St.Clair Associates
Land Surveying and Civil Engineering
34 Forest Lane
Cumberland, Maine 04021

20073 June 22, 2021

Steve Puleo, Planner
Town of Windham
8 School Road
Windham, ME 04062

Major Site Plan Application
S&N Investments LLC
Proposed Tier 3 Marijuana Cultivation Facility
24 Gambo Road
Windham Assessor's Map 41, Lot 4
Response to Comments

Dear Steve,

Thank you for providing Staff Comments via email on June 16 and 17, 2021. We have prepared the enclosed updated plans and supporting materials to address these comments.

In addition, we wanted to provide the following project update with regard to building materials, as we discussed last week.

Building Materials

As you know, we have had email discussions with your office to address the Applicant's need to store some of the building materials on the site prior to the Planning Board's Site Plan review.

In order to share this information with the Planning Board, we have provided excerpts from the emails we sent to your office on June 17, and 18, 2021. Excerpts from our email messages to you are provided in italics below:

June 17, 2021:

"I also wanted to let you all know (and please forward this to the appropriate staff in the Town Hall) that the Applicant has been coordinating with the steel supplier for his building. As you may be aware, windows of opportunity for fabrication are limited, waitlists are growing, and building materials are becoming scarce. This forces buyers to commit to the buildings at the onset of their project, at risk, in advance of the site approval and design process, to be able to get materials scheduled for fabrication.

The Applicant has been dealing with the steel company for quite some time now and he was forced to purchase the materials well in advance of the completion of the local review process. It is our understanding that the steel company has informed him that the materials must be shipped somewhere during the week of June 21st, or he would lose his hefty deposit. The Applicant would like to have the materials shipped to his site. These materials would be simply stored on site and the Applicant clearly understands that no site work will be done in advance of obtaining the appropriate local approvals and permits. He also realizes that if the Planning Board does not approve the development of this site, that the building materials would need to be removed from the site to a different location.

We wanted the Town staff to be aware of this situation and to ask if there is anything that would preclude the storage of these items on the site. Please let us know as soon as possible. We look forward to hearing from you.

Based on your initial response, it is our understanding that there is no permit required to store the material on site, provided that there will be no clearing or site disturbance.

You requested more information on the transportation and off-loading of materials, whether a stabilized entrance is needed, how much area is needed for the materials and what would be done to keep the materials off the ground to avoid potential erosion. In response to your email request for additional information, we also provided the following:

June 18, 2021:

The Applicant's builder forwarded your questions to the steel supplier and their responses are below which outline and detail the plan to deliver to the site. The materials will not be placed in the building footprint so the Planning Board should be able to get a clear view of the building's location. Please let me know if you have any other questions…

Kayla,

The building materials (steel columns, metal girts, purlins, and metal sheeting) will be delivered to the site via (2) 53' long tractor trailers. We will be utilizing a telehandler to unload and stockpile the materials on site towards the road side of the site to the right and left of the existing entrance to the lot. We aim to keep the materials as consolidated as possible and will be blocking up the materials with wood dunnage. We estimate that we will need approximately 1,200 to 1,500 sq. ft. of space to store the materials on site. The longest bundle of materials would be 34' long. We should be onsite for about ½ a day to unload and stockpile the materials. Trucks are setup for a staggered delivery so only one truck would be onsite at a time. There is an existing entrance (paved) to the site to a construction entrance is not required for our purposes. We had a site visit yesterday and the areas for unloading and stockpiling the materials are dry and firm and we are not concerned about equipment sinking into the ground. Please let me know if there is any other information required.

Thanks,

Bill III

William J. Belanger III
Seacoast Crane & Building Co., Inc.
98 Route 236, Suite # 3
Kittery, Maine 03904
Phone: 207-439-5899
Fax: 207-439-5879

At the end of last week, our office flagged the property corners, staked the building corners on the site, and provided additional stakes to identify the limits of the entrance and gravel parking area. As noted above, the building supplier planned to keep the materials out of the building envelope and to store the materials as neatly and compactly as possible without disturbing the site. It is our understanding that the delivery of the building materials was scheduled for Monday June 21, 2021.

Response to Staff Comments Received June 16 and 17, 2021

We have prepared the enclosed updated plans and supporting materials to address the staff comments received to date. For ease of review, we have reiterated the comments (*in italics*) and have provided our responses to each of the staff comments listed below:

Planning Director:

I have a few other comments on the submission:

- *Please clarify Note 5. If there are any easements that impact this property recorded in the CCRD, provide a specific reference and show the area on the plan. If there are none, remove this note.*

- Note #5 has been removed.

- *Notes 8 and 9 are not standard notes required by the Town and appear to provide more flexibility for plan changes than are permitted by the Land Use Ordinance. Please remove. Standard Condition of Approval #1 will provide the LUO reference for plan revisions.*

- Notes #8 and #9 have been removed, as requested. Upon Site Plan approval, the appropriate conditions of approval will be added.

- *The soil test pit location must be shown on site plan*

- The test pit location has been added to the Site Plan.

- *The total amount of wetlands on the property should be noted on the plan.*

- The total amount wetlands has been noted on the Site Plan.

- *The plan should identify the areas of wetland impacts and call out the area impacted in specific locations.*

- The total amount of proposed wetland impacts was previously noted on the Site Plan. The proposed areas of wetland impact have been identified with a "hatch" pattern on the Site Plan. Each individual "hatched" area includes the amount of proposed wetland impact in that specific area.

- *The plan should more clearly show the method of erosion and sediment control to protect the wetland areas that will not be impacted.*

- Additional information regarding the Erosion and Sediment Control measures has been shown on the Grading and Utility Plan. In addition, specific additional measures to protect wetland edges has also been shown on the Plan.

- *The proposed tree line shown on the site plan conflicts with the location of the septic tank shown on Sheet 4. Please clarify if the tank will alter the treeline, or the treeline location on the site plan should be adjusted.*

- The tree line has been adjusted in this area to reflect the installation of the septic tank.

- *Where a gravel drive is proposed, the fire line should be signed no parking.*

- Signs have been added to the Site Plan to designate the fire lane area as "Fire Lane, Do Not Block, No Parking". In addition, we have identified the aisle area associated with the ADA accessible parking space with a "No Parking" sign. The ADA space has a traditional ADA parking space sign as well.

- *Given the application narrative "Staff and Hours of Operation" on pg 5 of the final plan submission, the waiver request for traffic generation does not seem to be necessary and a traffic impact study is not required as the project will not generate fifty (50) or more trips during the a.m. or p.m. peak hour. Please note that the waiver request form is intended to be used only for requests for waivers from performance standards, not submission requirements.*

- Given the staff comment above, it is our understanding that this project is not of sufficient scale to trigger the need for a Traffic Generation calculation and Traffic Impact Study. As such, the Applicant is respectfully withdrawing the waiver request regarding Traffic.

Director of Code Enforcement

- *Is the applicant proposing floor drains in the build foundation slab for wash down purposes?*

- No floor drain is proposed for wash-down purposes.

- *No further comments at this time.*

  No response necessary

Pervious comments (5/16/2021)

Planner

- *Please note the Assessing Office has assigned the street address as 24 Gambo Road*

- Thank you for this information. We have added the street address to the Site Plan and have referenced it in the heading of this letter as well.

- *Please provide information on where the nearest public fire hydrant location and any flow data?*

- We have added a note to both the Existing Conditions Plan and the Site Plan referencing the distance to the nearest public fire hydrant, along with static pressure data provided by the Portland Water District, and anticipated flow data based on National Fire Protection Association (NFPA) markings on the hydrant.

- *Please show the building height the plans did not show the height of the building.*

- Based on information provided by the steel building fabricator, the building height is 24'-8" as measured from the top of slab.

- *Please provide the PWD ability to serve letter. (Found in the application)*

  No further response needed.

Fire Department:

- *No further comments.*

  No response needed.

Engineering Comments:

Stormwater

- *As a major site plan, the Land Use Ordinance (Section 812 E.1(f)) says that the project must comply with shall submit a stormwater management plan that complies with Section 4C(2) and Section 4C(3) of the General Standards of DEP Chapter 500. Section 4C(2) of Ch. 500 requires treatment of no less than 95% of the impervious area and no less than 80% of the developed area with some allowances for less treatment in certain cases. The applicant has proposed an underdrain soil filter (UDSF) and roof dripline filters as the treatment BMPs, but acknowledges that their proposed design only provides treatment for 86% of the impervious area. Therefore they have asked for a waiver from this ordinance requirement based on site constraints. Section 4C(2) of Ch. 500 does allow for a reduction in the percentage of impervious area treated to 90% for some situations including where less*

than 60% of the available land is developed, but no such case has been presented in the application.

As you know, as part of the Site Plan application materials previously submitted, the Applicant had requested a waiver of Section 812 E.1(f) of the Windham Ordinance, which references the MDEP Chapter 500, Sections 4C(2) and 4C(3).

It is our understanding that per Section 808 B of the Windham Land Use Ordinance, Site Plan Performance Standards may be waived by the Planning Board. Section 808 B indicates that the Planning Board may waive the requirements of Section 812 (i.e. the Site Plan Performance Standards) if it finds that extraordinary and unnecessary hardships, not self-imposed, may result from strict compliance with the site plan review standards.

Although the project provided various BMPs to support the standards cited in MDEP's Chapter 500, the percentages of treated areas do not fully comply with, and cannot reasonably meet, the percentage treatment levels cited by the MDEP for projects that require a Stormwater Permit.

Based on the proposed site design, the project will disturb approximately 24,249 sf (0.56 acres) of the approximately 1.07 acre site. This represents approximately 52% of the total lot area. Since the entire extent of the proposed site development is below one-acre, a MDEP Stormwater Permit is not needed. Thus, the project does not require any State Level Permitting for Stormwater under the Chapter 500 standards. The MDEP Stormwater Law does not regulate the development of sites below 1 acre of disturbance.

