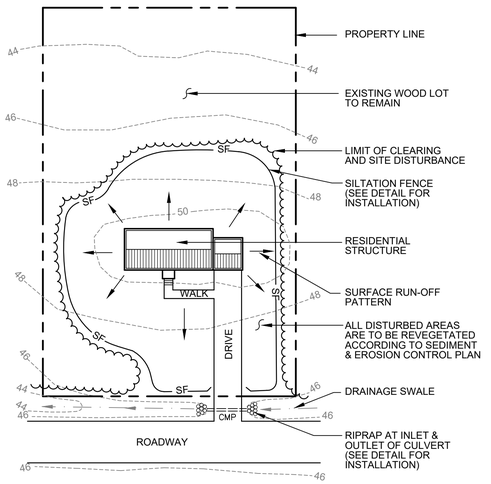
MAINTENANCE AND INSPECTION
A. MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE APPLICANT WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

B. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

C. A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE: BMPS THAT NEED TO BE MAINTAINED; LOCATION(S) OF BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION; AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION. FOLLOW-UP TO CORRECT DEFICIENCIES OR ENHANCE CONTROLS MUST ALSO BE INDICATED IN THE LOG AND DATED, INCLUDING WHAT ACTION WAS TAKEN AND WHEN.

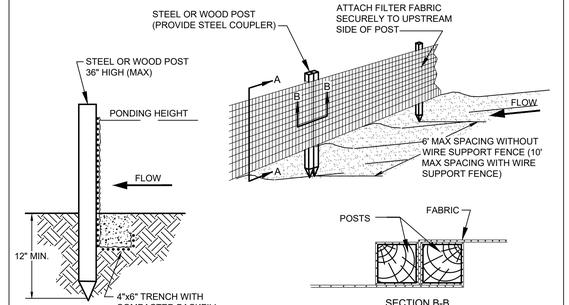
THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

DEWATERING
A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWNGRADIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE.



Inspection Notes for Lot Grading and Driveway location
Inspections by a professional engineer shall consist of a visit to the site prior to construction to consult with the earthwork contractor and a post construction meeting to confirm grading on lots and for all driveways to ensure runoff is directed according to plans and to oversee the re-stabilization of the lot into a vegetated cover.

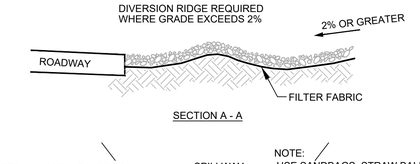
TYPICAL EROSION CONTROL MEASURES FOR DWELLING UNITS
NOT TO SCALE



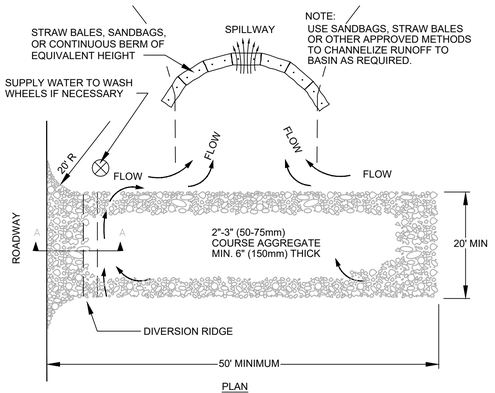
SECTION A-A

SECTION B-B

SILT FENCE
NOT TO SCALE



SECTION A - A



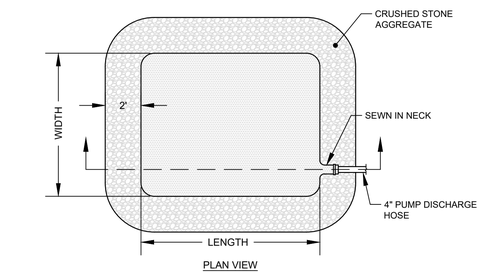
PLAN

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.

