EAGLE RIDGE

Final Environmental Impact Statement

APPENDIX

Lead Agency:

Town of North Castle – Town Board

December, 2020

APPENDIX

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Chapter V

APPENDIX

Appendix A

Public Comment Letters

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

ANDREW M. CUOMO
Governor

MARIE THERESE DOMINGUEZ
Commissioner

LANCE MacMILLAN, P.E.
Regional Director

July 19, 2019

Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, NY 10504

Re: NYSDOT SEQR #18-081
Eagle Ridge, N. Castle Dr.
Town of North Castle
Westchester County

Dear Mr. Kaufman:

In a June 11, 2019 letter (copy attached), we designated this project as a "Major Commercial Development" with a specific fee schedule and review procedures prior to permitting. Please be advised that as of this date, we have not heard from the Applicant regarding the establishment of this Major Commercial Development. Without completion of this item, NYSDOTs review comments remain pending.

In addition, please provide present and future ownership and maintenance plans for North Castle Drive.

Thank you for your interest in highway safety.

Very truly yours,

Mary McCullough
SEQRA – HWP Unit

Attachment

cc: Permit Field Engineer, Residency 8-9
L. Gorney, PE, NYSDOT Regional Permit Coordinator
J. Collins, PhD., PE, Maser Consulting
Westchester County Planning

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

ANDREW M. CUOMO
Governor

MARIE THERESE DOMINGUEZ
Commissioner

LANCE MacMILLAN, P.E.
Regional Director

August 7, 2019

Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, NY 10504

Re: NYSDOT SEQR #18-081
Eagle Ridge, N. Castle Dr.
Town of North Castle
Westchester County

Dear Mr. Kaufman:

The New York State Department of Transportation (NYSDOT) is in receipt of a submission package dated August 2, 2019 for the above project. Your Project Identification Number (PIN) is forthcoming, but we would like to take this opportunity to provide you with NYSDOT's comments. Please address the comments contained within the attached report.

Thank you for your interest in highway safety.

Very truly yours,

Mary McCullough
SEQRA – HWP Unit

Attachment

cc: Permit Field Engineer, Residency 8-9
L. Gorney, PE, NYSDOT Regional Permit Coordinator
J. Collins, PhD., PE, Maser Consulting
Westchester County Planning

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

ANDREW M. CUOMO
Governor

LANCE MacMILLAN, P.E.
Regional Director

Project Submission Review Report

(Submission dated June 13, 2019)

Eagle Ridge

NYSDOT SEQR # 18-081, NYS PIN Pending
NYS Route 22, Town of North Castle
Westchester County

New York State Department of Transportation
4 Burnett Blvd.
Poughkeepsie, NY 12603

Report date: July 26, 2019

Following are review comments based upon the latest submission.

Traffic Operations – TIS & SYNCHRO Analysis

1. The Land Use Code (LUC) and Independent Variable(s) were not specified in your trip generation. Please specify the LUC(s) to help us validate your trip generation.

2. W-569 (Route 22 @ I-684 NB Ramps):
   - NB Off ramp vehicle volumes do not match TIS figures.
   - Synchro model shows a 117 second cycle length but this signal is coordinated with W-568 with a cycle length of 90 seconds.
   - Phase 6 Min Green=0, Phase 6 Veh. Ext=0, Phase 2 Veh. Ext=2. Phase 6 is on Max Recall, Phase 2 on Min Recall.
   - PHF of 0.97 for all approaches seem high. Please provide the 15-minute counts for verification?
   - Traffic Data Viewer shows HV% on ramp to be 14.77. Synchro model shows 4%.
3. W-568 (Route 22 @ I-684 SB Ramps):
   - The vehicle volumes are not balanced between signals W-568 & W-569 (Route 22 @ I-684 Ramps). Why?
   - Synchro model shows a 92 second cycle length but this signal is coordinated with W-569 with a cycle length of 90 seconds.
4. W-315 (Route 22 @ Maple Ave/Business Park Dr)
   - Maple Ave & Business Park Dr approaches have max splits of 41 and 26 seconds respectively. Their All-Red time is 2 seconds.
   - Phases 1 & 5 are on min recall.
5. W-124 (Route 128 @ Whippoorwill Rd/Maple Ave)
   - The max splits shown in synchro model are incorrect. This is a 2-phase signal with max splits of 45.5 and 35.5 seconds.
   - All-Red clearance is 2 seconds and Vehicle Extension is 2 seconds.
   - Min Green is not 10 seconds for all approaches.
6. W-204 (Route 22 @ Route 128/North Castle Dr)
   - PHF of 0.97 for all approaches seem high. Provide the 15-min counts for verification.
   - What is the source of your heavy vehicle percentage? 33% for NB seems very high. Traffic Data Viewer shows on 4.69% on Route 22.
   - Phases 1 & 5 have max split of 42 seconds. Your synchro model shows 56.
7. W-522 (Route 22 @ Old Post Rd)
   - PHF of 0.97 for all approaches seem high.
   - Max split for phase 1 is 47 seconds (not 56).
8. W-154 (Route 22 @ Route 120)
   - PHF of 0.98 for all approaches seem high. Provide the 15-min counts for verification.
   - Phase 3 is not on recall and its max spilt is 41 seconds (not 36).
9. W-210 (Route 22 @ King Street)
   - The SBL phase must be leading (not lagging). And the max split is 42 seconds, not 48.
   - Max split for King Street approach is 41 seconds, not 27.
   - There are no pedestrian timings at this signal.
   - There is 2-second All-Red time on Route 22.
10. Vehicle volumes are not balanced between signals W-154 & W-210. Through vehicles on Route 22 @ Route 120 should not be 0.

Please revise your synchro models (or explain your methodology) based on the above comments and re-submit for further review.

Drainage

1. The Preliminary SWPPP is buried in the DEIS as an Appendix, but should be its own standalone document.
2. The DEIS Chapter IV.F references that the design was based on procedures set forth in the 2010 NYS Stormwater Management Design Manual, whereas they should be using the procedures from the 2015 version of the same. The actual SWPPP in Appendix F correctly states the work will be under the 2015 Permit, but does not indicate which version of the SMDM is being followed.
3. The NOI included in Appendix F appears to indicate a significant increase in runoff at the 10yr event, with a reduction in the 100yr event; in fact the proposed 10yr flow exceeds the proposed 100yr flow. My guess is the 10yr proposed flow is a typo.
4. Since NYSDOT is concerned with the full runoff from the site into the Wampus River, the models and SWPPP should include this information. Very easy in the model to link together all of the Drainage Areas that leave the site into the Wampus for both the Existing and Proposed Conditions and in fact this appears to be done somewhere because it is/should be what is listed as the outflows in the NOI.
5. Provided the peak flows from the site into the Wampus River are reduced for all flow events in the post-construction configuration.

Environmental

There is no discussion in the DEIS regarding how the traffic generated by this project will impact air quality and/or noise. If the proposed action triggers an air quality or noise analysis, please submit a copy of the report.

Mitigation and Improvements

Based upon the potential traffic impacts, various traffic signals will require some type of upgrading or improvement (including pedestrian accomodations). As we progress this project and receive revised SYNCHRO models, we will be in a better position to pinpoint specific items.

Thank you for the opportunity to offer comments with respect to this project.

End of report

Westchester gov.com

George Latimer
County Executive

County Planning Board

June 28, 2019

Alison Simon, Town Clerk
Town of North Castle
15 Bedford Road
Armonk, NY 10504

Subject: **Referral File No. NOC 19-008 – Eagle Ridge - Petition for Zoning Text & Map Amendments, Subdivision, and Site Plan Approval Draft Environmental Impact Statement**

Dear Ms. Simon:

The Westchester County Planning Board has received a draft environmental impact statement (EIS) (dated accepted May 22, 2019) for the above referenced petition to amend both the text of the North Castle Zoning Ordinance as well as the Town's Zoning Map. The application also includes a petition to subdivide a 32.5-acre property located at 1 North Castle Drive into two parcels. The smaller of the two proposed parcels will be 6.25 acres, and is proposed to be developed with a new five story, mixed-use development comprised of a 91-room hotel, 70 apartments, a bar, restaurant, fitness room, outdoor pool, ballrooms, and other ancillary uses typical of a hotel. Seven of the apartment units would be set aside as affordable AFFH units, and parking will be accommodated within a 241-space parking garage under the building along with a 66-space surface lot. Green building technology, including a green roof and green walls, are to be incorporated into the design.

The larger, 26.25-acre parcel would be developed with 94 three-bedroom townhouses centered on a "Village Commons" which would include open space, a pavilion, an outdoor amphitheater and related amenities. Nine of these townhouses would be set aside as affordable AFFH units. Both of the new development parcels are proposed to be interconnected by pedestrian pathways, with rain gardens, meadows, and greenways traversing the site.

Vehicular access for both properties will be via a shared driveway accessing North Castle Drive, with a loop circling the hotel and another loop providing access to all the townhouses. An emergency access driveway will also connect the townhouse lot directly to North Castle Drive. Pedestrian access to the site will be provided by a new sidewalk along North Castle Drive between the site driveway and Route 22. A walking path is also proposed to connect the site to the neighboring Community Park.

Currently the site is entirely located within the OBH – Office Business Hotel zoning district. The applicant is proposing a zoning text amendment to permit multi-family housing within the OBH district, which would accommodate the 70 apartments that are proposed to be constructed on the top

three floors of the hotel building. This site is the only location in the town zoned OBH. In addition, the applicant is seeking to rezone the proposed townhouse parcel to the R-MF-A Residence Multi-family-A Residence District, which would permit the townhouses.

We have conducted preliminary reviews for this matter under the provisions of Section 239 L, M and N of the General Municipal Law and Section 277.61 of the County Administrative Code and we responded to the Town previously in letters dated April 11, 2018 (in response to Lead Agency) and June 8, 2018 (in response to the draft EIS scope). We now offer the following comments with respect to the draft EIS:

1. **Consistency with County Planning Board policies.** The County Planning Board's long-range planning policies set forth in ***Westchester 2025—Context for County and Municipal Planning and Policies to Guide County Planning,*** adopted by the Board on May 6, 2008, amended January 5, 2010, and its recommended strategies set forth in ***Patterns for Westchester: The Land and the People***, adopted December 5, 1995, call for the channeling of development to existing downtown centers that is designed to facilitate or enhance a smart growth urban fabric. Because the subject site lies just outside of the downtown of the Armonk hamlet, making a good connection to the hamlet center will be critical in achieving this goal. While the potential for making such a connection is recognized in the draft EIS, our comments below on pedestrian and transit access offer some insight as to how that connection can be improved.

2. **Pedestrian access and sidewalks.** The applicant proposes to construct a sidewalk along North Castle Drive that would connect the new development to Route 22 where a school bus stop is proposed on the northbound side of Route 22. Since Bee-Line bus stops for Route 12 bus service are located on the opposite side (southbound) of Route 22, the applicant is proposing to work with the NYS Department of Transportation (NYSDOT) to install a crosswalk in this location. However, the crosswalk configuration shown on Figure IV.H-16 appears to be an insufficient crosswalk treatment. We recommend the applicant coordinate this effort with NYSDOT.

The draft EIS also notes that one of the intended uses of this sidewalk and crosswalk is to allow for pedestrian travel between the site and downtown Armonk. However, we point out that once a pedestrian crosses Route 22, there are no sidewalks along Main Street (NYS Route 128) connecting into the hamlet. We recommend that the final EIS address if sidewalks can be continued along Main Street to connect to the hamlet. We point out that the provision of these additional sidewalks would appear to be consistent with the Town Comprehensive Plan. If these sidewalks were not to be provided, the final EIS should state that pedestrians will need to walk in the roadway shoulder of Main Street to access the hamlet. If this is the case, then additional crosswalks would be necessary across Main Street since pedestrians would need to walk against the flow of traffic, and would therefor need to have safe access to both road shoulders of Main Street.

3. **Transit access.** The draft EIS does not contain the complete discussion of Bee-Line bus services that we requested in our comments on the draft scoping document. The draft EIS does not include a discussion of Bee-Line's existing Loop H shuttle service which currently operates within the IBM

campus and also has the potential to serve the subject site. The Town should require the applicant to contact the County Department of Public Works and Transportation (WCDPWT) to discuss this. In addition, Figure IV.H-16 only shows one of the two Bee-Line bus stops for Route 12 at the intersection of Route 22 and Main Street. This should be revised in the final EIS, and again, the applicant should be required to contact WCDPWT to determine the impacts of the proposed development on these bus stops and if any bus stop improvements are warranted or desired as a result of the proposed project.

4. **Recycling provisions.** While the draft EIS includes a section concerning solid waste and recycling, the Town should require the applicant to verify that sufficient storage measures are provided to accommodate the expanded County recycling program. County regulations for recycling may be found at http://environment.westchestergov.com. We note that Westchester County has reporting requirements for waste management for businesses with more than 100 employees.

We also recommend consideration of on-site food composting for any on-site food service operations. Food composting would not only reduce the burden of food waste in the waste stream, but it would also provide a resource for the maintenance of on-site landscaping.

5. **Green building technology and bicycle parking**. We appreciate the applicant's inclusion of a green roof and green walls in the building design and we note the variety of stormwater management techniques included in the document. We also note the applicant's decision to determine appropriate locations for bicycle storage and racks during the site plan review phase, which we support.

Thank you for calling this matter to our attention.

Respectfully,
WESTCHESTER COUNTY PLANNING BOARD

By: 

Norma V. Drummond
Commissioner

NVD/MV

cc: Anne Darelius, NYS Department of Transportation, Region 8
Christopher Lee, NYS Department of Transportation, Region 8

TOWN OF NORTH CASTLE

WESTCHESTER COUNTY
17 Bedford Road
Armonk, New York 10504-1898

PLANNING DEPARTMENT
Adam R. Kaufman, AICP
Director of Planning

Telephone: (914) 273-3542
Fax: (914) 273-3554
www.northcastleny.com

To: North Castle Town Board

Date: July 8, 2019

Subject: **Eagle Ridge – Substantive Review of Draft Environmental Impact Statement (DEIS) [#18-004]**

As requested, we have completed our substantive review of the Draft Environmental Impact Statement (DEIS) for the above-captioned project, which was accepted by the Town Board on May 21, 2019. Based upon our review of this document and associated plans, we offer the following comments for your consideration:

1. Hotel Density. The Applicant is proposing a change to the OBH Zoning District from 0.12 FAR to 0.7 FAR. This represents a 483% increase in density as compared to the existing OBH Zoning District. The Applicant should provide the rationale for requesting the proposed additional density on the property. A larger hotel lot with larger setbacks may yield a reduction in environmental and visual impacts. It is noted that the OBH district originally envisioned a minimum lot size of 20 acres in order to mitigate the impacts of a large hotel on the property.

2. Density. It is noted that 208,900 square feet of hotel is currently permitted in the OBH zone. Under the proposed action, 697,736 square feet is proposed - 80,982 square foot hotel, 91,911 square feet of apartments and 258,160 square feet of townhouses. This is a 234% increase in density as compared to the existing OBH zoning district. The Applicant should provide the rationale for permitting the proposed additional density on the property.

3. Townhouse Density. The Applicant is proposing to place the R-MF-A Zoning District on the site (the same as the Cider Mill project). However, it may be more appropriate to utilize the R-MF zoning district (the same as Whippoorwill Hills and Whippoorwill Ridge). The R-MF-A zoning district was created to supply housing that is relatively dense and located in close proximity to the hamlet core. The R-MF zoning district requires larger lots with more open space, which may be more appropriate for this site.

4. Site Design & Density. The proposed application of the R-MF-A Zoning District to the townhome portion of the Proposed Action results in a rather high density plan that limits access to the interior parklike amenities. It is recommended that the Applicant explore placing the R-MF Zoning District on the townhouse portion of the site and increasing the exposure of the interior amenity parcel from the street by eliminating lots and thereby creating additional gaps/access to the interior.

5. Zoning & Height. The proposed modifications to the OBH district's dimensional regulations would increase the maximum allowable building height from 3 stories and 45 feet, to 5 stories and 75 feet. This increase in height would permit the construction of a hotel that could be as much as 30 feet taller than currently allowed. This increase in height will be discernable from locations where the building can be observed, such as from North Castle Drive and Community Park. The Applicant should provide the rationale for permitting the proposed additional height on the property. The Town Board may wish to limit the maximum permitted height of buildings in the OBH Zoning District to minimize these impacts.

6. Visual Impacts & Site Disturbance. The proposed grading plan depicts significant disturbance between the proposed townhouse development and the proposed hotel for stormwater management. The proposed disturbance would necessitate removing a significant amount of trees and require disturbance to steep slopes, which results in the removal of the natural buffer between the proposed development and Community Park. The development plan should be revised to preserve natural buffers to the maximum extent practicable and the stormwater basin closest to Community Park should be relocated or adequately mitigated.

7. Visual Impacts. Generally, the NYS Route 22 corridor is defined by heavily wooded frontages and rising topography. The DEIS acknowledges that the hotel will have views from the NYS Route 22 and Main Street intersection. The Lead Agency will need to determine whether the visual impacts of the proposed hotel are acceptable. If not, the Applicant may wish to provide additional mitigation measures including the relocation of the hotel, providing a larger lot, providing larger setbacks or providing additional screening.

8. Visual Impacts. The DEIS demonstrates that the hotel will have views from Community Park. The Lead Agency will need to determine whether the visual impacts of the proposed hotel are acceptable. If not, the Applicant may wish to provide additional mitigation measures including the relocation of the hotel, providing a larger lot, providing larger setbacks or providing additional screening.

9. Screening. Approximately 230 feet of buffer along NYS Route 22 is located within the Route 22 right-of-way. The preservation of this buffer is an integral part of the proposed screening plan. The Applicant should identify any current or proposed NYSDOT plans that would remove the buffer. In addition, the Applicant should explain the effectiveness of the screening plan should the NYSDOT buffer be removed.

10. Setbacks. The Applicant should discuss any special setback conditions that pertain to the subject site resulting from the donation of Community Park to the Town of North Castle from IBM. The Town Board will need to take any special setback conditions into account when planning for future development on the subject site.

11. Setbacks. The existing OBH zoning setbacks are the same as the OB and DOB-20A Zoning District and are the largest of any zoning district in the Town. The proposed action would reduce the front yard setback from 150' to 100' (30% reduction in setback), the side yard setback from 300' to 40' (87% reduction in setback) and the rear yard setback from 300' to 50' (84% reduction in setback). The proposed reductions in setbacks may create significant visual impacts from NYS Route 22 and Community Park. The Applicant should provide the rationale for permitting the proposed reductions in setback.

12. Water Supply. A Water System Capacity Study for Water District No. 4 was prepared by GHD Consulting Services. The study evaluated water demand, supply and storage capacity. The study concluded that given the 648,000 gpd capacity of the water system and the maximum existing demand of 960,000 gpd, the district does not have sufficient supply capacity to meet the maximum day demand as required by the NYS Sanitary Code, and is currently relying on storage capacity to meet the demand. The production capacity deficit is approximately 312,000 gpd. It is recommended that the proposed action not be permitted until WD#4 has sufficient capacity to serve the project. The Applicant should describe any proposed mitigation that would help address this issue.

13. Water Supply. The Applicant should indicate whether the proposed hotel building would utilize water as part of the HVAC system. Given the water capacity issues of Water District #4, it is recommended that the building be designed to not utilize an HVAC system that requires any water demand. The Applicant should identify the type of system proposed and provide alternatives to a water using system, if necessary.

14. Sewer Capacity. Sewer District #2 is at capacity and plans are currently being designed to expand the district from 500,000 gallons/day to 700,000 gallons/day. It is recommended that the proposed action not be permitted until SD#2 has sufficient capacity to serve the project. The Applicant should describe any proposed mitigation that would help address this issue.

15. Cumulative Impacts. This project, along with other proposed projects near the Armonk Hamlet, may create unacceptable traffic, parking and congestion impacts within the hamlet area. It is imperative that the Town explore opportunities to expand the supply of public parking in the Hamlet by completing the approved Nelson\Nygaard Armonk Hamlet parking study (delayed due to Main Street fire) prior to approving significant increases in housing supply in, and adjacent, to the Armonk Hamlet. It is anticipated that a Community Benefit Agreement will be established to financially assist in implementing long-term parking solutions.

16. Bus Stop. The Traffic section of the DEIS discusses a bus stop along NYS Route 22, while the Community Facilities & Services section discusses a bus stop at Community Park. The Applicant shall clarify the currently proposed bus stop location.

17. Bus Stop. The proposed bus stop, either at Community Park or on Route 22, is not acceptable. It is recommended that a bus stop be proposed in a more convenient, and safe, location for students and families. Given the requirement that the Byram Hills Central School District only make bus stops on public roads, it is recommended that a portion of North Castle Drive be dedicated as a public road (or even a portion of the interior road network) in order to create an acceptable bus stop location.

18. Fire Protection. The Fire Department has raised serious concerns regarding the project. Specifically, the Department noted that a ladder truck would be necessary to provide adequate fire protection. Additionally, the Department noted that the project will add additional call volume without providing an adequate number of new volunteers to staff the Department. The Applicant should further describe how the Fire Department's concerns will be addressed.

19. Zoning & Parking. The proposed zoning significantly reduces the required off street parking for a hotel by eliminating off-street parking for restaurant, lounge and other eating and drinking facilities as well as not requiring off-street parking for non-rentable floor area. The Applicant should explain why such a change is proposed and why the existing off-street parking requirement is not appropriate.

20. Zoning & Signage. The proposed zoning modifies the sign requirements by allowing signage to be approved by the Planning Board without standards. The Applicant should explain why the provisions of Section 355-16.F.(9) should not apply.

21. Climate Change. The FEIS should include a discussion of measures to avoid or reduce both an action's impacts on climate change and associated impacts due to the effects of climate change such as sea level rise and flooding pursuant to Section 617.9(b)(5)(iii) of SEQRA. As part of this discussion, the Applicant should address whether rooftop mounted solar will be proposed as part of the Proposed Action.

22. Pedestrian Connection. The DEIS discusses creating a pedestrian connection from the Eagle Ridge development to Community Park. However, an adjacent property owner has stated that such a connection is prohibited. The Applicant should discuss this issue in further detail. The Applicant should provide potential solutions aimed at resolving this issue as it is critical that this development have access to the adjacent Town of North Castle Community Park.

23. Pedestrian Access. The DIES notes that the Applicant has had preliminary discussions with NYSDOT regarding constructing a crosswalk over NYS Route 22. It is imperative that a link to the hamlet be provided either at North Castle Drive or at Business Park Drive. The Applicant should provide a further update on the status of this issue.

24. Pedestrian Access. The Applicant should discuss how pedestrians would access the Armonk Hamlet from the site. The Applicant should give consideration to constructing a crosswalk at NYS Route 128 and Old Route 22 and provide a new sidewalk along NYS Route 22 to the newly proposed crosswalk at NYS Route 22.

25. Archeology. It is recommended that the Applicant complete Phase 1B archeological field testing so that results can be incorporated into the Environmental Findings to be prepared by the Lead Agency.

26. Earthwork. The DEIS indicates that 51,400 cubic yards of material is proposed to be exported from the site. Utilizing a 16 yard dump truck, 3,312 truck loads of material would need to be exported from the site. The proposed amount of truck trips is excessive. The Applicant should investigate whether there is a way to better balance earthwork for the project.

27. Forest Disturbance. The most sensitive upland cover type on the Site is the oak-tulip tree forest ecological community, which remains largely in-tact and survived the Site's prior agricultural activities. According to the New York State Natural Heritage Database, the oak-tulip tree forest is secure globally; however, it is very vulnerable in New York State with between 6 to 100 occurrences within its fairly limited range, which includes the northern half of Long Island in the Coastal Lowlands ecozone, in the Manhattan Hills, Hudson Highlands and Triassic Lowlands ecozones. The Applicant should prepare an exhibit that graphically depicts the existing oak-tulip forest and graphically depicts the proposed disturbance to the oak-tulip forest. Additionally, the exhibit should quantify the total size of the forest oak-tulip forest on site in acres and quantify the proposed amount of oak-tulip forest removal in acres. Given the sensitive nature of the oak-tulip forest, the Lead Agency should give consideration to investigating changes to the plan that can reduce the impact on the forest to the maximum extent practicable.

28. Ecological Communities. An additional exhibit after Figure IV.D-2 that depicts the Site Ecological Communities overlaid with the Proposed Action would be helpful to better understand proposed impacts to site ecological communities.

29. Alternatives. It is recommended that the Applicant provide a reduced Townhouse Development that places the townhouse parcel in the R-MF Zoning District rather than the R-MF-A Zoning District. This alternative requires large minimum lot sizes and may result in a development with more green space at a density that is more appropriate for this property. The resulting scale and density would be the same as the Whippoorwill Hills and Whippoorwill Ridge developments on Old Route 22.

30. Alternatives. It is recommended that the Applicant provide a modified Open Space Maximization and Limited Height Alternative. This alternative would provide a 208,900 square foot 3-story building with a mix of hotel units and apartments located in the south-central portion of the site in the existing open meadow.

31. Alternatives. The Hotel Only Development Under Existing OBH Zoning text may contain an error. This alternative analyzed an 80,982 square foot hotel, where the underlying zoning permits a much larger 300 unit hotel of 208,900 square feet (contemplated as part of the original IBM subdivision). The Applicant should indicate why a much smaller hotel was studied for this alternative.

* * * * * *

Once all of the written comments have been submitted, responses to all substantive comments will need to be included in a Final Environmental Impact Statement (FEIS). This document is typically prepared by the Applicant and then submitted to the Town Board, as the Lead Agency, for its review. Once accepted as complete, the Town Board will need to prepare a Notice of Completion, which will be filed and published together with the FEIS. After the FEIS is filed, public comments may be submitted to the Town Board for consideration. Finally, the Town Board will need to prepare a Findings Statement with respect to the proposed project, potential environmental impacts and proposed mitigation measures. This step must precede the Town Board's determination on the zoning changes as well as any actions to be taken by the Planning Board on the environmental permits, subdivision and site plan applications.

Adam R. Kaufman, AICP
Director of Planning

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ARMONK FIRE DEPARTMENT
PO BOX 116, ARMONK, NEW YORK 10504

Phil Goulet, Chief

Below please find my response to additional issues raised with the Eagle Ridge Development. As previously stated, this development will have a significant negative impact to the Armonk Fire Department. Although only some documents provided by the applicant refer specifically to the fire department, I have commented below on other issues that may additionally impact the fire department.

Executive Summary

Section H - Traffic

Traffic has been a major concern in the town for many years. Recent developments going through the approval process have already been shown to increase traffic in the area. Both the intersection at Business Park, and North Castle Drive are major intersections which are frequently used by responding emergency apparatus. Combining additional pedestrian traffic, and vehicle traffic will result in the following: Additional traffic concerns for first responders responding to the firehouse for calls creating a delayed response time, additional risk of accident and pedestrian related injuries, increased difficulty for responding apparatus. A Pre-emption device which is installed in the intersection allows for emergency apparatus to force traffic lights to give the apparatus the right of way. This is currently in place in the intersection of the firehouse. Additional devices should be added in all directions of both the intersection at Business Park and Rt. 22, as well as Main Street and Rt. 22. Although this will not help emergency responders responding from home to the firehouse, it will make the intersections safer overall for responding emergency apparatus. Additional studies should be conducted to determine how traffic will increase not only at peak times, but throughout the day, and how that will affect emergency response for first responders.

Section J - Fiscal and Market considerations

The Armonk Fire Department is currently volunteer. Members of the local community dedicated thousands of hours each year to serve the residents of Armonk. The applicant stated that the proposed action will generate approximately $4,000,0000 in real estate taxes. Unfortunately, volunteerism throughout New York State, and the country is declining in the fire service. The Armonk Fire Department has been running a successful recruitment campaign and recruited a number of new Volunteers. It is our hope that we can continue to remain volunteer to serve the residents of North Castle. With such a large development significantly increasing call volume, and only generating a minimal increase in volunteers, the development has the potential to over stress the current department and as a result require paid staff which will result in a large burden for the town and tax payers.

Telephone: 914-273-3357 Chief@ArmonkFD.com Fax: 914-273-3178

ARMONK FIRE DEPARTMENT
PO BOX 116, ARMONK, NEW YORK 10504

Phil Goulet, Chief

Community Services

Fire

The original estimate for additional call volume provided was 81-90 additional alarms. Contrary to the applicants statement that the impact of the development is not considered significant, it is the opinion of the fire department that a 10% increase in alarms would be considered significant and will have a significant impact on the department and membership. A recent development in Chappaqua, Chappaqua Crossing, which is significantly smaller than the proposed development with only 69 apartments and 5 businesses has generated an additional 71 fire and EMS calls in 6 months. Although we believe the estimate for additional call volume to be accurate, a faulty alarm system or other issues could lead to dramatic increase in total calls, significantly greater than expected.

The applicant cited information from the Urban Land Institute's Development Handbook from 1994. It should be noted that this handbook is currently out of print and over 20 years old. Construction techniques have changed significantly since this book was published and it does not appear to give an accurate representation of personnel needed. It has now been shown that newer construction techniques only allow 3-4 minutes for someone to escape a home.[1] Buildings burn faster, and as a result require more personnel.

The table provided by the applicant (IV.J-8) column 1 lists the number of "police personnel", however the right column indicates that that calculation was used to calculate fire personnel. Based on this chart it is unclear as to what it is actually supposed to represent. Assuming the chart is meant to represent fire personnel, it is impossible to have an increase of staff .8 thus we would require an additional member. This chart also does not take into account EMS personnel, or the fact that the department is volunteer.

Using the provided chart, and assuming a population in Armonk of 6,000 people the department would require 9.9 fire personnel. The fire department, would not be able to function and provide 24 hour coverage with only 10 members (paid or volunteer). The chart also concludes that with a population of 6,000 people, the department would only need 1.1 fire apparatus. The utilization of the Urban Land Institute's Development Handbook used by the applicant does not appear to provide an accurate representation of today's fire service or of our community. As a result, this should not be used to determine department impact. The department maintains that Eagle Ridge will have a significant impact on the department.

As the applicant noted, we do not currently possess a ladder truck. The additional call volume would require additional mutual aid until such time that that the fire department can purchase one. The construction of this large development, specifically with livable spaces greater than 3 stories will surely overwhelm the current apparatus and may impact other fire departments

[1] https://www.today.com/home/newer-homes-furniture-burn-faster-giving-you-less-time-escape-t65826

Telephone: 914-273-3357 Chief@ArmonkFD.com Fax: 914-273-3178

in North Castle, as they are some of our mutual aid partners. As a result, the District would need to obtain funding to acquire an apparatus with a 100' aerial device in order to provide the residents of Armonk the highest level of protection. Current costs for ladder trucks are estimated to $1.2 million. The additional tax revenue generated by the Eagle Ridge Development is minimal and would not have any sizeable impact with assisting the department to purchase the required apparatus.

Mitigation Fire

The applicant stated that transponders will be provided to the fire department for gate access. In addition to transponders, the department should be provided with a code to access the gate, as well as a solution such as "Siren To Enter". In the event of an emergency, there will be additional emergency vehicles accessing the site that do not have transponders.

In previous discussions with the applicant, the fire department advised that along with the sprinkler system for the hotel, the applicant should consider sprinkler systems for all residential townhomes. The applicant advised that sprinkler systems throughout the commercial structure will be installed as per the building code but did not mention any sprinklers being installed in the residential townhomes. With the density of the townhomes, there is an increased risk that fire can spread from one building to another. Residential sprinklers have been proven to increase safety and decrease property loss.[2]

- Civilian death rate was **81 percent lower** in homes with fire sprinklers than in homes without them.
- Average firefighter injury rate was nearly **80 percent lower** when fire sprinklers were present during fires.
- When sprinklers were present, fires were kept to the room of origin **97 percent of the time.**
- The home fire death rate was **90 percent lower** when fire sprinklers and hardwired smoke alarms were present. By comparison, this death rate is only 18 percent lower when battery-powered smoke alarms are present but automatic extinguishing systems weren't.

According to the Home Fire Sprinkler Coalition, the average cost to install sprinklers in new construction is $1.35 per square foot.[3] Based on the overall projected selling price for the townhomes, it appears as if this cost is negligible and would significantly increase safety for the residents of Eagle Ridge.

---

[2] https://www.nfpa.org/Public-Education/Staying-safe/Safety-equipment/Home-fire-sprinklers

[3] https://homefiresprinkler.org

ARMONK FIRE DEPARTMENT
PO BOX 116, ARMONK, NEW YORK 10504

Phil Goulet, Chief

Many affordable housing programs provide substantial benefit to lower income individuals and families. Previously, the department advised that this development will not be affordable for younger volunteers to stay in the community. Live-in programs are becoming a popular retention and recruitment tool for volunteer departments, specifically those in high cost of living areas. Both Purchase Fire Department, and Pound Ridge Fire Department operate a substantial "live in" program where members live full time either at the firehouse or in nearby apartments or houses. These programs have proved highly beneficial for the departments. In some cases, they have even contributed to lowering the fire departments insurance rating, thus lowering home owner insurance rates for all the residents of the town. The applicant indicated that the affordable housing units provided as a result of this development will allow for fire department members to stay in the area at a reduced cost of living. Unlike the past town of North Castle "Middle Income Units" which awarded fire department members and other town employees points to have a better chance of purchasing a unit, these units will be part of the Westchester County run program. The owners / renters of these units will be determined via a County wide lottery system. Essentially creating an equal chance for a non-fire department member to be awarded a unit versus a fire department member. As the fire department would not have any input as to who would be awarded these units, and no preference is made to current volunteers, they cannot be used as a recruitment or retention tool and do not satisfy the department's request. The affordable units discussed by the applicant would have no impact on the department.

Eagle Ridge development is expected to have a significant impact on the Fire Department. Based on the response provided by the applicant, it does not appear as if the applicant has adequately addressed the departments concerns. All of the original issues raised still exist with no real mitigation plan proposed by the applicant.

Thank you for contacting the Fire Department for our input during your assessment. Please do not hesitate to contact us moving forward regarding the aforementioned information or future concerns which may arise.

Sincerely,

Phil Goulet
Chief
Armonk Fire Department

William Fisher
Commissioner
North Castle Fire District #2

Telephone: 914-273-3357 Chief@ArmonkFD.com Fax: 914-273-3178

TOWN OF NORTH CASTLE
15 BEDFORD ROAD
Armonk, New York 10504
Established 1736

PETER J. SIMONSEN
Chief of Police

DEPARTMENT OF POLICE
Tel: 914-273-9500
Fax: 914-273-5412

MEMORANDUM

TO: Alison Simon
Town Clerk

FROM: Sgt. Thomas McCormack
North Castle Police Department

RE: Eagle Ridge-Draft Environmental Impact Statement

DATE: August 7, 2019

Police Department Comments for the Town and Applicant:

Re: Eagle Ridge- Draft Environmental Impact Statement Chapter IV.J. Community Facilities & Services

(b.) **Police:**

1. The population projections for projected police service level increase appears to include only residents. The population projections should account for all people who will utilize the property, including dining/retail/entertainment offerings (restaurant/bar/pool/banquet and conference rooms). The Applicant should provide additional information regarding how the total usage of the property was calculated.

2. The Police Department believes a sidewalk on SR-128, which would connect the proposed crosswalk on SR-22 to the sidewalk that begins at Old Route 22 would be necessary to ensure safe access for pedestrians utilizing the crosswalk.

3. The requested lighting for both sides of SR-22 should also include lighting for the sidewalk on SR-128.

4. In an effort to mitigate potential impacts on Police resources, it would be beneficial if the site contained full time security personnel on site monitoring access to the property, the hotel rooms, apartments, bar, pool, etc. The Applicant should indicate whether such private security is anticipated to be provided.

TOWN OF NORTH CASTLE
15 BEDFORD ROAD
Armonk, New York 10504
Established 1736

PETER J. SIMONSEN
Chief of Police

DEPARTMENT OF POLICE
Tel: 914-273-9500
Fax: 914-273-5412

5. In an effort to efficiently investigate on-site incidents, the Applicant should indicate whether the property will be monitored by CCTV.

6. The Applicant is proposing specific off-street parking standards that are different than that is what in the Town Code. The Applicant should explain why a new off-street parking requirement is proposed and demonstrate that there is adequate off-street parking proposed on the site to accommodate the hotel, apartments, and various retail uses. Additionally, the Applicant should explain where attendees for events at the Banquet/conference rooms will park.

7. The school bus stop location on SR-22 is not acceptable as all traffic on SR-22 would have to stop when school buses are stopped loading and unloading passengers. This will cause unacceptable safety concerns due to the roadway size and character. The proposed bus stop must be relocated.

8. The Applicant should give consideration to providing a designated turning lane from North Castle Drive into Eagle Ridge as during the arrival and departure of IBM employees there is significant traffic volume on North Castle Drive. A study should be conducted to see if a designated turning lane and acceleration lane for vehicles exiting Eagle Ridge is necessary.

TOWN OF NORTH CASTLE

WATER & SEWER DEPARTMENT
15 Business Park Drive
Armonk, New York 10504

Sal Misiti
Director of Water & Sewer Operations
smisiti@northcastleny.com
watersewer@northcastleny.com

www.northcastleny.com
914-273-1882- ext. 55
Fax-914-273-3075

Member
American Water Works Association
N.Y. Rural Water Association
N.Y. Water Environment Association
Westchester Water Works Conference

MEMORANDUM

To: Alison Simon, Town Clerk

From: Sal Misiti

Date: July 26, 2019

Cc: North Castle Town Board
Adam Kaufman, Director of Planning

Re: **Eagle Ridge DEIS ~ Review & Comments related to Water Supply & Sanitary Sewer**

Upon review of the above referenced document as detailed in Chapter II Executive Summary, Chapter III Description of Proposed Action, Chapter IV.G. Utilities section, Appendix G, Wastewater Report and Appendix H, Water Supply Report: I offer the following comments, observations, and concerns relative to Water Supply and Sanitary Sewer.

Chapter II Executive Summary

1.) **Description of proposed action:** With regard to the Boutique hotel there is no mention of laundry facilities. Will there be laundry for the hotel and guests on site? If so, the volume of wastewater generated and water consumption should be accounted for. Additionally, the possibility of a salon although not mentioned, would also increase water & wastewater demands.

2.) **Involved Agencies & Required Approvals:** It should be noted the address for the W&S Department is incorrect we are 15 Business Park Drive it is also incorrect in other sections of the document.

3.) **Potential Impacts & Mitigation Measures:** J. Fiscal & Market Conditions- It should be noted that there is an indication that the Hotel & Apartment Building will generate 164 full time jobs. None of the tables referencing project flows for both water and sewer includes this information, the standard says to add 15 gpd per FTE this is an additional 2,460 gallons per day.

Chapter III Description of Proposed Action

This section provides a sense of just how enormous this project really is. There are descriptions of functions such as the 2nd Floor Terrace which are not accounted for or called out in the W&S flow tables. Just some general concerns and observations regarding ballrooms, etc. there really is no indication as to the frequency and volume of events and functions.

Chapter IV. G. Utilities

On page IV.G-3 there is reference to Figure IV.G-2 Existing utilities, this should be corrected as the water main referenced as servicing the property does not exist (all of IBM's water service is fed from two service connections on Old Rt.22). I believe there was an easement established through the Town Park during the subdivision of the IBM property for a future connection of the lot, but an 8" water main does not exist as detailed. I'm assuming the average daily pressure range was concluded from some type of computer model.

(1.) Existing Conditions

(b.) Sanitary Sewer

Much discussion throughout the document speaks of capacity at the WWTP for the project as it should. However, there is reference to the 8" sewer main that runs along the site's eastern boundary within an easement with the intent to service the project. It should be noted that the existing 8" sewer line once at the base of the hill, extends through the park for approximately 300' at a 0.56% pitch under the Wampus Brook and into the WWTP. This same line services all of IBM, their Original Headquarters, Main Headquarters, and the Learning Center. The capacity of this line should be analyzed with emphasis on the peak loading requirements of the Eagle Ridge project and that of the IBM facilities combined. Can this line handle the additional flows during peak conditions?

(2.) Potential Impacts

(a.) Water Supply

Table IV.G-2 details water use for the various facilities and occupancy based upon number of people, seating, etc. Some of the same comments I had regarding sewer also apply here. Although the pool allocation is for patrons, what will the water demand for the pool be regarding refilling/evaporation rates?

Cumulative Water Demand

There is continuous reference to the "Airport Campus" project which has no basis with regard to water and sewer. That project is serviced by a private water supply and sewer service has no impact on SD2.

On page IV.G-16 reference to Figure IV.G-5 explains a connection to the WD4 distribution system at the intersection of New Rt22 & Business Park Drive it continues to say *"Once inside the Site, two looped water lines would service the hotel/apartment building and the townhouses. This water distribution system located on the Site will be owned and maintained by the Applicant"*. Based upon this statement I have to assume it is the intent for WD#4 not to own and operate the distribution mains and appurtenances. This statement presents a problem, not sure if the Health Department would accept this, the scenario would require master meters with fire flow capability on both distribution system feeds, along with capable backflow prevention devices. These would be very large meter pit/hot box structures.

Appendix G ~ Wastewater Report

- As indicated previously, there are concerns with the existing sewer main through the Town Park and its ability to service the entire project peak flows along with IBM and their peak flows.
- There is no accounting for Full Time Employees in the WW allocation tables.
- There is no allocation for 2nd floor terrace functions in the allocation tables.
- Potential laundry facilities on site?
- No Ballroom frequency or number of anticipated functions.
- No discussion of onsite wastewater collection system and serviceability.
- There is no mention of the pool filter backwash, which should not be discharged to the sanitary sewer.

Appendix H ~ Water Supply Report

- Much of the technical information was collected from the Water District No.4 Capacity Study 2016, prepared for the Town by GHD Consulting Engineers.
- Much of the same concerns detailed for the WW demand tables are relevant for the Water Demand table.
- There is no mention of water metering of the various buildings and facilities.
- Page 4 has the following statement *"Landscaping irrigation for the Eagle Ridge Project will be accomplished by the use of rain water harvesting tanks. During dry periods the tanks will be supplemented by on-site wells."* The onsite wells can present a problem, there is no way to regulate their use. There are two wells illustrated on Site Plan Figure 111-6, the concern is the possibility of

moving the downtown Armonk groundwater contamination plume closer to the WD4 production wells. The groundwater of the affected contamination area is still being contained and treated today. Water is being pumped, treated, and discharged continuously. This is being monitored and performed by the State, in DeCicco's parking lot. If onsite wells are added the requirements for Backflow Prevention & Cross Connection Control will increase substantially.

- Related to water supply there is mention in several parts of the DEIS that the developer is willing to make a financial contribution covering the cost of drilling and installing new production wells. This should happen sooner than later as this process is lengthy and can take years to achieve.
- Fire flow information should be detailed for the fire district and fire inspector in order to substantiate the ability to meet all firefighting requirements.
- The water district is also in need of additional storage, perhaps a buried storage tank could be incorporated onto the site, which can help balance the WD4 distribution system and provide more volume for site functions. Based upon elevation the area behind the Town House units 37-42, may work.
- Pool fill, evaporation topping off rates are not discussed.

Summary:

Under current district conditions, if service is provided for this project, future operations of water & sewer throughout the related service districts will ultimately be impacted. Much of what I have previously mentioned could have adverse effects relative to overall district operations. Items detailed should be looked into, and answers provided for the items questioned. Based upon current district conditions servicing of the property with water and sewer as proposed will be marginal, it is understood that WWTP upgrades are in the works to handle additional flows, however in my opinion water supply is a greater concern.

BYRAM HILLS SCHOOL DISTRICT
10 Tripp Lane, Armonk, New York 10504
914-273-4082, Ext. 5910 Fax: 914-273-2516

Jen Lamia, Ed.D.
Superintendent of Schools

To: Alison Simon, North Castle Town Clerk
Date: July 30, 2019

I enclose this letter as a memo of the requested corrections to the Draft Environmental Impact Statement sent to me by Adam Kaufman in July. Thank you for including me in reviewing the document and for distributing my corrections to the Town Planner and applicant to make the changes.

It should be noted that from the time I met with the attorneys who were conducting the Environmental Impact Study, the scope of the project has changed. It appears that the hotel will be smaller with more apartments than had originally been articulated. I note this only because the change from hotel space to apartments could potentially impact the number of school-age children who would be attending Byram Hills. The study estimates increased enrollment to be only 54.2 students for 70 rental apartments and 94 three-bedroom townhouses. I am hoping that Cleary Consulting can clarify the anticipated number of students from this project as that would be very helpful to the District.