Although this project does not involve the amount of development that the MDEP recognizes as requiring their review under the Chapter 500 standards, it is our understanding that, based on the Site Plan performance standard in Section 812 E.1(f), the project must submit a stormwater management plan that complies with Section 4C(2) and Section 4C(3) of the General Standards of DEP Chapter 500. As noted above, it is our understanding that the Planning Board has the authority to waive the requirements of Section 812 E.1(f) since it is a Site Plan performance standard.

The Applicant submitted a Stormwater Management Plan that complied, to the extent practicable, with Section 4C(2) and Section 4C(3) of the General Standards of the MDEP's Chapter 500.

As noted in our prior application materials, the Grassed UDSF provides treatment for the front parking area, which represents approximately 5,388 sf, which is 36% of the site's approximately 14,975 sf of total new impervious cover. The Grassed UDSF has been designed to meet the MDEP sizing standards for this BMP.

In order to provide for treatment of stormwater runoff from the building's rooftop, Roof Dripline BMPs are located on the westerly and easterly sides of the building along the drip edges. These BMPs have been sized based on the MDEP criteria for 1" of runoff, and treat the entire roof surface (i.e. approximately 7,488 sf). The Roof Dripline BMPs provide treatment to 100% of the rooftop, which represents an additional approximately 50% of the site's proposed approximately 14,975 sf of impervious cover.

The treatment afforded by the Roof Dripline BMPs, coupled with proposed Grassed UDSF provides a total treatment of approximately 86% of the site's proposed new impervious cover. As you know, the MDEP Chapter 500 standards require treatment of 95% of the project's impervious cover and 80% of the project's developed area.

In review of the site's natural features, including the soils and existing wetlands on the parcel, along with the flat nature of the area, there are no other apparent opportunities to add traditional stormwater BMPs to increase the treatment percentage on the site. There are no opportunities to reduce the driveway length, and hence the impervious cover by moving the building closer to Gambo Road given the 100' front yard setback. In the original sketch plan, the Applicant did not have an access drive along the side of the building, however, in order to address emergency access to at least 3 sides of the building, the 14' wide fire lane was added. The fire lane width represents the minimum width acceptable by the fire department to allow functional use of this area in an emergency.

Chapter 500, Section 4C(2)(a)(iii) does allow a reduction in treatment percentages based on the percentage of the parcel that is developed. As noted above, the proposed site development represents only 52% of the total lot area.

At a 60% development limit, the percentage of total impervious area requiring treatment under Chapter 500 is reduced from 95% down to 90%, and the developed area treatment levels are reduced down from 80% to 75%. However, the percentage of land developed cannot include protected natural resources (i.e. wetlands, streams etc). Given the extent of wetland areas that are on the site, unfortunately this reduction in treatment based on percentage of development cannot be taken.

In Chapter 500 Section 4C(3)(e), the MDEP also cites their ability to allow innovative treatment measures as an alternative to the more traditional Stormwater BMPs in assessing treatment of stormwater runoff. These alternative measures may be either proprietary or non-proprietary and must provide at least as much pollutant removal, channel protection and/or temperature control as the typical treatment measures. The MDEP has the ability to determine whether channel protection and/or temperature control are unnecessary given the nature of the resource downstream.

In addition, in Chapter 500 Section 4C(4), the MDEP also recognizes Low Impact Development (LID) techniques as a credit toward a reduction of a portion of the project's impervious or developed acreage that must be treated.

The proposed site development integrates Low Impact Design elements including minimization of site disturbance, protection of natural drainage systems such as wetland areas to the extent practicable. The site land clearing has been reduced to only the extent necessary to construct the building and its associated site improvements. The proposed Grassed UDSF and subsurface disposal bed are located in areas that do not require clearing. The site uses low maintenance landscaping that encourages native vegetation with minimum mowing requirements. To the extent practicable, runoff from the impervious surfaces has been designed to sheet flow rather than have a closed drainage system with a point source of discharge. Perimeter vegetated areas support flows either to the existing wetlands on the site or to the existing site outlets.

As the Site and Grading Plans demonstrate, the site has been designed to be as compact as possible, while still meeting the local requirements. The building has been located at the minimum distance that it can be from Gambo Road. The driveway and parking area have been designed to be as efficient as practicable while still accommodating the site needs.

The use of the Roof Dripline BMPs and the proposed Grassed UDSF promote filtration, cooling of runoff and reduction of erosive velocities. In addition, treatment is provided as near the source as possible. These measures are all consistent with LID techniques.

In order to add an additional alternative treatment measure to the site, to further enhance the stormwater treatment provided on the site, we have added an approximately 199' long band of Filtrexx's seeded SiltSoxx Original (8") compost filter sock along the entire westerly edge of the gravel fire lane. The fire lane area is expected to be used only in the case of emergency, and it is not anticipated that it will have heavy traffic use that may track in sediments or other pollutants that may require more extensive treatment. The impervious area that would be benefitted by the installation of the filter sock is approximately 2,030 sf and represents an additional approximately 13% of the site's impervious cover.

This compost filter sock will be seeded and will be a permanent part of the site's landform. The compost filter sock will provide a combination of sediment collection, pollutant reduction and control of erosive velocities. The added seed mix in the filter sock will add vegetation to help with nutrient uptake and erosion protection. Flow through the filter and over the vegetated slope will also aid in thermal reduction.

According to the USDA Natural Resources Conservation Service (NRCS) published literature, compost filter socks can be used for biofiltration, as a LID integrated management practice, and in green building programs such as the Leadership in Energy and Environmental Design (LEED) program. These measures are also recognized as a pre-treatment device.

We are respectfully requesting that the treatment measures previously proposed on the site, along with the addition of the new compost filter sock, coupled with the overall design that is consistent with recommended LID practices be considered sufficient to comply with the local performance standards.

Since these values are hard to quantify in the context of specific treatment percentages, the Applicant is respectfully requesting a waiver of Section 812 E.1(f) of the Windham Ordinance, which references the MDEP Chapter 500, Sections 4C(2) and 4C(3). While the Applicant has provided a plan that substantially meets the MDEP Chapter 500 criteria, there is no clear way to establish a means to establish a percentage treatment level to meet the specific values cited in Chapter 500 Section 4C(2).

As noted above, section 808 B of the Windham Land Use Ordinance indicates that the Planning Board may waive the requirements of Section 812 (i.e. the Site Plan Performance Standards) if it finds that extraordinary and unnecessary hardships, not self-imposed, may result from strict compliance with the site plan review standards. This waiver can be granted by the Planning Board at their discretion, provided the following criteria are met:

(a) The waiver will improve the ability of the project to take the site's pre-development natural features into consideration. Natural features include, but are not limited to, topography, location of water bodies, surface drainage, location of unique or valuable natural resources, relation to abutting properties or land uses.

As previously described, the site is relatively flat, with very little vertical relief across the site. In addition, there are approximately 18,797 sf (0.43 acres) of wetlands on this 1.07 acre site. This represents approximately 40% of the total parcel area. With the site design as proposed, the Applicant has been able to avoid unnecessary wetland impacts and only proposes approximately 4,200 sf (0.096 ac) of wetland impact. This level is below the threshold for which any MDEP permitting is needed.

If the Site Plan Performance Standard of Section 812 E.1(f) were to be fully applied, the Applicant would need to increase the amount of wetland impact to add fill and access available upland areas at the south side of the site to construct additional stormwater treatment BMPs, this is counter intuitive to the overall intent to protect natural resources.

(b) The waiver does not result in:

(1) *Undue water or air pollution,*

To the extent practicable, the Applicant has endeavored to avoid undue water and air pollution with the proposed site BMPs, LID techniques and alternative treatment measures provided in the site's Stormwater Management plan. The Applicant is not requesting a waiver of the Performance Standard cited in Section 812 E.1(f) to wholly eliminate site stormwater management and treatment features, he is simply requesting that the proposed plan, which may not fully comply with the MDEP percentage treatment levels cited in Chapter 500 be considered adequate for this site.

No air pollution impacts are anticipated with this waiver.

(2) Undue light pollution or glare,

This waiver pertains to stormwater and would not affect light pollution or glare.

(3) An inadequate water supply,

Public Water is supplied to the site by the Portland Water District and is unaffected by this waiver request.

(4) Unreasonable soil erosion,

The site design includes specific provisions to avoid unreasonable soil erosion. These measures will remain and are not affected by the waiver request.

(5) Unreasonable traffic congestion or safety risk,

Traffic or site safety will not be affected by this waiver request.

(6) Decreased pedestrian safety or access,

This waiver request is specifically for a stormwater performance standard, and does not affect pedestrian safety or access.

(7) Inadequate supply of parking spaces,

Site parking is unaffected.

(8) Inadequate sewage disposal capacity,

Sewage disposal is not affected by this waiver request.

(9) Inadequate solid waste disposal capacity,

This proposed waiver does not affect solid waste disposal.

(10) An adverse impact on scenic or natural beauty, aesthetics, historic sites, or rare or irreplaceable natural areas,

It is anticipated that the granting of this waiver request will help to protect natural areas by avoiding undue wetland impacts. The site's stormwater program has been designed to fit into the landform to the extent practicable and includes vegetated BMPs that will aid in site aesthetics.

(11) Flooding or adverse drainage impacts on abutting properties

Based on the results of the HydroCAD stormwater modeling conducted for this site, the site's proposed stormwater program, including its Grassed UDSF, Roof Dripline BMPs and the seeded compost filter socks is expected to avoid any undue downstream flooding or adverse drainage impacts on abutting properties.

Since the proposed site improvements are not of sufficient size to require any stormwater provisions under MDEP's Chapter 500, we are respectfully requesting that the Planning Board partially waive the requirements of Section 812 E.1(f) (to provide stormwater treatment in accordance with the MDEP General Standards) as described and detailed above, and allow the proposed BMPs (i.e. the Grassed UDSF and Roof Dripline BMPs) and the innovative treatment techniques (seeded compost filter sock), and LID practices, which provide treatment to the majority of the project's total impervious area, be considered sufficient to meet the local standards for stormwater treatment.