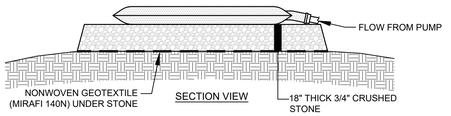
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



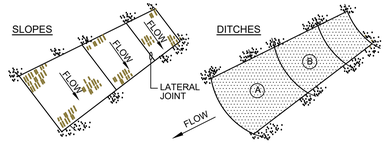
PLAN VIEW



SECTION VIEW

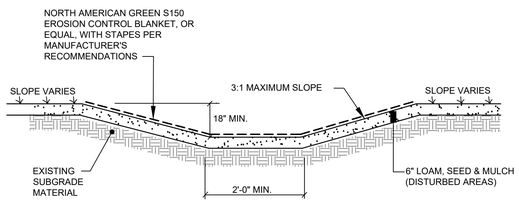
NOTES:
1. DIRTBAG BY ACF ENVIRONMENTAL
2. SEAMS MUST BE HIGH STRENGTH DOUBLE STITCHED "J" SEAMS.
3. CONSTRUCTION DEWATERING OF TURBID WATER SHALL BE PUMPED THROUGH A DIRTBAG AND RELEASED THROUGH A VEGETATED BUFFER AT LEAST 50' UPSTREAM OF WETLAND AREAS.
4. THE LOCATION OF THE DIRTBAG SHALL BE DETERMINED BY THE CONTRACTOR, BUT SHALL IT SHALL NOT BE SITED IN CRITICAL AREAS, SUCH AS WETLANDS.

DIRTBAG DETAIL
NOT TO SCALE



NOTES:
1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2' ON CENTER.
5. WIRE STAPLES TO BE MIN. OF #11 WIRE, 6" LONG & 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 (OR APPROVED EQUAL) ON SLOPES BETWEEN 4:1-2:1. USE NORTH AMERICAN GREEN VMAX SC250 PERMANENT TURF REINFORCEMENT MAT (OR APPROVED EQUAL) ON SLOPES 2:1 AND STEEPER..

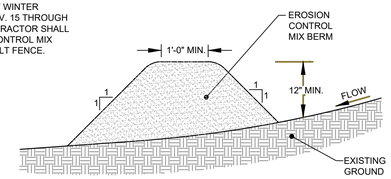
EROSION CONTROL BLANKET
NOT TO SCALE



NOTE: REFER TO GRADING PLAN FOR DITCH WIDTH AND SIDE SLOPES

GRASSED SWALE
NOT TO SCALE

NOTE:
DURING PERIODS OF WINTER CONSTRUCTION (NOV. 15 THROUGH APRIL 15), THE CONTRACTOR SHALL INSTALL EROSION CONTROL MIX BERMS IN LIEU OF SILT FENCE.



EROSION CONTROL MIX:
EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES & MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:
- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80% - 100% DRY WEIGHT BASIS
- PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85% PASSING A 0.75" SCREEN
- THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
- SOLUBLE SALTS CONTENT SHALL BE < 4.0 mmhos/cm.
- ph SHALL FALL BETWEEN 5.0 - 8.0.

EROSION CONTROL MIX BERM
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

LAWRENCE R. BASTIAN
No. 14321
STATE OF MAINE
REGISTERED PROFESSIONAL ENGINEER

DATE: 9-25-2018
P.E.: LAWRENCE R. BASTIAN

NO.	DATE	REVISIONS	APP'D BY
2	11/06/2018	RESPONSE TO CITY REVIEW COMMENTS	LRB
1	9/25/2018	PRELIMINARY SUBDIVISION PLAN	

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

PROJECT:
RICKER ROAD SUBDIVISION
RICKER ROAD, SACO, MAINE

SHEET TITLE:
EROSION & SEDIMENT CONTROL DETAILS

PREPARED FOR:
SEBAGO LAND DEVELOPERS, INC
144 DRYAD WOODS ROAD
RAYMOND, MAINE 04071

DATE:	9/14/2018
SCALE:	N.T.S.
DESIGNED:	MTW
JOB NO:	1722
FILE:1623-DETAILS.dwg	

SHEET C-5.2