The report also states, "According to Superintendent Lamia, the overall cost per student in 2017-2018 was $37,121.96" (p. IV.J-5). This information was not provided by me.

Also of note is that the report indicates that North Castle Drive is a private road and will not be utilized by buses. Instead, the proposal states that school bus drop-off and pick-up will occur adjacent to the tennis bubble in Community Park. The proposal contends that two paths will be created from the residences to the bubble. Policy 8410 for Byram Hills specifies:

The maximum distances on **public roads** which students may be expected to travel from their legal residence to their approved bus stops are as follows:

Elementary (K-5) - .5 mile

Middle/High (6-12) - 1.0 mile

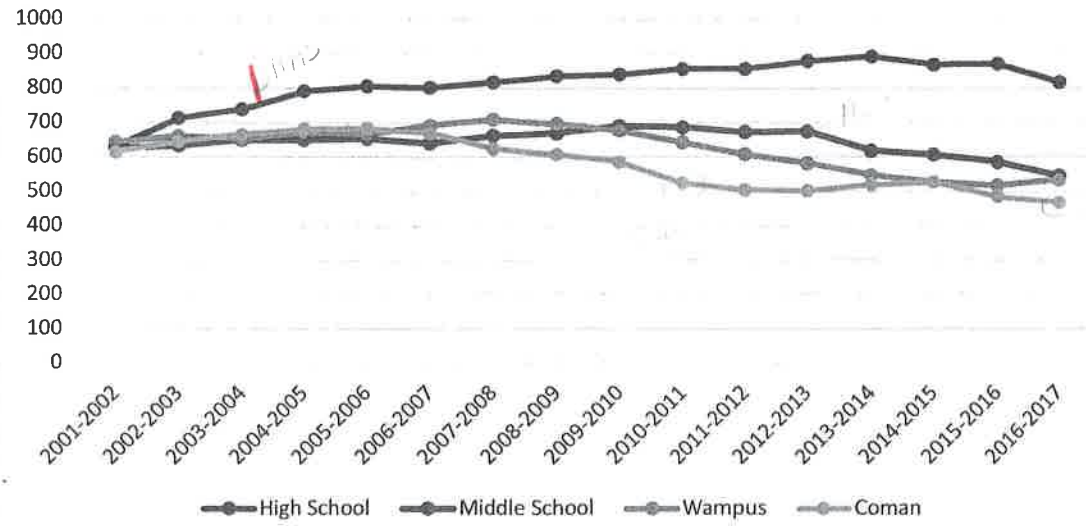
I include this information so that the study is sure to address the District busing policy, the safety of students traveling on a path to your proposed bus stop, and state laws regarding school-determined bus routes.

Finally, I have attached four pages with edits to enrollment figures and hope this is helpful.

Thank you,

Jen Lamia, Ed.D.

Chart IV.J-1
School Enrollments Over Time



Source: NYSED Student Information Repository System (SIRS)

Overall district enrollment peaked at 2,936 students during the 2007-2008 school year, declining by 564 students (19.2%) during the 2016-2017 school year. The '07/'08 enrollment peak can be tracked through each school in the district. Enrollment peaked in the Coman Hill Elementary School (grades K – 2) in 2006/2007, in Wampus Elementary School (grades 3 - 5) in 2006/2007, in the H.C. Crittenden Middle School (grades 6 – 8) in 2009/2010 and in the Byram Hills High School (grades 9 – 12) in 2013/2014.

This population pulse represents the tail end of the Millennial generation (children born between 1980 and 2000). While slightly delayed in the Byram Hills District, it is characteristic of the population fluctuation faced by virtually all districts in the region during this period. According to Hudson Valley Pattern for Progress[2], 82% of the region's school districts have already or are projected to experience enrollment declines in the coming years.

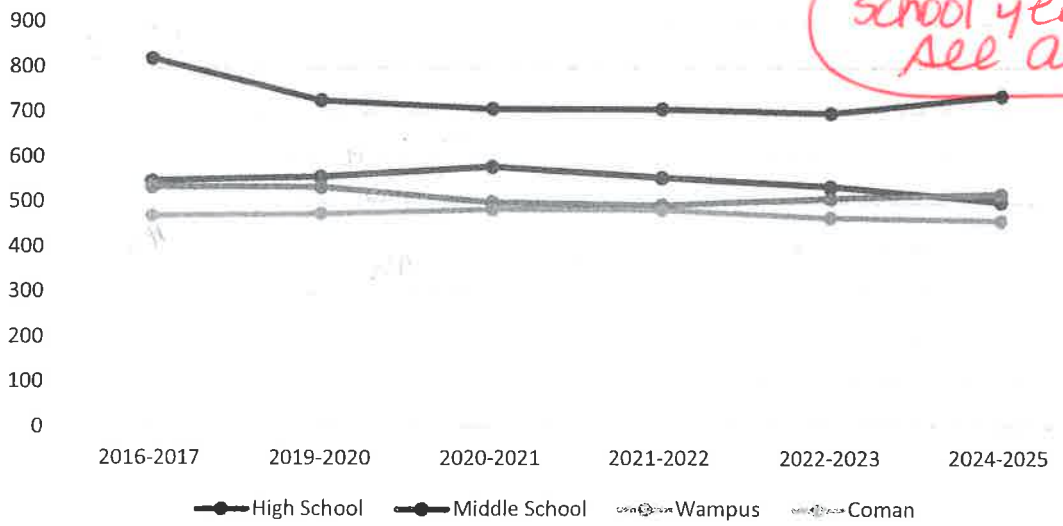
[2] *The Empty Classroom Syndrome*, Hudson Valley Pattern for Progress (May 2013).

According to data provided by District Superintendent Lamia, the projected enrollment for the 2018 – 2019 school year is 2,312 students. Superintendent Lamia also provided the following enrollment projections:

Table IV.J-3
School Enrollment Projections 2019 - 2024

School Name	2019-2020	2020-2021	2021-2022	2022-2023	2024-2025
Coman Hill	~~475~~ 456	~~485~~ 475	~~485~~ 491	~~468~~ 473	~~462~~ 454
Wampus School	~~535~~ 523	~~501~~ 487	~~496~~ 469	~~510~~ 503	~~520~~ 536
HC Crittenden Middle School	~~557~~ 562	~~580~~ 588	~~557~~ 556	~~536~~ 534	~~503~~ 479
Byram Hill High School	~~727~~ 740	~~709~~ 719	~~709~~ 735	~~700~~ 723	~~739~~ 761
Totals	~~2294~~ 2281	~~2275~~ 2269	~~2247~~ 2257	~~2214~~ 2223	~~2224~~ 2230

Chart IV.J-2
School Enrollment Projections



As can be seen, no major fluctuations in enrollments are projected through 2025.

IV. J - COMMUNITY FACILITIES & SERVICES

INTRODUCTION

This section of the DEIS evaluates the impact of the Proposed Action on community services and facilities; including the Byram Hills Central School District, the North Castle Police Department, the Armonk Fire Department, and on the Town's solid waste and recycling programs.

1.) EXISTING CONDITIONS

(a.) Schools:

The Project Site lies within the jurisdictional boundary of the Byram Hills Central School District. According to the New York State Education Department, The District's 2016-2017 K-12 enrollment[1] was 2,372 students in the Coman Hill Elementary School, Wampus Elementary School, H.C. Crittenden Middle School and Byram Hills High School. Grades K – 2 attend the Coman Hill Elementary School, grades 3 -5 attend the Wampus Elementary School, grades 6 – 8 attend the H.C. Crittenden Middle School and the Byram Hills High School accommodated grades 9 – 12. Table IV.J-1 presents 2016-2017 enrollments by school.

2,374

Table IV.J-1
Byram Hills Central School District
2016-2017 Enrollments

School	Grade	Number of Students	%
Coman Hill Elementary School	K	141	6%
	1	151	6%
	2	178	8%
Wampus Elementary School	3	169 173	7%
	4	187 188	8%
	5	171 174	7%
	Ungraded	8	0%

[1] 2016-2017 is the most recent school year presented in the NYSED Student Information Repository System (SIRS)

	Elementary		
H.C. Crittenden Middle School	6	150	6%
	7	~~201~~ 203	8%
	8	194	8%
Byram Hills High School	9	~~191~~ 192	8%
	10	~~211~~ 215	9%
	11	~~207~~ 208	9%
	12	207	9%
	Ungraded Secondary	6 ?	0%
Total		***2,372*** 2,371	***100%***

Source: NYSED Student Information Repository System (SIRS)

Table IV.J-2 displays enrollments at each school over time. Charts IV.J-1 – IV.J-4 graphically display these data.

Table IV.J-2
School Enrollments Over Time

School	Grade	16-17	15-16	14-15	13-14	12-13	11-12	10-11	09-10	08-09	07-08	06-07	05-06	04-05	03-04	02-03	01-02
High School	9-12	~~820~~ 822	~~874~~ 875	871 ~~872~~	894 893	881 ~~883~~	~~858~~ 862	858	841	837	819	803	807	792	739	714	632
Middle School	6-8	547	588	609	620 621	677	674 675	688	690	671	663	641	654	650	650	634	627
Wampus	3-5	535	518	~~529~~ 528	548	582	609	643	678 677	698	710	693	667	672	652	662	645
Coman	K-2	470	487	529	521	503	506	525	586	609	626	671	683	681	666	647	615
		2372	*2467*	*2538*	*2583*	*2643*	*2714*	*2714*	*2795*	*2815*	*2818*	*2808*	*2811*	*2795*	*2707*	*2657*	*2519*

Source: NYSED Student Information Repository System (SIRS)

Town of North Castle
Open Space Committee
17 Bedford Road
Armonk, NY 10504
(914) 273-0346 x168

To: North Castle Town Board

Date: August 9, 2019

Re: Comments on Eagle Ridge DEIS

The IBM property is a vital piece of open space for the Town of North Castle. This property ranks as #3 of 131 priority parcels on the Town's June 2003 Open Space Study Committee Report. It is ranked so highly because it has unique environmental and visual qualities that would be difficult to replace if lost. Preserving this piece of open space enables the Town to protect important environmental resources found on the site such as steep slopes, wetlands, woodlands, wildlife and their habitat, and the scenic vistas and ridgelines that are distinctive to this property and are thereby distinctive to the scenic quality of the Town.

The IBM parcel ranks so highly because it has <u>all</u> of the water characteristics measured in the 2003 study. Specifically, these are:

- aquifers,
- Department of Environmental Conservation (DEC) wetlands,
- hydric soil wetlands,
- National Wetland Inventory (NWI) wetlands,
- streams, and
- water bodies.

In particular, open space parcels located over aquifers are considered most important because they protect the Town's drinking water supply; and streams and wetlands are considered important for their ability to retain, filter, and transport surface water.

Therefore, it is with all of these things in mind, that the Open Space Committee submits the following comments on the Applicant's Draft Environmental Impact Statement.

OPEN SPACE

Town Comprehensive Plan p. 167. Open Space: "Where existing open space areas are private and potentially subject to redevelopment, such development should be contemplated in a manner that preserves as much of the property as possible…"

Scoping Document IV.N.3.b. Discuss what legal mechanism will be put into place to ensure perpetual preservation of open spaces.

> **Comment** DEIS makes **no** mention of deed restrictions, conservation easements or other methods of perpetual preservation of open spaces. Please address.

Scoping Document IV.N.3.c. Discuss the potential for connections of on-site open spaces to offsite open spaces and how this could be implemented and maintained.

> **Comment:** DEIS does not address this. Please show where these connections could be, as well as detail steps for implementation and maintenance.

Scoping Document IV.N.3.d. Other Mitigation Measures

> **Comment:** A townhouse development under the R-MF zone rather than the R-MF-A zone will allow for greater preservation of the existing open space. Furthermore, a development configured as a Conservation Subdivision in a R-MF zone as outlined in Town Code Section 355-31 will provide even more open space preservation. Please describe how such a development will look.
>
> **Comment:** Building a hotel on the 6.25 acre parcel as currently zoned and placing a conservation easement on the remaining 26.25 acre parcel to permanently preserve it as open space must be explored. There can be significant tax advantages to the applicant under this scenario. Please schedule an appointment to meet with the Open Space Committee so that we may discuss this option, as well as other preservation techniques and scenarios.

TOPOGRAPHY AND SLOPES

Scoping Document Section IV.C.2.c. Describe steep slope permits required in North Castle based upon steep slopes analysis as required by Section 355-18 (Steep Slopes) of the Code of the Town of North Castle.

DEIS Executive Summary P. II-12: Approximately 26.5 acres of the Site will be disturbed during construction. Of this total, approximately 4.3 acres are designated steep slopes in excess of 25%. A steep slope disturbance permit shall be obtained for these disturbances as required by Town Code.

DEIS IV.A-25: "As documented in Section IV-I, the new hotel would be partially visible from Route 22 – generally when sitting at the traffic light at Main Street and North Castle Drive." On a recent site walk, the Applicant stated that it is important for attracting business to the hotel that the hotel be visible from Route 22.

> **Comment:** § 355-18 of the Town Code entitled "Hilltops, ridgelines and steep slopes" states that the elevation and visibility of hilltops and ridgelines, makes them significant visual features of the landscape, thereby contributing to North Castle's attractive semi-rural character and property values.
>
> Please explain how the planned location and height of the hotel comply with the Town Code's intent to protect important scenic vistas (§ 355-18). Also please explain why the hotel location and height should be allowed if the Town Code states that "The approval authority shall not grant the necessary permit or approval if there is another alternative which, in the sole opinion of the approval authority, is reasonable and practical and would help to preserve the steep slope, hilltop or ridgeline."
>
> Please show another alternative that would eliminate the hotel's visibility from the street and would eliminate the need for a steep slope disturbance permit.

WILDLIFE

Scoping Document Section IV.D.1.c requires a " Site-specific analysis of resident and migratory wildlife, including amphibian, reptile, mammal and bird species. Assessment shall examine habitat functions (i.e., breeding habitat, transitional, staging areas, feeding and roosting sites and travel lanes).

> **Comment:** The DEIS makes two passing mentions of on-site observations, but provides no specific information about these on-site observations. Please provide the identity and credentials of the parties who performed the on-site observations, the dates of these observations, the purpose of these field visits, as well as copies of the data collected during these field visits.

Scoping Document Section IV.D.2.i requires Applicant to address the potential impact on habitat and wildlife corridor fragmentation.

DEIS Executive Summary Page II-12: The Proposed Action will disturb approximately 26.5 acres of the 32.5-acre Site. Table IV.D-1 on Page IV.D.-5 identifies the types and coverage of the ecological communities on the site. 48.9% of the site is "successional old field" which means a meadow with grasses and shrubs.

> **Comment:** The DEIS fails to address that the "successional old field" ecological community is vital habitat for many of the bird species that inhabit the site and are endangered or threatened. For example, two ground nesting birds reliant on

this habitat are the Eastern Meadowlark and the Bobolink. Both of these birds are classified as “Threatened” on the Westchester County Endangered Species List.

DEIS Table IV.D-1 on Page IV.D.-5 Identifies 28.4% of the site as an “Oak-tulip tree forest” ecological community.

Comment: The DEIS fails to address that the oak-tulip tree forest is vital habitat for many of the bird species that inhabit the site and are endangered or threatened. For example, two birds reliant on this habitat are the Black-billed Cuckoo and the Wood Thrush. Both of these birds are identified in DEIS Appendix K, p. 4 as Birds of Conservation Concern.

DEIS Table IV.D-1 on Page IV.D.-5 Identifies12.9% of the site as a “successional southern hardwoods” ecological community.

Comment: The DEIS fails to address that “successional southern hardwoods” is vital habitat for many of the bird species that inhabit the site and are endangered or threatened.

Comment: For all ecological communities identified on site please provide site-specific analysis of resident and migratory wildlife, including amphibian, reptile, mammal and bird species found in each ecological community. The assessment must be conducted by qualified experts, and should examine habitat functions (i.e., breeding habitat, transitional, staging areas, feeding and roosting sites and travel lanes), and also address mitigation measures for maximum reduction of impacting these species during site construction.

DEIS Executive Summary, Page II-13: “The ecological communities on the Site and their availability as habitat for local and migratory species of wildlife will be impacted by the Proposed Action. During the site clearing and construction phases of the Proposed Action, it is expected that some of the smaller, less mobile or juveniles of some species would be impacted.”

Comment: DEIS does not accurately describe the complete destruction of habitat and the large loss of life that will occur, especially if construction is done during the breeding season. Applicant needs to accurately detail the likely impacts, as well as identify mitigation measures for maximum reduction of impact.

Scoping Document Section IV.D.1.c requires a “ Site-specific analysis of resident and migratory wildlife, including amphibian, reptile, mammal and bird species. Assessment shall examine habitat functions (i.e., breeding habitat, transitional, staging areas, feeding and roosting sites and travel lanes).

DEIS Appendix K (p.2) Appendix K is an “automatically generated list of species and other resources such as critical habitat …that are known or expected to be on or near

the project area." The Appendix specifically notes that "determining the likelihood and extent of effects a project may have…typically requires gathering additional site specific (e.g. vegetation / species surveys) and project-specific (e.g. magnitude and timing of proposed activities) information."

DEIS IV.D-18: Applicant lists the amphibians and reptiles that may use the Project Site. Included in the list is the Eastern Box Turtle. This turtle is classified as "Threatened" on the Westchester County Endangered Species List.

> **Comment:** For all ecological communities identified on site please provide site-specific analysis of resident and migratory wildlife, including amphibian, reptile, mammal and bird species found in each ecological community. The assessment must be conducted by qualified experts and should examine habitat functions (i.e., breeding habitat, transitional, staging areas, feeding and roosting sites and travel lanes), and also address mitigation measures for maximum reduction of impacting these species during site construction.
>
> **Comment:** Please provide the complete Westchester County Endangered Species List. The one included in Appendix K is missing the two pages that list the Insects, Amphibians, Reptiles, and the majority of the Birds.

Appendix K (p.3) states that "Certain birds are protected under the Migratory Bird Treaty Act and The Bald and Golden Eagle ProtectionAct" and continues by advising that "any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures…"

Appendix K (p. 4) Applicant's consultant lists nine birds at the project site that are "of particular concern" and that "warrant special attention" in the project area. These are the Bald Eagle, Black-billed cuckoo, Bobolink, Clapper Rail, Kentucky Warbler, Prairie Warbler, Red-Throated Loon, Rusty Blackbird, and Wood Thrush."

> **Comment:** The Migratory Bird Treaty Act of 1918 makes it unlawful to wound or kill any migratory bird, or destroy their nests or eggs unless authorized under a permit issued by the Secretary of the Interior. A complete list of the birds covered by this act can be found at **https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php#alphabetical**. A quick glance at this list shows at least 40 birds that call the Project Site home, among them the Eastern Bluebird (the state bird of NY), the Northern Cardinal, the Northern Flicker, the American Goldfinch, and the Red-tailed Hawk (which was observed at the project site during the site walk by the Open Space Committee).
>
> **Comment:** The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, prohibits anyone from "taking" bald eagles, including their nests or eggs without a permit issued by the Secretary of the Interior.

The Eagle Act defines "take" as including wound, kill, molest or disturb. Disturb means: "to agitate or bother …to a degree that causes, or is likely to cause… injury to an eagle, a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

This definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding or sheltering habits, and causes injury, death or nest abandonment.

A violation of The Bald and Golden Eagle Protection Act can result in a fine of $100,000 ($200,000 for organizations) and imprisonment for one year for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

Comment: Because Bald Eagles have been observed roosting in the trees along Route 22, less than 1/4 mile from the Project Site, and because Applicant's Appendix K p. 4 states that the Bald Eagle either occurs on the Project Site or warrants special attention because of the project location, the Open Space Committee has contacted the United States Fish and Wildlife Field Office located in Cortlandt, NY that Applicant provides in Appendix K. The Field Office has referred us to the Eagle Coordinator for the Northeast Region US Fish and Wildlife Division of Migratory Birds. We have requested his review of and input on the proposed development.

Appendix K (p.3) references measures for avoiding and minimizing impacts to birds at **http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php**

Comment: Please discuss and detail how these assessment tools and guidances have been utilized. Outline in detail the conservation measures that will be undertaken to protect the migratory birds as well as the Bald Eagles that inhabit or use the project site.

DEIS Executive Summary, Page II-13: "Displaced species are expected to relocate to adjacent contiguous areas of similar habitat."

Comment: This comment is inaccurate and misleading. In many parts of this project site, once the habitat is destroyed, there simply is no "adjacent contiguous areas of similar habitat." Applicant must correct this statement and accurately detail the likely impacts, as well as identify mitigation measures for maximum reduction of impact.

Scoping Document Section IV.D.3. Requires Applicant to address mitigation measures for "Preservation and creation of wildlife corridors"

> **Comment:** The DEIS does not address preservation and creation of wildlife corridors. Please identify current wildlife corridors on the property and adjacent properties. Please address how these corridors can be preserved and how new ones can be created.

VEGETATION

Scoping Document Section IV.D.3.e Potential mitigation measures to explore "Preservation of trees, to the maximum extent possible."

DEIS Table IV.D-1, P. IV.D-5: 28.4% of the Project Site is oak-tulip tree forest classified in New York State as "very vulnerable." **Page IV.D-20**: of the 9.2 acres of this forest on site, only 3.9 will remain after development. 850 trees in excess of 8" dbh will be removed.

> **Comment:** According to the New York Natural Heritage Program, there are less than one hundred occurrences of oak-tulip tree forests statewide. Applicant should provide an alternative plan so that none of this forest on the project site is disturbed.

DEIS P. IV.D-22: "in the Applicant's opinion, no significant adverse impacts to vegetation and wildlife will result from the Proposed Action."

> **Comment:** Applicant's opinion that there will be "no significant adverse impacts" is neither persuasive nor determinative. Qualified naturalists and arborists must be retained to study to the area and the proposed development. These experts should submit an analysis of impacts to vegetation and wildlife.

DEIS P. IV.D-23: "To compensate for the loss of vegetation, a new Landscaping Plan is proposed (Figure IV.D-4).. Most of the wildlife species that will be displaced as a result of construction related activities are highly tolerant of proximity to humans, and upon completion of the project are expected to re-inhabit the newly landscaped portions of the Site."

> **Comment:** Applicant's statement is not accurate and misleading. Wildlife species that live, nest and feed in an oak-tulip tree forest are not going to re-inhabit newly landscaped portions of the site that provide a completely different habitat. Species dependent on a specific habitat cannot simply re-adjust to a new habitat that does not provide the same cover, food, and nesting requirements. Qualified naturalists and arborists must be retained to advise what mitigation measures will be the most effective. Applicant must make more

accurate statements regarding the impact of the proposed disturbance on the vegetation and wildlife.

WETLANDS

Scoping Document Section IV.E.2.a "analyze potential direct and indirect impacts on survey-located wetlands"

DEIS Executive Summary p. ii-14: The Proposed Action will not result in any direct impacts or disturbances to the wetland or wetland buffer.

Comment: Please address the indirect impacts (construction related and long term) on the wetland, wetland buffer, including impact on wildlife habitat as required by the Scoping Document. Please address impact, avoidance and containment.

FREDERICK P. CLARK ASSOCIATES
PLANNING, TRANSPORTATION, ENVIRONMENT AND DEVELOPMENT
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August 12, 2019

Mr. Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, New York 10504

Subject: **Draft Environmental Impact Statement (DEIS) – Substantive Traffic Review – Eagle Ridge Development, NYS Route 22, Armonk, New York**

Dear Mr. Kaufman:

As requested, we have reviewed the latest Traffic and Transportation Section of the Draft Environmental Impact Statement (DEIS), dated May 2019 for Substantive Comments.

Project Understanding

The Applicant is proposing a 91-room hotel with conference center, 70 apartments above the hotel and 94 townhouse units to be located on the east side of North Castle Drive. Site access will be provided via a full-movement access drive to North Castle Drive, which is a private road. The proposed development is estimated to generate a total of 118 and 146 vehicle trip ends during the weekday morning and weekday afternoon peak hours, respectively.

TRAFFIC AND TRANSPORTATION [SECTION IV.H. AND APPENDIX D]

Based on this review we have the following Substantive comments:

1. *Existing Traffic Volumes (Section IV.H.1.c. and Appendix D Section E.)*: Based on our review of the weekday afternoon peak hour volumes, the IBM approved 2017 traffic volumes used at the NYS Route 22 intersections of NYS Route 120 (two intersections) and the Interstate 684 Interchange were in some cases significantly reduced to balance to the 2018 traffic volumes. Therefore, the Applicant should provide a sensitivity analysis of these intersections provided in Figure 3A with the IBM approved 2017 traffic volumes and carry through the 2022 build condition.

2. *Accident History (Section IV.H.3. and Appendix D Section L.)* – The accident history summary is provided under Mitigation Measures in Section IV.H.3. It should be provided in Section IV.H.1.d.

3. *No-Build Traffic Volumes (Section IV.H.2.a. and Appendix D Section F.)*: The future 2022 no-build traffic volumes included an annual growth rate of one percent and included seven other developments and is reasonably acceptable. See Comment 1 regarding the sensitivity analysis.

4. *Site Traffic Generation (Section IV.H.2.b. and Appendix D Section G.)*: The site traffic generation estimates for the proposed development are reasonably acceptable.

5. *Site Traffic Distribution (Section IV.H.2.c. and Appendix D Section H.)*: The site traffic distribution patterns provided are reasonably acceptable.

6. *Build Traffic Volumes (Section IV.H.2.d. and Appendix D Section I.)*: The build traffic volumes are reasonably acceptable. See Comment 1 regarding the sensitivity analysis.

7. *Capacity Analysis (Section IV.H.2.f. and Appendix D Section K.)*: Review of the Synchro files indicated that the timing changes by NYSDOT to the intersection of NYS Route 22 at Maple Avenue/Business Park Drive were not used in the analysis. NYSDOT in 2018 changed the timing plan to add 15 seconds to phase 4 (change from 26 seconds to 41 seconds) with an increase in cycle length from 134 seconds to 149 seconds. This timing change should be implemented for all peak hours and conditions. The appropriate left turn pocket lengths for both the southbound Maple Avenue left turn lane at NYS Route 22 and northbound Maple Avenue left turn lane at Bedford Road should be inputted into the model.

   The intersection of NYS Route 128 at Whippoorwill Road East/Maple Avenue should be analyzed as a 2-phase signal (Phase 1 northbound and southbound and Phase 3 eastbound and westbound) as per the NYSDOT Timing Plan provided. Also, the minimum initial, minimum split, maximum split, yellow time, all-red time, vehicle extension, minimum gaps, walk time and flashing don't walk does not match the NYSDOT Timing Plan. The timing inputs should be revised for all peak hours and conditions.

   A review of the volume inputs indicated that at Node #13, 14 and 42 the volumes inputs are incorrect and do not balance for all time periods and conditions, with the exception of Node #42 for the no-build and build conditions during the weekday morning peak hour. This should be corrected. There were some minor discrepancies between the Synchro results and the tables for the delays and queuing at the NYS Route 22/NYS Route 128/North

Castle Drive intersection during the existing weekday afternoon peak hour condition. In Table 2 for the intersection of NYS Route 22 at Maple Avenue/Business Park Drive, the northbound left turn should be a Level of Service "E" not "D" during the build weekday morning peak hour condition.

The Applicant should provide in the capacity tables the analysis of the Interstate 684 northbound off-ramp to NYS Route 22 northbound. The proposed site driveway is analyzed as a single lane exiting not a separate left and right turn lane exiting, which provides a conservative analysis.

8. *Intersection Sight Distance (ISD) Analysis* (Section IV.H.2.f. and Appendix D Section K.): The Applicant should provide the ISD on the site plan for review. The roadway profiles should be provided to confirm the percent grade used in calculating the Stopping Sight Distance (SSD) requirements. The ISD requirements for a left turn from STOP should be adjusted to account for the three-lane cross section at the driveway. The time gap should add 0.5 seconds to adjust.

9. *Mitigation (Section IV.H.3.)*: Based on our review, there is a safety concern in the location proposed for the School bus stop on NYS Route 22. The bus would need to slow from a high rate of speed and cross over the solid white line for the free right turn from North Castle Drive. The Applicant should evaluate alternative locations, one being where the County Bee-Line bus stop is shown.

   For the proposed NYS Route 22 crosswalk from North Castle Drive to NYS Route 128, a build with improvement capacity analysis should be performed with the addition of a pedestrian concurrent phase during phase 3 with appropriate walk and do not walk timings, as well as pedestrian calls. Review of the site plan indicated that the sidewalk from the site does not connect to the proposed crosswalk. This connection should be provided as well as a proper landing on the north side of the intersection.

10. *Recommended Mitigation* – Based on a detailed review of the results of the traffic analysis and specifically traffic-related conditions along the existing North Castle Drive from the signalized intersection at NYS Route 22 to the IBM access gates, it is recommended that the Town and the Applicant consider the attached modifications to pavement markings and traffic control signing along North Castle Drive to improve circulation and overall safety with access to the proposed Eagle Ridge development.

Under existing conditions this access drive is only used by IBM-related traffic and includes a reverse-flow configuration, with minimal traffic control signing, which indicates that the center lane is only used inbound generally between 7:00 to 9:00 A.M. and outbound before 4:00 and 5:00 P.M. However, with the addition of non-IBM-related traffic, which is not related to peak entering and exiting IBM traffic condition, it is necessary to modify pavement markings to a standard configuration so that visitors to the Hotel and residents to the proposed residential development are not confused with a reverse-flow traffic configuration, which is currently minimally marked with pavement markings and signing.

As referenced in the attached Figure 1, it is recommended that standard pavement markings and appropriate traffic control signing for lane use be implemented along the entire length of North Castle Drive. This configuration favors the entering traffic during the morning peak period so that IBM-related traffic does not back up to the signalized intersection at NYS Route 22; however, maintains the three-lane configuration generally to the northeast of the Eagle Ridge site access drive to the signalized intersection with NYS Route 22.

At the approach to the IBM lane gate control it opens up to a two-lane configuration, with a third lane for visitors and deliveries. For exiting movements through the gates, it maintains the two-lane exit configuration; however, quickly transitions into a one-lane exit flow to and just beyond the Eagle Ridge site access drive.

Since IBM generally has a flex-time workday format it is anticipated that the one-lane section can accommodate exiting movements during the peak hour. Any delays along North Castle Drive will be limited to IBM traffic, without negative impacts to the signalized intersection at NYS Route 22.

We are available to discuss these comments further, if necessary.

Sincerely,

Michael A. Galante
Managing Principal

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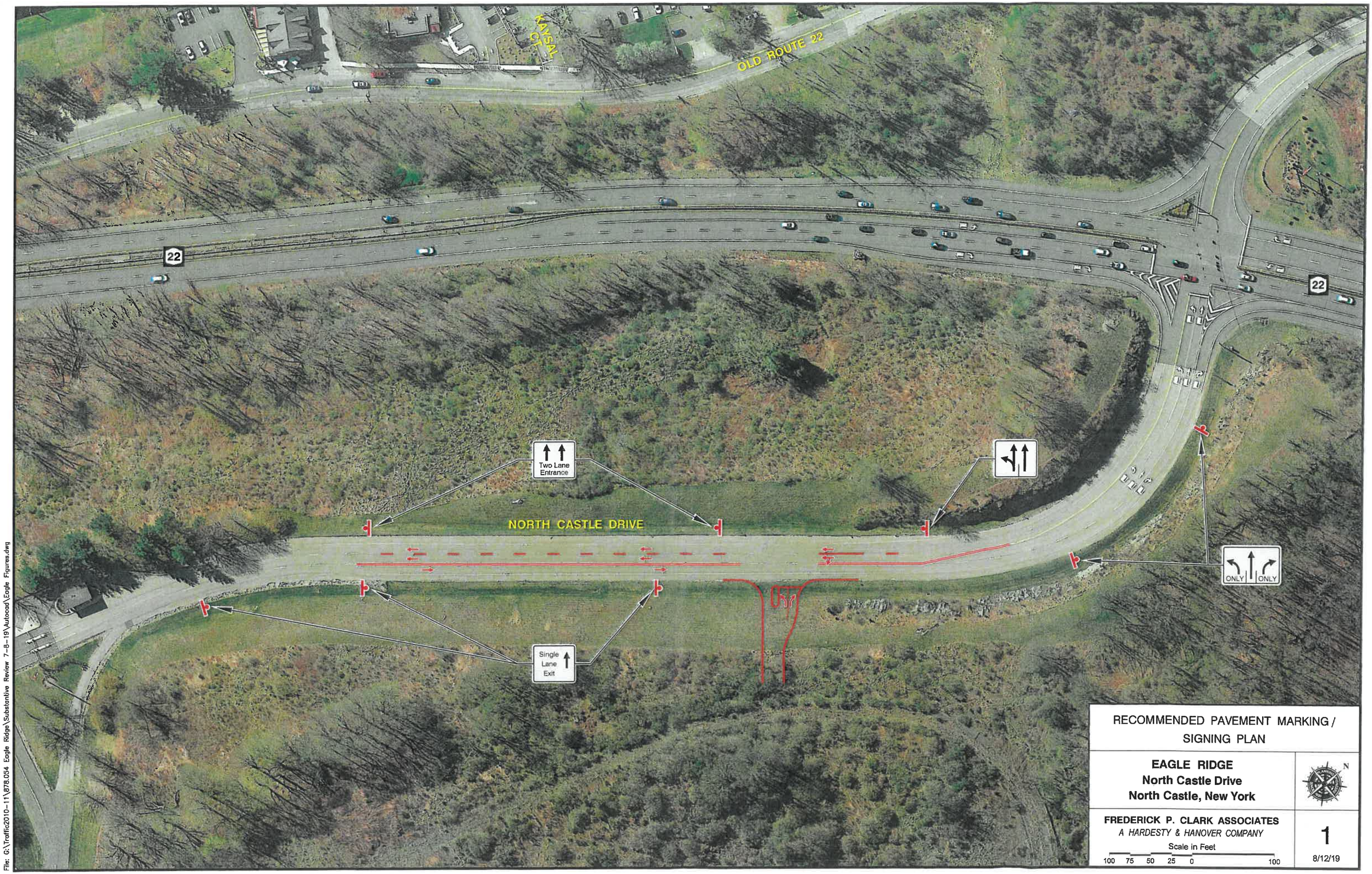

RECOMMENDED PAVEMENT MARKING / SIGNING PLAN

EAGLE RIDGE
North Castle Drive
North Castle, New York

FREDERICK P. CLARK ASSOCIATES
A HARDESTY & HANOVER COMPANY

Scale in Feet
100 75 50 25 0 100

1

8/12/19

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August 14, 2019

Mr. Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, New York 10504

Subject: **Draft Environmental Impact Statement (DEIS) – Supplemental Substantive Traffic Review – Eagle Ridge Development, NYS Route 22, Armonk, New York**

Dear Mr. Kaufman:

As requested, we have reviewed the latest Traffic and Transportation Section of the Draft Environmental Impact Statement (DEIS), dated May 2019 for Substantive Comments.

Based on the Recommended Mitigation (Comment number 10 in our August 12, 2019 Letter), North Castle Drive would be two lanes inbound and one lane outbound from IBM. Therefore, Comment number 8 in our August 12, 2019 Letter should remove the last two sentences for the Intersection Sight Distance requirements, as they are no longer needed.

We are available to discuss these comments further, if necessary.

Sincerely,

Michael A. Galante
Managing Principal

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KELLARD SESSIONS

John Kellard, P.E.
David Sessions, RLA, AICP
Joseph M. Cermele, P.E., CFM
Jan K. Johannessen, AICP

MEMORANDUM

TO: North Castle Town Board

CC: North Castle Planning Board
North Castle Conservation Board
Adam Kaufman, AICP

FROM: Joseph M. Cermele, P.E., CFM
Kellard Sessions Consulting
Consulting Town Engineers

DATE: August 15, 2019

RE: Eagle Ridge Subdivision
3 North Castle Drive
Section 118.03, Block 1, Lot 62.1

As requested, Kellard Sessions Consulting has reviewed the Draft Environmental Impact Statement (DEIS) submitted in conjunction with the above-referenced project. The applicant is proposing a mixed-use development to include a 172,893 s.f. five-story building with a 241 space, two-story parking garage and 66 at-grade parking spaces. The building would house a hotel with 91 guest rooms on the first and second floors and 70 rental apartments on the third through fifth floors. In addition, a separate community of 94 three-bedroom townhomes is proposed. The 32.5 acre parcel, which is located along North Castle Drive at NYS Route 22, is proposed to be subdivided into a 6.25 acre parcel (Hotel/Apartments) and 26.25 acre parcel (Townhomes). The property is located within the Office Business Hotel (OBH) Zoning District. The proposed action would require text amendments to the OBH District and rezoning a portion of the property to the Residential Multifamily (R-MF-A) Zoning District. Access to the property is proposed along a shared roadway from North Castle Drive, a private road owned and maintained by IBM. Public water and sewer facilities are available to service the project; however, supply and capacity issues exist within each District.

Our comments are outlined below.

1. Chapter IV.C – Topography & Slopes:

    a. The discussion regarding potential impacts to slopes and the Slope Impacts Table IV.C-2 should be expanded to express disturbed slopes as a percentage of total area for each slope category. The Table should include the total area and impact area for each category as an area (acres) and percentage.

b. The preliminary cut/fill analysis results in an estimated total of 51,400 cubic yards of material to be exported for the development of the site. To better understand how materials (surplus and import) will be managed throughout development, the cut/fill analysis should be provided for each phase. In this way, a discussion of how any required import or export of material or temporary stockpiling of surplus material will be managed and located.

c. The Slopes Analysis legend on the Areas of Disturbance on Steep Slopes and Soils, Figure IV.C-4, should be coordinated with the data include in Table IV.C-2 – Slope Impacts as expanded, as requested in Comment No. 1.a above.

d. As illustrated and tabulated on the Cut & Fill Map, Figure IV.C-5, it appears that a large portion of the development appears to require cuts of up to 10 feet. Consideration should be given to adjusting road profiles, building layout and site grading to minimize these cuts, thereby providing a more balanced site.

e. It is noted that the proposed stormwater basins are located in areas of deep cuts and in the vicinity of slopes greater than 15%. The Stormwater Pollution Prevention Plan (SWPPP) must demonstrate that the basin locations comply with the design guidelines presented in the New York State Stormwater Management Design Manual.

2. Chapter IV.E – Wetlands:

a. While locally-regulated wetlands are present on the subject site, the DEIS states that no impacts to these freshwater wetlands will result from this project. The applicant has flagged the wetland boundaries. We would suggest that the applicant's Wetland Consultant contact our office to schedule a site walk for verification by the Town Wetland Consultant. Should there be any discrepancies in the limits of the wetland boundary and associated wetland buffer, as shown, or additional wetland areas discovered, either of which encroach into the proposed development, the DEIS will require revisions, as necessary, to address the potential impacts and any necessary mitigation.

b. The wetland buffer illustrated on Figure IV.E-2, Locally Regulated Wetland, shall be revised to comply with Chapter 340: Wetland and Watercourse Protection of the Town Code, which defines a wetland buffer as the area extending 100 feet horizontally away from and paralleling the outermost wetland boundary or bank of the watercourse or if, within such buffer area, there is an area of slope in excess of 25%, the buffer area shall be expanded to include the lesser of either 150 feet or the entirety of the area of 25% or greater slope which drains down toward the wetland, water body or watercourse.

c. The current proposal appears to include minor disturbances within the 150 foot expanded wetland buffer; specifically, as it relates to grading associated with Units 22-27 and the

construction of Infiltration System No. 4. This should be verified and adjusted, as necessary. The disturbances shall be removed from the buffer or a Wetland Mitigation Plan prepared to demonstrate compliance with the mitigation policy which requires mitigation to unavoidable disturbances to wetlands and wetland buffers at a ratio of 2:1.

3. Chapter IV.F – Stormwater Management:

   a. Section IV.F of the DEIS shall reference the current edition of the New York State Stormwater Management Design Manual of January 2015. Further, the 6-step Green Infrastructure site planning process adopted by the 2015 Manual shall be implemented in the project's SWPPP.

   b. The New York State Stormwater Management Design Manual provides standards expected for the design of stormwater mitigation practices which will protect the waters of New York State from adverse impact of urban runoff. The manual establishes specifications and criteria for designing such practices. The manual emphasizes the use of green practices, the preservation of natural features, reduction of impervious surfaces and the de-centralization of practices.

      The proposed stormwater mitigation practices for the project do incorporate some green practices, including a green roof at the hotel and a few infiltration practices and rain gardens. It does, however, fall short in developing smaller de-centralized practices which treat the runoff at the source. Instead, the project proposes a large centralized treatment basin system within the center of the eastern hillside. As proposed, the basins will require significant land clearing and regrading and locates the basins in extremely difficult locations to access for future, long-term operation and maintenance. The plan should incorporate multiple smaller practices of adequate size and at a location that better fits the site and provides for ease of maintenance.

   c. The project site has deep, well-drained soils across much of its upper reaches. We would recommend that the project better utilize these soils by incorporating more infiltration practices and, perhaps, porous pavements into the design. These stormwater reduction techniques, along with the establishment of habitat areas and reforestation, could significantly reduce the disturbance of the hillside, which would be caused by the centralized approach presently proposed.

   d. The entire eastern portion of the project is bordered by the North Castle Community Park. This common boundary is the lowest point of the project site which will receive approximately 95% of the stormwater runoff discharged from the project. Ballfields, playground, tennis courts, parking lot and the park's track are all situated below this common border. While the applicant will be required to mitigate peak rates of runoff to comply with New York State Stormwater Regulations, the project will result in a significantly greater volume of runoff from the project site, which is being mitigated within a number of treatment facilities. Our concern, however, is in regard to the stormwater discharge from these treatment areas and the potential impact

such concentrated flows will have on the community's recreation facilities. We would recommend that the applicant further his study to examine how the runoff from the project may impact the Town's adjacent recreation facilities and the Wampus River. Such examination should evaluate the present stormwater systems within the adjacent park and the ability for these existing systems to adequately transport such additional concentrated flows without impact to the park or its various uses. The discussions in the DEIS should be expanded as appropriate.

e. It appears that water quality treatment of surface runoff from new lawn areas within the rear of most townhomes is not provided. The SWPPP and discussion within the DEIS should be revised to address this condition.

f. Additional information should be included on the existing and proposed condition Watershed Maps, including the subcatchment areas studied, the curve number (CN) for each area and the Time of Concentration (TC) flowpath. Additionally, Design Point 4 should be shown at a larger scale to help clarify the hydrology in the drainage area.

g. Table IV.F.6-7 in the SWPPP includes the subcatchment areas 4a-4d for Design Point 4. However, there is no cumulative post-development value for Design Point 4 for comparison to the existing conditions.

h. The New York State Department of Environmental Conservation (NYSDEC) verified capacities for the pre-treatment hydrodynamic separators shall be provided to verify they can properly treat the contributing flows.

i. The DEIS should include more discussion of the green roof system, including plant species and overflow systems.

j. Question #7 of the Notice of Intent (NOI) should be revised to state the correct post-development flow for the 10-year design storm.

k. Question #38 of the NOI should name the developer of the project responsible for the long-term maintenance of the stormwater facilities until other ownership arrangements are made.

l. Deep and percolation soil testing shall be performed by the applicant in all proposed infiltration areas. The testing shall be witnessed by the Town Engineer. If the proposed areas are not suitable for infiltration, other stormwater treatment methods will be necessary.

4. Chapter IV.G – Utilities:

a. Water Supply:

i. The water distribution system is proposed to be extended through the North Castle Community Park and looped back into the existing water distribution system at Business Park Drive and Route 22. This loop is beneficial since it will provide alternate distribution mains which could service the community from either direction.