- *The plan view for the UDSF does not show the location of the overflow spillway nor does it show the location of a forebay for sediment removal, which are required elements for a UDSF. The detail sheet only shows a generic diagram for the UDSF with minimum thickness and depths. A site-specific detail should be provided that can be used to construct this BMP. It should also show site specific elevations for the various components of the system. The HydroCAD model implies that the top of the embankment for the UDSF is 167.5', but this is not clear from any of the plans.*

- The enclosed plans have been updated to provide additional detail in the area of the Grassed UDSF, which includes the location of the proposed stabilized spillway. The spillway location has been shown on the plans, as well as spot elevations that identify the proposed spillway elevation and top of embankment elevations in the HydroCAD model. As the tables in our prior application cover letter noted, the spillway outlet elevation is proposed at 167.4. The minimum berm height around the perimeter of the Grassed UDSF was identified as 167.65. This spot elevation data has been added to the enclosed updated Grading and Utility Plans. The flood elevation was set in the model at 167.55 to provide an alert if the water surface elevation was nearing the lowest berm height.

  It should be noted that in the 2, 10, and 25 year storm events, the water surface elevation does not reach the spillway elevation. It is only in the 100-year storm event that water is predicted to even reach the spillway outlet elevation.

  With regard to a sediment forebay, the MDEP suggested forms of pretreatment devices include a forebay, or a grassed swale, filter strip or sediment trap. The parking area was designed to allow runoff to generally sheet flow into the Grassed UDSF, with no piped inlet or concentrated point of entry into the BMP. Given that the runoff generally sheet flows into the BMP from the edges of the proposed parking area, the construction of a traditional sediment forebay is not appropriate in this situation.

  In order to address pretreatment with the capture of sediments before entering the BMP, we have added an approximately 77' long (8" diameter) seeded compost filter sock along the edge of the parking area and driveway.

  As noted on the enclosed revised plans, Filtrexx's seeded SiltSoxx Original (8") or approved equal is proposed as a pre-treatment device. This device will

collect and trap sediments in the runoff from the gravel areas prior to entering the Grassed UDSF. The manufacturer's literature indicates that SiltSoxx Original has a functional longevity of up to 5 years, at which time it will need to be replaced. The compost filter sock will be pre-seeded to allow vegetation to develop as an aid in its permanent application for this site. If the compost filter sock must be replaced, an additional sock can simply be added on top of the existing sock. The proposed seed mix will include the same seeding mix specified for the Grassed UDSF.

Compost filter socks are recognized by the USDA Natural Resources Conservation Service (NRCS) as a measure to provide perimeter sediment control, inlet protection, energy dissipation, and reduction of suspended solids and turbidity, among other attributes. Runoff from the parking area and driveway will pass through the compost filter sock, while the sediments will be trapped along the upstream edge of the device.

We have calculated the anticipated volume of sand that would be generated during winter maintenance in order to assess the selection of an 8" diameter compost filter sock. Using the MDEP's calculation for sizing of a sediment forebay, which includes an average of 10 sanding storms per year, with approximately 500 lbs per acre of sand distributed over the approximately 0.19 acre parking area in each storm, using 90 lbs/cf of sand, the total anticipated volume of annual accumulated sediment over the areas tributary to the Grassed UDSF equates to approximately 10.61 cf annually.

Using an approximately 77' long compost filter sock, this equates to approximately 0.14 cf/ linear foot of sock. The NRCS recommends that sediment should be removed when it reaches half the height of the compost filter sock. Using an 8" diameter filter sock, this represents a maximum depth of 4" of sediment upstream of the barrier. Based on a 4" accumulation depth, the anticipated annual sediment load of 0.14 cf per foot of compost filter sock would extend approximately 5" upstream of the sock.

Given the location of the proposed compost filter sock, this would not affect the use of the parking area or access drive and could easily be reached for annual maintenance.

As noted, the proposed compost filter sock will include a seed mix that will allow it to be used permanently and become part of the landscape.

- *The Maine DEP requirements for a UDSF is that it must drain the stored volume in no less than 24 and no more than 48 hours. The stormwater modeling results provided in the application seem to indicate that the basin will drain in less than 24 hours. The Applicant should clarify.*

- Our office has reviewed and revised the Stormwater Model for the proposed Grassed UDSF to assess the timing for the basin to drain. In the prior model, the proposed underdrains were inadvertently overlooked in the modeling data. In addition, the phase-in depth for the exfiltration was corrected to reflect the base of the Grassed UDSF. Please note that the perforated underdrain size has been revised to 4" in the base of the BMP. Although these changes had no effect on the overall peak discharge rates previously calculated at Study Point 1 during each storm event, there were minor changes in the predicted water surface elevations in the Grassed UDSF and the time to drain the BMP equates to 24 hours.

  The table below compares the new water surface elevations in the BMP, and as you can see, these changes are very minute, and are not anticipated to have any impact on the site or the function of the BMP.

Water Surface Elevations							
Grassed UDSF	Base Elevation	Spillway Outlet	2-yr storm	10-yr storm	25-yr storm	100-yr storm	Berm Height
Filed 6-7-21	166.22	167.4	166.58	166.92	167.2	167.45	167.65
Rev. 6-21-21	166.22	167.4	166.60	166.94	167.21	167.45	167.65
Net Change	0	0	0.02	0.02	0.01	0	0

In reviewing the table (non-shrunk) for the hydrograph results for the revised modeling, it shows that, in the 2 year storm event, the secondary flow from the filter ends at approximately 24 hours, which is within the MDEP's 24 to 48 hour timeline for pond drainage. We have enclosed a pdf print out of this hydrograph data.

- *Sizing calculations should be provided for the roof dripline BMP to document that it will treat one inch or more of runoff and provide the storage capacity per the Maine DEP Stormwater BMP Manual.*

  Each roof plane was included as part of the HydroCAD calculations previously submitted for the Site. The roof planes were each routed through their respective Roof Dripline BMPs which were sized based on the MDEP criteria for a storage capacity in the porous reservoir equivalent to a minimum of 1" of runoff over the roof plane. We offer the following:

  As the Site Plan shows, the proposed building is 117' long by 64' wide, with a ridge line running in a general north/south direction down the center of the building. Thus each roof dripline BMP is approximately 117' long and each tributary roof plane measures approximately 117' by 32' (approx. 3,744 sf). Using an inch of runoff over each roof plane, the volume of runoff to be treated would be as follows:

  1" *(1'/12")*(3,744 sf)= 312 cf

  Since the roof dripline BMP is 117' long, this volume equates to a necessary storage volume in the reservoir layer of 2.67 cf/lf of roof dripline for each roof panel. Per the MDEP criteria, the stone in the reservoir layer has a porosity of 40%. Thus, to accommodate the fact that the water can only be stored within 40% of the bed (since the rest of the reservoir layer is stone), the reservoir layer must be sized to provide the following:

  (2.67 cf/lf)/(0.40)=6.67 cf/lf

  This volume includes the water and the stone. As shown on the Roof Dripline BMP Detail, the proposed BMP is 3.5' wide by 2' deep. This provides 7 cf/lf, which meets and exceeds the MDEP sizing criteria for the first inch of runoff from each roof plane.

  In accordance with the MDEP flooding standards for this BMP, it must be capable of containing the equivalent of the 25 year 24-hour storm, or an overflow must be provided. Both of the Roof Dripline BMPs have been designed to allow surface overflow in the event of a larger storm event.

As the modeling shows, in the 25-year storm event, the water surface elevation is just 0.01' over the overflow elevation, such that free surface discharge can occur in the larger storm events. It should be noted that additional storage is available in the filter layer, foundation backfill and underdrain layer but was not included in the volume calculations.

Other Comments

- *The plans show a 1.5:1 slope away from the building on the south and east sides of the building and the west side of the fire line and specifies loam, seed and permanent erosion control blanket. A detail should be provided for the slope with a specification for the erosion control blanket.*

  The detail and the specified turf reinforcement mat has been added to the plans.

- *The Trench Repair Detail on plan sheet 10 should add a note that indicates that there should be a 1.5" minimum grind 12" beyond the temporary repair to patch the trench in accordance with Windham Ordinance Ch. 210-10 and 210-11.*

- The Trench Repair Detail has been updated to reflect the Windham Ordinance criteria.

- *Details for the water line connection and service line and for the other piping trench details do not appear to be in the plan set. These should be provided.*

  These Details have been included in the enclosed revised plan set.

Application Materials

We have included 1 copy of our this response to comments (including updated HydroCAD data) and 5 copies of the updated plan set in support of the applicant's Major Site Plan Application to the Windham Planning Board. We are also emailing our responses and plan set, along with a .DWG version of the updated Site Plan.

Sitewalk

We look forward to meeting with you and the members of the Planning Board at the upcoming sitewalk on June 28, 2021 at 5:30. In accordance with the standards, the site and building has already been staked out in the field.

Closure

We would appreciate your review of the enclosed materials for consideration during the Planning Board's upcoming June 28, 2021 Agenda for Major Site Plan review. In the interim, we are available to virtually meet with you, if necessary, to discuss the enclosed materials in greater detail.

If you have any questions or need any additional information prior to the upcoming Planning Board meeting, please let us know, we look forward to hearing from you.