We would recommend that the water main loop into the townhouse community be located along the route of the sanitary sewer main, where access for maintenance can then be accomplished for both utilities. The IBM Filed Plat #28359 includes a water reservation area for a future 20 foot wide water main easement to permit water connection to Water District #4. The route of the water main through the park should be explored in more detail with the Town Water and Sewer Department and our office as the project progresses.

ii. Appendix H provides an analysis of the proposed water main extension off the Water District #4 distribution system and the distribution system's ability to supply fire flow protection to the proposed development. The DEIS uses a 1,500 gpm residential fire flow when examining storage and pressures within Water District #4 and 1,200 gpm when examining fire flow requirements and residential pressure on-site. The discussion and supporting design report provided within the DEIS should be expanded to explain the reasoning for using two (2) different residential fire flows within the analysis. The analysis should also provide the fire flow requirements for the hotel/apartments and explain the internal mechanics of the hotel fire system and whether on-site storage and fire pumps will be required.

iii. Table IV.G-2, Eagle Ridge Projected Water Demand assigns a design flow for each proposed use on the project site to achieve a peak daily demand for the project. The chart provides a 20% water savings for the hotel and its amenities. NYSDEC Standards for Intermediate Wastewater Treatment, 2014, permits the 20% reduction, except when post 1994 unit flow calculations are used. Table IV.G-2 uses a guest room flow of 110 gpd and, therefore, the 20% reduction should not be applied to the guest rooms, only the hotel amenities. The applicant should revise their computations accordingly. The applicant should also explain how they will ensure adequate maintenance and future in-kind replacement of all water saving fixtures within the community.

iv. The applicant estimates that the average water supply requirement for this project will be 73,410 gpd. Total demand from other projects within the district is 19,780 gpd for a total additional demand required from the district's supply of 93,120 gpd. The district

presently has an average domestic water demand of 381,000 gpd and an estimated maximum daily demand of 960,000 gpd. The present system's capacity is 648,000 gpd which indicates a deficit of 312,000 gpd to meet peak daily demand. The applicant should provide an update on recent progress to develop additional water supply for the district.

v. Landscape irrigation for the project is proposed to be provided through the use of rainwater harvesting cisterns which will be supplemented by on-site wells during dry-weather periods. The applicant should expand this thought by estimating the annual irrigation requirements, anticipated rainwater recapture and estimated well withdrawal for irrigation purposes. A maximum irrigation well withdrawal rate will need to be established for the project, which would provide assurances that upgradient groundwater would not draw into the area.

b. Sanitary Sewer:

i. Sanitary sewer collection is proposed by a gravity collection system, which is presently proposed within the roadway system, except for the system's link between the proposed community and the existing collection systems located along the common boundary with the Community Park. While the point of connection is less than 1,000 feet from the Sewer Treatment Plant, the existing sewer main is within the valley and crosses the Wampus River with minimum slope through the area. The applicant should examine the peak hourly capacity through this segment of the sewer system to confirm adequate capacity to accept flows from the project. As the project design progresses, we will need to examine with the Town Water and Sewer Department maintenance access for that portion of the system outside of the roadways.

ii. Table IVG-G-5, Projected Sanitary Sewage Flows, should not include waste discharge from the swimming pool. All swimming pool backwash is restricted from discharge to the Sewer District #2 collection system. Furthermore, as noted under Water Supply, a 20% reduction in flow shall not be applied to guest rooms where 110 gpd design flow (a post 1994) value is used and must provide means of assuring adequate maintenance and replacement in-kind. The applicant should revise these calculations and also provide a suitable means of addressing the pool backwash.

iii. The applicant estimates 73,410 gpd of sanitary sewage generated from the proposed project. The project sponsor had obtained 35,000 gpd of reserve capacity from IBM Corporation with the purchase of the property, leaving a capacity deficit of 38,410 gpd. This deficit is planned to be made up by the upgrade of the Sewer District #2 wastewater treatment plant capacity expansion. The applicant acknowledges his need to phase the project in order to not exceed the property's 35,000 gpd reserve

allotment until the sewer plant expansion is completed and a funding mechanism is in place.

5. Chapter IV.N – Construction:

   a. Construction Phasing:

      i. The applicant provides a schematic phasing plan which indicates the various staging of the project, however, provides little detail on how each phase can be constructed while limiting disturbance to five (5) acres. The applicant shall prepare conceptual grading, utility and erosion and sediment control plans for each phase of construction. The plans should consider construction trailers, equipment storage, employee parking (which could be up to 35 employees), location of rock crushing operations, storage of crushed product, as well as realistic erosion and sediment controls required for the respective phases, i.e., sediment basins of adequate size. Additionally, the grading shall illustrate the transition between phases and how construction access between subsequent phases will be maintained.

      ii. Crushing operations must consider the impacts of noise and dust at the North Castle Community Park, as well as the adjacent corporate offices and the mitigation required.

      iii. Table IV.N-1, Construction Noise Levels should be expanded to include a rock crusher. The decibel levels should be shown on an off-site plan which extends into the park and adjacent IBM office building.

      iv. As noted above, the preliminary cut/fill analysis results in an estimated total of 51,400 cubic yards of material to be exported for the development of the site requiring approximately 3,312 truck trips. The DEIS should discuss any mitigation or proposed protections to maintain the condition of existing surrounding roads including North Castle Drive and NYS Route 22. The applicant may require posting bonds or providing others means of protection.

      v. The project proposes blasting and provides a discussion regarding compliance with Chapter 122, Blasting and Explosives of the Town Code. In particular, the Code requires that an evaluation of all existing structures and utilities within 500 feet of the blast site be provided. The DEIS should include a figure illustrating the effected radius.

b. Erosion and Sediment Control:

i. The applicant has developed an erosion and sediment control plan for the overall project. The proposed mitigation includes protection measures, such as silt fence, diversion swales, temporary basins, anti-tracking pads, check dams, etc., which will be used in their effort to mitigate potential erosion and resulting sediments from entering downstream water features and the Town's recreation facilities.

The upper reaches of the project site includes a large, gentler sloping spine where most of the improvements and site disturbance will occur. Below the area to be developed is a steeper sloping hillside, which will not be developed, however, may be significantly impacted by runoff during construction if the upper areas are not properly mitigated and protected. The present plan does provide a level of diversion of runoff and sediment basin construction to protect the hillside, however, we do not believe the present plan is sufficient to adequately address the potential impacts from the project. The applicant should examine the volume of all sediment basins required to assure adequate settling of suspended solids does take place prior to discharge from the project. This will require sizing calculations be provided for all temporary facilities.

ii. In order to limit disturbance areas to no more than five (5) acres at any given time, the applicant proposes to construct the project in six (6) separate phases. The erosion control program should, therefore, be prepared as six (6) separate designs, with consideration given to areas previously completed, as well as areas yet to be developed while maintaining adequate construction access to areas to being developed and vehicle and pedestrian access to those phases that have been completed. Construction of certain townhouse buildings may need to be delayed until the remainder of the project is completed and stabilized prior to their construction.

c. Site Grading:

i. The application includes a Conceptual Grading Plan for the project. A more detailed plan with roadway profiles and cross sections shall be required as the project progresses and the review focuses on more specific details.

ii. The conceptual grading appears to be well thought out across much of the project. Townhouse units step up or down across the site working with the natural topography in an effort to manage cuts and fills. The project, however, will require the excavation of 113,549 c.y. of earth and rock and the filling of 62,149 c.y. Much of this earthwork is centered around the portion of the site at townhouse units 1-10, 59-62 and 89-94, the southeast corner of the hotel, as well as the hillside where the two (2) large stormwater basins have been proposed. We refer to this portion of the site as the

congested area, an area where sufficient area is not available to fit the number of units proposed because of the topography. It also appears that the stormwater basins were located within this area because the area was available, not because it's an ideal location for the basins. The sloping hillside requires significant excavation on the uphill side of the basin and significant fills on the downhill side to create the storage necessary to mitigate the project runoff.

As commented under stormwater, we would suggest the applicant take advantage of the deep, well-drained soils on the site by introducing additional infiltration practices into the stormwater mitigation design. We would also suggest utilizing smaller basins about the site at the source of the runoff. Perhaps, a reexamination of the central area could result in a significant reduction of disturbance, cuts and fills.

6. General Site Improvements:

   a. School Bus Stop

      i. The proposal includes a sidewalk along North Castle Drive to a bus stop at NYS Route 22 for school children. Although the bus stop is not illustrated on the plans, it is described to include a dedicated pull-off lane from NYS Route 22. The applicant states that they have been working with New York State Department of Transportation (NYSDOT) to refine these improvements.

      The bus stop will need to provide a safe, secure location for children to wait, which is protected from vehicles on NYS Route 22. We would question this being a safe and secure location for the school children. The applicant should provide the design plans for the bus stop, as well as crosswalk. The applicant should also elaborate on their discussions with NYSDOT. Byram Hills Transportation Department must be a direct participant in deciding on the bus stop's location and safety features.

   b. Emergency Access Roadway

      i. The project will enter off North Castle Drive. The drive enters approximately 400 feet to a loop roadway within the townhome community and approximately 400 feet to a looped driveway around the hotel building. The applicant is proposing an emergency roadway configured within the townhouse community to North Castle Drive, no emergency access is provided to the hotel building. The emergency access is narrow, will be built through a steep rock embankment and appears awkward to maneuver a large emergency vehicle entering the site from NYS Route 22.

We would suggest that the applicant explore the option of replacing the emergency assess road with a boulevard entry roadway, which is divided by a wide landscaped island. The boulevard could extend to the townhome looped roadway and to the hotel looped roadway, thereby providing a divided roadway which could be utilized in emergencies to both the residential community and the hotel facility. We would recommend that any proposed improvements to the emergency access to the site be reviewed by Town emergency service providers.

7. Project Alternatives:

   a. The applicant provides various alternatives to the project. Alternative #3 represents a significant modification to the site plan which limits development within the townhome community. The applicant should examine the benefits from a disturbance and earth moving perspective of relocating the stormwater basins within the townhome community which now seems to have ample room to accommodate the storage volume. We would expect a significant reduction in disturbance and earth moving with such a change.

DOCUMENT REVIEWED, PREPARED BY CLEARY CONSULTING, DATED MAY, 2019:

- Draft Environmental Impact Statement Report
- Draft Environmental Impact Statement Appendix

JMC/dc

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July 3, 2019

Dear Councilmembers and Supervisor Schiliro:

As you may recall, I attended and spoke at the Town Hall meeting on June 26, regarding the Eagle Ridge DEIS. I want to share with you some further thoughts. While I am providing these to you by email, I reserve the right to share some of these thoughts at the next public comment session.

First, I apologize again for the sarcastic remark I made regarding one of the town's established businesses; it was inappropriate to the occasion, and unnecessary to make my point. I should not allow my passion or my sense of humor to lead me astray.

Second, during the public comment period, resident Ann Dantzig asked a question about the Applicant's ability to obtain financing for a project of this type, and in response Supervisor Schiliro said, "This Applicant, to my knowledge, has never made any comments about issues with financing whatever they're proposing." I was surprised by this response, since earlier during the Applicant's presentation, consultant Johnathan Falik, while describing the transition of Applicant's thinking from a large-scale hotel to a boutique hotel to a hotel plus residentials, said, "we got to a place where it became financeable from a debt financing perspective, equity financing perspective…"

Similarly, in the document entitled "DRAFT North Castle Hotel Model" Mr. Falik's firm summarizes, "Based upon our financial analysis, a 300-room, full-service hotel is not viable and would need a substantial financial subsidy in order to generate acceptable returns for any developer or investor. These returns, as measured by leveraged IRR, would need to be in the 22-25% range. Even with such a subsidy, *it would be extremely challenging to obtain debt financing* for a hotel that would not be well received and is unnecessary in the market." (emphasis added) The analysis itself includes detailed projections for various debt financing cases.

I think it's clear that this was discussion regarding the Applicant's ability to obtain financing for "whatever they're proposing" and it's understandable that a resident might be confused and concerned by the reference.

Third, I was struck during the presentation, and then again during my further review of the Applicant's materials, by the choice of comparable hotels in the feasibility analysis. For obvious reasons, any comparison to existing hotels in our area is severely limited by the paucity of existing hotels. Unfortunately that restricts the comparison to some unsatisfying comparables – as the Applicant noted, almost all of these hotels are significantly older and many are quite a lot larger than what the Applicant contemplates. I would also add that many of these hotels directly compete with one another, which presumably constrains pricing. The Applicant did not note – but perhaps should have – that the communities in which these comparable hotels are located are themselves not readily comparable to our own. In particular, almost every one of these "comparable" towns has a Metro-North train station, and the communities are significantly larger than Armonk's. I suggest that the Applicant supplement its analysis by looking at hotels in communities that are more properly comparable to North Castle/Armonk, regardless of their proximity to our actual town: that is, identify towns with hotels in, for example, the Hudson Valley, Long Island, New Jersey, Connecticut or Pennsylvania with similar population size and density, similar (lack of) mass transit options, etc., and use those to generate a new set of comparisons.

Fourth, the Town needs to have better insight into the process by which the Applicant determined that the best use of this property is a largely residential development with a boutique hotel component, because the timeline is worrisome:

- As the DEIS notes, "The Town of North Castle Comprehensive Plan, adopted in April of 2016, endorsed the subdivision and rezoning of the Project Site that took place in 2010 to accommodate an as-of-right hotel use. At that time, it was envisioned that the Site could support a full-service 300 room hotel."
- The Applicant acquired the property in question in 2017, with what I can only presume was full knowledge of the zoning for this property.
- The feasibility analysis is dated February 11, 2018, but was presumably commissioned at some time between the 2017 purchase and the publication of that feasibility analysis.
- Quoting again from the DEIS, "The detailed market analysis conducted by the Applicant revealed that full-service hotel was not a realistically viable development opportunity, however, a smaller boutique hotel was. Because the hotel use must be reduced in scope and scale, it was determined that the Site would need to be subdivided, and alternative complementary uses added to the development to bridge the gap economically."
- Or, to quote from a February 16, 2018 article in *The Examiner News*: "Although the town's Comprehensive Plan calls for up to a 300-room hotel, research conducted by the potential applicant's team revealed that development costs are too high to make a full-service hotel feasible, said Jonathan Falik, CEO of JF Capital Advisors, which studied the issue."
- Somehow between the date the property was purchased and the date the feasibility study commenced, the economics of the hotel market seem to have dramatically changed in a way that must have come as an unpleasant shock to the Applicant.

I believe this sequence of events can only be explained in one of two ways: either i) the Applicant purchased the property – which was zoned for hotel use at the time – without having conducted adequate analysis of whether or not hotel use was appropriate and economically feasible OR ii) the Applicant knew that a different use would be financially preferable (to the Applicant) and felt comfortable in the assumption that the Town of North Castle would grant any requested zoning change. If it was the former, the Applicant made a grievous mistake – but not one that is the Town's responsibility to correct. If it was the latter, the Town may have made a grievous mistake in giving developers the impression it will accommodate any zoning request, no matter the circumstances. To better understand the truth of the situation, the Town should require Applicant to provide:

- any financial analysis conducted by Applicant or its agents prior to or in conjunction with the 2017 purchase;
- correspondence, agreements or other materials clarifying when, why and how the decision was made to commission JF Capital Advisors to conduct the feasibility analysis, and the nature of their engagement (i.e., was JF Capital asked to evaluate only the feasibility of the originally contemplated use, and then subsequently alternative uses; or were they charged from the start with looking at the other uses);
- any data that shows a dramatic change in the hotel market in our area between the date of purchase and the date the feasibility analysis was commissioned; and
- any analysis or correspondence regarding the actual ability of the Applicant to obtain financing, including, but not limited to, communications with potential lenders.

I'm entirely aware that much of this information would be considered confidential or proprietary by the Applicant, but such transparency would be a good demonstration of its good faith to the Town.

Finally, setting aside the specifics of this particular project, I do not believe that it is ever the Town's responsibility to help real estate developers when they make a bad investment decision, or even when adverse economic results cause them financial distress. I spoke at last week's meeting about my long home search, which ultimately resulted in me purchasing a house in Armonk. Part of the reason we took so long to find the right house is that even when we saw a nice property, in an attractive community, at a realistic price, we asked ourselves challenging questions about what could happen in the future. Yes, the vista is lovely, but what if someone erects a new building that blocks our view? Yes, the house is charming, but what if one of us suffers an injury or illness that restricts our mobility, and we can't manage all those stairs? Yes, we could stretch to afford a mortgage now, but what if business is slow at my firm, and we have trouble making the payments?

In effect, we sought to future-proof our purchase against various adverse and unlikely – but not impossible – contingencies. If I had bought my house, and it turned out to be too expensive or have too many stairs or to have failed in one or another way, that would be on my head. I wouldn't be coming to the Town Board to ask for a zoning variance so I could build a movie theater or a restaurant or subdivide my property or erect a 90 room boutique hotel. My property is not zoned for those things, and for good reason. It would be deleterious for my neighbors and for the town to make such an arbitrary exception.

We're just homeowners. If we were developing a multi-million-dollar real estate project that required years of approvals and construction and would impact hundreds and hundreds of lives, we would certainly have done at least as thorough a job forecasting ahead. And we would not burden the town's residents and elected leaders with the responsibility of making good for our own poor judgement. We should expect the same from Messrs. Mariani and Madonna and other prospective developers in our town. Let's start today.

Respectfully,

Jeremy Jacobs
673 Bedford Rd, Armonk NY
jrjacobs@mac.com

Michael E. Fareri

4 MacDonald Ave., Suite 1
ARMONK, NY 10504
(914) 273-4500
FAX (914) 273-4526
EMAIL: michael@farericompanies.com

August 19, 2019

Adam Kaufman, Planner
Town of North Castle
15 Bedford Road
Armonk, New York 10504

Re: IBM Proposal

Dear Adam:

I am writing to provide some comments to the Draft Environmental Impact Statement that was submitted for the IBM property. I have been told that these questions will be responded to in the Final EIS.

First, I would like to know what the value of the IBM property is as currently zoned for a hotel. Once that is established, I would like to analyze proof as to the feasibility of a hotel only. The original approval by the Town Board had a 3 story hotel on over 30 acres with excessive open space. The rear access was terminated to the IBM park. And hotel traffic has completely different patterns than the proposal which includes multifamily rental and 2 and 3 story townhouses. This was never anticipated by the Town Board when IBM had this rezoning. Please analyze the financial impacts of the project as zoned for hotel only.

I would also like an explanation of how this project, once approved, would affect Whippoorwill Ridge and Whippoorwill Hills as well as all of the projects that are currently being built in Armonk, including my lumberyard project. That analysis should also include Mariani's. This discussion should also address absorbsion rates and whether there is an adequate demand in the Town for all of this market rate product and what happens to the existing market rate product that it will compete with?

The proposal admits that all of these tenants and users would have to get to downtown for all of their service needs. The proposal talks about walking across Route 22. No one will walk and everyone will drive and park. This will support retail and its

tenants but the impact on traffic and parking needs to be fully analyzed as this could definitely change the character of the hamlet.

When this was rezoned, all residential was to be in downtown in the hamlet area. That's because it makes no sense to put significant residential development in this area.

Please explain why the F.A.R. for this project is increased from .12 to .7 with the hotel and multifamily site having an F.A.R. of 8. This is a huge increase and you always talked to me about the increase in F.A.R. on my projects. What is the Town gaining that is so precious that the F.A.R. can increase 5x?

Their engineer should look at alternate ways to mitigate the 3,300 trucks that they project would have to take rock and earth off this site. It is evidence that the project is too large and causing too many impacts. You should also fully analyze the blasting impacts as the entire site is rock.

I would like to have a plan prepared that shows a 150 unit hotel on the 12 acres as originally envisioned. Any increase in multifamily units should absorb F.A.R. from the remaining lands where the townhouses are. I would like to see those comparisons.

With respect to height, I would like an elevation from the ballfields in the IBM park to the top of these buildings. The fact that this site sits high above Route 22, and even higher above the park, exacerbates the looks of the project. Also, there is a "spite strip" of 4 feet in width that currently precludes access for water, sewer, traffic, and other utilities. The applicant should address alternate solutions to these limitations.

I am the owner of 333 Main Street and 99 Business Park Drive. Both properties are a short distance away from the proposed property. My tenants are Boies, Schiller & Flexner as well as Equinox and White Plains Hospital. I am concerned as to all impacts to these properties and to other properties that I own in the area. I am currently interviewing counsel to participate in the final design of this project.

Sincerely,

Michael Fareri

From: Supervisor External Account
To: Alison Simon
Cc: Michael Schiliro; Roland Baroni (RBaroni@prodigy.net)
Subject: FW: NO rezoning of Eagle Ridge
Date: Wednesday, July 24, 2019 1:49:43 PM

Alison: Here is another Eagle Ridge Comment, however I do not see an area of study unless "long term sustainability and future quality of life" is considered something to "study".

Mindy

From: ADT Bike & Skate Shop [mailto:adtbikes@gmail.com]
Sent: Wednesday, July 24, 2019 12:31 PM
To: Supervisor External Account <supervisor@northcastleny.com>; Stephen D'Angelo <sdangelo@northcastleny.com>; Barbara DiGiacinto <bdigiacinto@northcastleny.com>; Barry Reiter <breiter@northcastleny.com>; José Berra <jberra@northcastleny.com>
Subject: NO rezoning of Eagle Ridge

Please consider the long term sustainability and future quality of life in our town and vote NO on Rezoning the Eagle Ridge property

1) The developer in question knew exactly what this property was zoned for upon purchasing it from IBM
2) The Board should maintain the current zoning and stop catering to the whims and hedging of speculative developers.
3) The Board must Represent the voters of this town who have clearly spoken out against this rezoning...not the out of town developer.

Sternly,
Russell Alonzo
16 Fox Ridge rd

8/5/2019

580 Bedford Road
Unit 19
Pleasantville, NY 10570-3354

North Castle Town Board
Attn: Town Clerk
15 Bedford Road
Armonk, NY 10504

Subject: Eagle Ridge Plan

Dear Folks.

As a previous resident and member of the Armonk Independent Fire Company for over 22 years and also an Eastern Airlines pilot and Captain I must comment on the proposals for new buildings in Armonk. Historically developers always ask for more than is practical and then settle for something reasonable.

The idea of a motel and residences in the same building only works if they are permanently separated, one side for each with separate entrances and no chance for overflow from one to the other. My experience with motels/hotels include a crew hotel at Miami airport where a person released from a Massachusetts insane asylum found his way there and grabbed a child in the hall whose body was later found cut to pieces in the bathroom. Party groups are frequent where a promoter contract for a group of rooms and brings in a mixed group who disturb those around, above and below that area. If you want a example of terrible buildings just study the buildings built near the White Plains railroad station. The noise in the building is awful. I used to deal with a stock broker on the ground floor and in the winter the heated air flow made it very hard to operate the front door.

To test these applicants ask how they are going to EXCEED the NY State building codes to build a class location.

Height of the buildings and the fire department: To train volunteers to save people, find water, spread water hoses and extinguish fires is complicated but an easily understood process. When a building height requires an aerial apparatus (today a bucket to remove people above a fire with a remotely operated water nozzle and trained personal creates a much more complicated situation). First, a Chief or Assistant Chief (paid) has to arrive first followed by the aerial apparatus with a (paid) operator before the area is covered with fire hoses.

I have lived in Westchester County all my life and witnessed the change from sleepy villages to mini cities. My major observation is that the lower paid individuals can not afford the expense of living in the mini cities. Good luck and I hope your citizens awaken to the decisions you have to make.

Sincerely,

Arnold B. Allison (Arnie)

Comments on Eagle Ridge DEIS

As a 25 year resident of North Castle I have not been active in local development issues. I regret not weighing in on the Mariani project but have to comment on the Eagle Ridge proposal. Armonk has had a shortage of parking in town for years and could never absorb a project this size. Twenty-five years ago, when the townhouses on Old Route 22 were built, the developer stated that there would only be a dozen or so children who would live there because it was designed for older residents. This of course was a joke and the surge of young children resulted in a $50 million bond to expand the schools. The lesson is to be wary of claims by developers, and those who don't remember the past are condemned to repeat it. Below are some issues I observe in the DEIS.

Site Issues

The DEIS states that 26 of 32 acres will be disturbed, 4.3 are sleep slope, and only 3.9 will remain undisturbed. The DEIS lists pages of descriptions and pictures of plants (coneflower, joe pye grass, switchgrass, black eyed susans, aster, goldenrod, etc) and trees (elm, sugar maple, red oak, dogwood, willow, sycamore, etc). It sounds like a botanical garden until it states that 850 trees will be removed and **almost 1/3 of the project (10.4 acres) will be impervious surfaces**. Not surprising, after two years of blasting and construction it is "the applicant's opinion" that no significant wildlife impact" would result. By the developer's own self-reporting "As a result, the Proposed Action will result in the permanent elimination of approximately 26.5 (of 32) acres of existing open space."

Water

The site cannot handle the water runoff and the town cannot supply the water consumption needed for the project. Fuzzy statements that the developer "would work with the town" and possibly "make some financial contributions" is insufficient. Once built, the responsibility for the runoff shall be the management of the townhouses and hotel. Will they have the financial ability to address a problem if things go wrong? Why should existing taxpayers "the District" fund in any manner upgrades needed for a project that is a detriment to the town, and be on the hook if the management can't finance the necessary maintenance or repairs?

Traffic

The traffic section speaks in jargon, but common sense dictates that congestion in traffic and lack of parking has been an issue for years, and this proposal won't help. Discarding any hotel traffic, 200+ cars coming into town from Eagle Ridge (no one is walking in hot summer, cold winter, rain, or with young kids – that is fantasy) will ruin Armonk and may make some stay away unless absolutely necessary. Current residents may even

forego picking up a pizza at Broadway if it will take 20 minutes and have no place to park. Is this what you want?

The Market

Even being the only game in town, 140-room La Quinta Inn & Suites, according to the DEIS, "recorded a TTM occupancy of 59.7%." What is plan B if the hotel doesn't meet an acceptable capacity? As far as the apartments and townhouses (which have more square footage than many single family homes in North Castle), why should modifications be granted to projects that will hurt the current residents? The developer states that growth is projected at 4%, and that the North Castle is an older community. Therefore residents will be seeking to sell their homes in a very down market. 91 apartments and 94 3 bedroom apartments (in 30 buildings) aren't going to help, and will depress the value of single family homes and the subsequent loss of tax revenue when residents grieve their taxes. The DEIS concedes that it is "is a relatively low growth region" and that "many empty nesters looking to downsize would choose to continue to reside in the area." (sound familiar – another school bond on the way?). The developer continues "traditional single-family suburban homes are less attractive to young people who tend to settle down later in life, and are more mobile in their employment in the "gig economy.". Kiss goodbye to sales of the smaller homes in the town almost exclusively purchased by parents with young children.

Conclusion

Developers can pay for reports to justify their projects. It's a cost of doing business. Those of us who have lived in town for 20+ years have seen the changes, paid for rapid growth based on false DEIS projections, can't find a place to park to pick up skis at Hickory & Tweed, and have watched houses stalled on the market as the number of sellers exceed those of buyers. The need for public services (paid fire, ambulance, more police) continues to grow as more developments with townhouses and apartments seek to build in our town. This proposal would forever alter the nature of our town for the worse. Most of our residents are not aware of the proposals being considered in our town (I wasn't until recently). If the remaining residents were alerted, I can't imagine anyone who would want this development. We specifically chose not to live down-county – don't ruin our hamlet by packing downtown with cars and people through overdevelopment.

We trust you'll use restraint and look long term.

Jim Byrne

Byram Lake Road

Comments re: Proposed Eagle Ridge Development

Linda A. Fernberg
9 Wampus Avenue
Armonk NY

Mr. Supervisor, Town Board Members and Town Clerk,

I object to the proposed Eagle Ridge Development.

I object to developers/builders buying property zoned for one thing and then requesting something else. I know it's in their DNA, and it's business as usual. But I object to it.

I object to the size of the project proposed at Eagle Ridge for the main reason that it would obliterate a beautiful piece of pristine property in our hamlet.

If I had my druthers, I would hope that this could be kept as open space by a deal with a land trust entity.

Let's talk about zoning. This 32.5 acre parcel is zoned for an eight hundred room hotel. Read a small, maybe even tiny impact on a large piece of property. But no….

Instead the developer wants to put a 97 room hotel with 69 apartments of 1, 2 and 3 bedrooms on top of the hotel. So 166 + units, some with multiple bedrooms.

In addition, the developer would like to have a large parcel of the 32.5 acres rezoned for 94 attached and semi-attached townhouses.

Great.

The last time a large development was brought before the Town Board (TB) was Brynwood, which still hasn't been built.

Before that, it was Whippoorwill Ridge, Whippoorwill Hills, Cider Mill and Leisure Farm, Sands Mill and Wrights Mill. The first 3 are dense projects, the other 3 are single family homes, but they're not on the minimum 2 acres like most zoning in Armonk and Banksville.

All of these projects, except Brynwood, are relatively close to the business district of Armonk. Meaning all of these residents have to travel through town to get out of town. Hence, our bottleneck of traffic at Maple and Bedford, Bedford and Main St. and Maple and Main St..

If you look at Google Maps and focus on the intersections of Main St. and Rt. 22 and Maple St. and Rt. 22 you see from left to right Whippoorwill Ridge and Hills and Cider Mill then moving right you're in town and there Mr. Mariani will build his apartment buildings. Slightly to the north is Mr. Fareri's Main St. development with (?) units, and moving right some more you have Mr. Fareri's 36 unit apartment building at the end of Bedford Rd. (The Lumberyard)

These developments represent the trend of large amount of units on the smallest parcels of land in all of Armonk and Banksville. I do not know how many units are in Whippoorwill Ridge or Hills or Cider Mill. And while they are primarily single family townhouses, attached or otherwise, they do represent a lot of units close to town. Density.

By even entertaining anything more than the hotel, presently zoned for Eagle Ridge property you are looking at an exponential increase in population in general and when added to already approved projects like Main St., the Lumberyard and Mariani's, Eagle Ridge easily doubles those projects.

Here's the applicable word: CONGESTION. That's what we're going to get with all of this building. Congestion, traffic, pollution and desecration of a beautiful piece of property on North Castle Drive.

These large projects do not represent the Armonk I have come to know and love.

I haven't done a very deep dive on Eagle Ridge. I think a hotel could be good for North Castle, but I would say that a much better spot for it is the "MBIA" property. Closer to the airport with a minimal touch on our downtown which is already bursting at its seems.

Much of Armonk and Banksville have wetlands, streams and lakes. North Castle will never be fully developed area wise. Builders want to build, but when they come before you with outlandish proposals like Eagle Ridge, they should be sent packing.

Just because there's less land to build on doesn't mean that anyone should be allowed to increase the density of homes/buildings and people on the open land.

We live today in a time of greed. Call it the "Gilded Age II". Everyone wants to make money, and more money. Developers are no different. But they should not be accommodated or entertained when their plans take so much open land because "that's the only way they can be profitable". Their version of profitable can mean the end of "bucolic Armonk".

We already have huge parking problems in town. Traffic through town can be a nightmare. Downtown is the tail end of Rt. 128 which is a major north/south road that many people who aren't even stopping in Armonk have to use to get to White Plains, 684 and other places. We cannot expand anything downtown. The roads are hemmed in by wetlands and streams. We can't add additional roads, wetlands again. Why put an even greater strain on this tenuous part of town? Don't. It's that simple, just don't.

I'm not sure how cogent my writing is on this matter. As I said I have yet to do a deep dive into the project as I have had a serious personal matter that was only just recently resolved (positively, thank goodness) but my overall thoughts on the project are here.

I think this project is just wrong. For the site and for Armonk.

I do believe that we must find a more sensible way to support the kind of building and development that will help the town, not hinder it. Large dense projects are not the way to go. The future holds something we perhaps haven't seen yet.

But piling people into small areas close to town is not the answer. It will cause so many more problems than we already have.

Density is the enemy, especially near the downtown area.

Fareri is building his Main St project. He's approved for 36 units at the Lumberyard and Mariani has been approved for 43 units at the gateway corner into our downtown.

Please do not allow this project/application to move forward in any way, shape or form. It's too much for such a small area that's already oversaturated. Our infrastructure can only withstand so much. Why are "we" trying to cram as much as we can into it? Beats me.

Finally consider this. Sometime prior to the 2008 economic meltdown, this town put a moratorium on building (private? Not commercial?) I believe. Forgive me if my timeline is a little wobbly. This act ended up helping the town tremendously when the economy tanked. We didn't have a glut of overpriced housing on the market and we were able to survive and recover quite well.

One can argue, and I do, that we have not had a truly robust recovery since 2008. We're doing better than Europe because we didn't adopt an austerity budget, but we have anything but a booming or even robust economy, in my humble opinion.

Now we have serious reason to believe that a recession is looming. Empirical data bears this out. While no one has a crystal ball (at least no one I know) I believe caution is the best course of action at this time. There's nothing wrong with being prudent while looking at this project and the others that haven't been finalized yet.

Density, congestion, wetlands, traffic, water, sewer. These are the concerns.

Prudence, patience, caution. The preferred course of action.

I urge you to stick to the zoning. Hotel. Only.

Linda A Fernberg

I'm entirely aware that much of this information would be considered confidential or proprietary by the Applicant, but such transparency would be a good demonstration of its good faith to the Town.

Finally, setting aside the specifics of this particular project, I do not believe that it is ever the Town's responsibility to help real estate developers when they make a bad investment decision, or even when adverse economic results cause them financial distress. I spoke at last week's meeting about my long home search, which ultimately resulted in me purchasing a house in Armonk. Part of the reason we took so long to find the right house is that even when we saw a nice property, in an attractive community, at a realistic price, we asked ourselves challenging questions about what could happen in the future. Yes, the vista is lovely, but what if someone erects a new building that blocks our view? Yes, the house is charming, but what if one of us suffers an injury or illness that restricts our mobility, and we can't manage all those stairs? Yes, we could stretch to afford a mortgage now, but what if business is slow at my firm, and we have trouble making the payments?

In effect, we sought to future-proof our purchase against various adverse and unlikely – but not impossible – contingencies. If I had bought my house, and it turned out to be too expensive or have too many stairs or to have failed in one or another way, that would be on my head. I wouldn't be coming to the Town Board to ask for a zoning variance so I could build a movie theater or a restaurant or subdivide my property or erect a 90 room boutique hotel. My property is not zoned for those things, and for good reason. It would be deleterious for my neighbors and for the town to make such an arbitrary exception.

We're just homeowners. If we were developing a multi-million-dollar real estate project that required years of approvals and construction and would impact hundreds and hundreds of lives, we would certainly have done at least as thorough a job forecasting ahead. And we would not burden the town's residents and elected leaders with the responsibility of making good for our own poor judgement. We should expect the same from Messrs. Mariani and Madonna and other prospective developers in our town. Let's start today.

Respectfully,

Jeremy Jacobs
673 Bedford Rd, Armonk NY
jrjacobs@mac.com

Appendix B

Public Hearing Transcripts

TOWN OF: TOWN OF NORTH CASTLE
COUNTY: COUNTY OF WESTCHESTER
----------x

TOWN OF NORTH CASTLE PUBLIC HEARING

RE: EAGLE RIDGE DEVELOPMENT DEIS

----------x

15 Bedford Road
Armonk, New York
June 26, 2019
8:52 p.m.

P U B L I C H E A R I N G

PATCHEN STENO SERVICES LLC
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A P P E A R A N C E S:

SUPERVISOR	MICHAEL SCHILIRO
COUNCILMAN	JOSÉ BERRA
COUNCILMAN	STEPHEN D'ANGELO
COUNCILMAN	BARBARA DiGIACINTO
COUNCILMAN	BARRY REITER

ROLAND A. BARONI TOWN ATTORNEY
PATTI DWYER, INTERIM TOWN ADMINISTRATOR
ADAM KAUFMAN, DIRECTOR OF PLANNING
ALISON SIMON, TOWN CLERK

ALSO PRESENT:
Patrick Cleary, Cleary Consulting
Ariel Aufgang, Aufgang Architects
John Imbiano, IQ Landscape Architects
Ralph Alfonzetti, Alfonzetti Engineering
Jonathan Falik, JF Capital Advisors
John Collins, J. Collins Engineering
Frank Madonna, Madonna Development

SUPERVISOR SCHILIRO: We'll move on to the first public hearing, which is -- there's two that are connected. The opportunity, A, to provide comment on the Draft Environmental Impact Statement, otherwise known as a DEIS, prepared in connection with the proposed Eagle Ridge development at 3 North Castle Drive, Armonk. Item B, connected to this is consider the following local laws to amend Chapter 355 zoning with regard to the proposed Eagle Ridge development at 3 North Castle Drive, Armonk.

The first is a local law to amend Section 355, Schedule of Office and Business Regulations, by amending Permitted Principal Use No. 1 in the OBH, Office Business Hotel Zoning District, by adding a provision to include multi-family dwellings as a permitted principal use in the OBH Zoning District and by modifying requirements in the OBH Zoning District, amend Section 355-30(G), additional office and industrial district regulation - hotels.

Item 2 is a local law to rezone an

area of approximately 26.29 acres along North Castle Drive from its present OBH, Office Business Hotel Zoning District, to the R-MF-A Multifamily-A Residence Zoning District.

I'll give some very quick background on this, and asked the Town Attorney Roland Baroni just to provide some very brief background on what exactly we're looking at here, and then we'll have the Applicant before us. After that I'm going to have the board first provide their comments and questions to the Applicant. We may be covering some of what the audience may want to ask. But then after the board goes, you're more than welcome to provide your comments.

And what we're basically doing is they've studied what the potential impacts are, as is on every application like this. And then we have that reviewed, and then we also as a community and as a board provide additional comment on it or concerns or additional things to perhaps study. And that's kind of where we are now.

As quick history on this property, because there's been some questions about, you know, all of the sudden the Town's rushing into a hotel.

When I first got on the board in 2008, this was probably about a year after that, IBM came to the Town and asked that we consider subdividing the property, about 33 or so acres, specifically for a hotel. At the time they really didn't have any intention of building a hotel, but they wanted to subdivide it, and at some point in the future might sell the property, and then a purchaser would potentially build a hotel. That's the history. So this is not something that just happened. This has been zoned as a hotel for about 10 years.

As far as what's happening tonight, I'll just toss it to Roland, and then, Adam, if you have any comment, if there's any gaps, please come up.

MR. BARONI: What we're doing tonight is opening the public hearings on the Draft Environmental Impact Statement and the two local laws which would allow this project to

be built as proposed.

The DEIS is the environmental review. This board, the Town Board, is the lead agency. The purpose of the hearing is for the board and the public to ask questions about what they've read or what they know about the project. And what the Applicant will then be charged with is, once the public hearing is closed on the DEIS, the Applicant will then proceed to prepare what's called an FEIS, Final Environmental Impact Statement; and that provides the answers to all the questions that the board members may have and the Town's professionals, as well as all the public.

And when that document is accepted by the board, it becomes the board's document. And at that point in time, the board can then consider closing the -- well, the public hearing will be closed, but closing the public hearing on the zoning, which I would suggest you adjourn tonight. And once the FEIS is deemed complete and submitted to the board, you will then be in a position to issue findings that will conclude the

environmental review, and then you can consider the zoning actions.

After you're done, then the project proceeds to the planning board for a full site plan review.

SUPERVISOR SCHILIRO: Okay. Thank you.

Anything else? Adam gave me the thumbs up. Great.

So at this time we'll invite the Applicant up and we'll take it from there.

I'm sorry. We have to -- did we open?

COUNCILMAN D'ANGELO: No. I'll make a motion to open the public hearing on the DEIS.

COUNCILMAN DiGIACINTO: Second.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

COUNCILMAN D'ANGELO: I would like also to open the public hearing on the amendment to the local law.

COUNCILMAN DiGIACINTO: Second.

COUNCILMAN D'ANGELO: To rezone an area of the -- after the subdivision.

MR. BARONI: Both local laws.

COUNCILMAN D'ANGELO: Both local laws.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

SUPERVISOR SCHILIRO: And, Alison, any correspondence?

MS. SIMON: Yes. The Notices of Public Hearing, the Affidavit of Posting calling for the public hearing, the Affidavits of Publication from the Journal News calling the public hearing, certificates denoting mailing of notices of the hearing to adjacent property owners.

At the May 21, 2019 Town Board meeting the Town Board accepted the Draft Environmental Impact Statement, DEIS, dated May 2019 as complete, and established a common period of 90 days until August 19, 2019. Circulation of the accepted DEIS to all involved and interested agencies has been confirmed, and there are proposed local laws for consideration.

SUPERVISOR SCHILIRO: Thank you.

MR. CLEARY: Thank you,

Mr. Supervisor, members of the board. It's very nice to see you all again. My name is Patrick Cleary, and I'm the principal of Cleary Consulting, and our firm was responsible for the preparation of the Environmental Impact Statement that you have before you this evening.

Our purpose tonight is to give you and the folks who are not familiar with the project an overview of the project so there's an understanding of what we're talking about. But our job tonight really is to listen. As counsel indicated, we will not be responding to comments tonight; we're simply taking in all of those comments, all of which will be recorded by our stenographer. And, in fact, the Final Environmental Impact Statement is the forum by which we will respond to each and every one of the comments and questions that are raised this evening to your satisfaction.

So Mr. Supervisor, you accurately described the status of this project. In fact, Eagle Ridge is a proposed development on a 32-acre parcel of land located off

Route 22 next to Community Park. It's shown in red on the image you see in front of you today.

And what I wanted to do is give you just a little bit of context about history as well. So you've given us some history of IBM sale of the property. But I wanted to take a step back from that.

The property was known as the Cornell Birdsall Farm, which you may be familiar with, and it operated as a farm for many, many years. In the 1920s a fellow by the name of Cornelius Agnew bought the property, bought 600 acres, and developed what was known as Wenga Farm. And this is an image from 1926 that shows you the beginning of that development. The estate building is where the IBM headquarters building is, the original headquarters building is. And what Wenga Farm was, was an orchard. And you can see the beginning of the planting of an apple orchard on that site. The site is shown in red. And what you see in this image in 1926 is basically a site that has no real vegetation other than a pocket in

the corner and the orchard that's been prepared -- planted on the property.

By the '40s the orchard had grown in size somewhat significantly. By 1960, again, the orchard is even larger. The old farmhouse building of the Cornell Birdsall Farm, as you'll see when IBM eventually acquired the property and developed it, has been moved to across the street to your annex building, across the field from where we are tonight.

This is IBM's initial development of the property. You can see the orchard -- remnants of the orchard are still sort of on the property, but that little pocket of forested area is starting to grow on the site, and the orchard is starting to recede.

By 1990, you can see the orchard further receding.

By 2000, the orchard's just about gone. There's a few apple trees that remain. And by 2016, you can see the site's being sort of revegetated with second growth on the property.

Eagle Ridge, as you indicated,

Mr. Supervisor, is a several-pronged project that has been developed in accordance with the Town's Comprehensive Plan, which envisioned the rezoning of the site from OB to OBH, which envisioned the development of a hotel on the property.

I'm here tonight with Frank Madonna and the full develop -- Eagle Ridge team. And when Frank purchased the property, a lot of thought went into the ability to develop a hotel on the property. And what came out of that was there needed to be some modifications to that vision. And that's really what Eagle Ridge is all about.

So it involves subdividing that property, as you indicated, Mr. Supervisor, to a small parcel to the north and a larger parcel to the south. That small parcel would support a hotel, a 90-room/unit boutique hotel on the first three floors, and the three floors above it would support 70 rental apartments, including a 10 percent set aside for AFFH apartments as well.

The bigger parcel, the 26-acre parcel, would support townhomes: 94

three-bedroom units in about 30 buildings surrounding a central square. And we'll talk about the design layout of the project in a moment.

And, again, two important elements that accompany these two zoning changes, now that the site supporting the hotel has been reduced significantly to a six-acre parcel, we need some modifications to the dimensional requirements to make the hotel work, and also to accommodate the two uses on the property. And because we are now proposing townhomes on the second piece, we need to change that from OB/OBH to the R-MF zone.

So what I'd like to do now is introduce Ariel Aufgang, who is going to walk you through the design of the project itself. John Imbiano is going to talk about some of the unique landscape design elements we have. And I'm going to come back and briefly touch on the impacts that are described in the Environmental Impact Statement as well.

MR. AUFGANG: Good evening,

everybody. My name is Ariel Aufgang. I'm principal of Aufgang Architects based in Suffern, New York. I'm very happy to be here tonight to explain the development team's vision for this property.

And as you can see from the site plan behind me, the first decision that was made was that in order to really support the mixed use nature of the project, we decided to split it from a planning perspective. So we're doing our best efforts to not disturb the existing and sprawling landscape, so we've worked with the natural vegetation and the grade. So coming off of the main road, taking a left-hand turn, the hotel building is set at the lowest part of the site. So the tallest building is on the lowest part of the site; that's what I mean by working with the grade. And the lower buildings, the shorter buildings, are set on the higher part of the site. That's our way of minimizing the visual impact of the taller buildings on the property.

Additionally, we're providing new circulation paths for both cars and

pedestrians that wrap around the entire project to allow for some recreation.

We do have a rendering of the townhouses. This is an illustrative view of the townhouses. They are going to be amply sized -- I'm sorry. I feel like I'm blocking. So the townhouses will be amply sized with surrounding yards and decorative rooflines. Native species plantings will make the project appear uniquely ecological. And as Pat said, John will talk about that further. And we're also going to be designing the houses as being very energy efficient and sustainable.

We'll have more details about the townhouse development in a minute. I'm going to move on to the apartment/hotel building.

So what you see here is a building that combines three main materials, glass, brick, and precast concrete in a thin form, glass fiber-reinforced concrete. The building is meant to be both private and public by the mix of uses. So on the ground floor we have a restaurant use and assembly

spaces for the hotel function and then private uses upstairs. So we're trying to use materiality to emphasize the different uses within the building.

We propose the restaurant on the first floor in the most visible corner so the general public can enjoy this part of the building without having to commingle or really interact with the more private uses which are accessed through a private lobby on the center part of the first floor.

The interior space is going to have an ambience that's going to be really filled with natural light due to the siting of the property, and picturesque views from most all spaces around.

Using brick as the main facade material, we also combine with fiber cement boards to provide what we hope you find to be a sophisticated, modern, but contemporary look that can complement the surroundings.

The proposed building will have 241 indoor parking spaces, 65 outdoor spaces, and as was stated, 91 hotel rooms and 70 apartments.

The bottom floors of the building are actually parking, there's two levels of parking below that is not visible in the front due to the grade. And I have a view from the back in a minute that will illustrate that a little better.

We wanted to show you today an illustrative first floor plan to really demonstrate how we're separating the different uses. So this is the restaurant space and the bar area that I described earlier that's going to be using the outdoor parking. So for uses that -- for people that are coming to use those functions that are not for extended stay or residents, you can park outdoors and simply walk into the function.

Right now we're showing a shared lobby that could be used between both the apartment house and the hotel use.

There's a lot of amenity space here. Part of it could be shared between the apartment house and the hotel and part will be private. So we do have a pool and an outdoor area over the garage strictly for

use by the hotel residents. A fitness center that could be for both residents of the transient and permanent houses. And here you see the conference center banquet hall, and a large kitchen support those functions.

This is the view from the back of the hotel. So by utilizing the grade of the property, the existing grade, we're able to mask the two floors of indoor parking from the street. So essentially -- we have a little bit of a better view in a minute. Essentially you can wrap around the building in a car or by foot, drive down and pull right into the parking garage.

The parking levels will be separated for permanent residents and transient residents or hotel occupants. So the lower level will be just for permanent residents and the apartment house upstairs; you can drive in, park in your own spot, go into an elevator directly upstairs to the number of floors of the apartment house. The hotel occupants will be either valet service or self-service, depending on the time of the

week or how busy it is; that would be on this level here, the second level parking.

We have one more view, because we know it is important to understand how this is visible from the ball fields. So this is a photo montage. It's as accurate as we could make it using the survey, a photograph of the existing property, and our proposed rooflines.

So the building does stand 58.6-foot tall at five stories. But as you can see, most of the year it will be shielded. This picture is in winter; it's not as much growth as there might be right now. And that's approximately what you would see from the lower level of the ball field.

SUPERVISOR SCHILIRO: What was the number you said as the height?

MR. AUFGANG: 58.6 inches [verbatim] to the roof.

COUNCILMAN BERRA: That's just five feet --

MR. AUFGANG: Five stories from the street. At the street. So that doesn't include the two levels of parking.

COUNCILMAN D'ANGELO: I'm sorry. In addition to this photo, do you have available a figure of Roman numeral IV.1-10? It's called U4. It's from the parking lot of the Community Park.

MR. AUFGANG: I don't have it in this slide show. It's in the DEIS binder. I'm sorry, I don't have it with me in this slide show.

COUNCILMAN D'ANGELO: Okay. It's in the DEIS. I was just wondering if you could put it up.

MR. AUFGANG: I apologize, we don't have the entire file with us on the laptop today.

So we have one additional view to share with you. This is a night view of the front. What we're showing here is the porte-cochère at the front for drop-offs at the hotel and apartment building, and another view of the restaurant with the upper floors.

We hope you appreciate the effort we put into designing this building. It's a very exciting project. And we believe that

it really is a design worthy of a beautiful setting.

Now John Imbiano will discuss the landscaping and some of the other amenities on the townhouse portion.

MR. IMBIANO: Good evening. I'm John Imbiano, a principal with IQ Landscape Architects with offices in White Plains, New York. It's a pleasure to be here this evening.

What I'll start out with is the initial site plan that Pat already addressed. What we wanted to do is give a sense of place, a sense of community, to the townhouse and the hotel site and integrate both of the parcels in terms of landscaping and connectivity of paths and roadway systems.

We created five or six landscape zones that we thought helped do that for people living and walking through the project. I'll go by each one of those areas and zones. One of them is a village commons that's kind of, you can see, centrally located; an interior loop system, greenbelt

we're calling it, or greenway, that provides the connectivity that I mentioned.

We're also looking at something that functions, from what our civil engineers designed, in terms of stormwater management, but also making it a site amenity for the project by enhancing some of these meadows that were once historically there.

We took a look at the streetscape through the residential area and how to enhance that and reinforce that neighborhood feel. And then we took a look at the hotel site and, again, trying to integrate both of them to create a unified effect.

This is the village green. There's a large elliptical space in the middle there that will allow for flexible passive and active recreation. Working with the topography there, we feel we could carve out an amphitheater in terms of, you know, providing some performances there, multi-generational passive and recreation, a playground, a shade structure. So this is going to become kind of the focal point here.

These are some precedent images, some of them we -- are project -- ours. That one's at Blythedale Children's Hospital; you can see it's a covered tensile structure to provide shade.

The playground there, what we want to do is really reinforce that native landscape, and rather than just plop down a playground, is integrate materials into the playground itself. An example of an amphitheater, outdoor amphitheater and the large, flexible, open space.

This is a section of the linear greenway that I discussed. What it allows -- we want to provide a walkable community here, so we do have sidewalks in front of the units. This is the townhome area. Be we also want to provide an alternative path for pedestrians, and this is this interior loop that actually goes through swathes of native plantings rather than just open lawn areas to make it part of the experience there.

These are some samples. This is actually a park that we worked on in

Tarrytown called Scenic Hudson Park where we used all natives. I think it's quite delightful, rather than open spaces. Certainly not a suburban kind of feel here, but integrates nature with the buildings.

This is an enlargement of the townhomes. You can see what we're doing is introducing lots of shade trees, flowering trees, for developing design guidelines for the kind of shrubs and native plantings in the front. And this shot I love because it really shows you once you plant street trees, that the character of the neighborhood is really established and the buildings kind of fade into the background.

This is the large meadow that we're using for, again, stormwater management. There'll be these interim basins that collect stormwater and treat it. But you can see by the different colors here what we want to do is break that up and create an interesting natural meadow there with different native meadows -- types of meadows, I should say, using some of the free-standing stone wall that you might see

on the site that was left over from the old estate there, and using that on the hillside.

And then we also thought of introducing some outdoor art. And when I say "art," it would be more or less monumental kind of art because of the scale of the space. And this could be viewed from some overlooks that we're creating, and also from the hotel and the roof of the hotel.

These are some images of what a meadow could look like all year round, in a beautiful fall color. What grading and manipulation of grades can actually do if you think about it in a sculptural way. Even access through the meadows there, simply mowing paths allows for pedestrians and people to experience it.

And this is an example of the kind of art, not the art we're going to use, but the scale of it.

And this is the hotel site that I already described. This is the front drop-off area. You can see there's trees in the parking lot for shade and environmental

benefit. Some of these areas to the -- flanking the front of the hotel could be used for rain gardens. We thought about integrating some of these dining areas and waiting areas with those rain gardens.

And then the back, we're considering using a green screen to kind of buffer and screen some of the parked cars, although I think Ari's image shows that it's not really going to be in your face. And what these rain gardens can be, they really could be landscape features rather than just functional stormwater basins.

And then overall we also have kind of a landscape typology where we want to go back to the history of the site and actually reintroduce some of the apple trees, particularly along 22, and also integrate a lot of native species here. Apple trees, again. We're talking real apple trees, and it will take some maintenance, but we think that would be a nice gesture to the history of the site.

And then also treating -- we're going to have a lot of situations where we have

the edge of the meadow coming to a woodland edge, and these are great areas for kind of breeding pollinators, birds, butterflies, bees, where you transition from a meadow to a woodland, and we're developing a plant pallet that does that.

We've also worked to develop at least a schematic lighting plan for the project. All the areas in the dark blue are areas that are not necessarily illuminated, but you can see we're lighting the driveways, the drives, the roads, just for safety reasons. And we're using energy efficient LEED -- LED, I should say, light fixtures. We're cognizant that this site sits on a high point, more or less, in the town. So there would be dark sky compliant fixture that have no glow, upglow to it, and also those kinds of fixtures that have sharp cutoffs, which means the neighbors will not be affected by any of the lighting from the path.

So I thank you, and I'd like to introduce Jonathan Falik who will discuss some of the financials of the project.

MR. FALIK: Thank you.

Thank you, Mr. Supervisor, and thank you to the board for allowing me to be here again.

I didn't put any slides up here because the numbers would be so small you wouldn't be able to see them. But I was asked to take a quick step back and just go back through sort of where we started.

So I'm Jonathan Falik, CEO of JF Capital Advisors. We focus on hospitality transactions. We do a lot of feasibility analysis, programming, and financing. In the last 25 years I've completed $30 billion of hotel transactions, including a billion as a principal. And over the last decade or so we focused a lot on development.

So we were originally engaged to look at the operational and financial feasibility and viability of a 300-room conference center or a convention hotel. And that's what we did. And what we did was we did what basically anyone trained in feasibility analysis would do: We went and we pulled comparable operating statements, we pulled

comparable sales of hotels, we looked at what it would cost, roughly speaking, to build a hotel based on different construction methods and recent comparables in the broader area for hotels and hotel mixed use.

So we looked at the 300-room hotel, and we got a bunch of individual comparable operating -- operating statistics, but we also went to Smith Travel Research, which is the most widely accepted industry provider of occupancy, average daily rate, and room revenue information, and we ran customized reports for a full-service hotel.

And to look at comparables for this area for a 300-room full-service hotel, we pulled the Hilton, the Hilton, the Sheridan, the Renaissance, the Doubletree, the Marriott, and the Hyatt. On a blended basis, those average 334 rooms, 23,000 square feet of meeting space. What's interesting about that competitive set is on an average basis, they are 36 years old. No one's building new 300-room or 350-room hotels in this area. The math doesn't work

based on the cost. But, you know, so we took that data -- and what Smith Travel does is they don't give you the individual occupancy or daily rates for that individual hotel, they give the weighted average composite. They break it down, they tell you what it is by month of the year, by day of the week.

So Smith Travel Research confirmed for us that the average occupancy for that competitive set, the weighted average occupancy, was 71.1 percent at $146 average daily rate. You would generally think, and most of the people here in the room would generally think that the rate that I just quoted to you sounds very low, because what you're generally used to is hearing about the rack rate, when you need a room for a family member locally, or people are coming to town, or there's an event, a wedding, or something busy, and you're paying $300 for two nights. But the reality is a lot of the rooms sit empty, and a lot of rooms are sold at vastly discounted rates, whether on Expedia or as part of large group blocks to

fill their meeting space.

So we plugged all that in. We did five-year projections based on that competitive set and said we should do a little bit better because we're newer, we're not 35 years old, and the numbers -- the numbers spit out. And I reviewed this with this board and with you, Mr. Supervisor, I think a year ago or a year and a half ago and -- a couple of times, and it doesn't come close to being viable.

So we were then tasked with what is feasible? What is viable? So we did the exact same exercise. We pulled information for a limited service competitive set. There the local competitors we included were the Residence Inn in White Plains, the Hampton Inn in White Plains, the SpringHill in Tarrytown, the Courtyard in Tarrytown, and the Courtyard in Rye. Those average 146 rooms. They are also quite old; they are almost 30 years old on average, so you have a lot of generation 1 or 2 Courtyards.

And the occupancy there is actually higher, 77 percent, so higher than the

full-service competitive set, at $151 average daily rate, which is also higher than the Renaissance, the Hilton, the Hyatt, et cetera. And the reason for that is the average room count is less than half the size. So the traveling businessperson who drives up and down the highway, or is traveling, the person who needs a room for a few nights, is buying into that. They are very brand loyal. So the Marriott rewards people go to the Courtyard. The Hilton loyal people go to the Hampton Inn. So when we plug that in, and understanding kind of the local demographic, that also did not work.

So we pulled a what we call boutique set, which is not full-service traditional and now limited service, and there we included The Castle, the Ritz in Westchester, and importantly, the J House in Greenwich and the Delamar in Greenwich, as well as the Doral Arrowwood, just to round it out, so we could run a report and have some critical mass.

There the average room size is 144

rooms, but skewed very heavily high by the Doral with over 300 rooms. If we look at the most direct comparables, it's the J House at 86 rooms and the Delamar at 82 rooms, also with smaller amounts of meeting space. So we took those projections. They run a lower occupancy than the full-service set, and the limited service set at 64 percent, and an average daily rate of $206. So higher rate, but lower occupancy. And they focus a lot more on having a meaningful portion of their revenue contribution come from food and beverage.

So we thought we were on the right track. But when we ran five-year projections and we looked at -- and we plugged in comparable sales, it still didn't work. And that drove us to look at, well, what if we did a mixed-use building where we had just over 90 hotel rooms, and included apartment rentals in the building. So the apartment rentals could rent up and lease up faster and at a higher occupancy level than the hotel, and those apartment renters, the tenants in those units, would end up

supporting the food and beverage of the restaurant, of the bar, the lounge, and they could have certain shared amenities: Fitness center, swimming pool, things like that. Shared maintenance staff.

So as we went through that, we got to a place where -- where it became financeable, financeable from a debt financing perspective, equity financing perspective. And looking at all of it, we factored in what makes sense from an operational perspective, you need a certain number of rooms to spread your hotel fixed costs over, but you don't want to have too many rooms because you're going to struggle to fill them at certain points in time.

So this boutique hotel concept feels like a four-and-a-quarter- to four-and-a-half-star hotel, so a nicely done hotel, with a very attractive restaurant, bar, lounge, as well as a ballroom and a junior ballroom, which plays very well for small group events but -- for the local social catering events, weddings, Bar Mitzvahs, fundraisers, things that would

just get lost if they go to the jumbo-size ballroom of the Renaissance or the Hilton or the Hyatt.

So we end up with our entire model that was submitted, and you have in the exhibit. So, again, I apologize for not having slides, but, you know, I'm not sure how any of us would read them. We end up with 91 hotel rooms, 70 apartments. The 91 hotel rooms include a few suites. So when we were originally looking at it a year and a half ago, we had -- I believe we had 97 rooms. We kept the same square footage, but we introduced a Presidential Suite and some other suites, again, to accommodate that group user.

We thought about the sizing as being very important relative to IBM as a major user, but who also has their own convention facility and their own sleeping rooms for certain training, and the occupancy in the broader market.

In running our projections, we did a separate set of construction cost projections with hard costs, with soft

costs, with financing costs based on conventional cost methodology. We ran five years of operating projections, and assumed for modeling purposes, for financial modeling purposes, a sale at the end of year 5 at cap rates that are in sync with CBRE projects for hotels and for apartments in the broader area.

We think what was presented and you see in the financial analysis gets us to an investor internal rate of return on a leverage basis that is financeable, that clears the market. In doing our projections, you know, we projected out all of the direct expenses as well as the undistributed expenses and fixed expenses, including property taxes, insurance.

In our financial model and in the DEIS you have the detailed projections of the property taxes that we believe will be projected, as well as occupancy taxes, sales taxes, and the FTEs, the full-time equivalents that we believe the hotel will generate, which is on a regular annualized basis. So 121 full-time equivalents for the

hotel, and an additional 10 for the apartment component.

COUNCILMAN D'ANGELO: Can I ask you one question before you go on?

MR. FALIK: Yes.

COUNCILMAN D'ANGELO: So you've chosen the boutique model, which is your Ritz-Carlton?

MR. FALIK: So Ritz-Carlton is really luxury. The best way to think about boutique is more like a Kimpton.

SUPERVISOR SCHILIRO: Like a what?

MR. FALIK: Like a Kimpton hotel.

COUNCILMAN BERRA: And how would you characterize the Delamar and J House?

MR. FALIK: Similar boutique hotels. So J House is a -- J House is a -- I don't know if I'm supposed to answer now or not. But I'll tell you generally, just as we think about it, J House is a -- you know, is essentially an adaptive reuse of an older -- you know, a much older building. Not a purpose built new building. So the rooms are done in a certain way, they have a smaller amount of food and beverage space,

but appeal not just to someone who needs a room, but also to the local market for, you know, for -- for lounge, for restaurant, et cetera.

I think this will be at a higher price point than it and more comparable to the Delamar.

COUNCILMAN BERRA: I was just trying to get a feel, because you described everything else except the one you're --

MR. FALIK: Sure, sure.

So, you know, there's a lot of confusion in the world at large, but especially in the hospitality world as to what is boutique, right? Because some people describe an 800-room hotel in Las Vegas as a boutique, and some people say a boutique has to be smaller than 200 rooms.

Boutique, the way we refer to it, really means more customized. It could be affiliated with a brand, but it's not going to be a Marriott. As an example, within the Marriott brand family, there's W Hotels. A lot of people would think of a W Hotel as a boutique hotel, but it's part of the

Marriott system. So it's really kind of more of a lifestyle, trendy -- trendy kind of hotel.

So we've done an enormous amount of financial analysis. We've done the operational analysis.

Thank you for the opportunity to be here.

SUPERVISOR SCHILIRO: Thank you.

MR. AUFGANG: So as one last presentation, we did produce an animation. What you're going to see is turning into the property, making a left onto the road that wraps around the hotel, and then coming back around the hotel and then turning into the townhouses. So I can play that now.

(Video playing.)

COUNCILMAN BERRA: So that was turning in from 22?

MR. AUFGANG: We're still on, and we're ready to go into the driveway. Here we're going to make a left onto our driveway off of 22.

COUNCILMAN BERRA: Off of 22?

MR. AUFGANG: I'm sorry. North

Castle Drive.

So now we're turning in off North Castle Drive. This is where we split between hotel and townhouses. We're making a left.

COUNCILMAN BERRA: A lot of people out.

MR. AUFGANG: Here you see the corner with the hospitality services, the restaurant and bar, coming into the parking lot.

COUNCILMAN BERRA: You can't slow that down?

MR. AUFGANG: I'm sorry. I could pause it if you need to pause it.

Here's the entrance to the residents' parking. Coming back around. You'll see the loading dock and the entrance to the hotel parking when you get up here. This is our loading area. Entrance to the garage. And then we're going to make a left back into the townhouse portion of the project bar.

COUNCILMAN BERRA: Could you make a right into the townhouse? Or you have to go

around the hotel?

MR. AUFGANG: You could make a right. Right at the top of the driveway you can make a right.

So there's a -- we made a distinct effort to break up the driveways with planting so there's not too much concrete in any one spot.

Here you see the view towards the hotel down the hill. So I wanted to stop you here for one second to give you a feel for the slope of the land. You see the road does -- it's about a 15- or 20-foot change in grade from the townhouse area down to the hotel part of the project, which is what I described at the top of the presentation about why we're utilizing that land to make the taller building feel not quite as tall.

And then I'm going to pass it back to Pat just to wrap up.

COUNCILMAN D'ANGELO: Is it possible to get a copy of -- get that emailed to the board so we have it?

MR. AUFGANG: You have it. I sent it out -- I sent it today.

COUNCILMAN D'ANGELO: Okay.

SUPERVISOR SCHILIRO: So this is your computer --

MS. SIMON: It's in your Dropbox also.

COUNCILMAN BERRA: And what speed was that drive-through simulating?

MR. AUFGANG: There was no particular speed. It was faster when there was nothing to show and slower when there was something to show. I wanted to keep the animation to only two minutes. Sometimes it starts to feel very long. So when we were driving in, there's not much to view, it went a little faster, then slowed down. There are also elevations. It wasn't at car level. This was just to show the project.

MR. CLEARY: Thanks, Ari.

So the purpose of the EIS was to evaluate the impact of the project that we described to you this evening. So I just want to briefly touch on some of those. And I hope it becomes apparent that I started this evening by showing you some of the historic images of the site. It had been an

agricultural site, it was an orchard, and only that patch of forest in the lower southwest corner has ever been sort of untouched on that property. And this project sort of leaves that portion of the property alone. So we've really limited the development to the areas of the site that have already been disturbed.

So our project will disturb 26.5 acres of that 32-acre site. Of that, 5.5 acres will be new buildings, 4.9 acres will be driveways, walkways, and other impervious surfaces, for a total of about 10 acres, or about 32 percent of the site.

850 trees are being removed, but as I indicated earlier, those are second growth trees, or the remnants of the apple orchards. And as Jon indicated, there's an extensive landscaping plan proposed to mitigate that.

There's a small pocket wetland in that little wooded corner. We're not touching that. We're not encroaching in that area at all. There's a full stormwater mitigation plan that's proposed to deal with

the impervious surfaces.

The project will require water, about 70,000 gallons a day. When the property was purchased from IBM -- I'm sorry. So with respect to water, the developer is providing a financial contribution to the Water District 4's expansion to wells. There will be sanitary sewage generated from this property. When IBM -- when the property was sold from IBM, there was a reserve sanitary sewage volume of 35,000 gallons. That's now transferred to this property. And the property will be phased in with the expansion of the sanitary sewage treatment plant.

The project will generate about 118 a.m. peak-hour trips, 146 p.m. peak-hour trips. None of that volume will degrade the levels of service at any of the surrounding intersections. There'll be slight delays, but the levels of service will remain unchanged.

COUNCILMAN D'ANGELO: I'm sorry. Maybe I just skipped out there for a second. How much -- the sewer capacity, how much did

you say? Did you give me a number on that?

MR. CLEARY: 35 was purchased from IBM. The project in total is generating about 73,000.

COUNCILMAN D'ANGELO: Okay.

MR. CLEARY: The project is building new sidewalks and crosswalks across Route 22 to connect the project to the hamlet.

The project has a residential component. We project that there are about 52 -- or, sorry, 54 school-age children that will be generated from the project, 37 from the townhouses and about 17 from the apartments. That number is more likely lower than that. That's about a 2 percent increase in the school's population. And that number will be, with that addition, 452 students below the school district's peak enrollment of 2007/2008.

There'll be an instructional cost for those additional kids of about a million dollars a year. This project will generate about $2.6 million a year in school taxes, resulting in about a $1.6 million annual surplus in school taxes.

There'll be a modest increase in the demand for police, fire, and emergency services for the project. But the project will generate -- currently the site generates $210,000 a year in real estate taxes. When the project's complete, the taxes generated from the site will be about $3.9 million annually. And above that, about $657,000 annually are town taxes to you, directly.

As Jonathan indicated, there are hotel occupancy taxes. That's estimated to be about $300,000 a year. There will also be sales taxes generated from the restaurant uses at the hotel. There'll be indirect multiplier benefits from this development that are estimated to be about $5 million annually.

In addition, the EIS --

COUNCILMAN BERRA: Can you explain those multiplier effects? You mean more business in town?

MR. CLEARY: Correct. That's the benefit of a project like this, it's supplies, it's resources in serving the

development.

COUNCILMAN BERRA: And what percentage is that of the revenues that are generated in town already?

MR. CLEARY: That's a good question. We will get that answer for you in the FEIS in writing.

And there were also four alternatives that were evaluated in the EIS: An alternative that looked at just the hotel that Jonathan described earlier; hotel and townhouses only with no apartments above; a project where the townhouse component was reduced to 60 units; and a project where the height of the building was limited. And all four of those alternatives were evaluated in the EIS, and the same level of analysis was provided for each of those.

So that's our presentation. I appreciate the opportunity. And we're here, again, to listen tonight, and we appreciate the opportunity.

SUPERVISOR SCHILIRO: Great. Thank you.

So like I mentioned before, the board

will provide some feedback questions, comments and such, and then we'll open up to the audience for those who want to ask some questions or provide some input.

As always, I'd like to make sure everybody gets the opportunity to speak. So from the audience, try to keep your comments or your questions or input to five minutes.

Do we have a list?

MS. SIMON: Yes.

SUPERVISOR SCHILIRO: How many people on the list?

MS. SIMON: Four. But one just left. I don't know if she's coming back.

SUPERVISOR SCHILIRO: Just use your discretion. You know, if you know you're going to go on for 15 minutes -- I just want to make sure everybody speaks. If there's only four, there may not be an issue. So if you go for 10 minutes, the next people go for five, that's not that big of a deal. If we had, like, 20 people, I'd want to keep it to five.

So Steve, you want to start?

COUNCILMAN D'ANGELO: Why not?

This is a question I hope you can answer tonight. If not, we'll get it in a future document. You talk about splitting yourself into two separate parcels. To me that implies, and the Town Attorney also mentioned it to me earlier, that means these are going to be a condo-type operation, not fee simple. Obviously, if it was fee simple, we'd have to subdivide the second lot into however many units there are, parcels and homes.

Second, this is a comment. This was the first time I heard tonight that the need for the sewer is going to be more than twice than you bought from IBM. And that to me is very concerning, given the situation we have with the plant and what's going on.

Another comment, and we'll get this into a question later on, is I'm listening tonight to the gentleman who talked about the hotel, and basically his comment was you can't put a hotel on this piece of property because it's not profitable, and that the apartments above is the only way you could do this to where it offset the cost of the

hotel. It was zoned hotel. Now we're adding 70 apartments and however many townhouses we decide that should be the right number.

So based on that, one of the things I'd like studied is the -- how many townhouses you could build if the property for the -- if the OBH zoning were not changed, as far as frontage, depth, front, side, and rear yards, okay, so where we end up with still 500 front, 500 depth, 150 front, 300 side, instead of the 40 you've proposed, and the rear of 300 instead of the 50 you propose. And when you do that, figure out the hotel size, figure out the piece of property, and then come back and figure out how many townhouses we can put on that second piece of property, okay. Because I'm looking at these pictures and, you know, it looks like people are going to hit foul balls into some of the back yards and terraces of the hotel.

Again, this is just a comment. The original zoning for that entire piece of property is 300 rooms. If we put a small

hotel there, you're talking about 91 rooms, 70 apartments, which, by your count, gives you 96 bedrooms, 70 living rooms, 70 kitchens, and 10 have dens. That building alone is 337 rooms. And on top of that, you want to add 90 or so townhouses. In my opinion, way too big for the property.

In a similar vein, the square footage. I won't go through all the details, but, again, you have a certain square footage for a 300-room hotel, even if you include big rooms, huge ballrooms, everything else. When you get down to all the square footages on the apartments and the townhouses, it dwarfs what could be there before.

You made a comment on page 275 of -- it's PDF page 275. I don't know where it is on the document. But there is a comment made as far as roads in the Hamlet of Armonk, and Main Street specifically, saying that the Main Street is in good condition and paved well and doesn't need more. And I think anybody in this room could tell you, Main Street is probably one of the worst

roads in this town. And the supervisor for years has been on the DOT to try to get them to pave it. So I really think you should change that.

COUNCILMAN BERRA: Steve, I can tell you the page number. It's Roman numeral IV-H2.

COUNCILMAN D'ANGELO: Obviously, I wasn't the only one who noticed.

SUPERVISOR SCHILIRO: Just remind everybody who owns Main Street.

COUNCILMAN D'ANGELO: That's the DOT.

COUNCILMAN BERRA: New York State.

COUNCILMAN D'ANGELO: I said DOT.

COUNCILMAN BERRA: I know. But New York State.

COUNCILMAN D'ANGELO: New York State DOT.

Okay. Another main concern, again, is 384 PDF page, the fire issue. Unfortunately, I can tell you that I've been in false alarms in my home, three-bedroom house. I've been in false alarms in big hotels. I have a false alarm in my house, they send out one truck and a police car and

the chief comes out there. The hotel I was in was in downtown Boston, 3:00 in morning, the alarm wouldn't go off. They sent five trucks, seven police cars.

We don't have that type of capability here. So to say that a building of 91 hotels and 70 apartment buildings, five stories tall, even if it's a false alarm, to say that it's going to have minimal impact, even if nothing happens, just the response of the people that have to come out to do that, I think that needs to be looked at a lot closer.

COUNCILMAN BERRA: That's page IV-H --

COUNCILMAN D'ANGELO: I want to thank my assistant over here.

COUNCILMAN BERRA: We practiced before.

COUNCILMAN D'ANGELO: Another point, and I know this is probably just for visual purposes, but they talk about schoolkids and school bus stop, and they showed it on the corner of Route 22 and whatever that road is, Armonk Road. You have to change that.

I don't know if that's going to be a public road, private road going up the hill. But that can't be at that corner. It's a major intersection. I'm not going to ask kids to come down the hill, stand on the street corner at that intersection. I wouldn't park my car there, much less have my kids wait for the bus there.

On top of all the housing, everything else, we're going to have three separate rooms in the hotel: Ballroom with 282-person capacity, junior ballroom, 149, and a boardroom with 45 capability. I assume they can all be used at the same time. That's roughly almost 500 people. I don't know if the study's in there, but I'd like to know if the traffic study was done if that place is full, hotel full, you've got the apartments rented and 97 townhouses, how many cars is that going to generate at that particular time? Especially the ballroom, the junior ballroom, they may all be coming and going at the same time.

SUPERVISOR SCHILIRO: So your request there was to make sure it was studied?

COUNCILMAN D'ANGELO: Yes.

SUPERVISOR SCHILIRO: I don't remember seeing that.

COUNCILMAN D'ANGELO: I don't think it was. I didn't see it in there.

SUPERVISOR SCHILIRO: Do you remember, Adam?

MR. KAUFMAN: I'd have to go back.

COUNCILMAN D'ANGELO: It's a 500-page document.

SUPERVISOR SCHILIRO: So if it's not -- if it's studied, it could be pointed out. If it's not, it would just need to be studied.

COUNCILMAN D'ANGELO: Yeah.

That was my high points. If there's a couple things I think of as we go along... I'll pass it on to the next person.

SUPERVISOR SCHILIRO: Barry, you want to --

COUNCILMAN REITER: Yeah. I mean, Steve hit a lot of points that I was interested in, you know, the water, sewer.

You mentioned, and I'll bring it back because Steve talked about the fire, the

modest demand for PD, fire, and EMS. That should really be looked at. I'd really love to know a lot more about that. That's sort of my area of what I like dealing with.

And then traffic, you know, look into the traffic and the way it will flow and how it will work with, you know, like the buses or the school kids and how that would work.

But Steve hit most of the points that I was interested in, so I'll pass it to Barbara.

SUPERVISOR SCHILIRO: Barbara?

COUNCILMAN DiGIACINTO: Just to piggy-back on Barry's comment, looking at the hotel, I question if we have a fire truck that has a ladder that could respond. So I think that, you know, you need to study, you need to look at the equipment that our fire department has and evaluate what a project like this would need and what the cost would be and who would bear that cost. I think that's very important.

I have -- I'm just sort of -- I have to tell you, this was just very overwhelming to go through the binder and to just digest

all of this. And I'd like to ask you, if you could go back to the very first slide that you showed, where it showed the hotel and the townhouses. Please.

Okay. Thank you.

First of all, just for clarification purposes, and I think most people in the room know this, as we look at this entire plan, that entire piece of property, 32.5 acres, is zoned Office Business Hotel, and so, therefore, as a right, you can put a hotel on that property. On the other hand, the residential component, whether it's the apartments that are part of the hotel, much less the townhouses, they are not as of right. And that's obviously part of the petition.

I'm overwhelmed by the massiveness, the vastness, of this proposal. And when I was looking at it, I thought -- and I hadn't thought of this when I was looking at my binder -- is I'd like to see a proposal in which -- the hotel design is obviously going to be a lot different. But I'd like to see it flipped. I'd like to see the hotel --

first of all, I'd like to see the hotel parcel increased. It's only six and a half acres. The residential part is 26 and a half acres. And to me there's something sort of lopsided.

We have this, you know, 32.5-acre parcel that's zoned Office Business Hotel, and yet the greatest percentage of this proposal is residential. So I'd like to see a plan in which you had the hotel where the townhouses are. I'd like to see the property for the hotel maybe, at the very least, doubled. I'd like to see more green space. And obviously, I would like to see, you know, flipping the townhouses, fewer townhouses.

And once again, when we did that little video, some of the -- you know, the front yard space was so minimal that it took my breath away, again, seeing the video, as opposed to just looking at the binder. So that would be something that I would find interesting. And so I know I'm basically asking you to sort of redo. I'm not asking you just to flip. But something that I

think would be, to me, perhaps easier to consider.

I also think that as I look at this, I question if this is really the character of our town. Is this the character that we want to add to our town?

And I am a walker. I'm at Community Park probably 360 days a year. And when I walk down that path where the ball fields are and I look up at -- because your setbacks are so minimal, when I look up at where the hotel would be, I just think to myself, of all the families that use this park, either for ball fields or, like me, walking, jogging, whatever the case may be, and seeing this proposed plan, again, with the minimal setbacks and this five- story hotel, I think that I would leave town. I mean, I think people would be aghast at what this Town Board let happen. So I think an alternative plan is, to me, really very, very important.

The -- I was just curious in terms of the village green or the village -- in the middle there. How much property is that?

Is that like an acre? What is that?

MR. IMBIANO: We'll have to calculate.

MR. CLEARY: We'll get the number for you.

COUNCILMAN DiGIACINTO: And I think it was Chapter 2 of the Executive Summary Table Roman numeral II-2. I'd like you to explain how the open space was calculated, because it seemed rather generous or high in terms of the calculation. I didn't write down exactly what it was. And I'd like to make sure that the calculation for the open space would not include yards, you know, miniscule as they are.

I'd also like to see if you could do some type of study at your target audience for the hotel. I'm just in a -- I don't know -- I'd like to know how you think you're going to draw the people. It's not as if -- I was looking at, you know, similar size hotels, and what many of them had that would be in a similar setting, such as Armonk, which -- I mean, I love it, I'm third generation, but it's not an exciting

place to live. And I like that. But I just think, you know, what would be the draw?

And as I say, the hotels that I looked at that were similar, they had these magnificent spas. They had, you know, outdoor areas for yoga classes, and jogging trails. And they had Michelin one-star chefs. And these are, you know, in existence. And I thought, that I could see, you know, I want to get away from it all. But I don't -- I just would like to see some type of study that shows how you're going to draw people to the hotel.

I certainly, and I think everyone on this board, very concerned with the water and sewer demands. I think we really need to see very, very accurate calculations. And then we have to pin that against, you know, what do we have in terms of water? What do we have in terms of sewer? What is the expansion of, for instance, our sewer district going to entail and what is it going to cost? And how -- you know, how you are going to contribute to that.

I also would like to see if there's

some way you can -- I'm a little concerned with the amenities that the hotel is going to offer, which, you know, I understand you have to have amenities. But how is it going to -- are people going to leave the hotel, you know, with your different restaurants, with your bar, with your pool and bar area, with your grab-and-go for, you know, snacks and so on? You know, are you going to, you know, really be containing more people than having people leave the premises and coming to town?

Conversely, conversely, I'm concerned about parking. I'm concerned about traffic. Our Main Street, you know, is basically one block. And if these people that are either living in the townhouses or in the hotel, you know, if they are going to come into town, how are we going to address the traffic and the need for additional parking, which is already a topic.

Oh, you indicate that you're going to have green building measures, which, of course, I think we're all, you know, in favor of that. I think it's, you know,

really crucial that both parcels have, you know, really state-of-the-art, you know, green measures. And I'd like to just see a little more detail in terms of the water conservation measures in terms of you have, you know, efficient irrigation, water reuse, rain barrel cisterns, underground water storage tanks. I'd like to see more of that incorporated in the design.

And I think that's all for now. Thank you.

SUPERVISOR SCHILIRO: Thanks, Barbara.

José?

COUNCILMAN BERRA: I'm going to make a couple of general comments, ask some questions, and then make some other comments.

First of all, I think it's incredibly important people are turning out to this, watching on TV, and making comments on development in town, and I hope they will keep on doing this. This is a big project. It's a major project.

I like the idea of a hotel here. I

recognize the amount of work that goes into producing a 500-page document. If it's worth reading through it, then it's worth the work that goes into it. And I realize what a serious effort all this is. And I like the hotel. But I'm going to have some concerns about this.

But first a couple of questions. On page 446 out of 495 -- that's okay, I know the exhibit page -- 5-1, it says, This alternative does not meet the objectives of the Applicant, nor would it meet the objectives of IBM, the prior owner of the property.

What are the objectives of IBM with respect to this parcel?

MR. BARONI: They'll answer in the FEIS. They are not going to provide answers tonight.

COUNCILMAN BERRA: Okay. I may ask a couple of things because they may have ready answers, if that's --

MR. BARONI: It's really not the way this works. Your questions will be answered in the document. That becomes your document

once the FEIS is deemed complete.

COUNCILMAN BERRA: All right.

Then we talk about, or you speak about -- in the Draft EIS about unique. There's a couple of instances where I saw that. On 2-3 -- do you need me to give you --

MR. CLEARY: It helps if you can.

COUNCILMAN BERRA: PDF.

MR. CLEARY: Whichever one you do. Either way.

COUNCILMAN BERRA: Either one?

MR. CLEARY: Either one works.

COUNCILMAN BERRA: Okay. It speaks in the last paragraph right before 2, so it's the bottom of the page, This landscaping plan not only unifies the site by creating an attractive development with abundant visual interest internally, but also recognizes that Eagle Ridge will be visible from Community Park, and creates a unique visual interface from that perspective as well.

I'm not sure what that means.

There's -- I'm sorry, I've got notes

scratched in different places, so I've got to jump around and read a little bit of my chicken scratch.

So looking at this -- again, I recognize the amount of work that goes into it, and some of this might generate a response, some might not, but I think this really sugarcoats things way too much. The comment that was being made before about the fire trucks, how it only would require 11 percent more, something, and it's not the responsibility of the Applicant to pay for a fire truck. The reality of it is our fire department doesn't have equipment that could reach to these levels and doesn't currently have a need for it. Even though it might be desirable in some ways, it doesn't have the necessary ladder truck to do that. So I would have some concerns about this.

There's discussion in here about how much traffic will be generated in terms of the removal of excess material. And this is on page Roman numeral II-11 in the Executive Summary. And I worry a lot more about the permanent/long-term effects of how this fits

in than I do over the construction. But we're talking about a massive disruption here. And it discusses approximately 3312 truck shifts would be required to remove this excess material. I did a quick calculation. I don't know exactly how many garbage trucks Suburban Carting uses in town, but they are here, I believe, five days a week, and I'm guessing it's two or three trucks. If we assume three trucks, and they are big garbage trucks, and that means 15 a week, 52 weeks, that would generate 780 trips throughout town in a year. That's very noticeable. And you're going to have roughly four times that, according to this, coming out of this one site. And it's going to be going back and forth, I believe. So that to me is astonishing, a very, very large number.

Going back to my "unique" comment. I'm not sure that this adequately describes the impact it will have from IBM Park. We see -- I think before there was another image that showed -- maybe you could put it back up there -- that showed the length of

it alongside Lombardi Park.

COUNCILMAN DiGIACINTO: IBM Park.

COUNCILMAN BERRA: IBM Park. I'm sorry. Right.

And not necessarily the view from there, but superimposed, might be two up from there, how it goes the whole length of it. That one. Three, please. Down one. No, it doesn't show it.

There are --

COUNCILMAN D'ANGELO: That was the picture I asked for before, wanted to see a better picture.

COUNCILMAN BERRA: Right. But there is -- there are various ones in the Other Alternative section. And it really shows very clearly, for instance, on Roman numeral V-8, Roman numeral 5-8, this really goes the full length of IBM Park, and the height is just astonishing. This changes the very nature of the view from IBM Park. It's going to be high. Right now you don't see anything but trees there, by and large, and greenery. I think that needs to be given massive attention. It is a huge change.

It's not just fitting in, in a unique way. It's an entirely disruptive way. I think it is totally detracting from the quality of this town and what people like here.

Somewhere in here -- I'll slow down a little bit, give you a second.

SUPERVISOR SCHILIRO: There's a stenographer. Go as fast as you want.

COUNCILMAN BERRA: There was -- I'm sorry, I lost my thought for a second. I totally lost my thought for a second there. Whatever.

I agree with Barbara, that we really need to look at something that's much smaller in scale. This is just way too big for this Town. I think it looks beautiful in a lot of ways. I do share some concerns, just even if it weren't here, about how the units are so close together in terms of the townhomes. But the scale of this just is extreme. And I don't think this statement really addresses the magnitude of the impact that this would have.

I'm sorry. I'll finish up in about two or three minutes. I'm just going to

flip through a couple of pages here.

I'm not sure if this is something appropriate for in here, but you were throwing around figures before for what the different hotels have, pretty specific ones for J House, for instance, and the Delamar. I would think that information's proprietary. Is it really that public? So I'd like to understand where that level of detail is coming from so we can evaluate it.

I remember the other thing I was --

SUPERVISOR SCHILIRO: You mean to evaluate it or validate it or both?

COUNCILMAN BERRA: Evaluate it.

You're throwing these things out as financial information. And while I'm not in the business of figuring out which hotel should fit here appropriately, the figures are being thrown in there, have been discussed, so I'd like to understand them.

I think in here you refer to pedestrian connection being proposed from the Eagle Ridge development to Community Park. Is that something that you actually can do? I think there are restrictions on

that.

WOMAN IN GALLERY: Can you repeat? I couldn't understand what you just said.

COUNCILMAN BERRA: I'm sorry, you couldn't hear? Or understand?

WOMAN IN GALLERY: Understand.

COUNCILMAN BERRA: Ed cannot hear. You can't understand.

So on page Roman numeral II-10, the last bullet point at the bottom is, Pedestrian connections proposed from the Eagle Ridge development to Community Park.

And as I understand it, there are restrictions on the ability to do that. So I think that needs to be addressed. Understood?

Ed, did you hear?

MR. WOODYARD: Yeah.

COUNCILMAN BERRA: Good.

Again, this is the Executive Summary and you go into more detail, but on that same page, four bullet points up, it discusses minimizing impervious surfaces. It's 10.4 acres. Maybe you could be worse, but given how much you're moving, all the

disruption going on, all the tons, all the truck trips, and impervious surface, that's dramatically changing a place that has a lot of steep slopes, which is a troublesome thing.

It may be quantified in here already. I'm not sure. Page No. II-13, again in Executive Summary, it's not in bullet point form, but the last full paragraph at the bottom of the page refers to comparably minor decreases in some wildlife populations. To the extent that's not fleshed out, I'd like to understand that better.

And what would also be helpful to me would be -- we've got all these different alternatives. Barbara's spoken about different alternatives from those, which I totally endorse. I think we really have to see about downsizing this and really considering the impact it has on the flavor of this community. But I'd like to see, kind of in tabular form, a summary of some of the key characteristics of the different alternatives so you don't have to dig

through, because we got familiar with this, but it's nice to have some sort of crib sheet so we can look at it and check it off as we're going through the different things.

I think that -- I ultimately could have a lot more specific comments in here, but I think at this point it merits some specific comments, but a lot of general ones.

SUPERVISOR SCHILIRO: Okay.

COUNCILMAN BERRA: All yours.

SUPERVISOR SCHILIRO: I want to be mindful of the clock and people here that I believe do have comments they want to add. So I'll be as thorough as I need to be, but brief as well.

Six general comments. The feasibility study, which was very comprehensive, that Mr. Falik had prepared, the thing that still -- I'm still scratching my head with is most hotel developments are just that, a hotel. And this one requires, based on the numbers, an apartment component to it. I'm still puzzled by that, even though the report was very comprehensive

that he had presented months and months -- probably almost a year ago, I guess. And I didn't talk to Adam about this, but is there -- like we would study a -- have our traffic consultant study a traffic plan, do we have an outlet for studying the feasibility study to give us input on why in this particular case the apartments are needed?

And it's not to question your expertise. You've established that and your credentials are very good.

MR. KAUFMAN: We could hire someone.

SUPERVISOR SCHILIRO: Okay.

The just general information, which some of you have pointed out, but it is -- I'm the only one on the board that was around when we created or did this, IBM had come to us, they really -- as I mentioned earlier, don't think they had an intent on building a hotel, but asked us -- they had some foresight about a potential hotel here.

We know -- I shouldn't say that. There are -- just general information about the hospitality industry in our area.