Sincerely,

ST.CLAIR ASSOCIATES

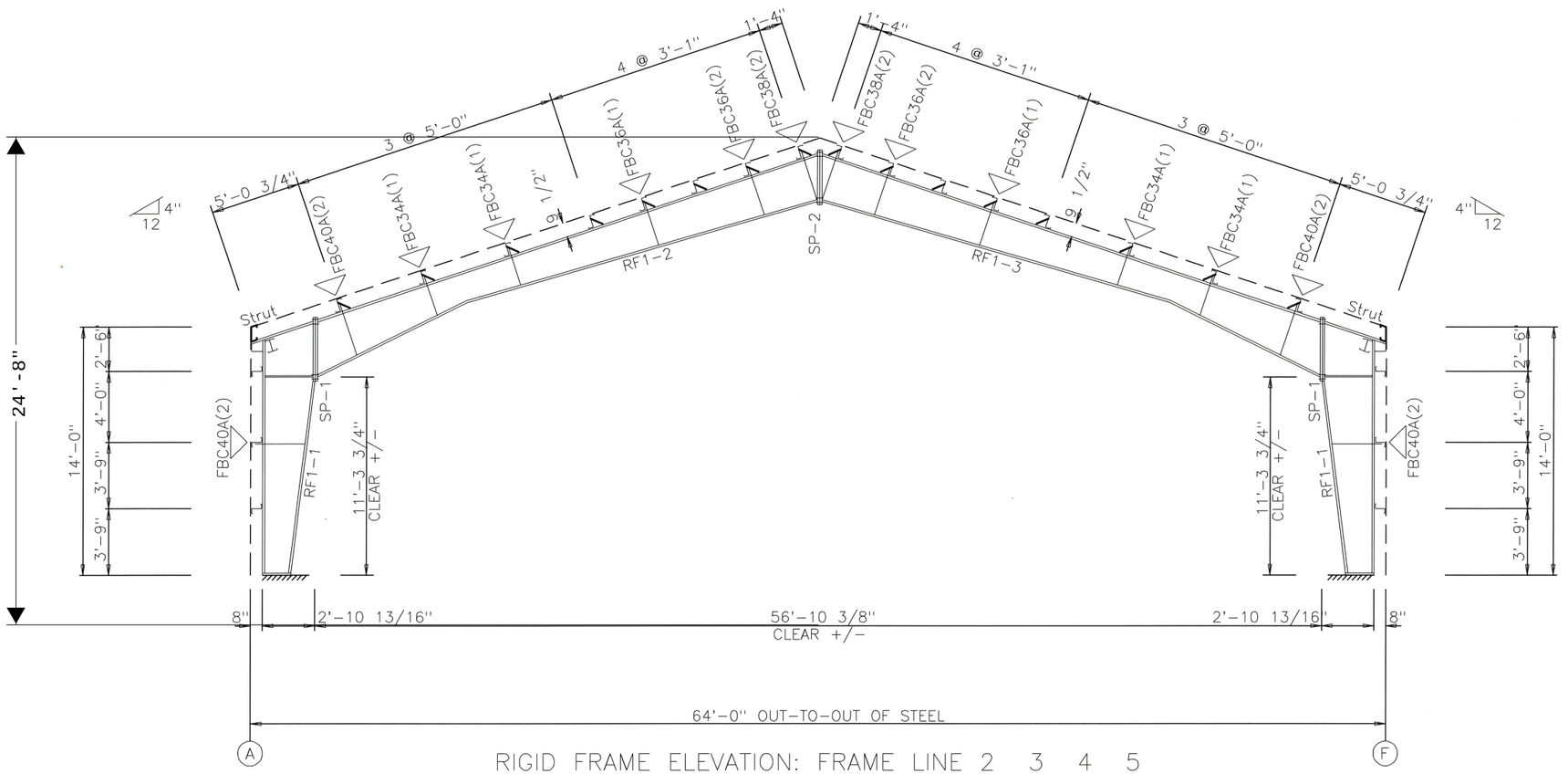
Nancy J. St.Clair, P.E.
Vice President

NJS:njs

C: S&N Investments LLC
Atlantic Home Construction Inc.

SPLICE PLATE & BOLT TABLE									
Mark	Qty Top	Bot	Int	Type	Dia	Length	Width	Thick	Length
SP-1	4	4	0	A325	1.000	3.25	6"	3/4"	3'-8 3/8"
SP-2	4	4	0	A325	1.000	3.25	6"	1/2"	3'-1 3/4"

MEMBER TABLE					
Mark	Web Depth Start/End	Web Plate Thick	Web Plate Length	Outside Flange W x Thk x Length	Inside Flange W x Thk x Length
RF1-1	16.0/34.0	0.220	131.1	6 x 5/16" x 159.5	6 x 1/2" x 132.2
	34.0/34.0	0.250	39.9	6 x 5/8" x 44.1	
RF1-2	34.0/18.0	0.250	112.5	6 x 3/8" x 101.1	6 x 3/8" x 113.6
	18.0/28.0	0.188	256.9	6 x 5/16" x 256.9	6 x 5/16" x 247.6
RF1-3	28.0/18.0	0.188	256.9	6 x 5/16" x 256.9	6 x 5/16" x 247.6
	18.0/34.0	0.250	112.5	6 x 3/8" x 101.1	6 x 3/8" x 113.6



RIGID FRAME ELEVATION: FRAME LINE 2 3 4 5

GENERAL NOTES

1. ▽ INDICATES FLANGE BRACING LOCATIONS. (1) = ONE SIDE; (2) = TWO SIDES.
2. IF FLANGE BRACING IS REQUIRED ON BOTH SIDES OF AN EXPANDABLE RIGID FRAME, THE OPPOSITE SIDE FLANGE BRACES WILL HAVE TO BE INSTALLED AT THE TIME OF FUTURE EXPANSION. THESE FLANGE BRACES HAVE BEEN PROVIDED, AS REQUIRED, FOR THIS FUTURE CONDITION.
3. RIGID FRAMES SHALL HAVE 50% OF THEIR BOLTS INSTALLED AND TIGHTENED ON BOTH SIDES OF THE WEB ADJACENT TO EACH FLANGE BEFORE THE HOISTING EQUIPMENT IS RELEASED.
4. INTERIOR COLUMN METAL TAG IS ORIENTED TOWARD THE LOW EAVE OF THE BUILDING.

ISSUE	DWN	CHK	ENG	PE	DATE
ANCHOR BOLTS	MBS	JSA	JMR		2.25.21
PERMITS	MBS	JSA	JMR		2.25.21
FINALS	WDY	DCR	JMR		5-12-21

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PROJECT NAME
S&N INVESTMENTS LLC
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CUSTOMER NAME
SEACOAST CRANE AND BUILDING CO
KITTERY, ME 03904

JOB NUMBER
W21S0150A

SHEET TITLE

STATE OF MAINE
TRAVIS L.
AESCHLIMAN
No. 12410
LICENSED
PROFESSIONAL ENGINEER
05/13/2021

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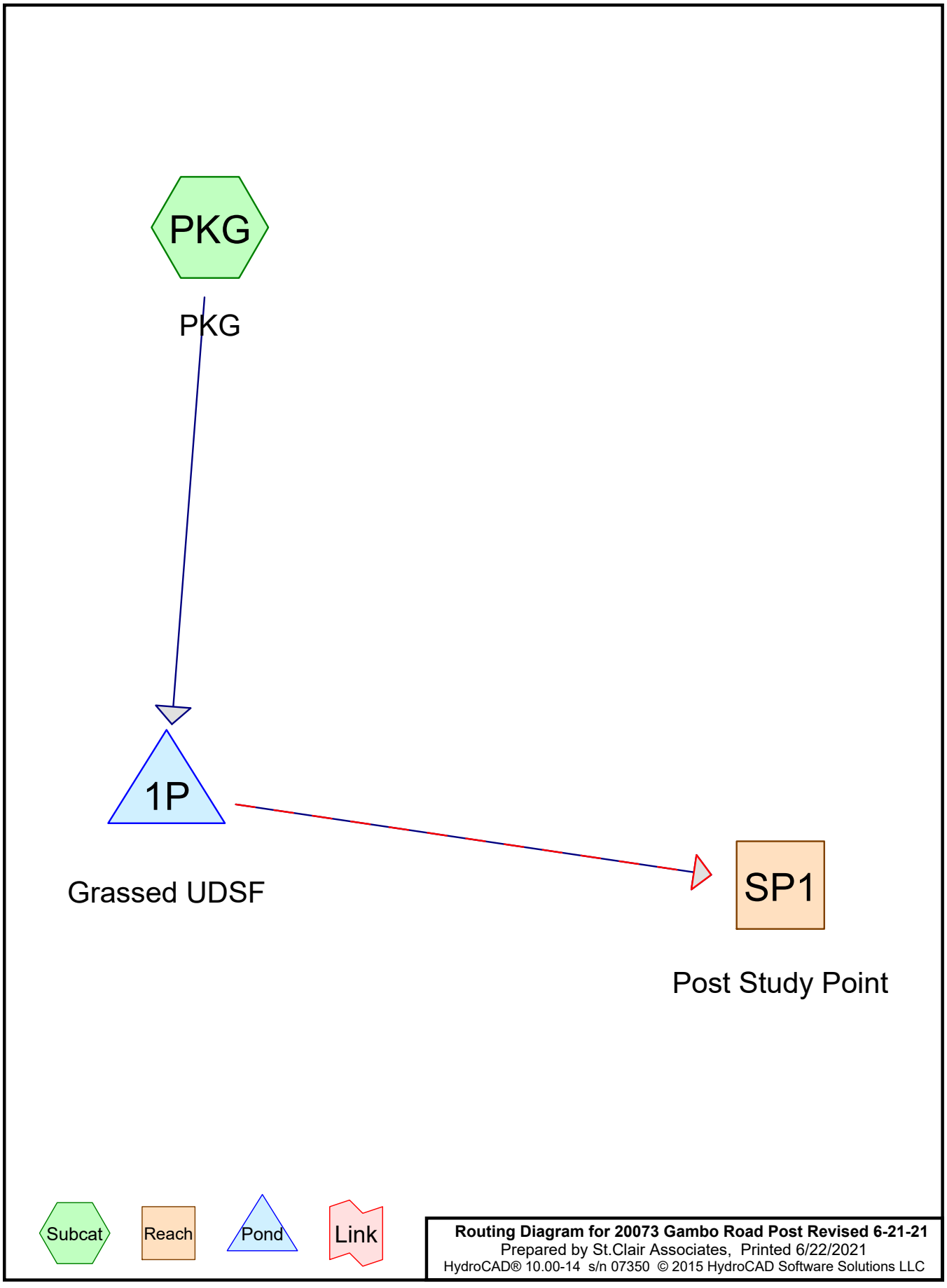
SHEET
E2 of 7