Between 287, really, in White Plains, and Danbury, there's La Quinta and then Holiday Inn in Mount Kisco. There's not too much else. Which also leads to the curiosity of why a larger hotel, as originally thought by IBM, would not work through the feasibility study.

But Steve pointed out some of the dramatic differences between at the time that board created in the zone, the OBH, versus what's being proposed, which are pretty dramatic. 20 acres versus five acres. 500-foot frontage versus 350. Depth, 500 feet versus 300. The minimum yards, front, 150 versus 100 proposed, side, 300 versus 40 proposed. Rear, 300 versus 50 proposed. Maximum building coverage area, originally 10 percent, now 30 percent. Maximum building height, three versus five stories. Actual height, 45 versus 75. And FAR, .12 versus .7 proposed.

So there's just a lot of dramatic difference in what was originally created by the board and what's being proposed here. And, again, we understand -- we've digested

the economics. Still some puzzlement on that.

Regarding the schools, in general on this application, and any application -- I've said this before publicly, but it's worth speaking about again. I meet with the school board -- superintendent and members of the school board once a month. Almost every meeting I have with them, I put on the agenda development in town. I get their information as far as -- I actually have it here -- as far as what their school populations are from the past and looking forward. So we always know what that is.

They've studied for us what their current population is. I've also established with them what their facilities can hold, as we've learned through a prior application that would have impacted the North White Plains part of the town and the Valhalla School District, where their facilities are very, very tight, where our facilities, after the expansion years ago, can hold more students. So I'm not saying you fill up the entire school. But the

reality is their peak, with the current housing stock in town, was 2800 kids. That was established, I think, by the one of the representatives. They are hovering around 2300 kids now. But their facilities can hold about 3300 kids. I'm not saying you get to 3300, but the point is if they have the facilities, then you're talking about variable costs.

So if they have -- if the population does increase, they are increasing the variable costs, meaning teachers. So I just wanted to make sure that people understood, when this comment about school kids will only increase the cost for the schools in taxes, they have the facilities; it's variable costs related to additional school kids.

The taxes -- I'm not going to go through the details, and the numbers are in here -- just a general -- we've been doing this long enough. The numbers are here. They are projections. They are high. And I'm not so sure they are 100 percent accurate. But not discounting that they are

significant numbers, but not so sure those will be the end result numbers if this project proceeded as is.

And then what I'd like to understand better when you study, way in the back, I think at Section 5, about, you know, the Other Alternatives, with a 300-room hotel, if it can be studied and presented, the document presents that it's not supportable. And I'd like to understand how it would be supportable. What would make a -- as approved now in this zone, what would make that alternative, which is how the zone was designed, supportable?

Just for the public, there's a couple quick comments going through this. There's a lot of comments in here about in the Applicant's opinion, and then there's comments beyond that. Just keep that in mind. It doesn't mean we all agree with their opinion, but they are proposing their opinion.

There was a comment in here on Section 2-9 about it was rezoned by IBM but has not been developed in accordance with

that zoning. We knew that. We knew that going in. IBM wanted to subdivide it, but did not really have, if I can remember correctly, an intent on building a hotel; they just wanted to have it zoned that way in -- potentially in the future. So it wasn't not built because IBM decided not to build it. Their intention was never really to build it.

Steve touched on -- I'm not going to cover everything because my colleagues covered a lot. But the numbers of the demand for water and sewer are, as this report has shown, greater than we originally thought they would be. Significant.

The -- just touching again on the height and the scope of this. When they studied in here what the size of the 300-unit hotel would be, it was three stories. And I think immediately it changes what those sight lines are. Those pictures are very helpful, those renderings are very helpful. But if there was something on that property that covered much less acreage and drops two stories, the sight lines are going

to change dramatically, and you may not even see it.

I touched on the taxes. And I touched on the 300-unit hotel.

Okay. That's it for me for now.

COUNCILMAN DiGIACINTO: Can I add just one thing?

SUPERVISOR SCHILIRO: Yeah, go ahead.

COUNCILMAN DiGIACINTO: I just wanted to add, when I asked for a study in terms of our equipment our fire department has, I think you also have to include in that study our -- how many volunteer firefighters we have, and EMS, and I think also look into the impact on our police department and -- you know, it's not just -- this is a very expensive proposition for us when we think of our police and fire department.

SUPERVISOR SCHILIRO: I thought -- was first responders not in there? I thought it was.

MR. KAUFMAN: Yeah.

SUPERVISOR SCHILIRO: Okay.

Which is part of -- you know, I heard some questions about that from the community

to your point, but that's studied in every proposal, has to be --

COUNCILMAN DiGIACINTO: More of an analysis in terms of --

SUPERVISOR SCHILIRO: But you have to know what the impacts are and determine -- Bristol was a good example of that, where because of the type of facility it is, the call volume would be higher, and we made adjustments in that approval where they had to have on-site a 24/7 to alleviate the need from our first responders.

But things like that were brought up, like you said, you know, a call or even a false alarm or something, would require a greater response, just to check it out, versus -- forget about fighting a fire or something. Just to respond properly.

COUNCILMAN D'ANGELO: Equipment.

SUPERVISOR SCHILIRO: So what I'd like to do now is --

COUNCILMAN D'ANGELO: I have to add one --

SUPERVISOR SCHILIRO: Go ahead.

COUNCILMAN D'ANGELO: I had brought

up the point about the size of the auxiliary rooms, the junior ballroom, the ballroom, as I was going through the financials, which I really didn't pay attention to because I didn't think it had much significance, you know, how much money you're going to make on this thing, but there's interesting numbers in here. According to one of the schedules, it shows that of the rooms, not the hotel rooms, not the apartments, but all the restaurants and ballrooms, the maximum occupancy by code is 2,363 people. That doesn't count people in the hotel rooms, doesn't count people in the apartments.

And one thing we hardly touched on tonight is the townhouses. And we need to study the traffic impact of filling up all those rooms to code -- even halfway to code is 1200 people, plus everything else. That needs to be studied. I don't know how we're going to handle that down at the bottom of the hill with everybody else we have here. These are extraordinary numbers. Much more than we ever looked at before.

Okay. It's all yours, Boss.

SUPERVISOR SCHILIRO: I'm glad you brought that up because you made me think of one other item. And I think this was -- I just want to make sure the timing of the studies, for the traffic studies, reflect the changes which we welcomed at IBM.

So some of you may know, IBM's world headquarters is here. They had a facility in Somers. They did major renovations here. And they moved, what, 800 employees, Roland, from Somers to this facility.

MR. BARONI: Correct.

SUPERVISOR SCHILIRO: And I'm not sure when these studies were done if that was commensurate with when that happened. So we welcome IBM staying here and expanding here, but we want to make sure that those new car -- or car trips are reflected in this. So all part of the traffic impacts.

I'm going to stop. I want to open it up to the residents here and others that wanted to provide some comment.

MR. BARONI: Before you do that, the stenographer, do you need a break or are you okay?

THE COURT REPORTER: I'm okay. Thanks.

SUPERVISOR SCHILIRO: Okay. And remember, the important piece here is this is the opportunity, in an application like this, to provide comment like we did. And then if there's things that you believe need to be studied or should be studied further than what's in this document. And as you can see, we've had a lot of comments. But there's a lot of pages that we've read through on this and still had them. So this is the opportunity to have them study things that you think are pertinent.

So Alison, you have a list, you said?

MS. SIMON: Ed Woodyard.

SUPERVISOR SCHILIRO: Ed?

And just a reminder, Barry was just saying, that's not a time for them to answer questions.

MR. WOODYARD: No, no. I just had some comments.

SUPERVISOR SCHILIRO: Yeah, comments. And then if you have things that you want studied, put those as well.

MR. WOODYARD: I remember when this was being proposed, and we had talked about the historic significance that was up there at one point. The Town of North Castle gets its name from the Siwanoy Indians who had their encampment up there. And because they had a palisades up there that was to the north of Rye and Greenwich, it was called North Castle, and that's why we get our name, so...

The other thing that was up there is -- and Barbara probably remembers the years when that was called Dynamite Hill and there was a ski thing --

COUNCILMAN DiGIACINTO: No.

MR. WOODYARD: Some of the kids -- I just remember when that was Dynamite Hill and you could ski on it.

And also it was going to be the site for the UN, did you know that? It was back in 1947, I believe.

Sharon?

She left. Okay.

Anyway, I think it was -- it was going to be the original site for the UN,

and then Rockefeller came up with some site that's there on the East River and things changed.

SUPERVISOR SCHILIRO: If it was the UN, they probably would have been tax-exempt, correct? So we're glad that didn't happen.

MR. BARONI: I was just thinking that.

COUNCILMAN D'ANGELO: You actually have a shot at knowing this one.

MR. WOODYARD: But anyway, we got all the taxes coming in from the water now, from Kensico, so -- from the city, which is the number one tax provider -- am I correct on that?

SUPERVISOR SCHILIRO: I believe that's correct.

MR. WOODYARD: Okay. Good.

A couple of things. Piers Curry was head of -- was the planning department guy -- not planning department, excuse me. He was the head of the planning board. And he had a philosophy that worked very, very well for this town, and it was part of a --

strategic part of the way this town was designed, and it involved Route 22. To the south it was going to be commercial and business. To the north it was going to be residential. And this kind of goes -- wavers past because you're bringing this south -- you're bringing this whole residential south. So I just wanted to make that as a comment.

The other thing was that Frank Lloyd Wright had a -- has a philosophy about ridge lines. You never build on the ridge line. You always respect it. And it's something just to throw out there for information to whoever wants to accept it.

Barbara, you were talking about -- and Steve was, too, about the IBM Park and looking up at it. I was out there last week as we were getting ready for the art show -- what can I tell you, I'm in the shed, and I'm looking up at this thing and saying, Holy cow, there's going to be this whole huge building up there. And you've got this bucolic, wonderful place for kids to go, and they can feel safe, secure, and embraced by

nature and having a good time, and meanwhile you've got this kind -- this huge thing --

If you want to get a comparison to this, go down to Bronx, go to Van Cortlandt Park and see all the city buildings that are just lining this whole area where all these people play and all these -- all these recreation fields. And that's -- that image came into my mind when I was sitting there imagining what was there.

The other thing is, the thing that they provided here, too, was, you know, all the trees that -- they are full. It's like outside now. But you know, come October all the way through until April, you know, it's all going to be kind of bare.

And you also mentioned that you were talking about it as being a five-story building. Actually, with the parking, there it's a seven-story building. Am I wrong on that? Yeah. So it's going to be a seven-story building that you're going to be seeing from it. And I don't even think the ones on Van Cortlandt Parkway are that tall. Some of them might be.

The other thing that's getting me is the height difference in this new construction of that five-story. What's been going down in Business Park, it's been kind of an accepted three-story idea. And this was kind of inconsistent with that.

It gets me to a question that I've been repurposing of MBIA at the airport campus and with the call for the hotel there, how does this conflict? Does this -- can this area really support that? When we were having the conversations during the Comprehensive Plan Steering Committee -- Barbara was on there, Adam was on there, and I don't see anybody here that was on it, but I was on it for quite a while, as people know -- we talked about both the airport campus and having the hotel there, as well as this piece of property, the OBH, and we talked for a long time on that.

There was -- you have to think about whether or not it's going to be really supported, because you've got one hotel off of one exit, off of Exit 2, and then you've got the other exit -- here off of Exit 3.

And I believe that one of the people that had been talking about it, this can provide accommodation for people coming into Westchester. And that's the same reason for putting the hotel in at the reconversion of MBIA, if I remember those discussions.

COUNCILMAN DiGIACINTO: It's not an approved plan.

MR. WOODYARD: It's not an approved plan. But it's all part of the thing that's going on. So it's all part of the discussion.

Then I had a couple of other things. In looking at the residential, it's massive. It's a lot of houses. Has anybody gone down to see BelleFair? In Rye Ridge. Yeah. BelleFair is kind of an interesting concept. They have all these townhouses around a central square. And I suggest that you guys to go down there and take a look at it. And at one end of it there's a little convenience store. It's all like a self-actuated community. And I think that that would be kind of an interesting way to look at it. And you go there and you see

all these kids after school playing on this village square that they've got there, and it's really wonderful to see kids playing football and frisbee and really having a good time. It's something to think about.

Two things that might be considered. A convenience store that would be part of the hotel, if you're going to do the residential up there, like a little Nick's or something like that, you know, just a Catch and Go, however --

COUNCILMAN DiGIACINTO: There's a Stop and Go they have there.

MR. WOODYARD: That would save traffic going...

The other thing is a shuttle bus to take people into town, that they might consider doing that from the hotel, because they are going to be taking people to the airport and back, they could maybe do something going to town. That's an idea I was thinking about. And also it could be used by the residents, if you decide to go ahead with this thing.

And I really like Barbara's idea of

flipping it. I think that the one thing that -- after I saw the pictures here, I was stopped at the light at 22, the Eagle's to the left, I'm looking straight ahead and the ridge is up there, and I'm sitting there going, Holy cow, there's going to be a huge, huge building there. And as tasteful as it's going to be, it's still going to be coming -- it's going to be staring right at you. And I would like that to be kind of blunted and lowered a little bit.

Those -- and I'm trying to think of what else I have here.

Oh, one final -- oh, two things. One is you were talking about the IBM allotment that was going to be provided for the water and sewer. Two weeks ago I believe Tony Veneziano said -- and you can go back and look at that -- that he was going to try to get that allotment for Mariani's.

SUPERVISOR SCHILIRO: It's a different allotment.

MR. WOODYARD: It's a different allotment?

SUPERVISOR SCHILIRO: They pay for

reserve, and part of this property, they took some of their reserve that was allotted to this. So he was talking about a different reserve.

MR. WOODYARD: Okay. Thank you.

SUPERVISOR SCHILIRO: It's a good point, but it's a different reserve.

MR. WOODYARD: And one other thing was everybody's tossing numbers around here like crazy. And I learned a couple of things. One is that there are more lies than statistics. And I just heard that recently and I thought that kind of confirms something that a great statistician and a great researcher who used to live in this town, a guy by the name of Jack Hill who I worked with for a long time, and his widow's right here in the back, Norma, he said, "If you want me to use numbers to give you any kind of conclusion you want, I can do that."

So with that... Thank you.

SUPERVISOR SCHILIRO: Thank you, Ed. One thing I will comment -- thank you, Ed. But I wouldn't say that we're, as a town, making a statement or even Ed, that there's

lies included in here. My comment on -- no, but seriously. Because my comment on taxes was that you may be more optimistic or you may be projecting or -- you know, I've learned a lot from Vicki Sirota, who is our assessor here, about not just what may be generated now, but what may be generated in the future, especially when you're talking about multifamily and tax tertiaries and all the like.

So it's not that terminology. It's more being realistic about what will be achieved in the beginning, and then what could be changed or lowered through tax tertiaries. And the reality is, on any project, it's not like it's extra money that goes into the pot. We do a levy, and if there's more people paying in the levy, that may mean that the existings may come down. Or if the cost of government, which can average with inflation let's say 2 percent a year, it may just keep everything level because you're adding more people into the pie to pay. So just a little bit of a clarification there.

But thank you, Ed.

Alison?

MS. SIMON: Ann Dantzig.

MS. DANTZIG: Ann Dantzig, Armonk.

I haven't had time to read this document. I wish I had, but I haven't.

COUNCILMAN BERRA: You didn't look at it over lunchtime?

MS. DANTZIG: I didn't do that.

So Ed already touched on some of the things I wanted to mention. When I first heard about this, it was many months ago, maybe a year ago. And my thought was, okay, a hotel up there. And I wasn't getting too excited about it because you've got the Business Park down below with all those businesses, and then you've got the old IBM headquarters up there. And I just thought, okay, this is just going to get tucked away back there. And it was going to be a hotel.

And then all of a sudden I feel like a bomb was dropped on me. And all of a sudden they have all this other residential going on there. And it seems like there is an awful lot of new multifamily housing

being proposed in this town. And everybody comes and thinks their proposal is great and everybody is going to want their residential housing. But it sounds like people are going to have a choice of a lot of residential housing, because wasn't there some talk about that MBIA was maybe going to be turned into some kind of residential too?

SUPERVISOR SCHILIRO: Not talk. They came before us with a potential for --

MS. DANTZIG: Right.

So I'm just hearing a lot of residential. It's not like one house here, one house there, another house going up in that neighborhood. This is a huge number of lots of multifamily housing coming into this town.

And one of the things I'd be interested in knowing is what do you think you're going to be renting the apartments for in the hotel? And the same thing I asked about Mariani, what do you think -- are these townhouses for sale or are these townhouses for rent? I'm not sure.

And then where have I heard this

before where somebody is talking about the difficulty of getting financing when you've got two different kinds of uses in the same place? Is that what I heard talked about here? Like when there's retail plus residential. I'm not sure. But here we're talking about all kinds of mixed use.

And I have to just say that this looks to me, feels to me, way overblown. And if it had no residential component to it, I would be more than satisfied to be looking at a hotel. And I do know, because of the work I do, and I use a lot of hotels, a nice, clean hotel would be very welcome. The Ritz-Carlton has gotten really expensive in town from when they opened it.

SUPERVISOR SCHILIRO: You mean in White Plains?

MS. DANTZIG: Down in White Plains. The hotels in Greenwich tend to be expensive. Some of the older hotels around the 287 corridor we get warnings from our travel department, "Don't put people in those right now because of problems." And then we get the all clear, "You can put

people back in them." So a new, clean hotel I know would be welcome.

And lastly, in the -- somewhere I saw them talking about in the Comprehensive Plan affordable housing. And I would like to hear, and perhaps it's more from you, what was meant by affordable housing? I don't know if it was an average of the housing costs here. If you meant -- I just don't know what that term meant anymore. And at some point I would be very interested in hearing what that was, because people keep saying the rents at Mariani, what do they mean by affordable? That's not affordable. So that term is being tossed around so much, and I think it has so many different meanings. I would be more interested in it not being used and having a better descriptor of what -- something to take its place.

And I think that's about it for now.

SUPERVISOR SCHILIRO: Okay. I can address a few of them.

You made a comment about financing. This applicant, to my knowledge, has never

made any comments about issues with financing whatever they are proposing. The one piece that's been part of their conversation with us for a while has been the feasibility study. Any time that anybody builds a hotel, at least to my knowledge, you always do a feasibility study to make sure this will all be warranted in that marketplace. And that's what any financial institution is going to look to to say, We'll consider financing it if it's feasible. So that's part of -- I haven't heard them say anything about their financing piece of it.

With respect to you had made a comment about -- oh, just the diversification of what's being built or what's being proposed to be built. And I've said this at prior meetings. And this is not a reason for us to approve every project, any project, no project, whatever, but developers like this applicant and others, will seek to potentially build, propose and build, what the demand is for.

So right now in Westchester County,

throughout the county, multifamily housing is very common. Cluster developments, like is being proposed here, is very common now. Why? Because that's what people want, that's where people want to live, they want to live close to town, they want to have walkability. They don't want big expanse acreage they have to take care of. I'm not saying that's what anybody in this room would want to live in and want, but that's what the demand is for, and that's why developers look to build what fits with the demand. And that's just, you know, common.

We've commented retail is more difficult in this economy, as it has in past, especially with the advent of the Internet and buying there. So, again, the market will dictate, to a certain extent, what developers will invest in because they are usually not going to build something that they can't rent or can't sell.

With respect to affordable housing, I can address some of that, and if I miss anything, Roland, you can add. In town in specific we have 34 units that are middle

income housing. That started 25 years ago, I guess. Any subdivision that had more than X number of units, you had to have 10 percent of middle income units. We have 34 of those units. The equation for those was, I believe, two times the average Town employee's income. Is that the number?

MR. BARONI: Yeah. But it only applied to multifamily.

SUPERVISOR SCHILIRO: Multi-family, right.

MR. BARONI: Not all.

SUPERVISOR SCHILIRO: We have some history here because I -- Barbara used to be the chair and serve, I served on it, and then Steve served on it as well. We modified our middle income housing law last year to make it akin to the county's Affordable -- AFFH affordable program. So I think that will address what you asked.

Affordable housing, as the program is identified -- and we're one of the communities that adopted the mile ordinance, it's a percentage of the average, the median, for the county, right? Income. Not

employees, but income. So that number now for the affordable units by the county's definition in town, you can make probably upwards of about $85,000 a year, in that range, and qualify.

The reason why sometimes it can be confusing, and I understand what Annie's asking, is there's a difference between affordable housing and what you can afford. So in the Mariani project, they will have 10 percent affordable, by that definition, and then anybody will determine if they can afford to live there outside of the affordable components.

There's a reality in the development world, and I'm sure this applicant can speak to that, as well, is you may want to build things that people could afford and sell them for less, but unless they are part of an affordable program, if you sell them for less by just doing good, that next person can sell it for dramatically more.

In the affordable program, and in the middle income housing program, there's a limit on how much those units can appreciate

every year. The middle income, I think, is 1 percent. AFFH I think is probably similar.

COUNCILMAN DiGIACINTO: I think so.

MR. BARONI: Yeah.

SUPERVISOR SCHILIRO: But obviously if they are market units, the market will dictate what you can sell them for. So if the Applicant decided, I'm going to sell these townhomes below market for $300,000 each, the person who buys it can turn around and sell them for a million dollars if they wanted and they make the profit on it. If they are affordable, by definition, you are limited on -- they are not moneymakers. There's deed restrictions on them.

So I think -- does that address -- but we have to use the term, because if we call the affordable housing something else, it wouldn't align with what our law is, our local law and what the County program is. So they are AFFH, otherwise known as affordable.

Did I miss anything on that?

COUNCILMAN D'ANGELO: You covered it

very well.

SUPERVISOR SCHILIRO: Next, Alison?

MS. SIMON: Jeremy Jacobs.

MR. JACOBS: Yeah. Jeremy Jacobs in Armonk. I actually moved here just over a year ago. So made the decision to live in Armonk. This is my first time attending one of your meetings, and my first time participating.

SUPERVISOR SCHILIRO: Welcome.

MR. JACOBS: Thank you.

And I'm participating because, to be quite honest, I'm concerned, did I make the right decision. When we decided as empty nesters -- the kind of empty nesters that, I think from this statement, are envisioned as being some of the kind of tenants looking at these properties.

We made the decision to move out of Manhattan. We looked at -- we spent seven months looking for a house. We looked at 120 houses from 20 different municipalities. So we didn't take the decision lightly. We didn't even decide on Armonk because it was the first thing that came to our mind. My

family had a house on Whippoorwill for over 25 years. So I know the area really well, and I've seen it grow and change, and I've seen a lot of residential development. And to be honest, some of it was concerning and we were startled by how much development there's been.

We were aware of the Mariani Gardens project. We made that decision. We figured, well, it was either it was going to go ahead or it wasn't going to go ahead. But we factored that in. This is a development of a monumentally greater size. Deeply concerning to me.

I'm really perplexed by the concept that we envision so many -- this project envisions so many people coming to an environment which the DEIS actually says has inferior public transportation options and lacks accessibility to New York City when compared to other areas of Westchester County.

Yes, that's true. I just moved here from Manhattan. It's not an easy commuter town. Hundreds and hundreds and hundreds of

people are going to come here to this hotel and this residential area drawn by our lack of train station? I don't understand that logic.

If they do come, I'm concerned about the impact on traffic, the impact on parking. We live north of Windmill, and I'll tell you, and as much as I like the hamlet, we've started doing our shopping already up in Bedford because the parking situation is so poor in the Armonk Square vicinity. I didn't come to Armonk to have to go elsewhere to avoid the crowds.

I think with regard to the specifics of this plan, one of the councilmen already mentioned this, but one of the astonishing aspects of it is the suggestion of a school bus stop on the side of Route 22, a seven-lane road at that point.

54.2 schoolchildren are envisioned in this plan? I guess one of them is really, really small. And those 54.2 children are going to line up on the side of the road to wait for their bus? That's not how we do things in Armonk. It will be 54.2 parents

driving 54.2 cars lining up on the side of the road. That's a fairly good size parking lot with cars. So that's bonkers.

And then the idea of a crosswalk across the same, at that point, seven-lane road. Who are you renting to? Sprinters? I don't understand that concept.

And I'd like to know a lot more, a lot more about that. I'd like to see the numbers worked out. I'd like to see simulations, animation of how this is going to look and work. And the concept of, again, that crosswalk and that school bus stop and all of the cars coming and going is going to have literally no impact, no impact of any kind on service levels at those intersections? That simply doesn't ring true.

I'm actually -- like a number of other people here, I'm perfectly comfortable with the idea of a new hotel in town. It seems like a very necessary idea. Frankly, the hotel option that we currently have in Armonk is not a great one. I don't dislike any members of my family enough to ask them

to stay there.

SUPERVISOR SCHILIRO: What I would say is out of respect to an operating business in town, I would provide that if you want to make those comments, make them privately.

MR. JACOBS: But I am very curious what the impact of this hotel, the boutique hotel, a larger hotel, any of these various hotel options, would have on the La Quinta, which currently exists, and it has a certain level of occupancy. It occupies space. It generates taxes. Would it prosper in this new situation? Would it be driven out of business? If it were driven out of business, what would be the impact of that on the town? It's a gap in this logic here. As several people have pointed out, there are not a lot of hotel options in this area. So none of them exist independently of the others.

And, you know, the other remark I'd make is just to elaborate on something that I already referred to. I live north of the hamlet, well north of the hamlet. That

actually gives me an option that a lot of people in North Castle don't have. If I don't feel like driving into Armonk and figuring out parking and dealing with traffic at the busy times of day, I don't have to. I can shop in Bedford. I can get to the movies in Bedford. I can drive to Mount Kisco if I want to be in a small city with good transportation. And I think that one of the effects of this is going to be to really heighten the contrast between what's going on down here in the southern part of Armonk and the northern part, which is really going to start to resemble a different country.

Finally, I just want to make a sort of an observation or plea. Watching the four and a half hours on TV of the last meeting, and then sitting here today, I've heard one theme that keeps coming up over and over and over again. I hear it from the council members. I hear it from the applicants. I hear it from folks in the audience. Which is constantly stressing the amount of effort that has been put into

these projects, put in by the council, the staff, the planning board, the applicants, people in the audience. The effort, the effort, the effort.

The effort expended in advancing a project is not a consideration in whether or not that is a good project. That is the sum cost fallacy. It has no place in rational decision-making. And we -- I guess, look, it's politeness, it's gratitude. It's a bit of a conversational tick. But we really need to take the admiration of people's effort out of thinking this is a good idea for this town or not.

SUPERVISOR SCHILIRO: Thank you.

I'll just make two very quick comments. One is that we have, and publicly we're commissioning, we're working on a traffic study. If you go back, and you've had some familiarity with the town even though you didn't live here, but family here, where -- you don't have to go back too many years where the retail businesses in town were really struggling and looking for shoppers. The advent of Armonk Square,

which a lot of people opposed in town, too, has really rejuvenated things in town.

We are working on more parking. We've talked to a lot of the shopkeepers about trying to create perimeter parking for employees so there's more parking for consumers like you. So we're working on that.

With respect to your comment on the effort, I agree with you, and I said it today, where economics just don't play a role in making a decision, or the fact that people are only building multi-family which means we should only approve -- or we should approve what's being proposed. The comments -- and I made them for myself, not to defend myself. But we do a very thorough review, so I know that when I'm making a decision, it's -- I put a lot of work into it to make a comprehensive decision.

So if somebody's saying, you know, you're rushing into a decision, or you're making a decision without thorough thought. That's all. It's not you make a decision because you did all that, but the decisions

that we feel we've made are valid because of the study that we put into it. It's not, I studied it, so I should approve it. It's, I studied, that helped me make the decision. That's all.

Do you have anybody else, Alison?

MS. SIMON: No.

SUPERVISOR SCHILIRO: Okay.

Any other -- Ed?

MR. WOODYARD: Just one quick question.

SUPERVISOR SCHILIRO: Sure.

And thank you for coming, by the way, Jeremy.

MR. WOODYARD: Yeah. That was -- interesting comments and well said.

My -- the Applicant used the -- referred to Doral Arrowwood. Is the Applicant familiar with what's happening there?

SUPERVISOR SCHILIRO: You mean in the study?

MR. WOODYARD: Yeah, in the study.

SUPERVISOR SCHILIRO: I don't know if they are familiar with what's going on

there, but...

MR. WOODYARD: It was just kept from going bankrupt and went into immediate receivership because they are having problems. So I would look for perhaps a different comparison there.

SUPERVISOR SCHILIRO: Sure.

Any other -- did you have a comment?

MAN IN GALLERY: No.

SUPERVISOR SCHILIRO: I thought you were going to say something.

MAN IN GALLERY: I'm just enjoying being here and listening to what's transpiring.

SUPERVISOR SCHILIRO: Great. Thanks for coming.

Any other comments by the board?

COUNCILMAN DiGIACINTO: Just I wanted to clarify, when I mentioned that I'd like to see a plan where you flipped the hotel and increase, you know, the -- double the land size. But I also would like to see the hotel, you know, smaller, I mean, not the, you know, five stories aboveground.

COUNCILMAN BERRA: Barbara, do you

mean the building or the hotel itself?

COUNCILMAN DiGIACINTO: The hotel building.

MR. BARONI: Do you want it spread out? Is that what --

COUNCILMAN DiGIACINTO: Possibly.

MR. BARONI: A larger footprint?

COUNCILMAN DiGIACINTO: Right.

SUPERVISOR SCHILIRO: Which would use more of the plan, which was the original zone. That's how it was --

COUNCILMAN DiGIACINTO: Exactly. That's the reason -- it has to be 12 acres for the hotel --

SUPERVISOR SCHILIRO: Three stories. Right.

COUNCILMAN D'ANGELO: Somewhat similar to my comment about --

SUPERVISOR SCHILIRO: Setbacks for different --

COUNCILMAN BERRA: Or it could be lower with less residential on it.

COUNCILMAN DiGIACINTO: Right. Absolutely. That's what I said before.

SUPERVISOR SCHILIRO: Well, it ties

to the thing that I had asked for, is how would it be feasible?

COUNCILMAN DiGIACINTO: Right.

SUPERVISOR SCHILIRO: How would it be supportable? And I'm curious, you know, if this, then it would work at the original plan, or if this, it would work. So I'd be curious to know what that if is.

Adam, is there anything else to add, that you wanted to add to this?

Okay.

COUNCILMAN BERRA: I'd like to add one thing.

SUPERVISOR SCHILIRO: Yep.

COUNCILMAN BERRA: It would be very helpful -- any time we've looked at projects, we either know them, assisted living we know the piece of property there, Mariani. I don't know this property. And I'd like to be able to go and take a look. It's hard to really comment finally on the Environmental Impact Statement without being able to walk the property to a certain extent. Now, it's massive enough so I don't really suppose it should be staked out. But

given the maps and all that, maybe we could do it and, you know, get a sense of what's there and the steep slopes.

SUPERVISOR SCHILIRO: I'm not sure what the options are there. You have to go on IBM property to get to it.

MR. BARONI: I think Mr. -- the Applicant would have to give you permission, and probably someone from his -- the Applicant would have to accompany. But it is possible.

COUNCILMAN D'ANGELO: Would this be the time to do it, or should we at least wait till we get what -- the draft of the Final DEIS is, in case there's some changes that have been made along the way?

MR. BARONI: No. That would be too late.

COUNCILMAN D'ANGELO: Okay.

MR. BARONI: What you have to consider is whether tonight -- you're certainly going to adjourn the two public hearings on zoning.

SUPERVISOR SCHILIRO: Correct.

MR. BARONI: The questions that the

board has is whether or not you're going to close the public hearing on the DEIS and set a comment, a written comment period, because that would be the time for councilmen to make their final comments to the DEIS. Or are you going to adjourn the DEIS public hearing and reconvene it again at a later date? That's a decision the board has to make.

COUNCILMAN D'ANGELO: When we set this public hearing, didn't we set a comment period date for some time in August?

MR. BARONI: You did. It was a meeting I wasn't at.

COUNCILMAN D'ANGELO: Oh, right.

MR. BARONI: But I think it was some date in August.

COUNCILMAN D'ANGELO: I think it was 90 days from the meeting date, which was around August 19, August 20.

COUNCILMAN BERRA: It's hard to really comment, and it might make it difficult for members of the public to comment without hearing that unless we're actually looking at the property. And we

did it for the Park Place, whatever it's called, for the airport parking lot; it helped to go there, for different reasons. But this involves so much environmentally. And we can look at it from the park, we can get aerials. But I think really going on there gives a sense of other suggestions and ideas.

COUNCILMAN D'ANGELO: Is it possible to make that happen?

MR. MADONNA: I'd have to arrange it with security. But yeah.

COUNCILMAN D'ANGELO: Okay.

SUPERVISOR SCHILIRO: You're not talking about for the public? You're talking about for the board?

COUNCILMAN BERRA: Yeah, for the board.

SUPERVISOR SCHILIRO: So I would -- I'll just give my opinion. I prefer to keep at least the scope of both hearings open. You know, it's voluminous. We've had some people from the public come tonight, and we thank them for giving their input.

This is a lot of information for to

us digest. I may have a few more things, which I know we can do in writing, but I'd still feel a little bit better if we kept it open for the public who may be less likely to study this and provide written comment, versus being able to at least view this meeting, being able to go to a landing page which the clerk set up, look at that quick animation, I guess you call it, and then we can determine if we think -- I would say probably the next meeting may be the most appropriate. If not -- I think that's probably the most appropriate. But you guys can give your feedback.

COUNCILMAN DiGIACINTO: No, I think that makes sense.

But I think, going back to José, do you think we can, between now and the next meeting, go on site? Do you think you can arrange -- I think we can obviously try to be cooperative so that you're not going to have to arrange it five times.

MR. MADONNA: I don't travel very far.

COUNCILMAN D'ANGELO: That's a

problem. That's going to be tough, because next week's a holiday week. But if you could try to set this up for the 8th, 9th, before our next meeting.

SUPERVISOR SCHILIRO: You still may decide -- again, if you keep it open for written comment, it doesn't preclude you from having more comments after that next meeting if we close it for comments at the meeting. But it's still open for comment. You can still do the site --

MR. MADONNA: Wouldn't you have to go two at a time anyway?

SUPERVISOR SCHILIRO: No, no, no.

MR. BARONI: They are allowed to go as a board.

SUPERVISOR SCHILIRO: You will be inviting us. On a town meeting.

So we probably need a motion to, I believe, adjourn, correct?

COUNCILMAN D'ANGELO: I'll make a motion to adjourn all the public hearings.

COUNCILMAN DiGIACINTO: Second.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

SUPERVISOR SCHILIRO: We thank you all for coming and giving us your comments.

MR. BARONI: Did you adjourn it with a date?

COUNCILMAN D'ANGELO: I make a motion that we adjourn --

SUPERVISOR SCHILIRO: Really both.

COUNCILMAN D'ANGELO: -- the DEIS public hearing to the next meeting, July 10.

MR. BARONI: All the public hearings.

COUNCILMAN D'ANGELO: Okay. Fine.

SUPERVISOR SCHILIRO: To July 10.

(Time noted: 11:01 p.m.)

C E R T I F I C A T I O N

I, Pamela Grimaldi, Registered Professional Reporter and Certified LiveNote Reporter, before whom this proceeding was taken, do hereby state on the Record:

This to be a true and accurate transcript of the aforesaid proceeding and that due to the interaction in the spontaneous discourse of the proceedings, dashes (--) have been used to indicate pauses, changes in thought, and/or talk-overs; that same is the proper method for a Court Reporter's transcription of proceedings, and that the dashes (--) do not indicate that words or phrases have been left out of this transcript;

That any words and/or names which could not be verified through reference material have been denoted with the parenthetical "(ph)."

_____
PAMELA GRIMALDI, RPR, CLR

Dated: **July 9, 2019**

TOWN OF: TOWN OF NORTH CASTLE
COUNTY: COUNTY OF WESTCHESTER
----------x

TOWN OF NORTH CASTLE PUBLIC HEARING

RE: EAGLE RIDGE DEVELOPMENT DEIS

----------x

15 Bedford Road
Armonk, New York
July 10, 2019
8:27 p.m.

P U B L I C H E A R I N G

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A P P E A R A N C E S:

SUPERVISOR	MICHAEL SCHILIRO
COUNCILMAN	JOSÉ BERRA
COUNCILMAN	STEPHEN D'ANGELO
COUNCILMAN	BARBARA DiGIACINTO
COUNCILMAN	BARRY REITER
ROLAND A. BARONI,	TOWN ATTORNEY
PATTI DWYER,	INTERIM TOWN ADMINISTRATOR
ADAM KAUFMAN,	DIRECTOR OF PLANNING
ALISON SIMON,	TOWN CLERK

ALSO PRESENT:

KORY SALOMONE, ESQ.

SUPERVISOR SCHILIRO: Next hearing is reconvening the public hearing for opportunity to provide comment on the DEIS, the Draft Environmental Impact Statement, prepared in connection with the proposed Eagle Ridge development at 3 North Castle Drive, Armonk, which is the property right across the street from the corner of 128 and Route 22, the IBM property. It was about 33 acres, which was subdivided, as background, about ten years ago, nine or ten years ago, by a prior town board that I was on for the purposes of a 300-room hotel, on or about, was sold recently, and the Applicant has come before us for a different development to include a hotel, smaller than what we had envisioned there.

So we have the reconvening on the hearing of the public comment part -- I mean, to provide comment on the DEIS, and also reconvening the hearing to consider the local laws to amend Chapter 355 with regard to proposed Eagle Ridge development at 3 North Castle Drive, same property, local law to amend 355-23, and local law to rezone an

area of approximately 26 acres along North Castle Drive from its present OBH, Office Business Hotel, zoning district to the R-MF-A multifamily A residence zoning district.

COUNCILMAN D'ANGELO: I would like to make a motion to reconvene both those hearings without repeating what you just said.

COUNCILMAN DiGIACINTO: Second.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

SUPERVISOR SCHILIRO: Any correspondence, Alison?

THE CLERK: Yes. These public hearings were opened on June 26, 2019. The following correspondence was received: A letter from the Westchester County Planning Board dated June 28, 2019; a memo from the Director of Planning, Adam Kaufman, dated July 8, 2019. And there is also -- well, we have the Draft Environmental Impact Statement dated May 2019. And there are proposed local laws for consideration.

SUPERVISOR SCHILIRO: Okay. Kory?

MR. SALOMONE: Kory Salomone here tonight on behalf of MADD Madonna Armonk in connection with this project. And I'm just letting you know I'm here listening to the public hearing.

SUPERVISOR SCHILIRO: Okay. So what -- at the meeting two weeks ago there was a lot of comment from the board and from the public, some of it asking the Applicant to study more additional or additional information regarding this application. There's been some concern voiced by the public and the Applicant on the density of it. And so we're still working through that. And just to explain --

Well, Roland, can you just explain very briefly the process that we're at here?

MR. BARONI: Well, with respect to the Draft Environmental Impact Statement, at the time you declared the document a complete document, you also set a 90 day comment period. And when you opened the public hearing at your last meeting, you took many questions from the public, and many board members had their own questions.

That period of time to continue to ask questions extends to August 14.

So even if you choose to close the public hearing tonight on the DEIS, it still the process still continues where the public can send in their written comments, and those questions will be answered in what's called the Final Environmental Impact Statement.

SUPERVISOR SCHILIRO: Okay.

MR. BARONI: Of course, you would keep the two public hearings on the rezoning you would adjourn those and then reopen those at a later date, probably not until the FEIS was submitted and deemed a complete document.

SUPERVISOR SCHILIRO: Okay. Great.

THE CLERK: Just to clarify, the written comment period is to August 19?

MR. BARONI: Okay. I stand corrected.

THE CLERK: Sorry.

SUPERVISOR SCHILIRO: So we the Applicant offered, actually, the -- I think it was the Friday, two days after the

meeting when we opened the hearing, so we did a site walk with the town planner and the board and we walked the property, which you normally wouldn't have access to because you have to get through the IBM gate. So it was very educational for us to -- it's a beautiful piece of property up there.

And then what we also asked the town planner, Adam Kaufman, to do is resubmit to this board, because I was the only one on the board when we approved the zoning that's currently there, the conditions that we approved it upon, which was a 300-room hotel. It conforms to what the current zoning is with the setbacks and the height requirements. And the point of that, which we discussed on the site walk and I want to make sure is entered into the record for this application and can be put on the landing page on the town website, is that should be our point of comparative reference.

So, it's not just a green space currently. We should be comparing to what the current zoning is, because if the

Applicant came with a 300-room hotel that conformed to all of the requirements, as of right they can proceed, get their permits, and build that. So we should be comparing to the impacts of that.

And just briefly, the design of that had the property or the structure set back further in the property, and Barbara had made the comment at the last meeting considering flipping what they're proposing and putting the hotel on the larger piece and considering the residential on the smaller piece. I think it's, I'm going to round, 7 acres that's proposed for the hotel, and 26 acres for the residential townhome component, and Barbara was suggesting flip flopping those to make the hotel on the larger parcel, which is similar to what's currently in the zone.

So, I just want to make that as part of the record for this application and this hearing, so that way people have the opportunity to look at it from a comparative standpoint.

COUNCILMAN D'ANGELO: On that note, I

had made a comment at the previous hearing two weeks ago to study the -- putting the hotel and the apartments in -- on that piece of property based on the current zoning, except for the FAR and the height requirement. And I just want to amend that to bring it -- take that height requirement, make it the same height as what was in the original OBH zone. So what can you put there -- what can you put the hotel piece on just having a different FAR, which obviously would be a lot higher than the zoning exists because you'll be cutting a piece off. So I'd like that issue studied.

SUPERVISOR SCHILIRO: Okay.

José, do you have anything?

COUNCILMAN BERRA: You're saying how many stories, Steve?

COUNCILMAN D'ANGELO: Three.

COUNCILMAN BERRA: Does that include underground parking?

COUNCILMAN D'ANGELO: Whatever the existing code is.

COUNCILMAN DiGIACINTO: Whatever the -- that's the local --

COUNCILMAN D'ANGELO: Whatever they can do under the existing code.

COUNCILMAN BERRA: I have a few questions, comments.

Number one, fire department.

SUPERVISOR SCHILIRO: You want a couple minutes? I can jump to Barbara or Barry.

COUNCILMAN BERRA: I'm good. Or you can jump if you want.

SUPERVISOR SCHILIRO: Okay. Go ahead.

COUNCILMAN BERRA: There was some comment from the fire department that they would need a ladder truck, and I believe a response in the DEIS was that, Well, we're paying a lot of taxes, so that means that they should buy their own ladder truck. But that doesn't recognize the reality of the situation.

There are tax caps in the town, and I believe a ladder truck costs about $900,000, and they just cannot manage that because this would accelerate the need for it. And incrementally, it's probably the only

property, if it were approved in this way, that the DEIS looks at it for what it is, five or seven story building, however you want to count. So I think it's something that needs to be addressed more realistically.

And I think there was a statement also in the DEIS that it wouldn't meaningfully increase the demand on the fire department. That's not the -- at least the Armonk fire department's perspective, as I understand it.

There's also mention made -- and I'm sorry, it's hard to tell just --

SUPERVISOR SCHILIRO: Sorry, let me stop you there. So do you have a specific item that you want to have reported to have studied? Because that's what we need to make sure we're focused on is if there's things we need to have studied -- we have concerns, but if you want something studied, we want to be sure it's in the record. And you can wait for written, if you want, but the stenographer is here to record it down.

COUNCILMAN BERRA: Yes.

I guess I'd want a more concrete response as to what can be done in terms of assisting with the fire truck, because it's just not practical; the fire department's not going to be able to acquire -- they are saying it flatly, and I totally believe them. It really is the notion of additional equipment being needed, it might benefit the town in some way to have a ladder truck, but they wouldn't absolutely have to have it absent that.

SUPERVISOR SCHILIRO: And is that a document that we have, a formal concern from the fire department?

MR. KAUFMAN: Uh huh.

SUPERVISOR SCHILIRO: We do? Okay. I want to make sure it's in the proper form. Okay.

COUNCILMAN BERRA: Also, I'd like to have you consider more closely the statements that were made in here about not being -- I don't have the exact comment, but not being such a big imposition on the fire department, there's such a drain on the fire department resources in terms of personnel,

because they have serious concerns about that.

Another thing that has been mentioned is that -- and I think needs to be addressed and studied, is the proximity that's referred to to the park, Community Park, because due to that proximity, it will be less room for the fire department to operate. I think even in -- where the townhouses are, I forget how many there are, 92 or something, and also the concern that fire could spread easily from such a huge structure into the other parts, and also to the woods that would be left, the greenery barrier.