Routing Diagram for 20073 Gambo Road Post Revised 6-21-21
Prepared by St.Clair Associates, Printed 6/22/2021
HydroCAD® 10.00-14 s/n 07350 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment PKG: PKG

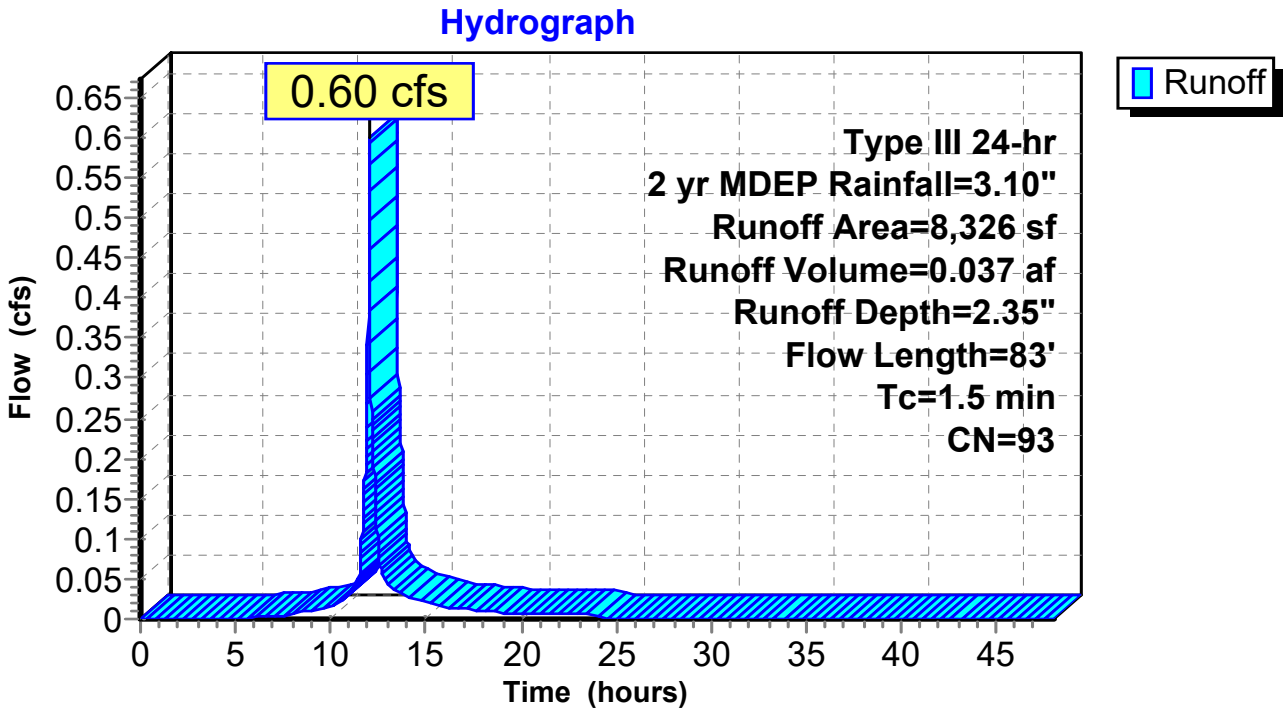
Runoff = 0.60 cfs @ 12.02 hrs, Volume= 0.037 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr MDEP Rainfall=3.10"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		**Sheet Flow, Parking Area** Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

Subcatchment PKG: PKG

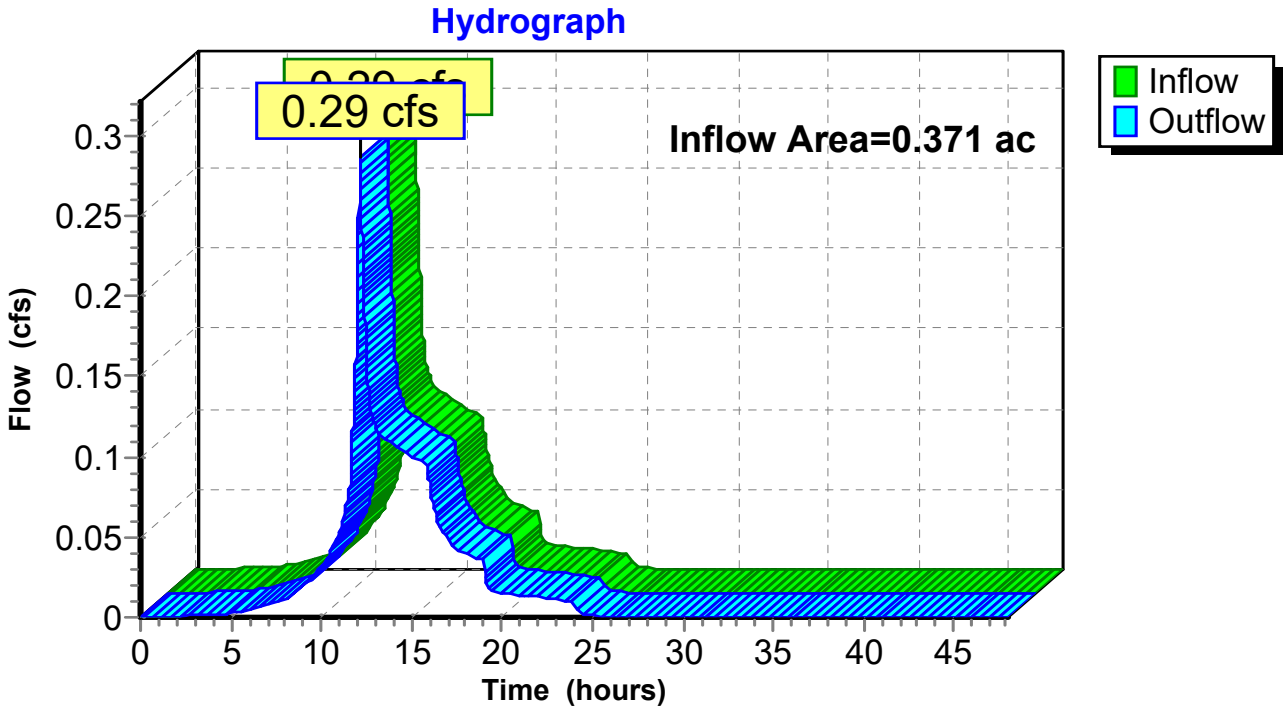


Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 2.40" for 2 yr MDEP event
Inflow = 0.29 cfs @ 12.15 hrs, Volume= 0.074 af
Outflow = 0.29 cfs @ 12.15 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SP1: Post Study Point



Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 2.35" for 2 yr MDEP event
Inflow = 0.60 cfs @ 12.02 hrs, Volume= 0.037 af
Outflow = 0.07 cfs @ 12.51 hrs, Volume= 0.037 af, Atten= 88%, Lag= 29.2 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.07 cfs @ 12.51 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 166.60' @ 12.51 hrs Surf.Area= 1,309 sf Storage= 593 cf
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 71.2 min calculated for 0.037 af (100% of inflow)
Center-of-Mass det. time= 71.2 min (860.8 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

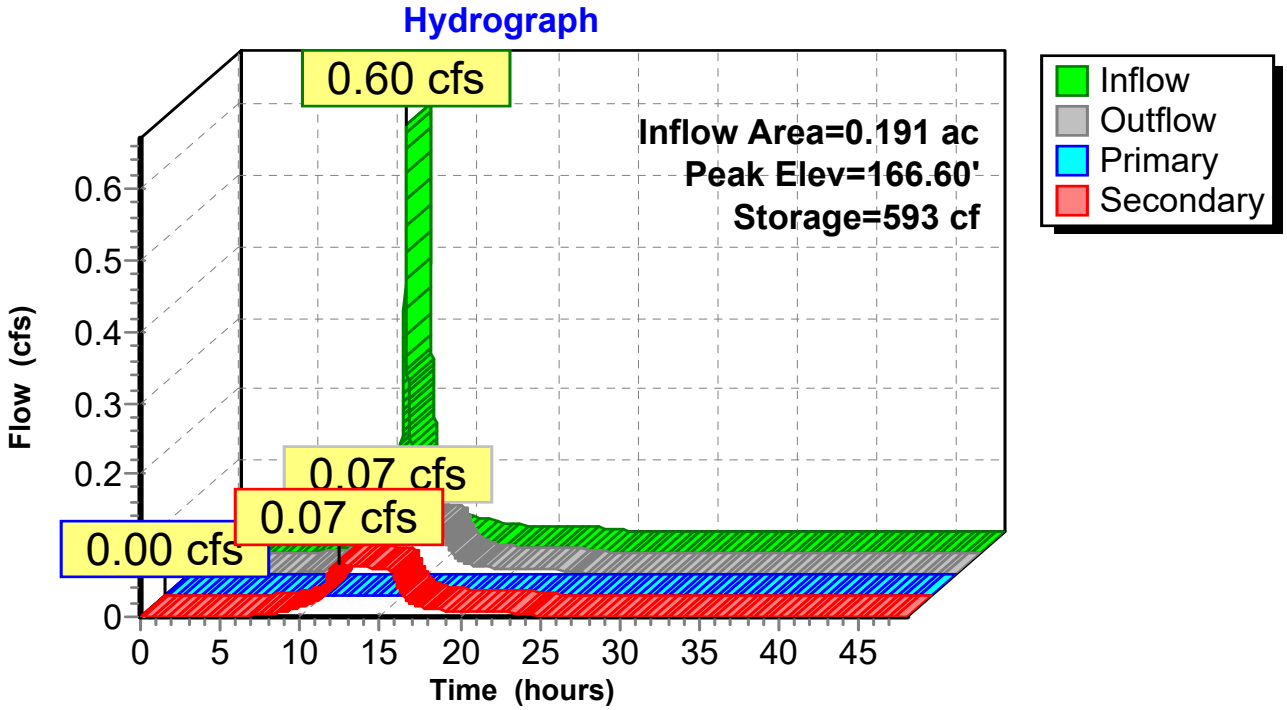
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	164.39'	**4.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 164.39' / 164.39' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	166.00'	**2.410 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.22'
#3	Primary	167.40'	**10.0' long (Profile 9) Broad-Crested Rectangular Weir** Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.07 cfs @ 12.51 hrs HW=166.60' (Free Discharge)
1=Culvert (Passes 0.07 cfs of 0.36 cfs potential flow)
2=Exfiltration (Controls 0.07 cfs)

Pond 1P: Grassed UDSF



Summary for Subcatchment PKG: PKG

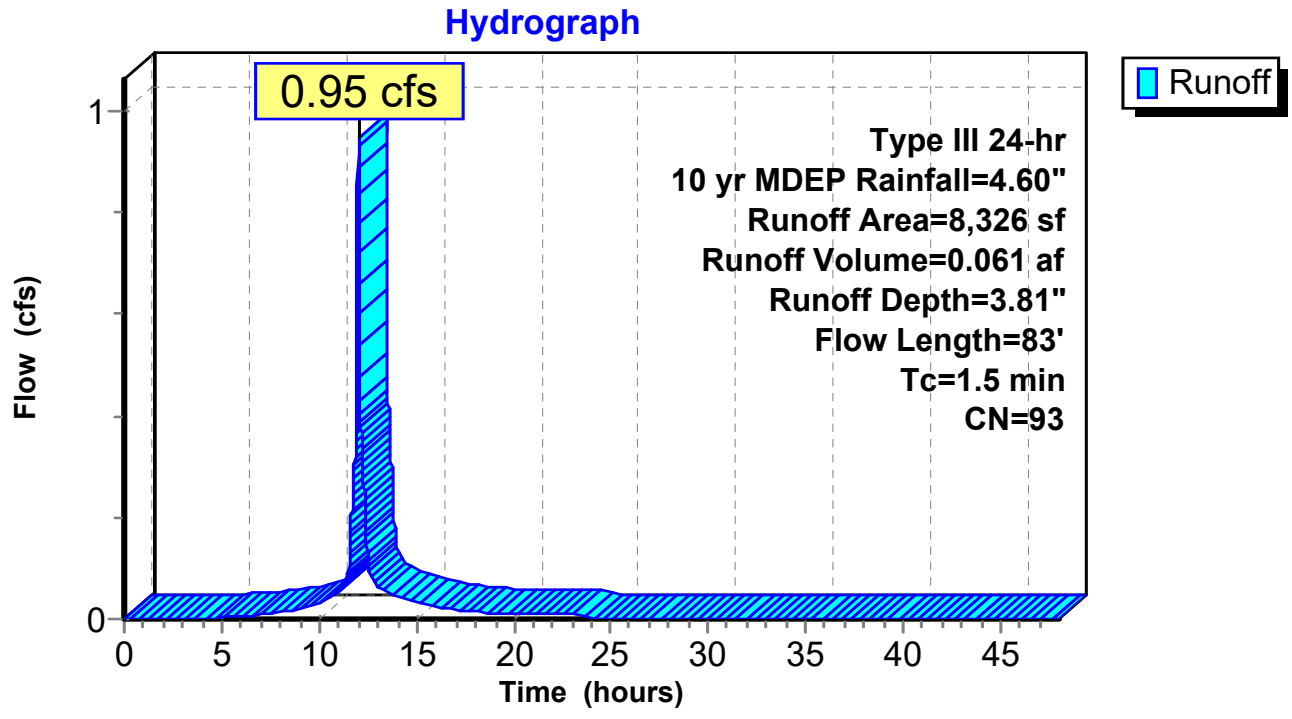
Runoff = 0.95 cfs @ 12.02 hrs, Volume= 0.061 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr MDEP Rainfall=4.60"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		**Sheet Flow, Parking Area** Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

Subcatchment PKG: PKG

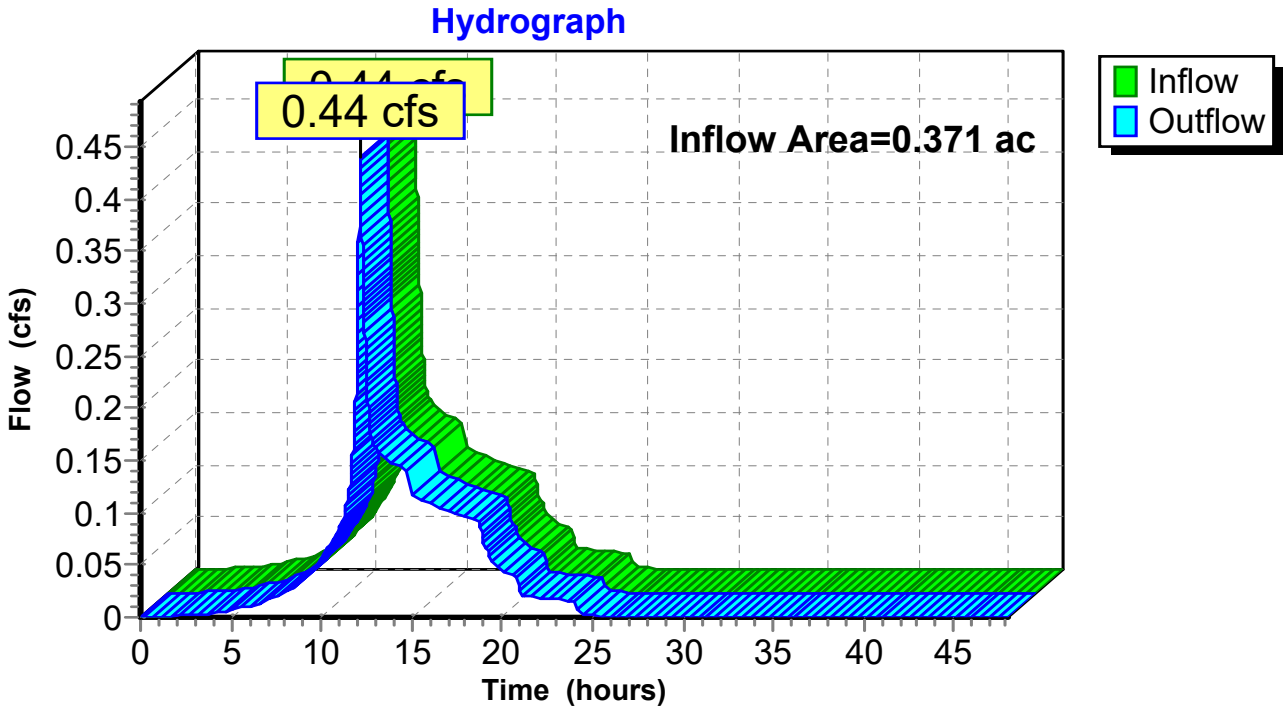


Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 3.86" for 10 yr MDEP event
Inflow = 0.44 cfs @ 12.15 hrs, Volume= 0.119 af
Outflow = 0.44 cfs @ 12.15 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SP1: Post Study Point



Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 3.81" for 10 yr MDEP event
Inflow = 0.95 cfs @ 12.02 hrs, Volume= 0.061 af
Outflow = 0.08 cfs @ 12.78 hrs, Volume= 0.061 af, Atten= 91%, Lag= 45.7 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.08 cfs @ 12.78 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 166.94' @ 12.78 hrs Surf.Area= 1,449 sf Storage= 1,061 cf
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 116.8 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 116.7 min (893.4 - 776.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

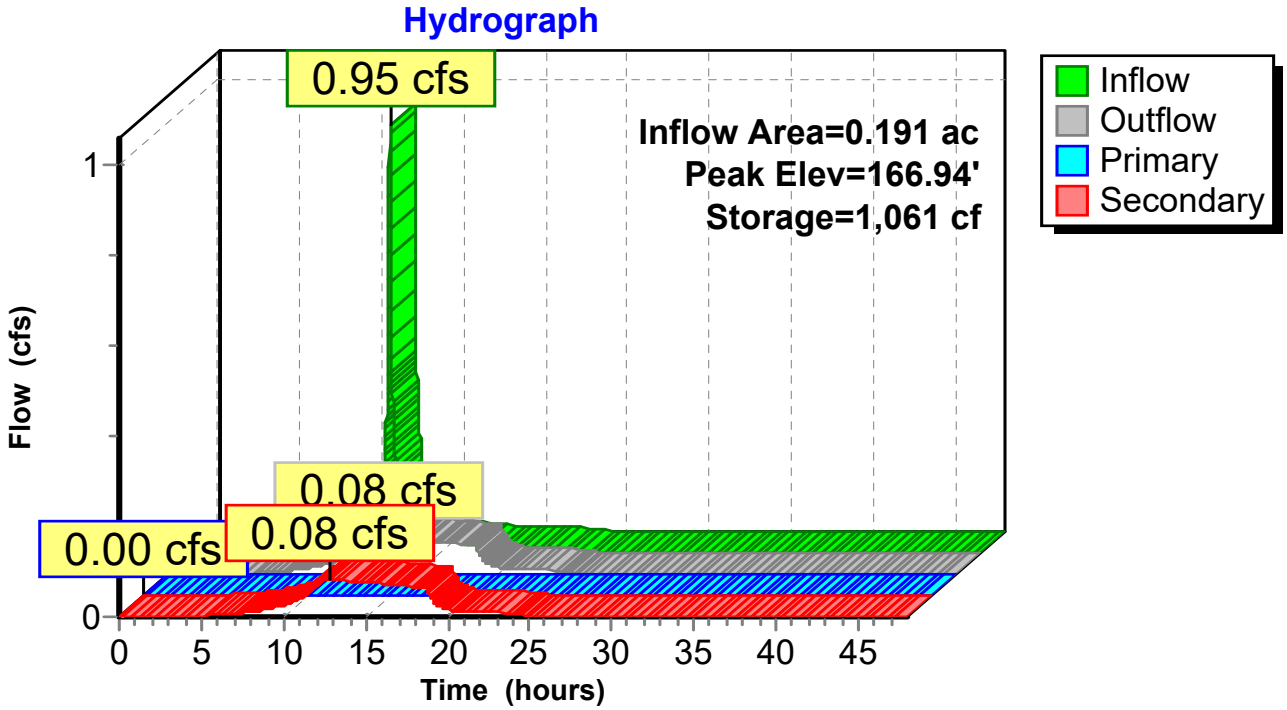
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	164.39'	**4.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 164.39' / 164.39' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	166.00'	**2.410 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.22'
#3	Primary	167.40'	**10.0' long (Profile 9) Broad-Crested Rectangular Weir** Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.08 cfs @ 12.78 hrs HW=166.94' (Free Discharge)
1=Culvert (Passes 0.08 cfs of 0.39 cfs potential flow)
2=Exfiltration (Controls 0.08 cfs)