And some of this -- again, I apologize, but there's so much in terms of materials here, I don't know how many people have looked at it, but there's about a 13, 1400 page appendix, there's a very long DEIS, and they aren't cross referenced, so to the scoping document or to some other things, so it's hard to be sure exactly what's in there at any one time in response to anything.

I'm not sure this was addressed: Is it possible to have sprinklers in a structure like this? It's something we've spoken about before. Is that something that's contemplated?

COUNCILMAN DiGIACINTO: Are you referring to just the hotel or the townhouses as well?

COUNCILMAN BERRA: Perhaps the townhouses. Especially if there's going to be a whole bunch of them and they are tight together, you might worry about it. This is a big project. And you would really, I think, hate to see a big fire spread putting people's lives at risk, including the fire fighters.

SUPERVISOR SCHILIRO: I don't know if it can be required, though.

MR. KAUFMAN: The building code would dictate that.

SUPERVISOR SCHILIRO: Right. The commercial certainly.

MR. KAUFMAN: There certainly will be fire hydrants.

COUNCILMAN REITER: They could

volunteer to put them in.

SUPERVISOR SCHILIRO: Sprinklers.

COUNCILMAN REITER: Yes.

SUPERVISOR SCHILIRO: At significant cost, but yes.

COUNCILMAN BERRA: So I'm just going to flip to another source book.

In the main document, I think it's in the Executive Summary, it says in Roman numeral II 7 that the project is specifically consistent with the land use recommendation established in the Town's recently adopted Comprehensive Plan. I'd like more analysis of that, because I don't see that as being the case, certainly not specifically consistent. Comp Plan I don't believe envisions something like this. And I think that misses the point that a lot of people are concerned about the dramatic message that this provides, and also how big it will look. And I'm having a hard time seeing that this would really be consistent with the nature of the town or what's in the Comprehensive Plan. So anything that can be done to address that.

SUPERVISOR SCHILIRO: I think what you're talking about is the residential piece, not the hotel.

COUNCILMAN BERRA: I'd have to look at it for what it said, but what triggered it is in Roman numeral II 7. I would tell you that probably both of them.

SUPERVISOR SCHILIRO: Okay. Well, it could be in the comments, and then they'll determine whether it's -- needs to be studied further on the hotel piece of it.

COUNCILMAN BERRA: Yeah. It says, The project is specifically consistent with the land use recommendations.

SUPERVISOR SCHILIRO: Okay.

COUNCILMAN BERRA: I don't believe the Comprehensive Plan spoke about having rentals up top.

SUPERVISOR SCHILIRO: I don't remember. It speaks about clustered housing, but I don't know it specifically addressed that.

COUNCILMAN BERRA: Okay.

I'm also concerned about a statement in Roman numeral II 9 that the opinion of

the Applicant that none of the impacts resulting from the proposed action exceeded any threshold that would classify as adverse or significant.

I really don't understand how a statement could be made like that. I think that a lot of people would have a very hard time seeing this as not being significant, and I would like further explanation of that.

There is, on page II 10 -- I don't have many more comments -- page Roman numeral II 10, there's a proposal for a pedestrian connection to Community Park. But I don't think that's currently permissible. So I would like that addressed.

On page Roman numeral II 12, there's discussion about the substantial rock cutting, and I guess I'd like this -- a more studied analysis as to the amount of noise that would be made by that, just the notion is that this will be used for fill, and it's going to be crushed. That, to me, sounds like it will be a very noisy operation.

In terms of the trees, in the appendix there's a tree inventory that assessed the condition of the trees. And a good many of them, more than half, would be cut down, existing trees. There's an assessment there that says a lot of them are poor or fair condition. And what I'd like to understand there is how that assessment was made, who made it, and what the impact is of just leaving those trees there, keeping in mind what you're saying what the baseline is. Obviously some trees would come down. But in my understanding of it is that, So fine, you have trees that are fair or poor condition, but that's kind of the natural order of things in woods, and as they die off, then other trees pop up. So I'd like to understand the impact of that.

I was really disturbed that in the appendix, on page 95 at 1341, it described pavement conditions on Route 22 and 128 as being generally good. And --

[Addressing the court reporter]

COUNCILMAN BERRA: Can you record laughter in there for me?

I'm baffled. You know, not to pick at things, but there are a lot of things in here that just don't make sense to me. So I really would like an explanation of that, because when we get complaints about roads, one of the -- in town, we've been making a lot of progress, one of the biggest problems they have is that -- or we have is that these are state roads that we cannot repair. But everyone is -- most people are terribly troubled by them, so I cannot imagine how these are viewed as generally good, and I'd like some analysis on the standing of that.

And then, you know, for a lot of things, the appendix, which has a lot of different studies, while helpful in some ways, we're going to have experts look at it on the town's behalf, and that's something that's important to us, because a lot of these things I don't think anybody here can evaluate them, and certainly nobody on the board can evaluate all of them, so that will drive some of the analysis and conclusions as to how desirable this is.

So I think that's about it.

SUPERVISOR SCHILIRO: Okay.

Barry?

COUNCILMAN REITER: I've got to say, Adam put together a seven page memo that hit on, I would have to say, most of my concerns. It was awesome. I really -- I think it hits on a lot of the questions that I had. So I don't really have anything -- any comments other than I would defer to the July 8th memo from the planning board.

COUNCILMAN DiGIACINTO: I totally agree. I think Adam did an outstanding job with the seven page memo with, I think, 31 comments, if I'm not mistaken. And he really did, he hit upon everything that I think everyone on the board would want answers.

I just have a few things. I'd like to go back to Steve D'Angelo's initial comment about the proposal of, you know, flipping so that the hotel is on the upper level of the property and that it would be shown according to the OBH zoning district setbacks, et cetera. And I think I had said that I'd like to see it on at least 12

acres, the hotel. And I just wanted to clarify that the remaining 20 acres, or it could be less, if they wanted to do 14 acres for the hotel, but the remaining, let's say, 20 acres that are for townhouses, I would want to see using the residential multifamily zoning district requirements, and I would want it to be for detached housing so that we would see larger parcels for the townhouses.

We have visuals, obviously, showing the proposed plan. When we did the site walk on Friday after the meeting, the town board meeting that week, the Applicant, you know, walked with us. And when we were at the town park, we walked along the ball field, across the parking lot to the middle of the track, and that was basically showing us, you know, where the hotel turned and was going, you know, sort of being turned going towards 22, so to speak, and where the townhouses began. And the townhouses, again, would go to the middle of the track. And, you know, there is -- there's a fence that shows sort of the line of demarcation

where the town park property ends and the Applicant's property begins.

But right now, you have everything green, all these deciduous trees and weeds that are five feet tall, et cetera. And I really would like to see a visual of the proposed project, as well as what Steve D'Angelo and I are proposing in black and white -- in color, I mean, but when it's winter, when we're not going to have the leaves on the trees, we're not going to have the, you know, five, six, feet tall weeds. I'd like to just see that visual. I think that --

SUPERVISOR SCHILIRO: Of what's currently proposed?

COUNCILMAN DiGIACINTO: Of what's currently proposed, as well as what Steve and I are asking, you know, flipping it.

SUPERVISOR SCHILIRO: Okay.

COUNCILMAN DiGIACINTO: I think that would maybe be very helpful.

Okay. José touched on a couple of things.

SUPERVISOR SCHILIRO: And just to add

to that, even though it's not my turn yet, I would think the same thing with the current zoning, which is why we wanted to put that into the record. What was envisioned where that building would be with the 300-room hotel, placement of it, and what those sight lines would look like.

COUNCILMAN DiGIACINTO: Right, right. Exactly.

SUPERVISOR SCHILIRO: Go ahead. I'm sorry.

COUNCILMAN DiGIACINTO: No, no, no. I think that's a good point.

MR. BARONI: Just for the record, I think that those plans from the original IBM application were prepared by Divney Tung. Is that correct? Wouldn't that be correct? Yes. So those are the plans that you want put into the record.

SUPERVISOR SCHILIRO: Right.

MR. KAUFMAN: I don't think we did photo simulations.

SUPERVISOR SCHILIRO: I don't think we did either.

COUNCILMAN DiGIACINTO: When I look

at the proposed project, and once again, this whole parcel is zoned OBH -- it's -- I think I made this comment before -- it's, to me, just sort of a little lopsided, given the present zoning. It's 91 hotel rooms, but 164 residences. And I'd like the rationale for why you have proportionately so many more proposed residences, apartments, townhouses, than hotel rooms.

Norma Drummond, the Commissioner of Westchester County planning, in a letter dated June 28, 2019, raised, I believe, five concerns in terms of, you know, pedestrian access, sidewalks, transit access, recycling provisions, et cetera. I think that it's important that the Applicant addresses in detail these concerns from the county planner.

As we said, Adam's memo is outstanding, and I think that probably all of us on this board, we really do need to understand the rationale for increasing the density of -- for instance, it's, you know, it's 234 percent increase in density in terms of what is allowed right now by code.

And in terms of -- if I'm not mistaken, the way this is being presented to us, the 32.5 acre parcel is going to be subdivided into two parcels. And what I would like to see is a plan showing the subdivision with the hotel, but then with -- instead of just another big lot, the individual lots for the townhouses so that it would be -- it would be a subdivision, not as what is being proposed right now.

MR. BARONI: Right. Each of the residential lots has to be shown, so it's not a two lot subdivision as they proposed. It's more like a -- well, under their proposal it would be a 95 lot subdivision.

COUNCILMAN DiGIACINTO: But we haven't seen anything that shows --

MR. BARONI: They have some lot lines on something that they propose as a site plan, but they don't have -- they don't show a subdivision plan.

COUNCILMAN DiGIACINTO: So could we ask for that?

MR. BARONI: Absolutely.

COUNCILMAN DiGIACINTO: I definitely

would want that.

And I think that's -- those are my comments.

SUPERVISOR SCHILIRO: Stephen?

COUNCILMAN D'ANGELO: Yep.

I know I brought this up during the presentation last week, but the type of hotel, brand of hotel that you're proposing to do there. The only one that was mentioned was Kimpton and nothing else was proposed. It is a boutique hotel. I'd like to get, you know, more idea of what type of hotel it's going to be, whether it's going to be a Kimpton or there's another brand in there. Because Kimpton is kind of upscale. I've been in a couple of them.

One of the things they are known for is that they have their own branded restaurants. So in conjunction with what brand of hotel you're going to bring in there, what type of restaurant are you going to bring in? Because, you know, you intend that people are going to be staying in the hotel and going to the restaurant, but we also have some very fine restaurants in town

that I don't want to start taking business away. So if we could get a little more information on that.

One other thing I didn't see addressed, it's probably in here somewhere but buried in some financial numbers, is how many events are planned for the three different ballroom type areas for the hotel, from the large room down to the small conference room?

One of the things your hotel consultant talked about, he said it twice when we had the first meeting, he said it last week, that when this thing was evaluated, building just a hotel on the property wasn't profitable. So, being the accountant that I am, I went through all the numbers. I have a schedule. It's on page 120 -- 1226 on the appendix that shows that the 50 year net operating income -- and, again, a lot of things come off that -- but the net operating income is roughly about $4 million just for the 91-room hotel. Sounds a little profitable to me.

COUNCILMAN BERRA: That's yearly?

COUNCILMAN D'ANGELO: That was year 5. For the whole five years on the schedule, it comes out to about 15 and a half million dollars NOI on the -- just on the hotel itself without the apartments. The apartments add another roughly $4 million over that time period.

So the premise here is that we're allowed to build a hotel, but just building a hotel isn't profitable to make this job work. I'd like to get an answer as to why that comment was made, because it looks to me if you just build a hotel and maybe with the apartments on top, there is a lot of profit involved. So, please, I'd like that looked into, in that question and answer.

And my final question is what is the long term plan for this piece of property? Does the owner, whoever that may be, plan on keeping it long term, five, 10, 15 years? Because everything in here talks about what the exit price is and what the exit value is going to be at the end of five years. Very high numbers. This looks like it would sell at an extremely high profit. I would like

to know what the plan is. If the plan is to build this project and sell it in five years to somebody else, it definitely has an effect on the way I look at this.

And that's all for me.

SUPERVISOR SCHILIRO: Okay. I'll wrap it up, and then we'll open up to the public. I only had a couple very quick items, so I'll just reiterate what I said at the last meeting and add one. And then I'll probably have some written comment before the deadline in August.

Touching on what Steve said, which is one of the things I mentioned last week, is I'd like to see a study to show the analysis that the Applicant has provided through their consultant, a while ago, laying out in much detail why the hotel market is what it is in Westchester and why this property won't work as a larger hotel. And what I had asked for, similar to what you're saying, is show us how it would work. Show us how a 300-room hotel, as it's currently zoned, or a hotel of any size that or below it, would work. What's the impediment of

why it won't work? It may have something to do with the costs, including land costs, but I'd like to see how it would be viable.

I wanted that particular study also studied by one of our consultants, so I wanted their feasibility study by somebody on our side. So the point that I was making last time was it just makes me still scratch my head that a hotel, with the lack of hotels in the space between 287 and Danbury and near a hotel isn't viable beyond 95 or 100 rooms.

The last piece, which we've accomplished, I wanted to set the baseline of what was currently zoned there and make sure we're comparing, to be fair to the Applicant, the impacts and the design and the site plan to what's currently -- already it's zoned for. Not just nothing. And that's already been done. We've received that, and that will be in the record.

Those are my three main items. I probably will have more written comment to be studied, and we've got time to do that.

So with that I will open it up to the

public if anybody has any comments and contributions to this that they'd like to see studied. And keep in mind, tonight isn't the last night. You've got about a month, almost a month and a half to do so.

Anybody from the public that would like to -- Ed? Or Linda?

MS. FERNBERG: I'm getting up for Ed.

SUPERVISOR SCHILIRO: Oh. Nope, you've got to speak. Come up.

MS. FERNBERG: But I will make a comment.

MR. WOODYARD: Good evening. Ed Woodyard.

I just wanted to confirm what José said earlier about the Comprehensive Plan, because people will know that I was on that for three years. Barbara was a consultant on it, and Adam did an outstanding job in leading his troops ahead.

We looked at this property and we looked at the zoning and the OBH, and we were pretty happy with it. There was no mention of any housing, no rentals as part of it. We wanted to keep it as an OBH. So

I'm a little bit confused, but anyway, as to why there would be this change. And we were pretty strident about it.

The other thing is -- and the reason was, is going back to what I had mentioned two weeks ago, is what Piers Curry had done and how he had divided the town, had 22 being the town DMZ, for lack of a better term, with commerce and businesses to the south and residential to the north. And that's worked for the town for years and years and years, and I thought it was good.

The other thing I had when I was looking at this local law change -- which I'm glad it's going to be postponed -- the number of stories is five, and the question as to whether or not that includes the two stories of parking that are proposed.

COUNCILMAN BERRA: It doesn't. Seven total.

MR. WOODYARD: No? It's all separate?

COUNCILMAN D'ANGELO: Ed, we're not even there. We're still trying to figure out where the -- the DEIS.

MR. WOODYARD: So I'm putting my cart before my horse. Okay. They don't call me Mr. Ed for nothing. Thank you.

SUPERVISOR SCHILIRO: Linda, did you have a comment?

MR. JACOBS: Jeremy Jacobs, Armonk.

So after I spoke at the last meeting regarding this proposal, I sent the council members and the supervisor some further thoughts by email. And I just wanted to draw out and emphasize one thing that I put in there as a request for further information from the Applicant.

The Applicant acquired the property in August 2017 with what I can only presume was full knowledge of the OBH zoning for the property and with, again, I presume, a financial rationale for the acquisition at that time. The feasibility analysis, which tells us that the Applicant concluded that a full service hotel and no residential component was not feasible is dated in February 2018. So just several months afterwards.

So it seems to me that one of three

things occurred: Either the Applicant purchased the property zoned for hotel use at the time without having conducted adequate analysis of whether or not hotel use without residential was appropriate and economically feasible, in which case the Applicant has a problem, not North Castle.

Or the Applicant did conduct such analysis, and then the market for hotels changed dramatically during the six months between purchase and completion of the feasibility analysis.

Or the Applicant knew at the time of purchase that hotel only use would not be feasible for its purposes, but bought the property anyway, secure in the knowledge that they could ask for and receive the necessary variances, in which case I think North Castle does have a problem.

So I would like the Applicant to provide more information on the process, the decision making process, that led to the purchase and then to commissioning the feasibility study, including but not limited to any financial analysis conducted by the

Applicant or its agents prior to or in conjunction with the purchase, any information regarding the terms under which JF Capital Advisors was engaged to conduct the feasibility analysis, and any data that shows a dramatic change in the hotel market in our area between the date of purchase and the date of the feasibility analysis.

Thank you.

SUPERVISOR SCHILIRO: Thank you.

Now Linda.

MS. FERNBERG: Sorry. I wasn't really -- Linda Fernberg, 9 Wampus Avenue. And I say that because it's just outside of town, and I'm just -- I know it's a question time, and I do have questions, but I'm going to say I'm deeply concerned with how much building is going on almost right in town. We have the 45 Bedford Road Mariani project, the -- is it 140 Main Street that's being built right now?

SUPERVISOR SCHILIRO: 470.

MS. FERNBERG: 470? All right. Sorry. Not close. The Main Street, the lumberyard. And I know that could change

again in what it is, but something's going to be built there. The Mount Kisco 128 restricted age. The homes that Mr. Madonna's building a little further up the road.

This area's being inundated with homes. I mean, you do have Brynwood further way up the road. But is there a way to determine what is too much as far as, you know, what individual units are being added and the percentage compared to what we are now? And I know that your jobs -- job includes bringing in assessables and making sure the town remains vibrant and viable.

But at what point is it overload, you know? The New York Times, especially when it was in print and I would read it, would always highlight a little town every week. And, you know, Armonk was always bucolic. And the reason I was late today is somebody came here to see me, because they thought I would be here, about this project and the Mariani project. And when I wasn't here, he pulled in front of my driveway, and as I was trying to leave he wouldn't let me out

because he was so enraged about these two projects. You know I'm telling you the truth, that I don't need to make up a reason why I was late.

People are extremely concerned about what's going on. And I have to revert to one of my neighbors saying, We're turning into Scarsdale. And I think it's true. If all of this is built -- I just think it's overbuilt. Does that mean we might have to pay a little more in taxes? We had a comment from a woman after the public hearing on Mariani that reminded us of what Mr. Fareri said years ago about, Well, if you want to live that way, move to Vermont. It's a poor reconstruction of what he said. But the whole idea was the building is coming, and if you don't want to live this way, you want the trees, go to Vermont. And she pointed out that a lot of people made the decision that we don't want to move to Vermont, we want to stay here, and we might be willing to pay a little bit more in order to do that, and keep the town in the same flavor.

Obviously it can't stay as it is forever. That may not be feasible. And I know -- the other thing is we are in a flux. You know, between what happened in 2007 2008 with the recession, coming back from that -- and there's, in my opinion, never been a full recovery. I think it was stopped and is still a problem in the country. So building is way behind on everything. Building is way behind.

But now we have salt, where people in this community -- I know some people had to pay many hundreds of thousands of dollars more in taxes than they have ever paid before. And then they can't turn around and sell their house for anywhere near what they might have paid for it, or they are not making as much money off of it -- they are not getting the bigger return.

So we're in a lot of flux right now. And you have all these projects coming up to you, five, six of them. And I'm concerned that what your concerns might be at this time, but then that might be too much for a later date, and you can't take it back once

it's been -- once it's been granted.

And I think a hotel is a great idea. I think it would be very successful. And I've stayed in Kimptons myself. I didn't know that was one of the brands they were talking about. But, you know, I think that's a really great idea. But the housing, the additional units, I'm just very concerned that we're going to be oversaturated with a lot of housing and a lot of super expensive housing. And I know it's not your jobs to know if a project will fail or not, or be successful or not, but at some point you have to say, you know, when is too much? And I don't know if there's some formula that there's an answer for out there. I'm sure there's not.

SUPERVISOR SCHILIRO: So I'm going to take a stab at I think what you might want studied, because that's what we're talking about here, and ask them to study more than what's already been studied. And as I've said many times before, and it's not the reason to approve any and every application, but people will propose building certain

things because that's what the market's demanding. Developers and investors won't build things that they can't rent or can't sell. It's just the way the market speaks to us.

But I think part of what you're saying is the DEIS studied the impact, it's Draft Environmental Impact Statement, so it's studying the impacts of traffic, you know, pollution, fire, all those things. And I think what I'm hearing is you want to, perhaps, know can we study what the impacts of additional residential units have on, perhaps, the rest of the housing market in town.

MS. FERNBERG: Yes.

SUPERVISOR SCHILIRO: And I don't think that can be studied and to what extent. But if it can be, perhaps that can be put into the DEIS.

Did I get it?

MS. FERNBERG: Yeah, that's pretty -- yes. Very, very close. Because, you know -- and I haven't brought this up yet with the Mariani project, but you always

talk about like not -- you don't want to grant something that's going to compete with something else.

SUPERVISOR SCHILIRO: Depending. We did that with Brynwood.

MS. FERNBERG: But you look at Wampus Avenue -- and I know it's not this project, but Mariani's rental apartments are going to make it very hard for us to sell our houses possibly. I'll go into it another time. It's not relevant here. But, you know -- and the other thing is, you know, obviously I've lived here for 30 years and I've lived -- I bought my house for under $200,000. I was very lucky. So I can afford to stay here. And, you know, I don't know what the world is all -- going which way, but every single thing that is being built here seems to start at a million dollars, or pretty darn close to it, and that seems kind of crazy to me that people have -- there are that many people that have that much money to come and live here.

I may be off base on that one. You know, because there's -- look around us,

there's Greenwich, there's, you know, Scarsdale, there's all different kinds of places that you can buy. And we've always had this kind of, you know, no train, just small town, bucolic flavor, and I think we're losing it.

So thank you.

SUPERVISOR SCHILIRO: Thanks, Linda.

And there's -- just to add a little, and I'm happy to hear anybody else -- in the development world currently, there's some positives, depending on how you take it, to what you said is yes, some of the things you said are true. Well, a lot of things you said are true. But as far as the market, people will look at that as a positive and say, Gee, people want to live here. There's a demand. People want to live here. And the development segment of the residential market right now, it kind of boils down to rail line, you know, town, or water. So do you want to be close to the water? Do you want to be close to a rail line? Do you want to be close to a town?

And we know that people who like to

live in -- North White Plains is a little different because they are much closer to the rail line. But in the Hamlets of Armonk and Banksville, they will sacrifice a trip to the train station for what we have. And it takes nothing away from North White Plains. There are beautiful parts of North White Plains where you can go up on, actually, Ed and Terry's side of the street, and I think there are houses where you can see New York City. You know, it's beautiful.

But a lot of it is what the market is telling developers and builders, and then it's our job to determine what makes sense and what doesn't. And your comment -- just one last thing, which isn't really applicable to, you know, the scope is, you know, some people would be willing to just stay -- keep everything the way it is and pay more tax, but -- and I'm not saying this is a reason, again, to further applications, but I've been through -- I can't believe I'm saying this, but I've been through a lot of years on this board, and I've been through

those cycles and those hearings where people are saying the complete opposite thing when you're in a great recession and you're trying to manage the budget and people just want things cut, and they want things built to add to the assessables so that you -- I hear different people say different things in different economic climates.

Our job is to digest all that, try to look to the future and balance it all and try to make educated decisions which clearly are not agreed upon by some people in the public. And we've had prior applications that we've seen that. But that's what we're tasked with. So I'll stop talking on that.

Is there anybody else who wanted to make any comments from the public?

MR. McLAUGHLIN: I do.

SUPERVISOR SCHILIRO: Sure.

MR. McLAUGHLIN: Stephen McLaughlin. I live on 24 Whippoorwill Road East. My main concern -- and thank you both for your comments.

But my main concern has been a little bit more micro, I guess. I live very near

town. I'm a light sleeper. I'm up at, you know, 4:00 in the morning a lot of times. It's getting very busy around here. And these two developments, Mariani and, you know, the other one that would be at IBM, just feels, also, to me like it would add to a certain amount of congestion. And I can't help but feel like they are each looked at as individual projects and not necessarily in aggregate. I'm new to participating in this process, so I could be wrong about that. But that's how it seemed to me as I've read up on these things recently.

And then the other is I do find it troubling that somebody could make a purchase with a known zoning limitation and then just try to get that law changed and then put themselves in a more profitable position. And it seems very odd to me, honestly and, again, I'm new to this process -- for that to be even taken into consideration when that's their risk. I just don't -- I don't actually get that part and I find it concerning.

SUPERVISOR SCHILIRO: I'll try to

address a couple of those things.

The last piece is -- and I've said this probably many times before, to me and my colleagues may disagree with me -- it's our responsibility to take an educated look at every project that comes before us where somebody proposes to invest in our town, because where we can get smart development that provides more assessables, it continues to help the tax base. So for me, that's part of this process. The risk is on the applicant. They've got to spend the money to do the studies. And the other binder we have is three times the size of this. We don't want them to waste money, but it behooves us in our fiduciary responsibility to make sure we review all those things.

The -- what was the second thing you said?

MR. McLAUGHLIN: First part was in aggregate.

SUPERVISOR SCHILIRO: Yes. So we do that. And I forget the term -- I always forget the term, but a --

MR. KAUFMAN: Cumulative.

SUPERVISOR SCHILIRO: -- cumulative impact. So that was brought up at the planning board on several applications of the cumulative impact. So -- and it's not ignorant of you, it's a very good question, but yes, that's taken into consideration so we understand what the impacts are.

And actually, they touched upon that when they did the Comprehensive Plan task force and the update in making sure they understand how things all integrate. So it's a very astute comment and we do take a look at that.

I don't remember if there was a third item that you mentioned, just as far as the --

MR. McLAUGHLIN: Just noise, my light sleeping.

SUPERVISOR SCHILIRO: In general, we're doing a parking study for downtown. Some of these proposals we're including where, as they go through them, there may be a contribution to parking, because we know we need to add more parking now. And we also look at baselines. Like we're looking

at this. The baseline of that we know is already in the zone, is already zoned for that hotel with that number of rooms. So that's all been looked at and studied already. But we are very conscious of what those baselines are and what we're comparing to. But very good comments.

Anybody else who wanted to comment? And remember, you've got almost a month and a half beyond this to provide written comment. I probably will include some myself. So if there's not, if the board chooses --

COUNCILMAN BERRA: Can I just --

SUPERVISOR SCHILIRO: Yeah, go ahead.

COUNCILMAN BERRA: A couple more things so I don't have to do it in writing.

SUPERVISOR SCHILIRO: Go ahead.

COUNCILMAN BERRA: I think it's been touched on by a couple people, including you, but I just want to be very clear on this, I would like to be very carefully studied what the impact of a project like this, even in a reduced scope under some of the alternatives, would be on the value and

salability of the current housing stock we have in town and the different types of it, whether it be townhomes, whether it be single family homes. I think that's an important thing to consider.

SUPERVISOR SCHILIRO: I think that's what you kind of said, but I reiterated it.

MS. FERNBERG: I know there are different housing stock. Generally people who own townhomes aren't looking for single family homes.

SUPERVISOR SCHILIRO: Potentially.

COUNCILMAN BERRA: There's an impact potentially.

SUPERVISOR SCHILIRO: But if it can be studied, we'd like to see what can be studied on that and what the impacts would be.

COUNCILMAN BERRA: And it's hard to keep track of all the different alternatives that are being considered. But I understand the desirability, I've seen it for certain hotels, to have rentals on top. It's, I think, a trend that exists in some segments. So I could be supportive of that. Not of

the height that we have as presently considering it. But I could be supportive of something where you have rentals on top of the hotel. But I'd like to consider as an alternative a situation where you have just one floor, rentals on top, and be limited to roughly a third of what you've got, say 20 or 25 rentals units on top, because that could be study and included as an alternative.

SUPERVISOR SCHILIRO: Let me just stop you there. You know, maybe what you might be asking for is to provide -- if we were going to consider some type of zoning change or subdividing that property, what would still fit within the parameters as far as height and setbacks and everything. In other words, if you fit it into what's approved now but you still -- but we -- presuming we would consider a zoning change or a subdivision with a new zone, but conforming to what's there, what does that look like? Is it 25 townhomes and 20 apartments and then 200 hotel rooms? I think that's kind of what you're saying?

COUNCILMAN BERRA: Somewhat.

SUPERVISOR SCHILIRO: Because I want to make sure that it's studied right and then you get back the product that you're looking for.

COUNCILMAN BERRA: Right. I'm not necessarily envisioning that the hotel would be 200 units if they decided -- if it's not marketable. Whatever different variations there are allowing for rentals on top, whether it fits within the existing or whether it requires some degree of modification.

SUPERVISOR SCHILIRO: Okay. So -- but the existing to me is important.

COUNCILMAN BERRA: Right. And I agree with you on that, that you've got to look at what the existing is as a baseline. But I think the cumulative impact point, an extra 10 or 20 percent, can have very bad impact as well.

COUNCILMAN D'ANGELO: I think what he's looking for is similar to what we talked about earlier, you know, a building that fits into the current zoning with

hotels and apartments, three story limit.

COUNCILMAN BERRA: Right.

And then two other things. Is it possible to cross reference the scoping document to answers in the DEIS? If that were something that could be done, if it were going to be done in a specific way -- maybe it's not something that could be done. But that would make it a lot easier for review. We're all looking at this very carefully, obviously, Adam tremendously so. But it only serves you well to have answers like that. But we're going to look at this, we're going to look at it objectively, but that would be something I thought would be helpful.

And the final thing -- I'm sorry, I forgot your name.

MR. McLAUGHLIN: Stephen McLaughlin.

COUNCILMAN BERRA: Stephen McLaughlin.

The idea that the finances for the applicant is something that should be considered, I personally, and I think a lot of us, if not all of us, want people to

develop in town and do it successfully and do something good. But my view of it is probably something similar to yours. If someone overpays on a speculative basis, again, if we can help them along in some reasonable way, that's great, if we can come up with a good project for the town, but that's not really the town's responsibility. And let's face it, some projects don't make it because people overextend themselves.

MR. McLAUGHLIN: And to be clear, I only meant it in the context of getting the law changed.

COUNCILMAN BERRA: Okay. You have to come up.

SUPERVISOR SCHILIRO: Just say that again.

MR. McLAUGHLIN: Sorry. I only meant it in the context of making that investment and then just applying to get law changed.

COUNCILMAN BERRA: Right. It's speculative at that point in time. If they are coming in doing what they are entitled to do, God bless them one way or the other. But that's right. I want to be receptive to

things and try to help, but the town is a main consideration, and I don't think it's this town's job to make sure that someone's project, if they were overly speculative, succeeds.

SUPERVISOR SCHILIRO: Okay. So if there's no further comment, then I would ask that we --

COUNCILMAN D'ANGELO: I'll make the motion to close the public hearing on the DEIS.

COUNCILMAN REITER: Second.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

COUNCILMAN D'ANGELO: And then I would like to adjourn the public hearing on the zoning code and the -- that would be it, right?

SUPERVISOR SCHILIRO: That would stay open for --

MR. BARONI: The two public hearings on the rezoning petitions.

COUNCILMAN D'ANGELO: I'll make a motion to adjourn those two public hearings.

COUNCILMAN BERRA: I'll second that.

SUPERVISOR SCHILIRO: All in favor?

(The motion was unanimously passed.)

(Time noted 8:27 p.m.)

C E R T I F I C A T I O N

I, Pamela Grimaldi, Registered Professional Reporter and Certified LiveNote Reporter, before whom this proceeding was taken, do hereby state on the Record:

This to be a true and accurate transcript of the aforesaid proceeding and that due to the interaction in the spontaneous discourse of the proceedings, dashes ( ) have been used to indicate pauses, changes in thought, and/or talk-overs; that same is the proper method for a Court Reporter's transcription of proceedings, and that the dashes (--) do not indicate that words or phrases have been left out of this transcript;

That any words and/or names which could not be verified through reference material have been denoted with the parenthetical "(ph)."

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PAMELA GRIMALDI, RPR, CLR

Dated: **July 25, 2019**

Appendix C

SWPPP

ALFONZETTI ENGINEERING, P.C.
1100 Route 52, Carmel, N.Y. 10512

(845) 228-9800 Info@AlfonzettiEng.com

Preliminary Stormwater Pollution Prevention Plan

for

Eagle Ridge
Town of North Castle

February 14, 2019
Revised: April 30, 2020

ALFONZETTI ENGINEERING, P.C.
1100 Route 52, Carmel, N.Y. 10512

(845) 228-9800 Info@AlfonzettiEng.com

PROJECT: Eagle Ridge
Town of North Castle, NY

SCOPE: Preliminary Stormwater Pollution Prevention Plan

DATE: February 14, 2019
Revised: April 30, 2020

Introduction:

The subject site is located at 1 North Castle Drive, in the Town of North Castle, New York. The proposed development of this site, with more than one (1) acre of disturbance requires a Stormwater Pollution Prevention plan as per New York State Department of Environmental Conservation. This stormwater pollution prevention plan complies with New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity–GP-0-20-001 and New York State Stormwater Management Design Manual, dated January 2015.

Description:

The site is located on approximately 32 acres at 1 North Castle Drive in the Town of North Castle. The project site consists of one lot, with property tax map identification number; 108.03-1-62. The existing site consists of vacant land consisting of meadow areas, wooded areas, an abandoned asphalt road. On the southern end of the site there is a helicopter pad and internal roadways associated with the neighboring IBM property.

The applicant is proposing a mixed-use development consisting of townhouses, a hotel building, and an apartment building, with associated improvements.

The proposed disturbance for the site is approximately 19.1 acres. This project results in the creation of approximately 7.8 acres of impervious area. The site generally slopes in an easterly direction.

Runoff from the site drains partially to an on-site wetland and to the adjacent property owned by the Town of North Castle. Eventually runoff from the site makes its way to the Wampus River, then to the Byram River, then to the Long Island Sound.

Owner/Operator/Applicant:
MADDD/Madonna Armonk LLC
7 Spruce Hill Court
Pleasantville, New York 10570

Contractors:
TBD

Individual Responsible for Implementation of SWPPP:
TBD

Individual Responsible for Periodic Inspections:
Alfonzetti Engineering, PC
1100 Route 52
Carmel, NY 10512

At the time of the preparation of this Stormwater Pollution Prevention Plan, there are no know violations on this site.

A Phase I Cultural Resources Survey has been conducted on the site. A portion of the report prepared by Historical Perspectives, Inc., dated June 2018, is included in the appendix of this report.

The approvals associated with this project are as follows:

Agency	Approval	Status
Town of North Castle	- Zoning Amendment - Site Plan Approval	Pending
Westchester County Department of Health (WCDH),	- Watermain Extension - Sewermain Extension	Pending
New York State Department of Environmental Conservation	- Stormwater	Pending

Deep test holes and percolation tests were performed on site to determine the suitability of the soil for subsurface detention/infiltration. The results are shown in the appendix of this report. In addition, the soils according to the USDA (United States Department of Agriculture), NRCS (Natural Resources Conservation Service) are also shown in the appendix of this report.

Discussion:

Temporary Erosion Control Measures:

The following is an inventory and description of the temporary erosion control devices proposed on this site.

Anti-Tracking Pad – Anti-Tracking Pads shall be installed at all construction entrances. The purpose of the Anti-Tracking Pad shall be to dislodge mud, dirt, and debris from construction vehicles prior to these vehicles leaving the construction site. This will ensure the existing roadways are kept clear of sediment. Locations and details of the Anti-Tracking Pad are shown on the plans.

Silt Fence – Silt Fencing consists of a fabric barrier between supporting stakes or posts usually made of wood. The fabric is proposed to capture suspended sediments from construction runoff and also decreases the velocity of the runoff to protect off-site areas. The proposed location of the silt fence is shown on the plans along with details for installing the silt fence.

Haybales – Haybales are used in a variety of erosion control devices. At the top of an excavation, haybales are used to spread out concentrated flow to prevent erosion. Haybales are used in conjunction with silt fence to add additional protection to sensitive areas such as wetlands and water bodies. Haybales are also used in conjunction with Silt Fence to protect surrounding areas from soil stockpile erosion. The proposed location of the haybales is shown on the plans along with details.

Inlet protection – Inlet protection is used to filter runoff from non-stabilized construction sites prior to this runoff entering the drainage system.

Temporary Sediment Trap – Temporary Sediment Traps are small ponding basins constructed by excavation or embankment used to intercept sediment laden runoff. The sediment trap protects waterways, properties, and right-of-ways below the sediment trap.

Construction Sequence:

The proposed development is proposed to be constructed in 6 phases. The construction will be in a sequence that will minimize the potential for erosion. No phase will be more than 5 acres and no two adjacent phases will be disturbed at the same time. Construction is anticipated to begin in the winter of 2020, and last approximately up to 36 months for the entire site to be built.

The general sequence of construction is as follows:

Some phases of construction may be combined with prior approval.

Phase 1: Site Entrance and Earthwork
Overall Disturbance: 4.62 acres

- Phase 1: Pre-Construction Meeting, Stakeout, Erosion Control Measures, Clearing
    1. Pre-construction meeting with the Town Engineer, Applicant, Applicant's representative, and Contractors.
    2. Survey and stake for disturbance limits and erosion control installation.
    3. Establish parking and storage area via existing entrance.
    4. Place construction trailer and/or field office and a construction yard, if necessary.
    5. Mark and protect all trees to be preserved within the disturbance limits of Phase 1.
    6. Install anti-tracking pad and silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.
    7. Remove trees within Phase 1.
    8. Install silt fence in areas of tree clearing.
    9. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 1. Note: Tree stump removal shall only begin following the installation of the anti-tracking pads at all the construction entrances as shown on Phase 1 plan.

- Phase 1: Earth Work and Construction Entrance
    1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
    2. Begin rough grading for entrance and stockpiles.
    3. Install soil stockpiles within Phase 1 disturbance limits and sediment trap ST-1A and ST-1B. Construct temporary sediment trap ST-1A and ST-1B in the location indicated on plan.
    4. Install diversion ditch(es) tributary to ST-1A and ST-1B within Phase 1 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic
    5. Set up rock crushing area and erosion control for stockpiles shown on Phase 1 plan.
    6. Complete rough grading.
    7. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
    8. Complete final grading and stabilize earthwork on Phase 1
    9. Sediment trap ST-1A shall remain until phase 5. Sediment trap ST-1B shall remain and cleaned for phase 2.
    10. Anti-tracking pad shall remain until all phases are complete.

Phase 2: Site Entrance, Earthwork, Sewer and Water Connections, Utilities and Ponds.
Overall Disturbance: 5.00 acres

- Phase 2: Stakeout, Erosion Control Measures, Clearing
    1. Survey and stake for disturbance limits and erosion control installation.
    2. Mark and protect all trees to be preserved within the disturbance limits of Phase 2.
    3. Install anti-tracking pad and silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.
    4. Remove trees within Phase 2.
    5. Install silt fence in areas of tree clearing.

6. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 2. Note: Tree stump removal shall only begin following the installation of the anti-tracking pads at all the construction entrances as shown on Phase 2 plan

- Phase 2: Site Entrance, Earthwork, Sewer and Water Connections, Utilities and Ponds.
    1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
    2. Parking and storage shall remain throughout all phases of the project.
    3. Begin rough grading operations for the parking lot, roads and pond for phase 2. Stockpiles 2 and 3 will be used to supply the fill needed.
    4. Install soil stockpiles within Phase 2 disturbance limits and sediment trap ST-2A, ST-2B, and ST-2C. Construct temporary sediment trap ST-2A, ST-2B, and ST-2c in the location indicated on plan.
    5. Install diversion ditch(es) tributary ST-2A, ST-2B, and ST-2C within Phase 2 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic
    6. Set up rock crushing area and erosion control.
    7. Install appropriate proposed utility services to the site. Utility services include sanitary sewer service, water service, stormwater drains, electrical lines, and other utilities needed for the site.
    8. Sanitary sewer and water service shall be connected to the public line as shown on the plan.
    9. Backfill and compact trenches as installation progresses.
    10. Complete rough grading.
    11. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
    12. Complete final grading and stabilize earthwork on Phase 2.
    13. Sediment trap ST-2A shall remain until all phases are completed. Once all phases are completed ST-2A shall be clean and modified into a stormwater basin as shown on the plans. ST-2B and ST-2C shall be filled and graded once phase 2 is complete.

14. Infiltration systems proposed in phase 2 shall not be operational until all phases are complete or approved to be active.
15. Anti-tracking pad shall remain until all phases are complete

Phase 3: Hotel and Apartment foundation, Retaining walls, Earthwork, Utilities and Ponds.
Overall Disturbance: 4.88 acres

- Phase 3: Stakeout, Erosion Control Measures, Clearing
    1. Survey and stake for disturbance limits and erosion control installation.
    2. Mark and protect all trees to be preserved within the disturbance limits of Phase 3.
    3. Install silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.
    4. Remove trees within Phase 3.
    5. Install silt fence in areas of tree clearing.
    6. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 3.
    7. Spread soil stockpile within Phase 3 disturbance limits and construct sediment trap ST-3A and ST-3B. Construct temporary sediment trap ST-3A and ST-3B in the location indicated on plan.
    8. Install diversion ditch(es) tributary ST-3A and ST-3C within Phase 3 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic

- Phase 3: Hotel and Apartment foundation, Retaining walls, Earthwork, Utilities and Ponds.
    1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
    2. Parking and storage shall remain throughout all phases of the project.
    3. Begin rough grading operations for the foundations, parking lot, roads and pond for phase 3.

4. Set up rock crushing area and erosion control.
5. Install appropriate proposed utility services to the site. Utility services include sanitary sewer service, water service, stormwater drains, electrical lines, and others utilities needed for the site.
6. Backfill and compact trenches.
7. Complete rough grading.
8. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
9. Complete final grading and stabilize earthwork on Phase 4.
10. Sediment trap ST-3A shall remain until all phases are completed. Once all phases are completed ST-3A shall be clean and modified into a stormwater basin as shown on the plans. ST-3B shall be filled and graded once phase 3 is complete.
11. Infiltration systems proposed in phase 3 shall not be operational until all phases are complete or approved to be active

Phase 4: Townhouse's Foundation Units 1-14, Earthwork, Utilities and Ponds.
Overall Disturbance: 4.99 acres

- Phase 4: Stakeout, Erosion Control Measures, Clearing
    1. Survey and stake for disturbance limits and erosion control installation.
    2. Mark and protect all trees to be preserved within the disturbance limits of Phase 4.
    3. Install silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.
    4. Remove trees within Phase 4.
    5. Install silt fence in areas of tree clearing.
    6. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 4.
    7. Construct temporary sediment trap ST-4A and ST-4B in the location indicated on plan.
    8. Install diversion ditch(es) tributary ST-4A and ST-4C within Phase 4 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic

- Phase 4: Townhouse's Foundation Units 1-14, Earthwork, Utilities and Ponds
    1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
    2. Parking and storage shall remain throughout all phases of the project.
    3. Begin rough grading operations for the foundations, roads and pond for phase 4.
    4. Install soil stockpiles within Phase 4 disturbance limits.
    5. Set up rock crushing area and erosion control.
    6. Install appropriate proposed utility services to the site. Utility services include sanitary sewer service, water service, stormwater drains, electrical lines, and others utilities needed for the site.
    7. Backfill and compact trenches.
    8. Complete rough grading.
    9. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
    10. Complete final grading and stabilize earthwork on Phase 4.
    11. Sediment trap ST-4A shall remain until all phases are completed. Once all phases are completed ST-4A shall be clean and modified into a stormwater basin as shown on the plans. ST-4B shall remain until phase 5 is complete.
    12. Infiltration systems proposed in phase 4 shall not be operational until all phases are complete or approved to be active

Phase 5: Townhouse's Foundation Units 41-50, Earthwork, Utilities and Pond.
Overall Disturbance: 4.40 acres

- Phase 5: Stakeout, Erosion Control Measures, Clearing
    1. Survey and stake for disturbance limits and erosion control installation.
    2. Mark and protect all trees to be preserved within the disturbance limits of Phase 5.
    3. Install silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.