Pond 1P: Grassed UDSF



Summary for Subcatchment PKG: PKG

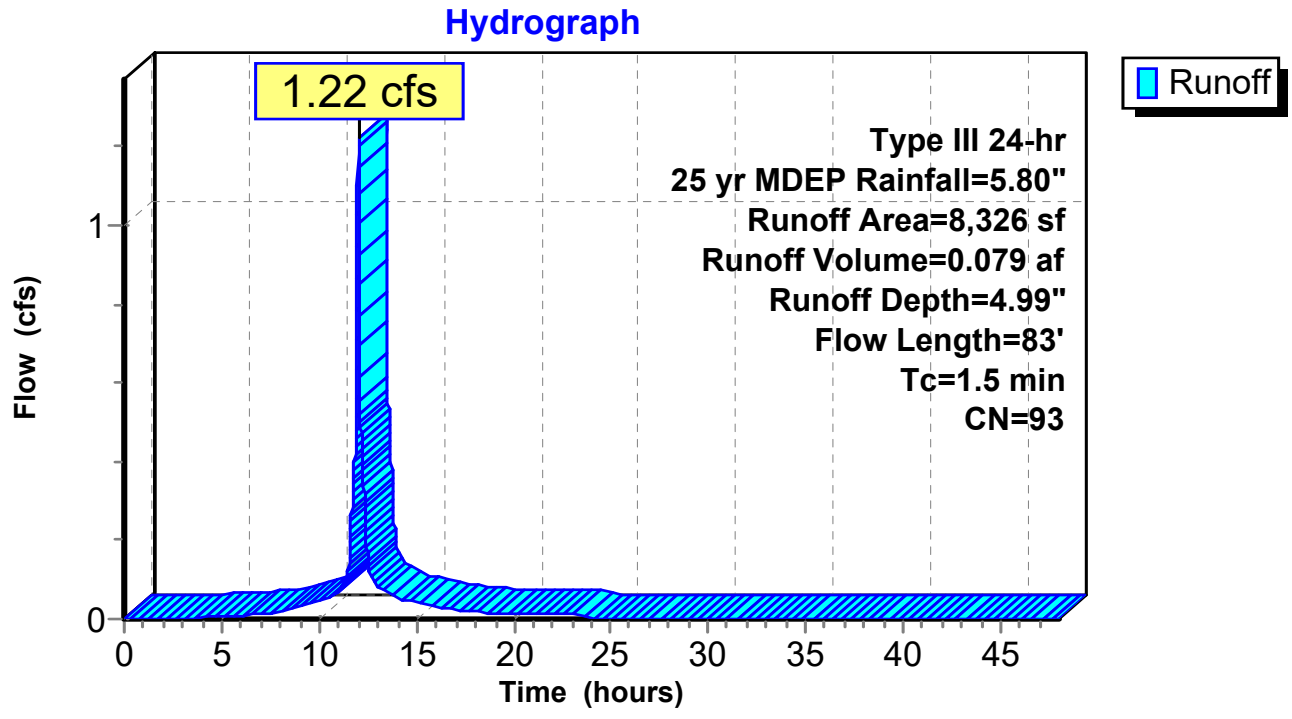
Runoff = 1.22 cfs @ 12.02 hrs, Volume= 0.079 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr MDEP Rainfall=5.80"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		**Sheet Flow, Parking Area** Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

Subcatchment PKG: PKG

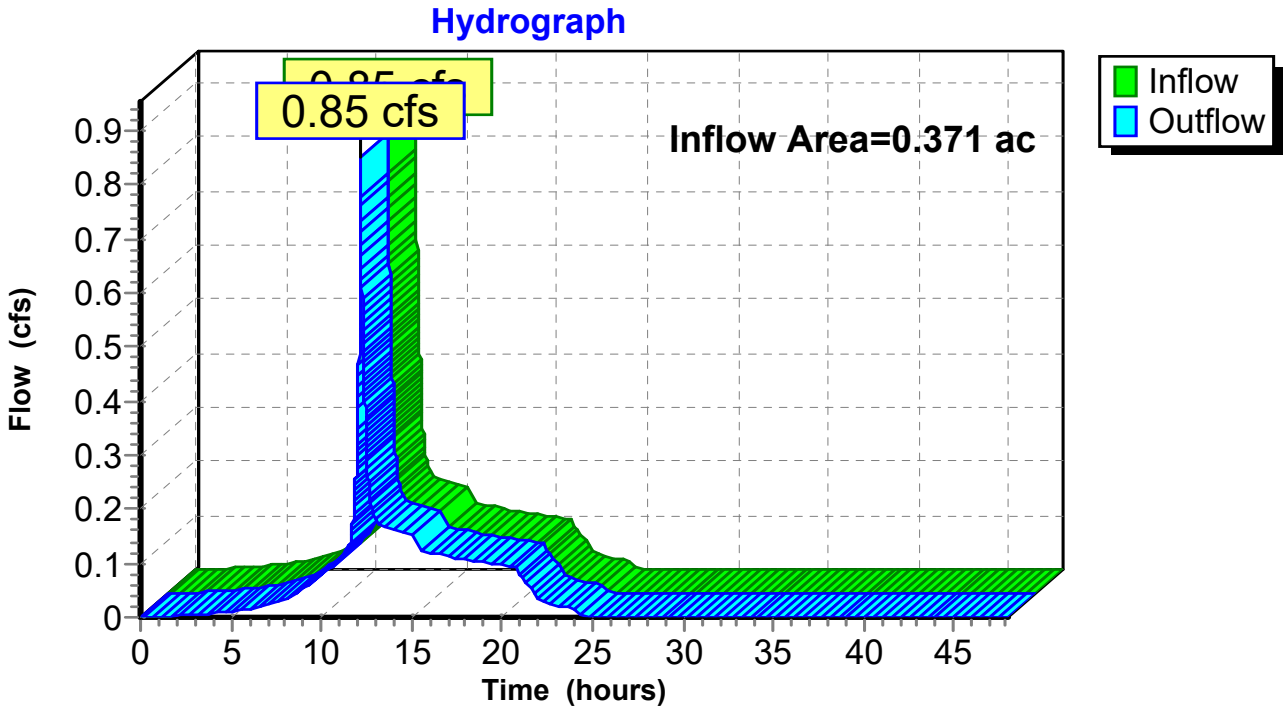


Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 5.03" for 25 yr MDEP event
Inflow = 0.85 cfs @ 12.16 hrs, Volume= 0.156 af
Outflow = 0.85 cfs @ 12.16 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SP1: Post Study Point



Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 4.99" for 25 yr MDEP event
Inflow = 1.22 cfs @ 12.02 hrs, Volume= 0.079 af
Outflow = 0.09 cfs @ 12.94 hrs, Volume= 0.079 af, Atten= 93%, Lag= 55.1 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.09 cfs @ 12.94 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 167.21' @ 12.94 hrs Surf.Area= 1,568 sf Storage= 1,467 cf
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 153.1 min calculated for 0.079 af (100% of inflow)
Center-of-Mass det. time= 153.1 min (922.9 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