4. Remove trees within Phase 5.
5. Install silt fence in areas of tree clearing.
6. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 5.
7. Install soil stockpiles within Phase 5 disturbance limits and sediment trap ST-5A1, ST-5A2 and ST-5B. Construct temporary sediment trap ST-5A1, ST-5A2 and ST-5B in the location indicated on plan.
8. Install diversion ditch(es) tributary ST-5A1, ST-5A2 and ST-5B within Phase 5 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic

- Phase 5: Townhouse's Foundation Units 41-50, Earthwork, Utilities and Pond

1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
2. Parking and storage shall remain throughout all phases of the project.
3. Begin rough grading operations for the foundations, roads and pond for phase 5.
4. Set up rock crushing area and erosion control.
5. Install appropriate proposed utility services to the site. Utility services include sanitary sewer service, water service, stormwater drains, electrical lines, and others utilities needed for the site.
6. Backfill and compact trenches.
7. Complete rough grading.
8. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
9. Complete final grading and stabilize earthwork on Phase 4.
10. Sediment trap ST-5A1 and ST-5A2 shall remain until all phases are completed. Once all phases are completed ST-5A1 and ST-5A2 shall be clean and modified into a stormwater basin as shown on the plans. ST-5B shall remain all grading is for phase 5 and shall be clean and converted in to a foundation ash shown on the plans.

11. Infiltration systems proposed in phase 5 shall not be operational until all phases are complete or approved to be active.

Phase 6: Townhouse's Foundation Units 15-40, Earthwork and Utilities.
Overall Disturbance: 4.25 acres

- Phase 6: Stakeout, Erosion Control Measures, Clearing
    1. Survey and stake for disturbance limits and erosion control installation.
    2. Mark and protect all trees to be preserved within the disturbance limits of Phase 6.
    3. Install silt fence as shown on the erosion control plan and as per the respective erosion control details. Note: Silt fence should not be installed in areas where tree clearing operations will damage silt fence.
    4. Remove trees within Phase 6.
    5. Install silt fence in areas of tree clearing.
    6. Remove tree stumps, brush and other vegetation. Tree stump removal shall only include stumps within the immediate work area of Phase 5.
    7. Spread soil stockpiles within Phase 6 disturbance limits and sediment trap ST-6A and ST-6B. Construct temporary sediment trap ST-6A and ST-6B in the location indicated on plan.
    8. Install diversion ditch(es) tributary to ST-6A and ST-6B within Phase 6 disturbance limits. Install temporary pipes to convey runoff in areas of vehicular/machinery traffic

- Phase 6: Townhouse's Foundation Units 15-40, Earthwork, Utilities and Pond

    1. Erosion control devices must be installed before earthwork operations can commence. A water truck will be available during dry times to reduce airborne dust.
    2. Parking and storage shall remain throughout all phases of the project.
    3. Begin rough grading and foundations. Stockpiles 1 and 2 will be used to supply the fill needed.
    4. Set up rock crushing area and erosion control.

5. Install appropriate proposed utility services to the site. Utility services include sanitary sewer service, water service, stormwater drains, electrical lines, and others utilities needed for the site.
6. Backfill and compact trenches.
7. Complete rough grading.
8. Begin final grading, seeding, sodding, and soil stabilizing landscaping.
9. Complete final grading and stabilize earthwork on Phase 6.
10. Once grading is complete, ST-6A and ST-6B shall be clean and regarded into foundations.
11. All inlet protection shall be removed and all Sediment Traps remaining shall be clean and converted to stormwater basins as shown on plan.
12. All Infiltration systems shall be put online. Install roadway top course when heavy equipment is no longer needed and prior to the final Certificate of Occupancy.

The general phases of construction are shown on the Phasing Plans, in the appendix of this report. As the project is developed a more detailed construction sequence will be established.

Maintenance:

The maintenance chart below shows typical maintenance of temporary and permanent structures and erosion control devices during construction,

Device	Weekly	Monthly	Bi-annually	Annually	Prior to Significant Rainfall	After Significant Rainfall
Haybales		Inspect		Replace	Inspect	Inspect/clean
Silt fence		Inspect		Inspect	Inspect	Inspect/clean
Anti-tracking pad	Inspect		Restore			Inspect
Inlet protection		Inspect	Restore		Inspect	Inspect/clean
Catch basins/ Drain inlets	Inspect (during construction)		Clean			Inspect

Temporary Sediment Traps shall be inspected prior to significant rainfall and inspected and cleaned if needed after significant rainfall. The sediment trap shall be cleaned and sediment removed when sediment reaches ½ the design depth. Temporary sediment trap sizing is included in the appendix of this report.

Permanent stormwater management device maintenance schedule is as follows:

- Hydrodynamic separator devices shall be inspected biannually and cleaned out as per manufacturers' instructions (included in the appendix of this report).

- The green roof maintenance requirements are included in the appendix of this report. The maintenance is as per 'Carlisle' green roofs planted with Sedum. Access to the roof is from the interior of the buildings.

- All catch basins/drain inlets/drain manholes shall be inspected and cleaned biannually. These structures should also be inspected weekly during construction and after significant rainfall.

- The subsurface infiltration systems shall be inspected annually through observation ports.

- Stormwater Basins/Detention ponds should be inspected after major storm events and semi-annually. During the inspections, the following should be checked:
    - Clogging of outlet structure.
    - Erosion on the embankment/berm.
    - Condition of the emergency spillway.
    - Accumulation of sediment around the outlet structure.
    - Erosion of the basin bed and banks.
    - Sources of erosion in the contributory drainage, which should be stabilized.
    - Sediment removal in the forebay shall occur every five to six years or after 50% of total forebay capacity has been lost.
    - If any trash has made its way to the pond, it shall be cleaned out and disposed of in a lawful manor.
    - Grass should be cut at a minimum twice a year.

  - Dead/Diseased plants shall be removed and disposed of in a lawful manor. Replacement plants shall be of the same type and size as initially planted.
  - No herbicides, pesticides, or fertilizers should be used in or near the ponds.

- Rain garden, of used, maintenance may include the occasional replacement of plants, mulching, weeding and thinning to maintain the desired appearance. Weeding and watering are essential the first year, and can be minimized with the use of a weed-free mulch layer. Once the rain garden has matured, the garden area should be free of bare areas except where stepping stones are located. Inspect for sediment accumulations or heavy organic matter where runoff enters the garden and remove as necessary. The top few inches of planting soil should be removed and replaced when water ponds for more than 48 hours.

Potential pollutants during construction are sediment laden stormwater runoff, liter, and construction fluids/chemical spills. During construction, the sediment laden runoff will be trapped or filtered through the silt fence and other erosion control devices prior to being discharged. The construction litter will be cleaned on a daily basis and disposed of in a lawful manor. The storage of any construction fluids or chemicals will be within water tight containers suitable for storage and will not be exposed to the elements.

During the construction phase, the trained contractor shall be responsible for erosion and sediment control device maintenance and pollution prevention measures. The trained contractor shall also be responsible for maintenance of the permanent drainage structures during construction and to ensure protection of the subsurface infiltration system areas. The trained contractor shall inspect the erosion control devices daily to ensure they are in effective operating condition.

The qualified inspector shall conduct site inspections at least once every seven (7) calendar days while soil disturbance activities are on-going. If soil disturbance activities are suspended, inspections shall occur under the guidelines in the appendix of this report.

After construction, the maintenance of the stormwater mitigating devices shall be the responsibility of the managing entity for the townhouse development and the managing entity of the hotel site.

Permanent Stormwater Management Devices:

The proposed stormwater mitigation practices have been sized according to the New York State Department of Environmental Conservation Stormwater Design Manual (Stormwater Design Manual). The project is a mixed-use development that is proposed to disturb more than 1 acre, therefore the Stormwater Pollution Prevention Plan must incorporate Water Quality treatment features as well as Water Quantity control features.

After construction, in the post development stage, potential pollutants can be an increase in runoff rates as well as suspended sediment and elevated nutrient levels within the runoff. The increase in runoff rates is mitigated by the combined use of the stormwater practices located throughout the site, namely the subsurface infiltration systems, the stormwater ponds, and the green roof. The increase in suspended sediment and elevated nutrients are mitigated by the subsurface infiltration systems, the infiltration pond, the extended detention pond, the green roof, the hydrodynamic separators, and the sumps in all the drain inlets and catch basins. By meeting NYSDEC Water Quality criteria and Runoff Reduction Volume criteria the pollutants of concern will be mitigated.

There are no stormwater discharges due to industrial activities, apart from construction, associated with this site.

The Stormwater Design Manual criteria are as follows:

Water Quality Volume (WQv):

- capture and treat runoff from the 90th percentile rain event

Runoff Reduction Volume (RRv):

- Reduction of the total WQv by application of green infrastructure techniques and standard Stormwater Management Practices to replicate pre-development hydrology.

Channel Protection Volume (Cpv):

- Provide 24 hour extended detention of the 1-year storm event, remained from runoff reduction.

Overbank Flood Protection (Qp):

- Attenuate the post development 10-year, 24-hour peak discharge rate to pre-development rates.

Extreme Flood Protection (Qf):

- Attenuate the post development 100-year, 24-hour peak discharge rate to pre-development rates.

This project incorporates the six-step process involving site planning and stormwater management practice selection to provide a more holistic approach to stormwater management per Chapter 3 of the *New York State Stormwater Design Manual* as described below.

1. Site planning to preserve natural features and reduce impervious cover.

2. Determine Water Quality Volume (WQv) for the site.

3. Apply Runoff Reduction Techniques and Standard SMPs with RRv Capacity to Reduce Total WQv.

4. Determine the minimum Runoff Reduction Volume (RRv) required.

5. Apply standard SMPs, where applicable, to address remaining Water Quality Volume (WQv) not addressed by runoff reduction techniques and standard SMPs with RRv capacity.

6. Apply Volume and Peak Rate Control Practices if still needed to meet requirements.

Step 1 was achieved by locating the proposed development away from the wetlands and watercourses and using the minimum required driveway width, parking space dimensions, and drive aisle widths as per the Town of North Castle design standards. In addition, the bulk of the proposed development is located outside the steep slope areas of the site. The majority of the steep areas of the site remain undisturbed. Another preservation of natural features is the

preservation of the wetland buffer. The development maintains a 150-foot buffer from the wetland on-site. Steps 2-6 are addressed in subsequent sections of this report.

The Stormwater Pollution Prevention Plan analyzes 6 Design Points. In order to determine the existing and proposed runoff flows at each respective design point, the stormwater model uses data from the existing and proposed watersheds. The watersheds and descriptions are below.

The Design Points are described below.

Design Point 1	DP1 is a linear design point located along the eastern property line. In the existing condition and proposed condition, this represents the runoff from Watershed 1.
Design Point 2.	DP2 is a linear design point located along the eastern property line. In the existing condition and proposed condition, this represents the runoff from Watershed 2.
Design Point 3	DP3 is another linear design point located along the eastern property line. In the existing condition and proposed condition, this represents the runoff from Watershed 3.
Design Point 4	DP4 is another linear design point located along the eastern property line. In the existing condition, this represents the runoff from Watershed 4. In the proposed condition, this represents the sum of the runoff from Watersheds 4A-4N after they have been routed through their respective stormwater mitigation devices.
Design Point 5	DP5 is a linear design point along the eastern property line within an on-site wetland. In the existing condition this represents the runoff from Watershed 5. In the proposed condition, this represents the sum of the runoff from Watershed 5A-5H after it has been routed through its stormwater mitigation devices.

Design Point 6 DP6 is located within an existing drainage swale along North Castle Drive at the northern property line. In the existing condition and the proposed condition, this represents the runoff from Watershed 6.

Design Point 7 DP7 is located at an existing drain inlet, at the south west property corner. In the existing condition and the proposed condition, this represents the runoff from Watershed 7A and Watershed 7B.

The rainfall amounts required to satisfy the stormwater design criteria for the site are:

Design Storm Summary Table

Criteria	Storm	Rainfall (Inches)
Water Quality Volume (WQv)	90%	1.5
Channel Protection Volume (Cpv)	1 year	2.8
	2 year	3.43
	5 year	4.31
Overbank Flood Protection (Qp)	10-year	5.13
	25 year	6.46
	50 year	7.69
Extreme Flood Protection (Qf)	100-year	9.17

The methods used to calculate the runoff flows for the selected storms is as follows:

- The existing and proposed watersheds are determined and curve numbers are calculated for both conditions. Travel times are also calculated for the existing conditions.

- The existing watershed areas, curve numbers, and travel times are input into 'HydroCad' stormwater modeling software to determine the existing condition peak runoff flows.

- The proposed watershed areas, curve numbers, travel times, and stormwater mitigating devices and routings are input into 'HydroCad' stormwater modeling software to determine the proposed peak runoff

flows. The results of the existing and the proposed peak runoff flow calculations are shown in the summary tables included in this report. The data used to determine the existing and the proposed peak runoff flows is also shown in the summary tables.

- The topography and land use/cover for the site was taken from a site-specific survey. The topography for off-site is taken from GIS mapping. The curve numbers and the travel times for the off-site watersheds are estimated using available aerial photographs. The soil grouping for the site was taken from the USDA (United States Department of Agriculture), NRCS (Natural Resources Conservation Service) soil survey

Water Quality:

The water quality volume is calculated using the following formula from the Stormwater Design Manual:

$WQ_v = ((P)(R_v)(A))/12)$

where $Rv = 0.05+0.009(I)$

I = Impervious Cover (percent)

P = 90^{th} % Rainfall Event Number (Use 1.5")

A = Site Area in acres

Designing the stormwater mitigation practices in accordance with the requirements of the NYSDEC Stormwater Design Manual will maintain proposed pollutant loading at or below existing condition levels. The impervious cover was calculated for each of the watersheds tributary to a stormwater treatment practice and tabulated below.

Watershed Name	Watershed Area (Acres)	Impervious Area (Acres)	Percent Impervious
PRWS4B	0.235	0.235	100%
PRWS4C	0.235	0.235	100%
PRWS4D	1.021	0.776	76%
PRWS4F	0.411	0.411	100%
PRWS4G	0.350	0.055	16%
PRWS4H	3.165	1.365	43%
PRWS4I	0.470	0.470	100%
PRWS4J	0.118	0.118	100%
PRWS4K	1.407	1.053	75%
PRWS4M	0.418	0.418	100%

PRWS5A	0.705	0.705	100%
PRWS5B	0.705	0.705	100%
PRWS5C	0.353	0.353	100%
PRWS5E	3.061	0.736	24%
PRWS7A	0.118	0.118	100%

Using the percent impervious and the formulas above, the resulting Water Quality Volumes are calculated in the table below for the developed watersheds.

NYSDEC PROPOSED WATER QUALITY VOLUME (WQv) CALCULATIONS								
Watershed Name	Watershed Area (Acres)	Impervious Area (Acres)	Percent Impervious	90% Rainfall (Inches)	Rv	Wqv (Ac-Ft)	Required Wqv (C.F.)	Provided Wqv (C.F.)
PRWS4B	0.235	0.235	100.00	1.50	0.95	0.0279	**1216.0**	**1,615**
PRWS4C	0.235	0.235	100.00	1.50	0.95	0.0279	**1216.0**	**1,615**
PRWS4D	1.021	0.776	76.02	1.50	0.73	0.0937	**4083.2**	**4,997**
PRWS4F	0.411	0.411	100.00	1.50	0.95	0.0488	**2125.6**	**9,994**
PRWS4G	0.350	0.055	15.72	1.50	0.19	0.0084	**365.4**	**9,994**
PRWS4H	3.165	1.365	43.13	1.50	0.44	0.1734	**7551.1**	**16,783**
PRWS4I	0.470	0.470	100.00	1.50	0.95	0.0558	**2432.0**	**16,783**
PRWS4J	0.118	0.118	100.00	1.50	0.95	0.0140	**608.0**	**16,783**
PRWS4K	1.407	1.053	74.84	1.50	0.72	0.1272	**5541.3**	**16,783**
PRWS4M	0.418	0.418	100.00	1.50	0.95	0.0496	**2161.3**	**9,994**
PRWS5A	0.705	0.705	100.00	1.50	0.95	0.0837	**3648.0**	**6,072**
PRWS5B	0.705	0.705	100.00	1.50	0.95	0.0837	**3648.0**	**14,020**
PRWS5C	0.353	0.353	100.00	1.50	0.95	0.0419	**1824.0**	**14,020**
PRWS5E	3.061	0.736	24.04	1.50	0.27	0.1019	**4439.3**	**14,020**
PRWS7A	0.118	0.118	100.00	1.50	0.95	0.0140	**608.0**	**1,140**

The Water Quality Volume for the development is proposed to be captured and treated in subsurface infiltration systems throughout the site. The subsurface infiltration systems shall consist of 'Cultec' stormwater chambers, model 'Recharger 330xl' and cylindrical dry wells, 10' in diameter and 8' in height, surrounded by crushed stone and filter fabric.

Prior to entering the infiltration practices the stormwater runoff will pass through pre-treatment devices. The pre-treatment devices proposed are hydrodynamic separators. Water quality runoff rates and sizing information for the hydrodynamic separators is contained in the appendix of this report.

To improve water quality and to reduce the runoff from the site, within the townhouse portion of the development, the driveways will be constructed with permeable pavers.

A summary of pollutants removed by standard practice:

Infiltration Practice	Phosphorous Nitrogen Metals – Cadmium, Copper, Lead, and Zinc Pathogens – Coliform, Streptococci, E. Coli
Extended Detention Pond	Phosphorous Nitrogen Metals – Cadmium, Copper, Lead, and Zinc Pathogens – Coliform, Streptococci, E. Coli

Runoff Reduction Volume (RRv):

The runoff reduction volume criteria requires the reduction of runoff volume by green infrastructure techniques, infiltrating, ground water recharge, reuse, recycle, or evaporation/ evapotranspiration of the entire Water Quality Volume.

The Water Quality Volume calculations are discussed in the section above. Since the entire Water Quality Volume for Watersheds 4B, 4C, 4D, 4F, 4G, 4H, 4I, 4J, 4K, 4M, 5A, 5B, 5C, 5E, and 7A is being infiltrated, the Runoff Reduction Volume criteria has been met.

Channel Protection Volume (Cpv):

Since the infiltration systems all capture a minimum of the 1-year storm and the discharge from Pond 1 is zero for the 1-year storm, the Channel Protection Volume criteria has been met for these watersheds. In addition, the small watershed sizes result in using very small orifice sizes to accomplish the 24-hour detention. Since such small orifices tend to clog and the New York State Stormwater Design Manual recommends a minimum orifice size of 3”, channel protection is met by maintaining or reducing the proposed peak runoff to the existing peak runoff for the 1 year storm event. All discharges are to a stone dissipater/trench to ensure no erosion and to promote sheet flow.

The table below summarizes the data used for the stormwater calculations:

Watershed Designation	Area (Square Feet)	Curve Number	Travel Time (Minutes)
EXWS1	80,671	55	20.0
EXWS2	17,033	55	13.5
EXWS3	255,227	61	33.2
EXWS4	718,402	60	23.7
EXWS5	431,278	62	16.5
EXWS6	256,054	69	6.0
EXWS7	97,844	64	4.7
PRWS1	80,670	55	20.0
PRWS2	17,034	55	13.5
PRWS3	65,586	56	12.6
PRWS4A	26,850	61	12.7
PRWS4B	10,240	98	5.0
PRWS4C	10,240	98	5.0
PRWS4D	44,534	89	1.2
PRWS4E	11,410	61	2.0
PRWS4F	17,900	98	5.0
PRWS4G	15,265	67	10.4
PRWS4H	142,656	77	10.9
PRWS4I	20,480	98	5.0
PRWS4J	5,120	98	5.0
PRWS4K	61,269	89	1.2
PRWS4L	62,940	59	13.0
PRWS4M	18,200	98	5.0
PRWS4N	314,152	57	6.4
PRWS5A	30,720	98	5.0
PRWS5B	30,720	98	5.0
PRWS5C	15,360	98	5.0
PRWS5D	36,719	61	17.8
PRWS5E	133,316	73	20.4
PRWS5F	33,040	61	10.6
PRWS5G	11,860	87	0.6
PRWS5H	418,163	60	16.5
PRWS6	173,498	70	8.0
PRWS7A	5,120	98	5.0
PRWS7B	43,457	57	8.8

The tables below show a comparison of the existing and proposed peak flows:

DESIGN POINT 1			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	0.1	0.1	0
2 Year	0.2	0.2	0
5 Year	0.7	0.7	0
10 Year	1.2	1.2	0
25 Year	2.4	2.4	0
50 Year	3.6	3.6	0
100 Year	5.2	5.2	0

DESIGN POINT 2			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	0	0	0
2 Year	0.1	0.1	0
5 Year	0.2	0.2	0
10 Year	0.3	0.3	0
25 Year	0.6	0.6	0
50 Year	0.9	0.9	0
100 Year	1.3	1.3	0

DESIGN POINT 3			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	0.6	0.1	-0.5
2 Year	1.5	0.3	-1.2
5 Year	3.1	0.7	-2.4
10 Year	4.9	1.3	-3.6
25 Year	8.3	2.4	-5.9
50 Year	11.7	3.6	-8.1
100 Year	16	5.2	-10.8

DESIGN POINT 4			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	1.7	0.5	-1.2
2 Year	4.2	1.7	-2.5
5 Year	9.3	4.9	-4.4
10 Year	15	8.8	-6.2
25 Year	25.8	16.8	-9
50 Year	36.8	28.9	-7.9
100 Year	50.9	44.3	-6.6

DESIGN POINT 5			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	1.1	1.1	0
2 Year	2.8	2.7	-0.1
5 Year	6.4	6.2	-0.2
10 Year	10.4	10.1	-0.3
25 Year	17.9	17.5	-0.4
50 Year	25.6	25.1	-0.5
100 Year	35.5	34.9	-0.6

DESIGN POINT 6			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	3.2	2.2	-1
2 Year	5.7	3.8	-1.9
5 Year	9.7	6.5	-3.2
10 Year	13.9	9.1	-4.8
25 Year	21.1	13.8	-7.3
50 Year	28.2	18.3	-9.9
100 Year	36.9	23.9	-13

DESIGN POINT 7			
Storm Event	Existing Peak Runoff (cfs)	Proposed Peak Runoff (cfs)	Net Change (cfs)
1 Year	0.7	0.1	-0.6
2 Year	1.5	0.2	-1.3
5 Year	2.9	0.6	-2.3
10 Year	4.4	1.1	-3.3
25 Year	7	1.9	-5.1
50 Year	9.7	2.9	-6.8
100 Year	13.1	4.7	-8.4

Overbank Flood Protection (Qp):

As seen on the peak flow comparison charts, the proposed peak runoff is maintained or reduced as compared to the existing peak runoff for the 10-year storm event.

Extreme Flood Protection (Qf):

As seen on the peak flow comparison charts, the proposed peak runoff is maintained or reduced as compared to the existing peak runoff for the 100-year storm event.

Conclusion:

Based on the analysis in the Stormwater Pollution Prevention Plan, the stormwater management practices proposed will adequately treat the runoff leaving the site in regard to water quality. In addition, the proposed stormwater practices will control runoff quantities to ensure no adverse affects due to stormwater as a result of the proposed development.

ALFONZETTI ENGINEERING, P.C.
Ralph Alfonzetti, P.E.

Archeological Information:

Phase IA Cultural Resources Survey
Eagle Ridge Development
1 North Castle Drive, Armonk, Town of North Castle
Westchester County, New York

Prepared For:

Frank Madonna

Prepared By:

Historical Perspectives, Inc.
P.O. Box 529
Westport, CT 06881

Authors:
Dawn L. Brown, M.A., R.P.A.

June 2018

MANAGEMENT SUMMARY

SHPO Project Review Number (if available):

Involved State and Federal Agencies:

Phase of Survey: **Phase IA Cultural Resources Survey**

Location Information
- Location: **1 North Castle Drive**
- Minor Civil Division: **11910, North Castle**
- County: **Westchester**

Survey Area
- Length:
- Width:
- Number of Acres Surveyed: **32.5**

USGS 7.5 Minute Quadrangle Map: **Glenville, CT**

Archaeological Survey Overview
- Number & Interval of Shovel Tests:
- Number & Size of Units: **N/A**
- Width of Plowed Strips: **N/A**
- Surface Survey Transect Interval: **N/A**

Results of Archaeological Survey
- Number & name of precontact sites identified:
- Number & name of historic sites identified:
- Number & name of sites recommended for Phase II/Avoidance:

Results of Architectural Survey
- Number of buildings/structures/cemeteries within project area:
- Number of buildings/structures/cemeteries adjacent to project area:
- Number of previously determined NRHP listed or eligible buildings/structures/cemeteries/districts:
- Number of identified eligible buildings/structures/cemeteries/districts:

Report Authors(s): **Dawn L. Brown, M.A., R.P.A., Historical Perspectives, Inc.**

Date of Report: **June 2018**

EXECUTIVE SUMMARY

Eagle Ridge is a proposed Armonk development of a boutique hotel with residential housing, and supportive services and parking, and a separate 94-unit townhome complex. Rezoning, subdivision and construction of the 32.5-acre property at 1 North Castle Drive requires local permits and zoning approval prior to implementation. The development parcel, which contains steep slopes, is immediately west of a municipal sports park and north of an International Business Machines Corporation (IBM) corporate complex (Figure 1 and 2). Originally a part of the IBM complex, a small western portion of the project site was previously graded and developed by IBM into a helipad. The local Planning Board has requested the completion of a Phase I cultural resources evaluation of the project site acreage so that the Eagle Ridge site application can move forward.

From what is known of precontact period settlement patterns in Westchester County, most habitation and processing sites are found in sheltered, elevated locales close to wetland features, major waterways, and with nearby sources of fresh water. The project site is located near the Wampus River and contains well-drained soils uphill from the water. Research found that fourteen precontact sites have been identified within a one-mile radius of the project APE. One of these sites, an Early Archaic (LeCroy) site, was on the IMB property immediately south of the APE (Boesch 1995a, b, c). In addition, bedrock outcrops on the APE may contain possible rockshelters. These factors signify potential precontact sensitivity.

The 18th to 19th century Cornell-Birdsall farm, and later 20th century Wenga Farm, consisted of a large complex of buildings that existed on the northern portion of the APE; the APE was part of the larger agricultural history which consisted of orchards, livestock and farm buildings. IBM purchased this land from the Agnew family in 1955. The farm buildings were moved or demolished by the 1960s. Aerial photographs show that some of these buildings were originally located where Route 128 intersects with North Castle Drive; however, a number of buildings also existed on the northern portion of the present APE. These factors signify potential historic-period sensitivity.

Archaeological testing is recommended for only a portion of the project site (Figure 8). No field testing is recommended for the project APE with more than 12% slope. Also, no field testing is recommended for land areas with clear evidence of 20th century disturbance (e.g., road prep and installation, rock and tree removal, helipad construction, and installation of sewer line).

Some portions of the APE which fit the model for possible precontact occupation are clearly undisturbed (i.e., southeastern wooded portion) and standard Phase IB Archaeological Field Testing is recommended. However, on other portions of the APE (i.e., center field area, western, and northwestern edge) complete disturbance is unclear or intermittent; therefore, limited Phase IB field testing is recommended to confirm possible disturbance.

In addition, further archaeological investigations are recommended for the northern portion of the APE due to possible middens, privys, wells or cisterns related to the Cornell-Birdsall residence that may have remained intact. No foundation or structural remains could be seen upon visual inspection (5/26/2018); however, the area was heavily overgrown.

Testing is also recommended for several rock overhangs that are present within the bedrock outcrops.

Deep Test Hole Information:
(designations are shown on the plan in this appendix)

DEEP TEST 1 (DT1)

0"-6"	TOPSOIL
6"-12"	SANDY LOAM
12"	ROCK

DEEP TEST 2 (DT2)

0"-6"	TOPSOIL
6"-30"	SANDY LOAM
30"	ROCK

DEEP TEST 3 (DT3)

0"-10"	TOPSOIL
10"-16"	GRAVEL
16"-60"	SANDY, SILTY LOAM
60"	ROCK

DEEP TEST 4 (DT4)

0"-6"	TOPSOIL
6"-108"	SANDY LOAM
108"	WATER

DEEP TEST 5 (DT5)

0"-6"	TOPSOIL
6"-102"	SANDY, SILTY LOAM
102"	WATER

DEEP TEST 6A (DT6A)

0"-6"	TOPSOIL
6"-92"	SANDY, SILTY LOAM

DEEP TEST 6B (DT6B)

0"-6"	TOPSOIL
6"-84"	SANDY LOAM WITH COBBLES

DEEP TEST 7 (DT7)

0"-6"	TOPSOIL
6"-132"	SANDY LOAM

DEEP TEST 8 (DT8)

0"-6"	TOPSOIL
6"-132"	SANDY LOAM

DEEP TEST 9A (DT9A)

0"-6"	TOPSOIL
6"-86"	SANDY LOAM

DEEP TEST 9B (DT9B)

0"-6"	TOPSOIL
6"-100"	SANDY LOAM

DEEP TEST 10 (DT10)

0"-6"	TOPSOIL
6"-78"	SANDY LOAM WITH BOULDERS

DEEP TEST 11 (DT11)

0"-6"	TOPSOIL
6"-96"	SANDY, SILTY LOAM

DEEP TEST 12 (DT12)

0"-6"	TOPSOIL
6"-70"	SANDY LOAM
70"-120"	MIXED SANDS
120"	ROCK

DEEP TEST 13 (DT13)

0"-6"	TOPSOIL
6"-66"	SANDY LOAM WITH COBBLES
66"-97"	MIXED SANDS

DEEP TEST 14 (DT14)

0"-6"	TOPSOIL
6"-66"	SANDY LOAM
66"-78"	MIXED SANDS

Deep Test Hole Information:
(designations are shown on the plan in this appendix)

DEEP TEST 15 (DT15)

0"-12"	TOPSOIL
12"-58"	SANDY LOAM
58"-94"	MIXED SANDS

DEEP TEST 16 (DT16)

0"-6"	TOPSOIL
6"-108"	SANDY, SILTY LOAM

DEEP TEST 17 (DT17)

0"-6"	TOPSOIL
6"-100"	SANDY LOAM WITH BOULDERS

DEEP TEST 18 (DT18)

0"-6"	TOPSOIL
6"-80"	SANDY, SILTY LOAM WITH COBBLES

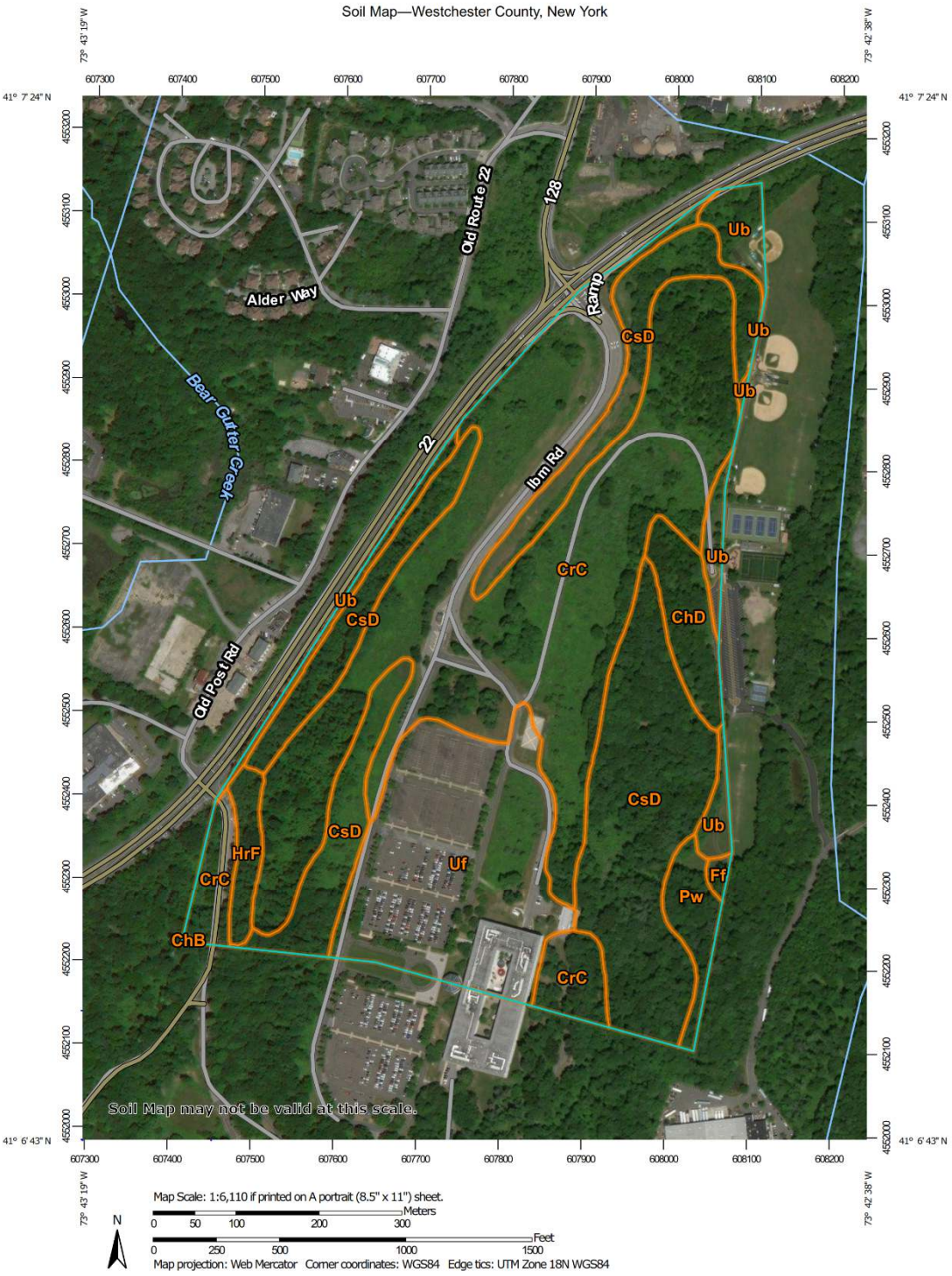
DEEP TEST 19 (DT19)

0"-6"	TOPSOIL
6"-122"	SANDY LOAM
122"	ROCK

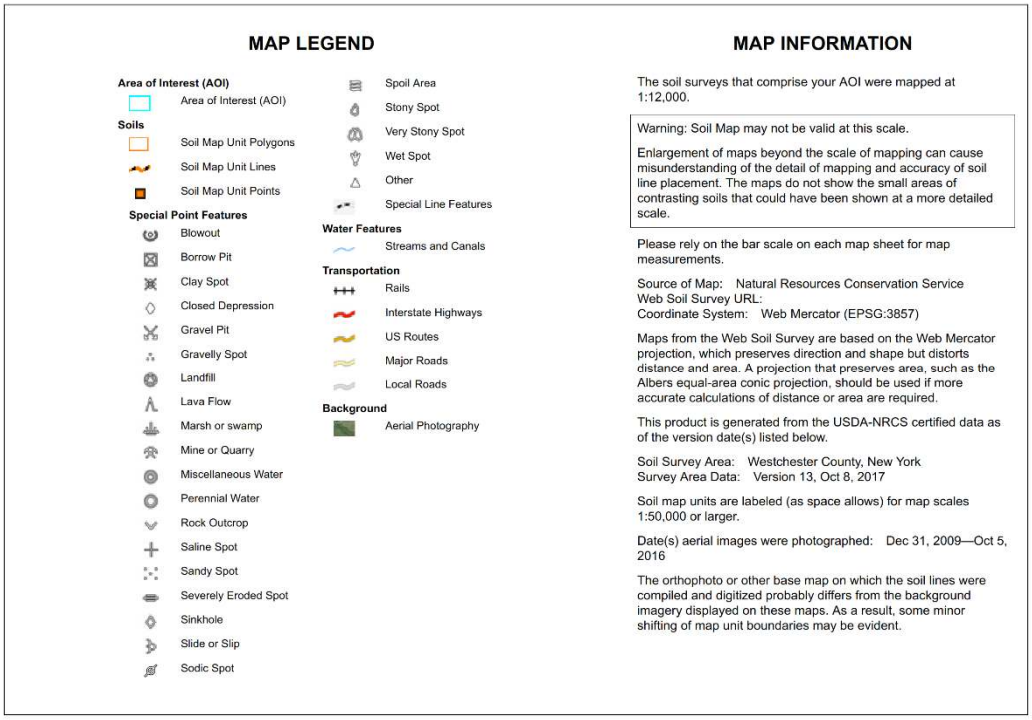
Percolation Test Results:

PERCOLATION TEST	PERCOLATION RATE (MIN./IN.)
P4	2
P5	3
P6	2
P7	12
P9	46
P10	20
P11	30
P12	3
P13	7
P14	2
P16	8
P18	3
P19	6

Soil Information as per USDA (United States Department of Agriculture), NRCS (Natural Resources Conservation Service):



Soil Map—Westchester County, New York



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ChB	Charlton fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
ChD	Charlton fine sandy loam, 15 to 25 percent slopes	3.1	3.0%
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	46.7	45.1%
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	28.2	27.2%
Ff	Fluvaquents-Udifluvents complex, frequently flooded	0.3	0.3%
HrF	Hollis-Rock outcrop complex, 35 to 60 percent slopes	1.6	1.5%
Pw	Pompton silt loam, loamy substratum	2.1	2.0%
Ub	Udorthents, smoothed	4.4	4.2%
Uf	Urban land	17.1	16.5%
Totals for Area of Interest		**103.5**	**100.0%**

Temporary Sediment Trap Sizing

Required Temporary Sediment Trap Volumes				
Temporary Sediment Trap	Contributing Areas	Upstream Area (s.f.)	Upstream Area (ac.)	Volume Required (c.f.) (3600 c.f./ac.)
ST 1A	Phase 1	92,205	2.12	7,620
ST 1B	Phase 1	20,108	0.46	1,662
ST 2A	Phase 2	101,508	2.33	8,389
ST 2B	Phase 2	9,339	0.21	722
ST 2C	Phase 2	20,603	0.47	1,703
ST 3A	Phase 3	80,939	1.86	6,689
ST 3B	Phase 3	85,095	1.95	7,033
ST 4A	Phase 4	171,961	3.95	14,212
ST 4B	Phase 4	45,300	1.04	3,744
ST 5A	Phase 5	81,649	1.87	6,748
ST 5B	Phase 5	67,035	1.54	5,540
ST 6A	Phase 6	121,004	2.78	10,000
ST 6B	Phase 6	64,061	1.47	5,294

Temporary Sediment Trap 1A Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	3,364	0	0
2	4,332	7,696	7,696

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 1B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	426	0	0
2	617	1,043	1,043
4	834	1,451	2,494

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 2A Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	7,691	0	0
2	10,406	18,097	18,097

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 2B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	618	0	0
2	834	1,452	1,452

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 2C Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	1,021	0	0
2	1,287	2,307	2,308

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 2C Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	1,021	0	0
2	1,287	2,307	2,308

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 3A Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	456	0	0
2	2,103	2,559	2,559
4	3,957	6,060	8,619

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 3B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	1,678	0	0
2	2,414	4,092	4,092
4	3,278	5,692	9,784

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 4A Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	2,327	0	0
2	4,359	6,686	6,686
4	6,765	11,224	17,910

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 4B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	3,364	0	0
2	4,332	7,696	7,696

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 5A1 Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	760	0	0
2	2,430	3,190	3,190

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 5A2 Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	456	0	0
2	2,103	2,559	2,559
4	3,957	6,060	8,619

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 5B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	3,364	0	0
2	4,332	7,696	7,696

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 6A Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	3,069	0	0
2	4,001	7,070	7,070
4	5,034	9,035	16,105

* Elevations are conceptual and do not represent the proposed design.

Temporary Sediment Trap 6B Volume Provided			
Elevation* (ft.)	Area (s.f.)	Volume Per Contour Interval (c.f.)	Cumulative Volume (c.f.)
0	456	0	0
2	2,103	2,559	2,559

* Elevations are conceptual and do not represent the proposed design.

Hydrodynamic Separator sizing

Hydrodynamic Separator Sizing Summary Table 1 of 3*					
Hydrodynamic Separator	Contributing Watershed(s)	WQv (c.f.)	Watershed Area (s.f.)	Watershed Area (sq. miles)	Q (in.)
HDS1	PRWS4B	1216.00	10240	0.000367	1.425
HDS2	PRWS4C	1216.00	10240	0.000367	1.425
HDS3	PRWS4D	4083.18	44494	0.001596	1.101
HDS4	PRWS4F,G,M	4652.29	51365	0.001842	1.087
HDS5*	PRWS4K,H,I,J	16132.41	224734	0.008061	0.861
HDS6	PRWS5A	3648.00	30720	0.001102	1.425
HDS7	PRWS5B,C,E	9911.30	179396	0.006435	0.663
HDS8	PRWS7A	608.00	5120	0.000184	1.425

*See example calculations below for HDS5.

Hydrodynamic Separator Sizing Summary Table 2 of 3*					
Hydrodynamic Separator	CN	Ia	Ia/P	Tc (min.)	Tc (hrs.)
HDS1	99.36	0.041	0.03	5.0	0.08
HDS2	99.36	0.041	0.03	5.0	0.08
HDS3	96.08	0.083	0.06	1.2	0.02
HDS4	95.91	0.083	0.06	5.0	0.08
HDS5*	92.93	0.151	0.10	1.2	0.02
HDS6	99.36	0.041	0.03	5.0	0.08
HDS7	89.62	0.236	0.16	5.0	0.08
HDS8	99.36	0.041	0.03	5.0	0.08

*See example calculations below for HDS5.

Hydrodynamic Separator Sizing Summary Table 3 of 3*			
Hydrodynamic Separator	qu	Qp	CDS Model Number
HDS1	660	0.3	CDS-3
HDS2	660	0.3	CDS-3
HDS3	650	1.1	CDS-5
HDS4	650	1.3	CDS-5
HDS5*	650	4.5	CDS-10
HDS6	650	1.0	CDS-5
HDS7	650	2.8	CDS-7
HDS8	650	0.2	CDS-3

*See example calculations below for HDS5.

Hydrodynamic Separator Sizing for HDS5
Water Quality Peak Flow Calculations as per Appendix B (B.2)
CN = 1000/(10+5P+10Q-10(Q^2+1.25QP)^.5
CN = curve number
P = rainfall in inches (use 90% rainfall event from figure 4.1 for Water Quality storm)
Q = runoff volume, in inches
Qp= qu*A*WQv
Qp = peak discharge in cfs
qu = unit peak discharge, in cfs/mi^2/inch
A = drainage area in square miles
WQv = water quality volume, in watershed inches

Hydrodynamic Separator Sizing for HDS5 (con't)		
Water Quality Volume Required, WQv:	16132.41	cf
Watershed Area:	5.159	acres
Watershed Area:	224734.0	sf
Watershed Area:	0.008061	sq. miles
P:	1.5	inches
Q:	0.861	inches
CN:	92.93	
CN (rounded):	93	
Time of Concentration, Tc	1.2	min.
Time of Concentration, Tc	0.02	hours
Initial Abstraction, Ia (from table 4.1):	0.151	
Ia/P:	0.10	
Unit Peak Discharge, qu (from Exhibit 4-III):	650	csm/in
Peak Discharge, Qp:	4.5	cfs

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

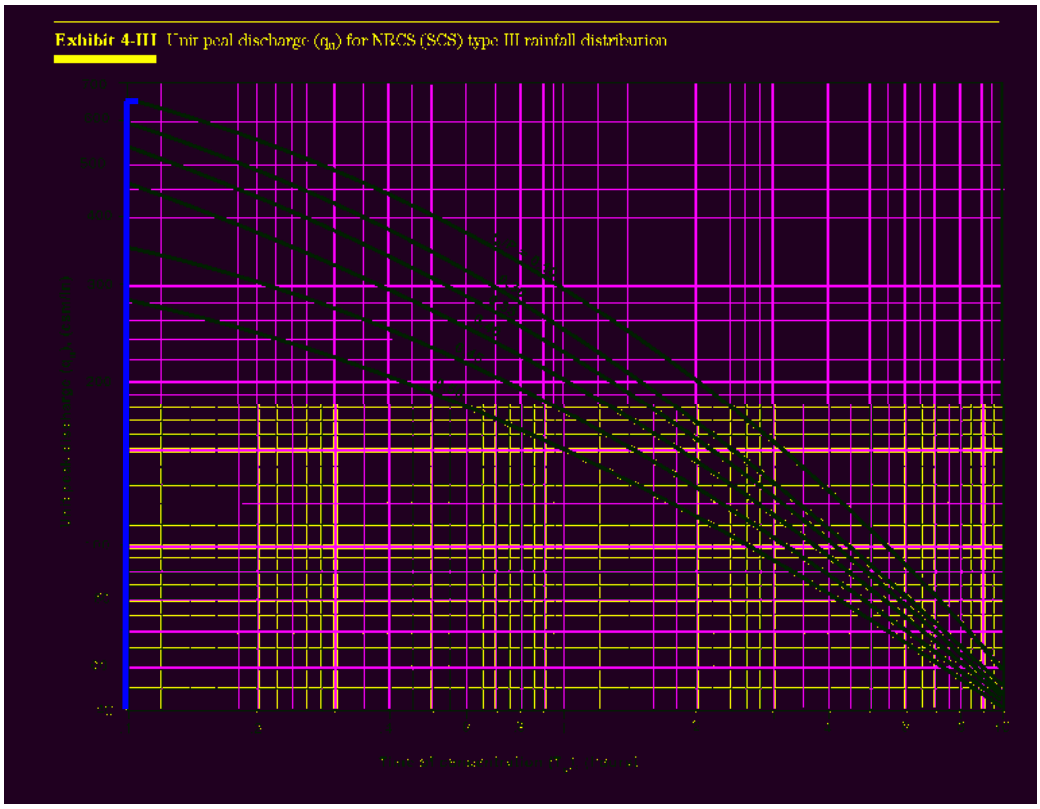


Exhibit 4-III Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution

Hydrodynamic Separator Flow Verification:

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Nonpoint Pollution Control
Division of Water Quality
401-02B
Post Office Box 420
Trenton, New Jersey 08625-0420
609-633-7021 Fax: 609-777-0432
http://www.state.nj.us/dep/dwq/bnpc_home.htm

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

March 21, 2017

Derek M. Berg
Contech Engineered Solutions, LLC
71 US Route 1, Suite F
Scarborough, ME 04074

Re: Revised MTD Lab Certification
Continuous Deflective Separator (CDS®) Stormwater Treatment Device by Contech Engineered Solutions, LLC
On-line Installation

TSS Removal Rate 50%

Dear Mr. Berg:

This revised certification letter supersedes the Department's prior certification dated January 9, 2015. This revision was completed to reflect the updated Manufactured Treatment Device (MTD) scaling methodology as agreed upon by the manufacturers' working group on September 19, 2016. In part, the updated scaling for hydrodynamic MTDs is based on the depth of the reference (tested) MTD from the top of the false floor utilized during removal efficiency testing, not from the physical bottom of the unit. Based on the above decision, Table A-2 of the NJCAT Technology Verification report located at http://www.njcat.org/uploads/newDocs/CDSVerificationReportFinal1.pdf has been revised, and Table 1 noted below has been added.