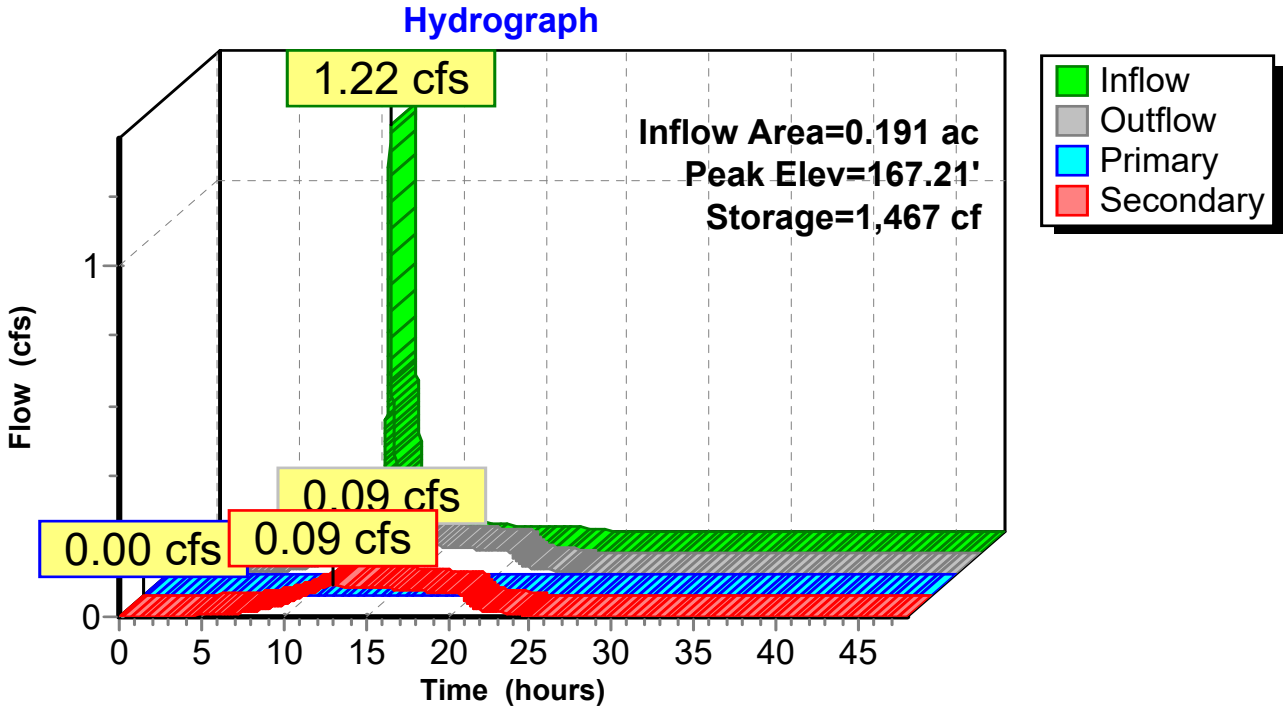
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	164.39'	**4.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 164.39' / 164.39' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	166.00'	**2.410 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.22'
#3	Primary	167.40'	**10.0' long (Profile 9) Broad-Crested Rectangular Weir** Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.09 cfs @ 12.94 hrs HW=167.21' (Free Discharge)
1=Culvert (Passes 0.09 cfs of 0.41 cfs potential flow)
2=Exfiltration (Controls 0.09 cfs)

Pond 1P: Grassed UDSF



Summary for Subcatchment PKG: PKG

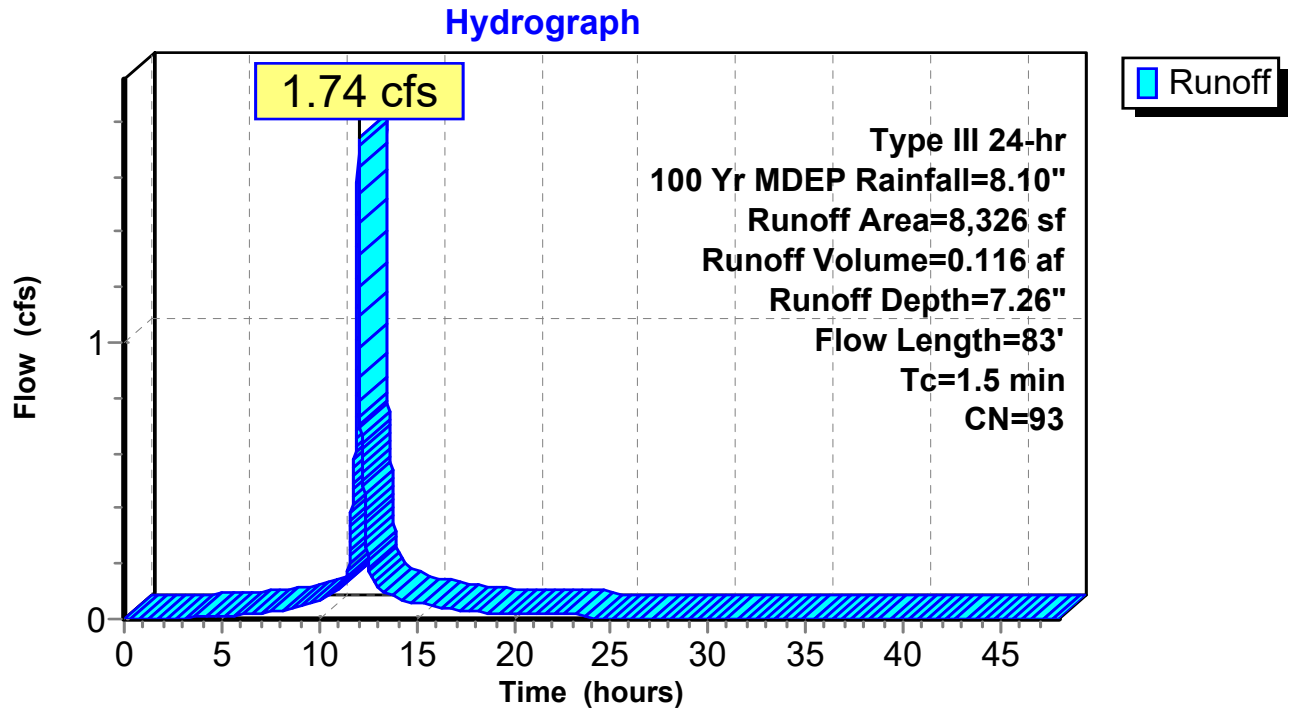
Runoff = 1.74 cfs @ 12.02 hrs, Volume= 0.116 af, Depth= 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		**Sheet Flow, Parking Area** Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

Subcatchment PKG: PKG

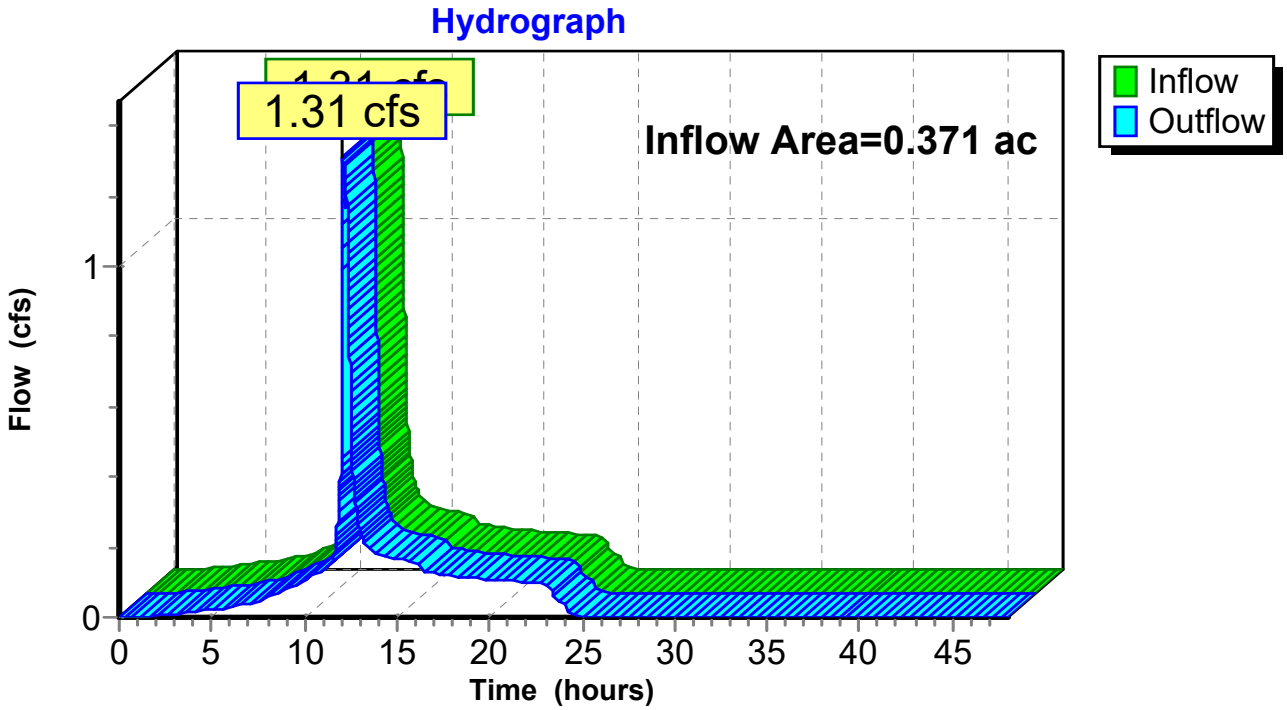


Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 7.31" for 100 Yr MDEP event
Inflow = 1.31 cfs @ 12.09 hrs, Volume= 0.226 af
Outflow = 1.31 cfs @ 12.09 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SP1: Post Study Point



Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 7.26" for 100 Yr MDEP event
Inflow = 1.74 cfs @ 12.02 hrs, Volume= 0.116 af
Outflow = 0.53 cfs @ 12.27 hrs, Volume= 0.116 af, Atten= 70%, Lag= 14.7 min
Primary = 0.43 cfs @ 12.27 hrs, Volume= 0.013 af
Secondary = 0.09 cfs @ 12.27 hrs, Volume= 0.103 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 167.45' @ 12.27 hrs Surf.Area= 1,679 sf Storage= 1,865 cf
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 163.7 min calculated for 0.116 af (100% of inflow)
Center-of-Mass det. time= 163.7 min (924.6 - 760.9)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	164.39'	**4.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 164.39' / 164.39' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	166.00'	**2.410 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.22'
#3	Primary	167.40'	**10.0' long (Profile 9) Broad-Crested Rectangular Weir** Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Primary OutFlow Max=0.43 cfs @ 12.27 hrs HW=167.45' (Free Discharge)
↑└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.43 cfs @ 0.82 fps)

Secondary OutFlow Max=0.09 cfs @ 12.27 hrs HW=167.45' (Free Discharge)
↑└**1=Culvert** (Passes 0.09 cfs of 0.43 cfs potential flow)
↑└**2=Exfiltration** (Controls 0.09 cfs)

Pond 1P: Grassed UDSF