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7 (c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Contech Engineered Solutions, LLC has requested an MTD Laboratory Certification for the CDS® Stormwater Treatment Device.

The verification is subject to the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification

Appendix dated September 2014 (Revised January 2017) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the CDS® Stormwater Treatment Device by Contech Engineered Solutions, LLC at a TSS removal rate of 50% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.

2. The CDS® Stormwater Treatment Device shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.

3. This CDS® Stormwater Treatment Device cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual which can be found on-line at www.njstormwater.org.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the CDS® Stormwater Treatment Device. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at http://www.conteches.com/products/stormwater-management/treatment/cds.aspx#1822141-technical-info for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for the CDS®:

   Example: A 0.25-acre impervious site is to be treated to 50% TSS removal using a CDS®. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

   Maximum Treatment Flow Rate (MTFR) Evaluation:

   The site runoff (Q) was based on the following:
   time of concentration = 10 minutes
   i=3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)
   c=0.99 (runoff coefficient for impervious)
   Q=ciA=0.99x3.2x0.25=0.79 cfs

   Given the site runoff is 0.79 cfs and based on Table 1 below, the CDS® Model CDS-4 with an MTFR of 0.93 cfs would be the smallest model approved that could be used for this site that could remove 50% of the TSS from the impervious area without exceeding the MTFR.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1 and A-2.

Table 1 CDS Models

CDS Model	Manhole Diameter (ft.)	Treatment Chamber Depth (ft.)	MTFR (cfs)
CDS-3	3	3.50	0.52
CDS-4	4	3.50	0.93
CDS-5	5	3.75	1.5
CDS-6	6	4.50	2.1
CDS-7	7	5.25	2.8
CDS-8	8	6.00	3.7
CDS-10	10	7.50	5.8
CDS-12	12	9.00	8.4

- Treatment Chamber Depth is defined as the depth below the invert to the top of the false floor installed at 50% sediment depth.

A detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Mr. Shashi Nayak of my office at (609) 633-7021.

Sincerely,

James J. Murphy, Chief
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

c: Chron File
Richard Magee, NJCAT
Vince Mazzei, NJDEP - DLUR
Ravi Patraju, NJDEP - BES
Gabriel Mahon, NJDEP - BNPC
Shashi Nayak, NJDEP – BNPC

Hydrodynamic Separator Maintenance:

CDS Maintenance

The CDS system must be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit, e.g., unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping will slow accumulation.

Inspection
Inspection is the key to effective maintenance and is easily performed. Pollutant deposition and transport may vary from year to year and regular inspections will help insure that the system is cleaned out at the appropriate time. At a minimum, inspections must be performed twice per year (i.e. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid pollutant accumulations, or in equipment washdown areas. Additionally, installations where excessive amounts of trash are expected should be inspected more frequently.

The visual inspection must ascertain that the system components are in working order and that there are no blockages or obstructions to the inlet and/or separation screen. The inspection must also identify accumulations of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick such as a stadia rod, tape measure or other measuring instrument. If sorbent material is used for enhanced removal of hydrocarbons then the level of discoloration of the sorbent material should also be identified during inspection. Sorbent material must be replaced when it is predominantly dark in color (similar to oil). It is useful and often required as part of a permit to keep a record of each inspection.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (screen/cylinder) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained behind the screen. For units possessing a sizable depth below grade (depth to pipe), a single access point allows for both sump cleanout and access behind the screen.

The CDS system must be cleaned when the level of sediment in the sump has reached a depth of 12 inches or more to avoid exceeding the maximum 24 inch sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine if the height of the sediment pile off the bottom of the sump floor exceeds 75% (18 inches) of the total height of isolated sump.

Cleaning

Cleaning of the CDS systems should be done during dry weather conditions when no flow is entering the system. Cleanout of the CDS with a vacuum truck is generally the most effective and convenient method of excavating pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be pumped out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis must be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use adsorbent pads since they are usually less expensive to dispose of than the oil/water emulsion that may be created by vacuuming the oily layer. Trash can be netted out if you wish to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure proper safety precautions. Confined Space Entry procedures need to be followed.

Disposal of all material removed from the CDS system must be done is accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

New York State Department of Environmental Conservation Notice of Intent:

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

(Owner/Operator (Company Name/Private Owner Name/Municipality Name)
MADDD MAJCYNA ARMONK LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
MADONNA

Owner/Operator Contact Person First Name
FRANK J.

Owner/Operator Mailing Address
501 MARKET AVENUE

City
PLEASANTVILLE

State: NY Zip: 10570-

Phone (Owner/Operator): 914-557-4895 Fax (Owner/Operator): 914-703-4605

Email (Owner/Operator)
FJMADONNA@AOL.COM

FED TAX ID
92-2551037 (not required for individuals)

Project Site Information

Project/Site Name: EAGLE RIDGE

Street Address (NOT P.O. BOX): 1 0 CASTLE DRIVE

Side of Street: ○ North ○ South ● East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT): TOWN OF MOUNT CASTLE

State: NY Zip: 10504- County: WESTCHESTER DEC Region:

Name of Nearest Cross Street: N.Y.S. ROUTE 22

Distance to Nearest Cross Street (Feet): 670

Project in Relation to Cross Street: ○ North ○ South ● East ○ West

Tax Map Numbers (Section-Block-Parcel): 109.03-1-62

Tax Map Numbers:

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location until you can accurately place on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting): -73.7727 Ex. -73.749

Y Coordinates (Northing): 45.326267 Ex. 42.652

2. What is the nature of this construction project?

● New Construction

○ Redevelopment with increase in impervious area

○ Redevelopment with no increase in impervious area

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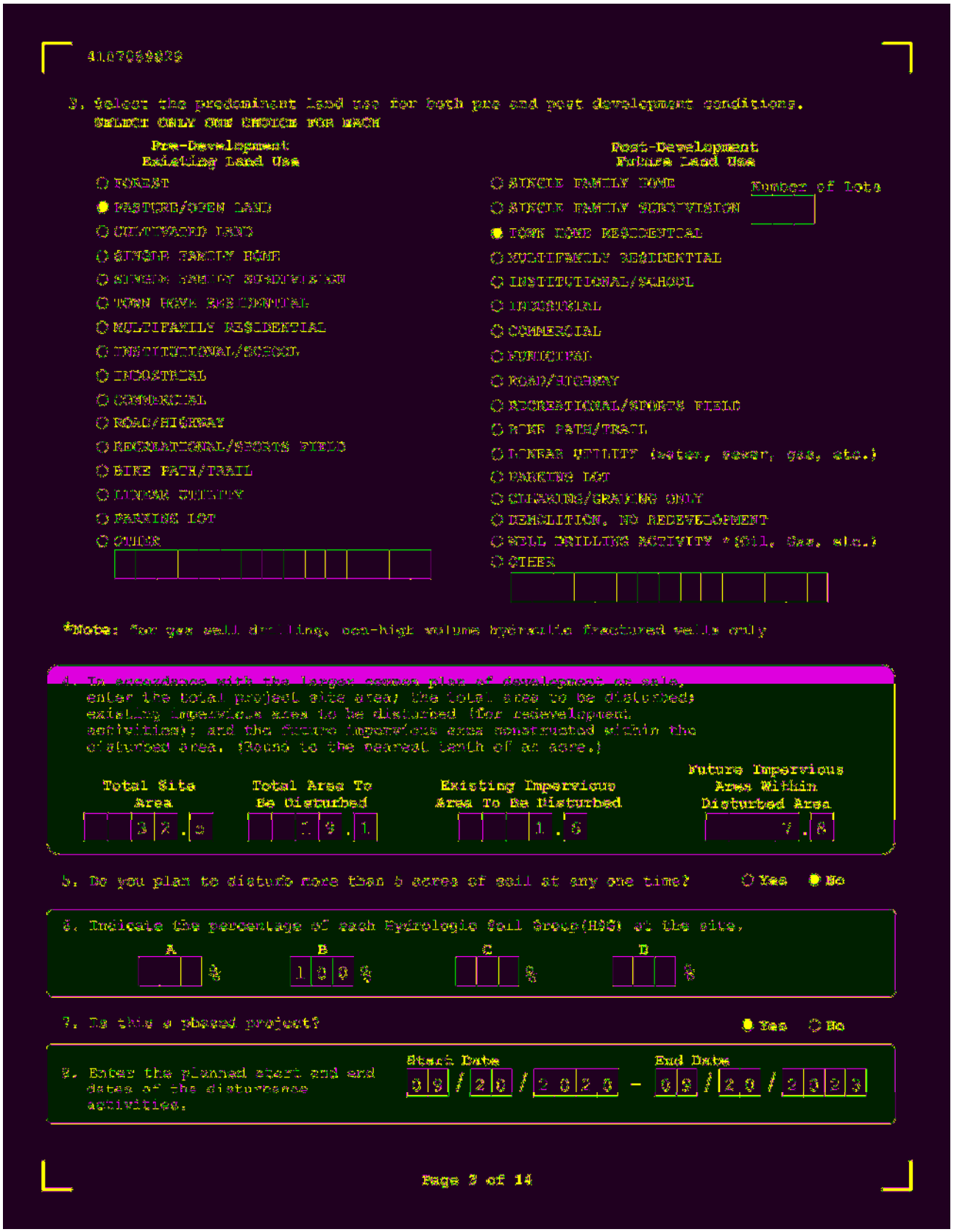

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE ENTRY FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
○ FOREST	○ SINGLE FAMILY HOME
● PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	● TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	○ OTHER

Number of lots

*Note: For gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
32.5	19.1	1.5	7.8

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ Yes ● No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	100 %	%	%

7. Is this a phased project? ● Yes ○ No

8. Enter the planned start and end dates of the disturbance activities.

Start Date: 09/20/2023 – End Date: 03/29/2023


8. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Name
WAMPUS INTAKE
9a. Type of waterbody identified in Question 8?
Wetland / State Jurisdiction On Site (Answer 9b)
Wetland / State Jurisdiction Off Site
Wetland / Federal Jurisdiction On Site (Answer 9b)
Wetland / Federal Jurisdiction Off Site
Stream / Creek On Site
Stream / Creek Off Site
River On Site
River Off Site
Lake On Site
Lake Off Site
Other Type On Site
Other Type Off Site
9b. How was the wetland identified?
Regulatory Map
Delineated by Consultant
Delineated by Army Corps of Engineers
Other (Identify)
10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of NP-0-20-001? Yes No
11. Is this project located in one of the Watersheds identified in Appendix C of NP-0-20-001? Yes No
12. Is the project located in one of the watercourse areas associated with AA and AA-S classified waters? Yes No
If no, skip question 13.
13. Does the construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? Yes No
If Yes, what is the acreage to be disturbed?
14. Will the project disturb soils within a State regulated wetland or its protected 100' tidal adjacent area? Yes No
Page 4 of 14


15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? Yes No Unknown
16. What is the name of the municipality/entity that owns the separate storm sewer system?
Town of Wolcott
17. Does any runoff from the site enter a sewer classified as a Combined Sewer? Yes No Unknown
18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? Yes No
19. Is this property owned by a state authority, state agency, federal government or local government? Yes No
20. Is this a remediation project being done under a Department approved work plan (i.e. BCP/CA, RAWA, Voluntary Cleanup Agreement, etc.) Yes No
21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? Yes No
22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
If No, skip questions 23 and 27-30. Yes No
23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? Yes No
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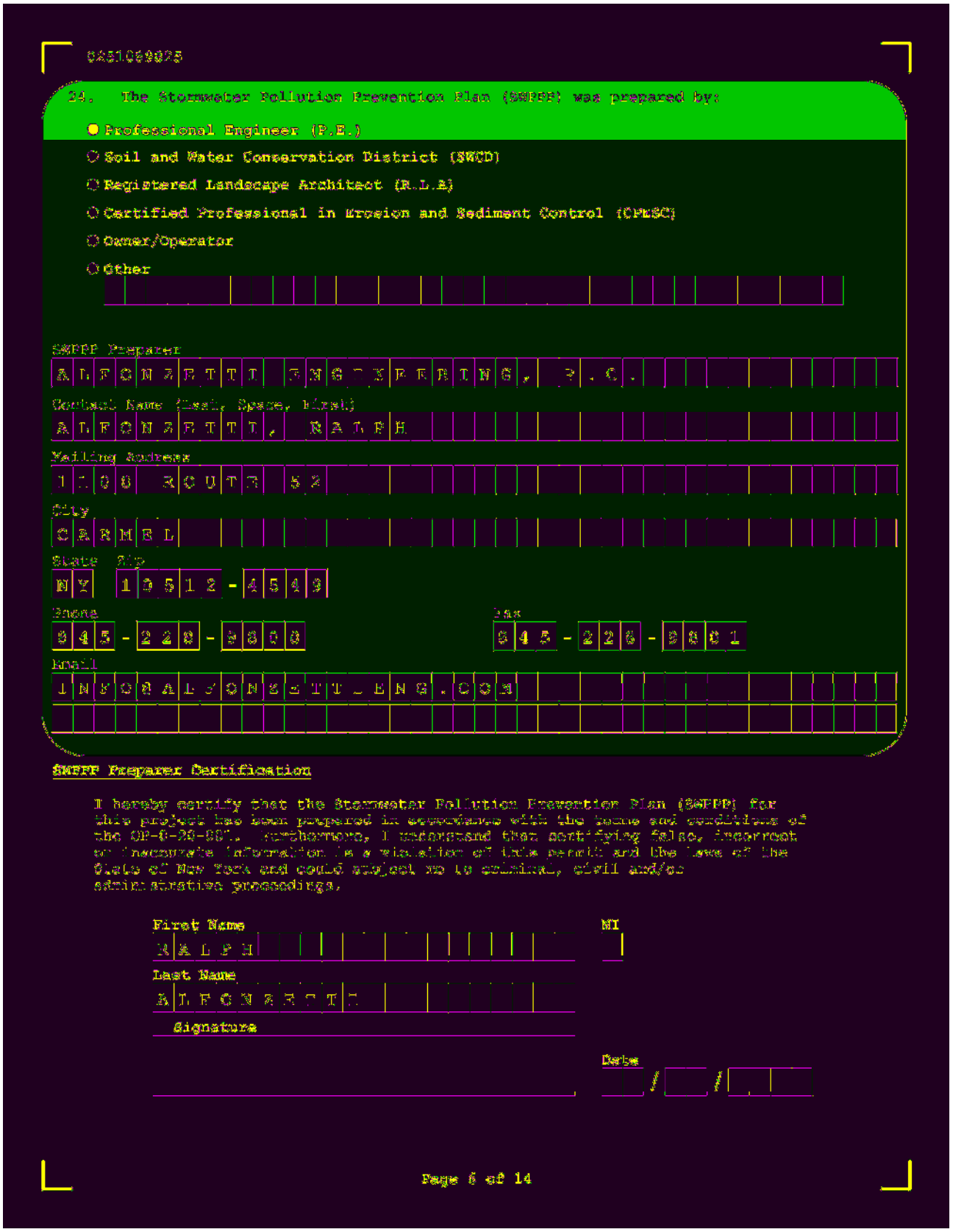

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- (●) Professional Engineer (P.E.)
- ( ) Soil and Water Conservation District (SWCD)
- ( ) Registered Landscape Architect (R.L.A)
- ( ) Certified Professional in Erosion and Sediment Control (CPESC)
- ( ) Owner/Operator
- ( ) Other

SWPPP Preparer
ALFONZETTI ENGINEERING, P.C.

Contact Name (Last, Space, First)
ALFONZETTI, RALPH

Mailing Address
1100 ROUTE 52

City
CARMEL

State Zip
NY 10512-4549

Phone
845-228-9660

Fax
845-225-9691

Email
INFO@ALFONZETTIENG.COM

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
RALPH

MI

Last Name
ALFONZETTI

Signature

Date
/ /

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ● Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ● Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ● Temporary Swale
- ○ Turbidity Curtain
- ● Water Bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ● Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ● Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-30 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- [x] Preservation of Undisturbed Areas
- [x] Preservation of Buffers
- [x] Reduction of Clearing and Grading
- [ ] Locating Development in Less Sensitive Areas
- [ ] Roadway Reduction
- [ ] Sidewalk Reduction
- [ ] Driveway Reduction
- [ ] Cul-de-sac Reduction
- [ ] Building Footprint Reduction
- [ ] Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2018 version).

- [x] All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- [ ] Compaction areas were considered as impervious cover when calculating the WQv Required, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.952 acre-feet

29. Identify the ER techniques (Area Reduction), SF techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the total WQv Required(%).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction techniques, provide the total contributing area (the area pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects will use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 30a after identifying the SMPs.

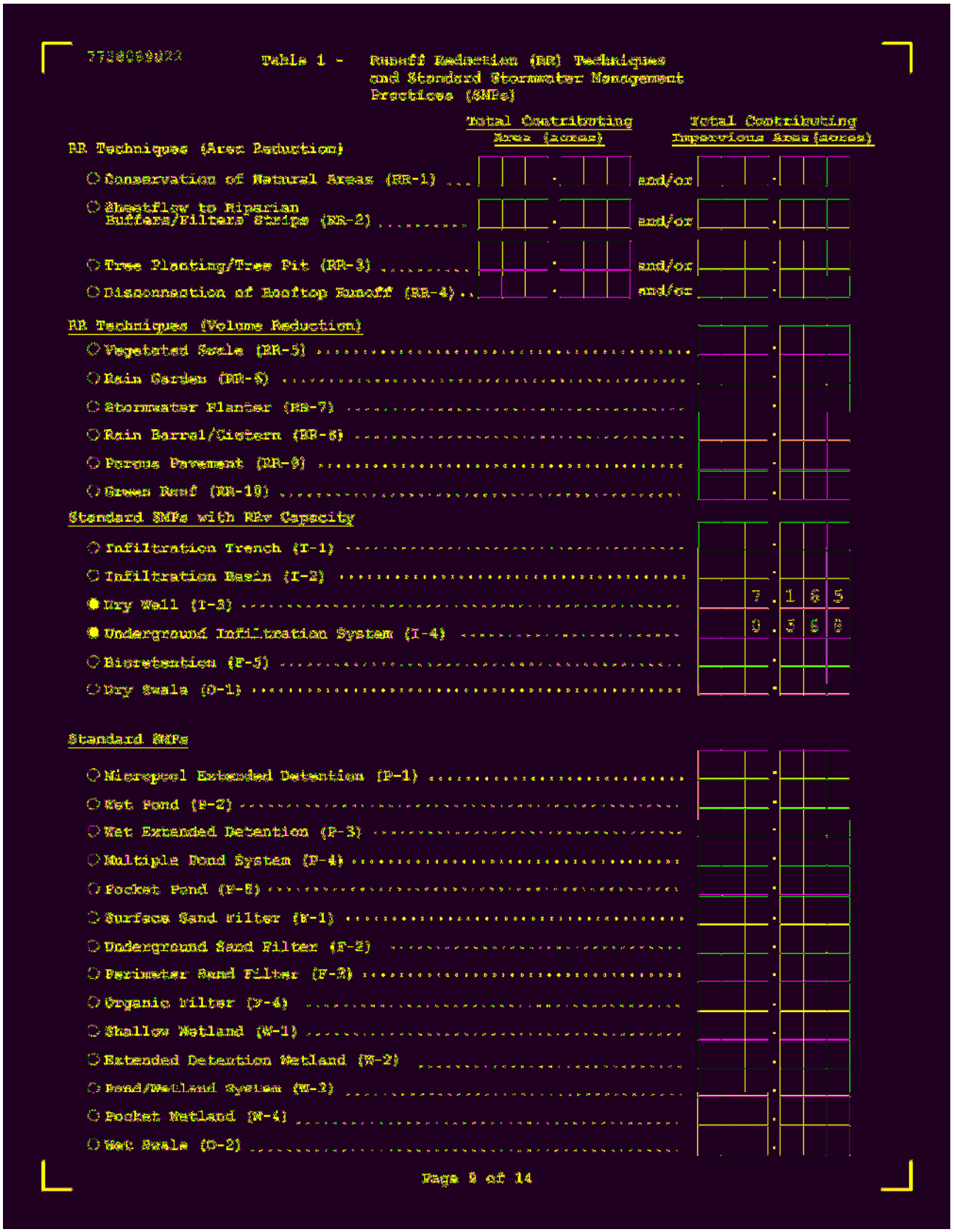

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
● Dry Well (I-3)	7.16		5.16
● Underground Infiltration System (I-4)	0.36		0.36
○ Bioretention (F-5)			
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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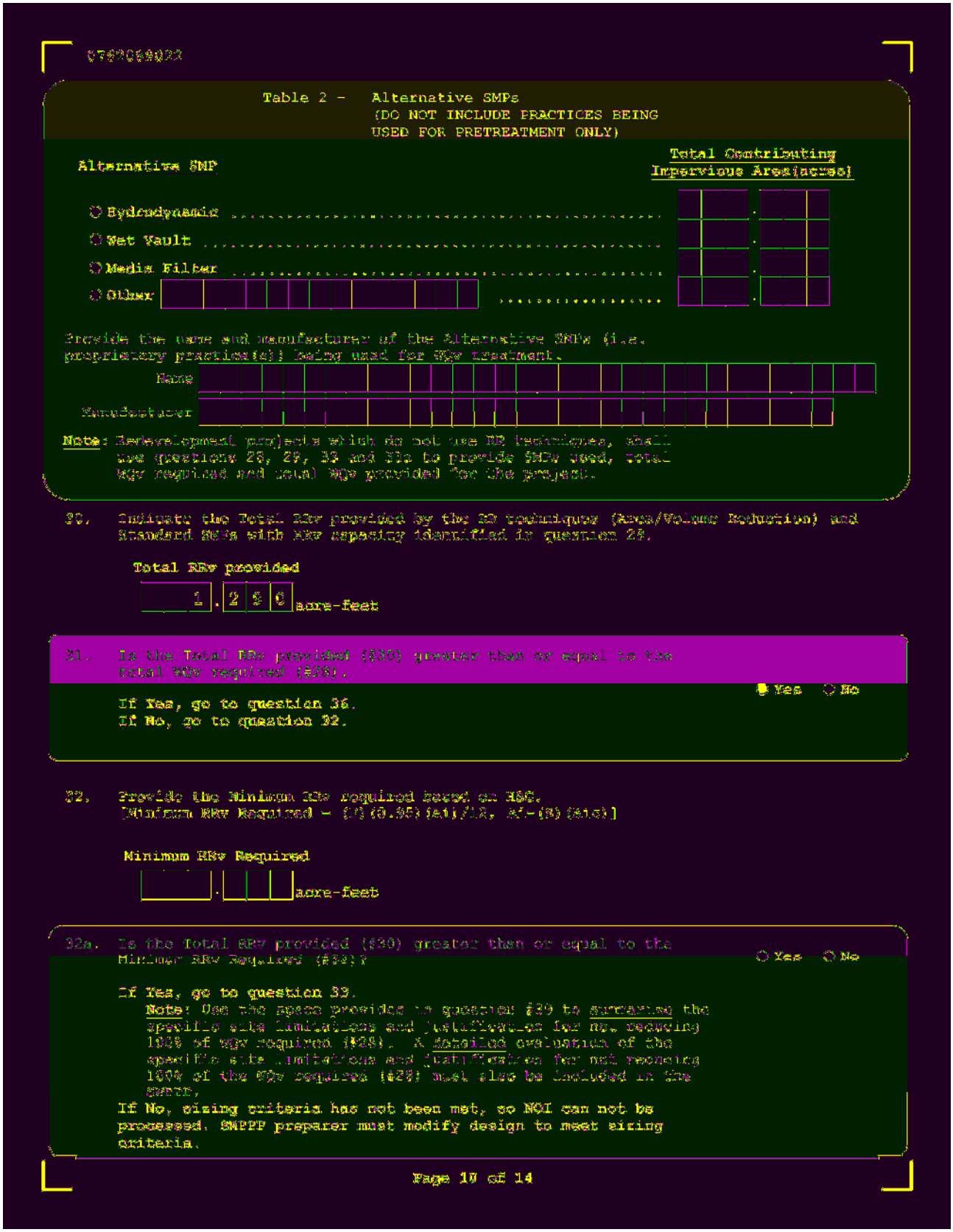

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP | Total Contributing Impervious Area(acres)

- ○ Hydrodynamic
- ○ Wet Vault
- ○ Media Filter
- ○ Other

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practices) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use BR techniques, shall use questions 28, 29, 33 and 34a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the BR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

1.236 acre-feet

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

● Yes ○ No

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(A)/12, A=(B)(#1c)]

Minimum RRv Required

acre-feet

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ Yes ○ No

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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29. Identify the standard SCMs in Table 1 and, if applicable, the Alternative SCMs in Table 2 that were used to treat the remaining Total WQv (=Total WQv Required in 28 - Total RRv Provided in 29).
Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.
Note: Use Tables 1 and 2 to identify the SCMs used on Redevelopment projects.
30. Enter the Total WQv provided (i.e. WQv treated by the SCMs identified in question 27 and Standard SCMs with RRv Capacity identified in question 29.
WQv Provided
acre-feet
Note: For the standard SCMs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.3 in Design Manual)
34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? Yes No
If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.
36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.
CPv Required
acre-feet
CPv Provided
acre-feet
36a. The need to provide channel protection has been waived because:
Site discharges directly to tidal waters or a fifth order or larger stream.
Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.
37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.
Total Overbank Flood Control Criteria (Qp)
Pre-Development
50.1 cfs
Post-development
31.9 cfs
Total Extreme Flood Control Criteria (Qf)
Pre-Development
156.3 cfs
Post-development
119.5 cfs
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32a. The need to meet the Qp and Qf criteria has been waived because:
Site discharges directly to tidal waters or a fifth order or larger stream.
Downstream analysis reveals that the Qp and Qf controls are not required
36. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes
No
If Yes, Identify the entity responsible for the long term Operation and Maintenance
39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a)
This space can also be used for other pertinent project information.
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42. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP N Y R
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ● No
If Yes, Indicate Size of Impact, .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "NYS SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y 3

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Owner/Operator Certification
Print First Name
MI
Print Last Name
Owner/Operator Signature
Date

Construction Site Log Book

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:**_____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA
[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA
[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA
[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA
[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA
[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA
[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

CONSTRUCTION DURATION INSPECTIONS **Page 1 of _____**

SITE PLAN/SKETCH

Inspector (print name) **Date of Inspection**

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

CONSTRUCTION DURATION INSPECTIONS **Page 2 of _____**

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

CONSTRUCTION DURATION INSPECTIONS **Page 3 of _____**
Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

CONSTRUCTION DURATION INSPECTIONS **Page 4 of _____**

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)
Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap
Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin
Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	**Today's Date:**	**Reporting Month:**
Location:	**Permit Identification #:**	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

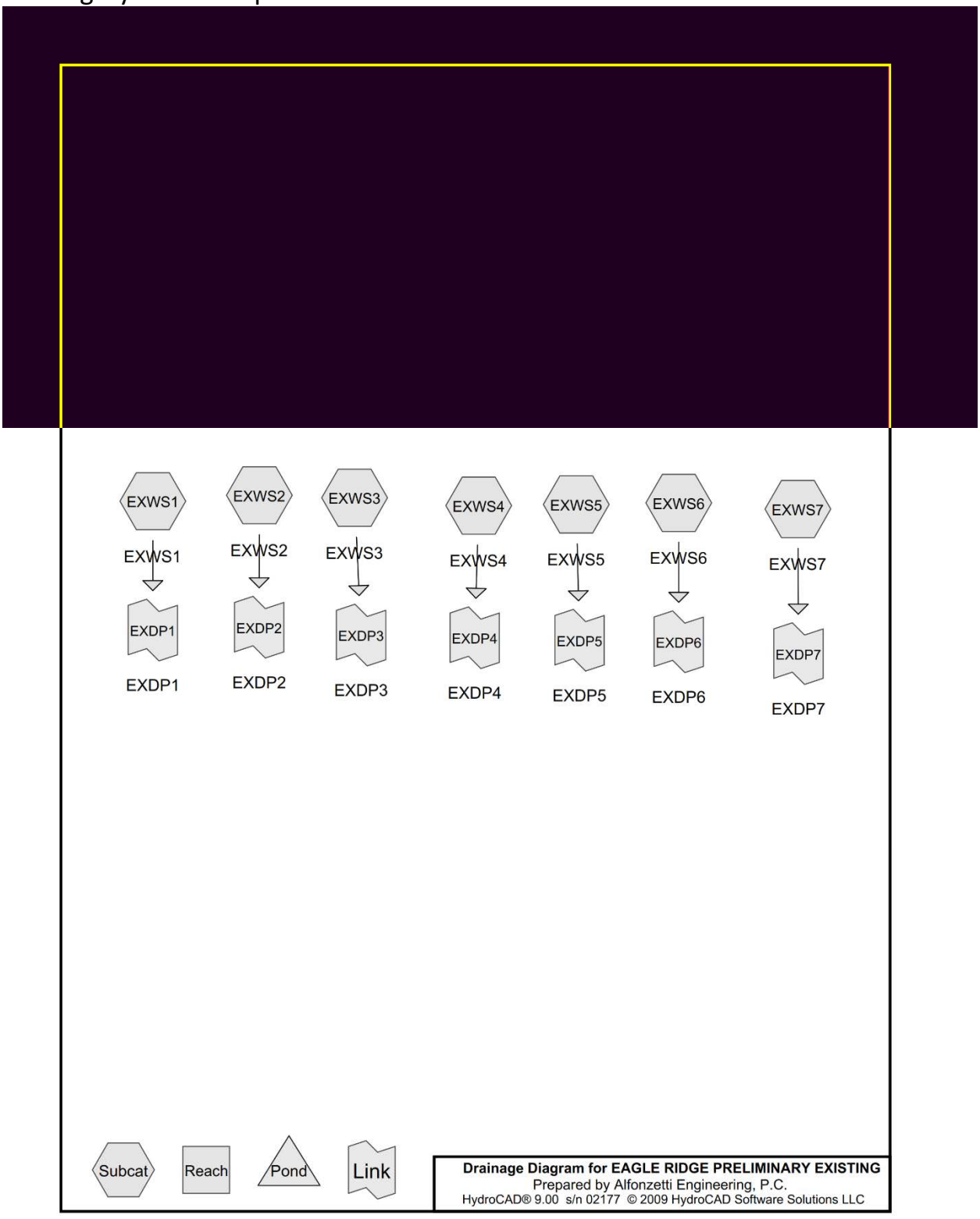
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Existing HydroCad Report:



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.1 cfs 0.022 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.0 cfs 0.005 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=0.29"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=0.6 cfs 0.143 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=0.26"
Flow Length=759' Tc=23.7 min CN=60 Runoff=1.7 cfs 0.363 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=0.26"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=1.1 cfs 0.218 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=0.57"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=3.2 cfs 0.277 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=0.38"
Flow Length=706' Tc=4.7 min CN=64 Runoff=0.7 cfs 0.072 af

Link EXDP1: EXDP1 Inflow=0.1 cfs 0.022 af
Primary=0.1 cfs 0.022 af

Link EXDP2: EXDP2 Inflow=0.0 cfs 0.005 af
Primary=0.0 cfs 0.005 af

Link EXDP3: EXDP3 Inflow=0.6 cfs 0.143 af
Primary=0.6 cfs 0.143 af

Link EXDP4: EXDP4 Inflow=1.7 cfs 0.363 af
Primary=1.7 cfs 0.363 af

Link EXDP5: EXDP5 Inflow=1.1 cfs 0.218 af
Primary=1.1 cfs 0.218 af

Link EXDP6: EXDP6 Inflow=3.2 cfs 0.277 af
Primary=3.2 cfs 0.277 af

Link EXDP7: EXDP7 Inflow=0.7 cfs 0.072 af
Primary=0.7 cfs 0.072 af

Total Runoff Area = 42.620 ac Runoff Volume = 1.100 af Average Runoff Depth = 0.31"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment EXWS1: EXWS1

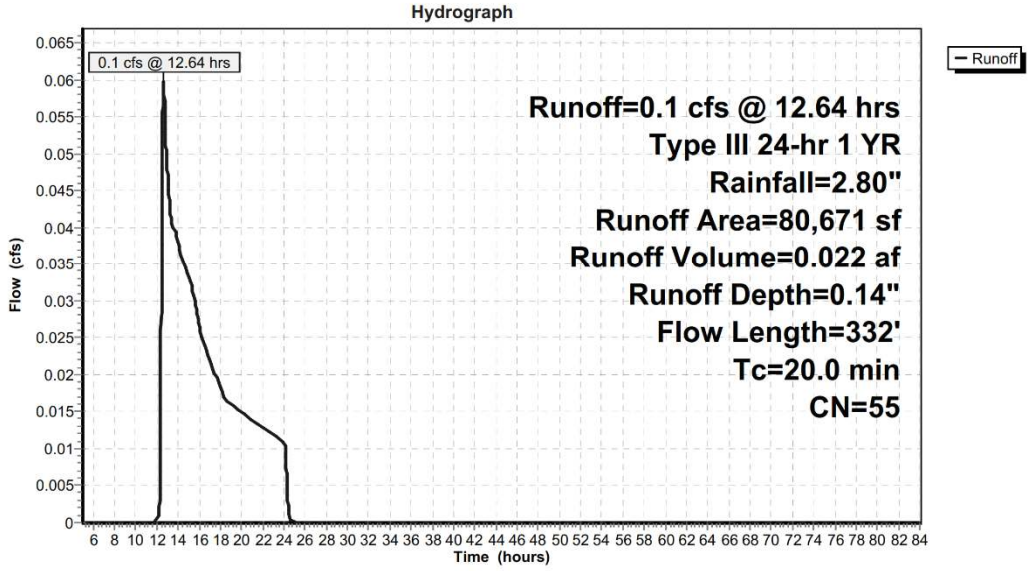
Runoff = 0.1 cfs @ 12.64 hrs, Volume= 0.022 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment EXWS2: EXWS2

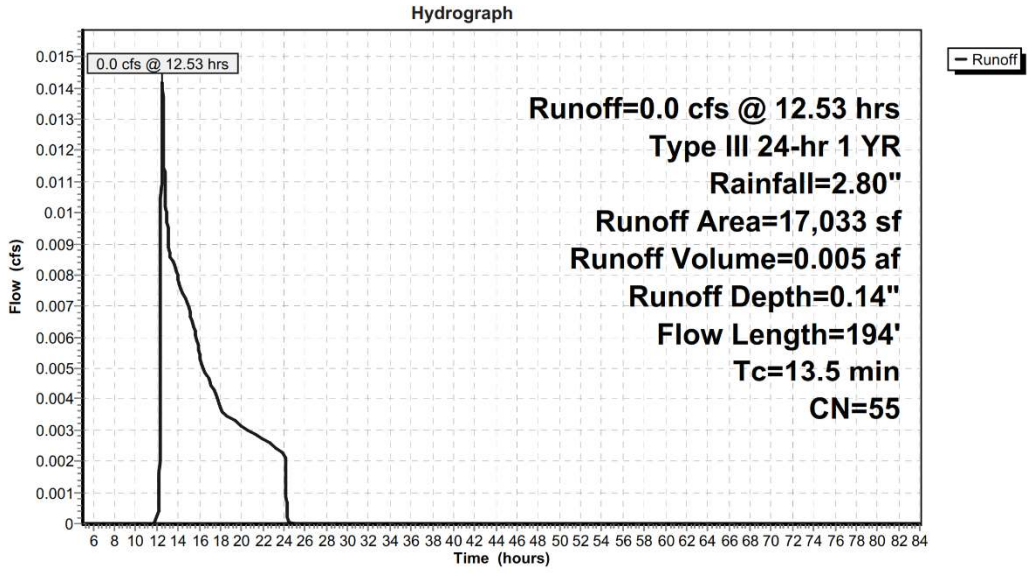
Runoff = 0.0 cfs @ 12.53 hrs, Volume= 0.005 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment EXWS3: EXWS3

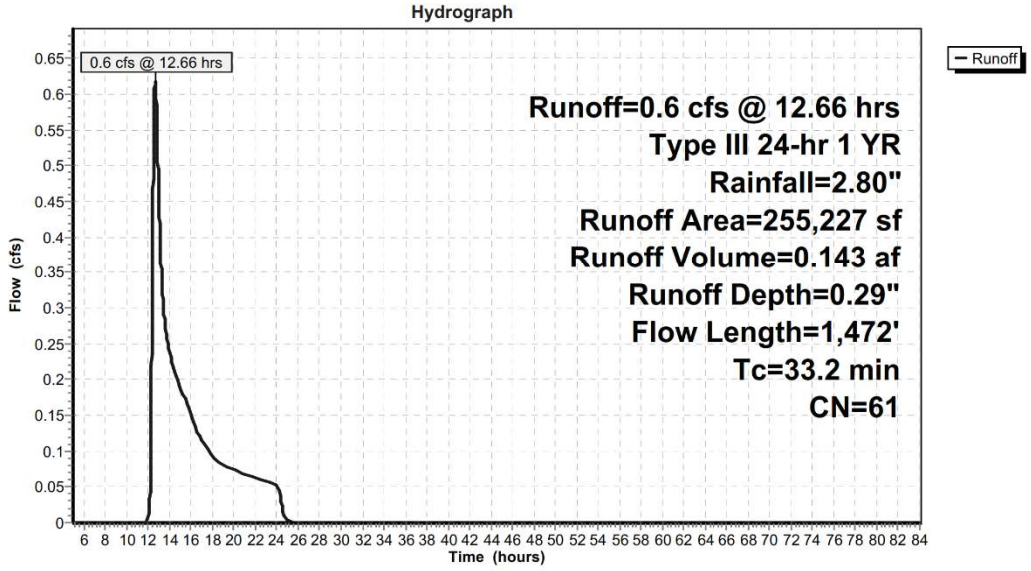
Runoff = 0.6 cfs @ 12.66 hrs, Volume= 0.143 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment EXWS4: EXWS4

Runoff = 1.7 cfs @ 12.56 hrs, Volume= 0.363 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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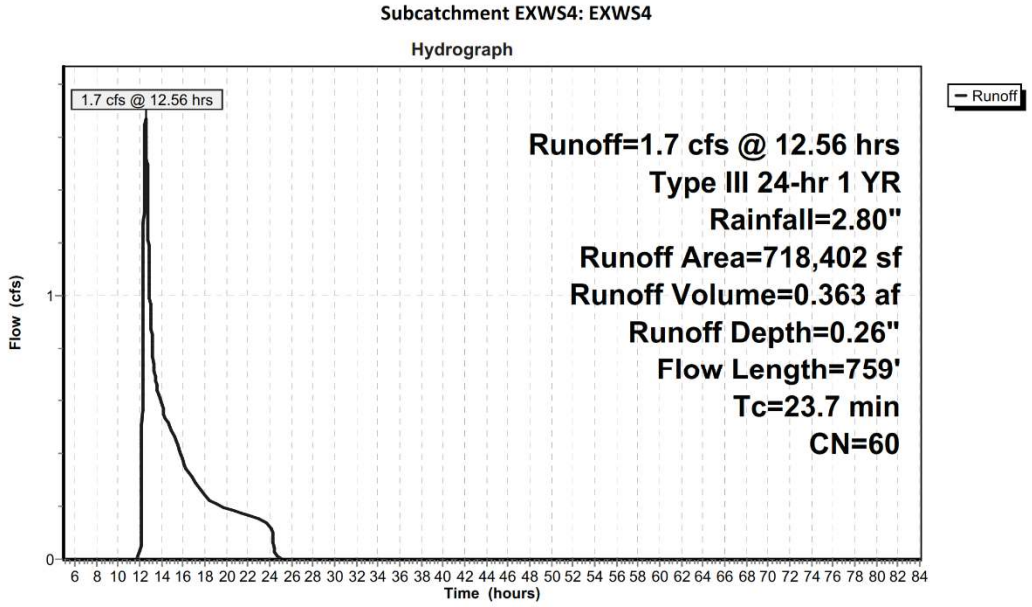

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Summary for Subcatchment EXWS5: EXWS5

Runoff = 1.1 cfs @ 12.45 hrs, Volume= 0.218 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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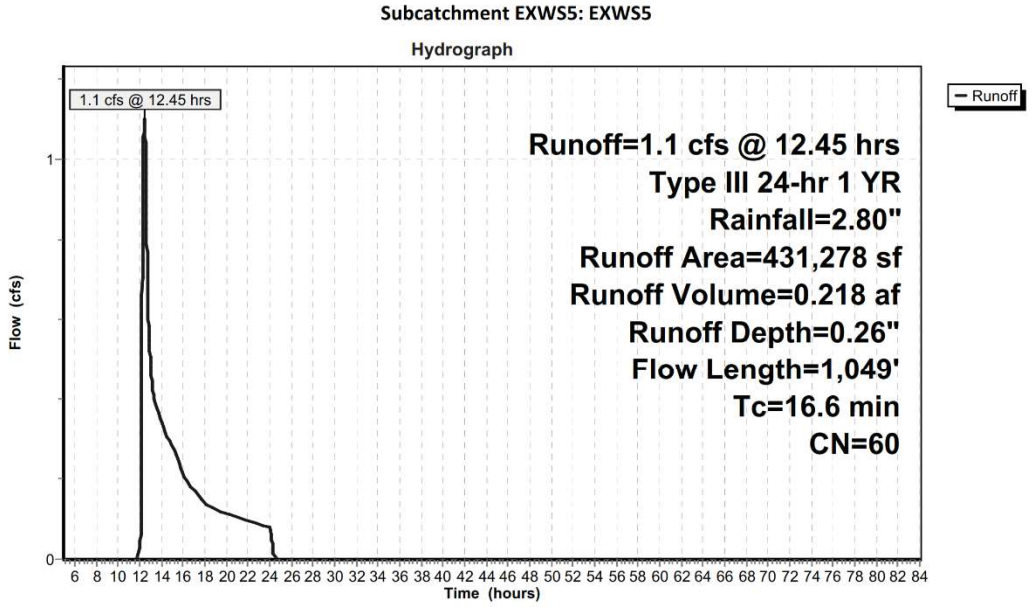

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Summary for Subcatchment EXWS6: EXWS6

Runoff = 3.2 cfs @ 12.11 hrs, Volume= 0.277 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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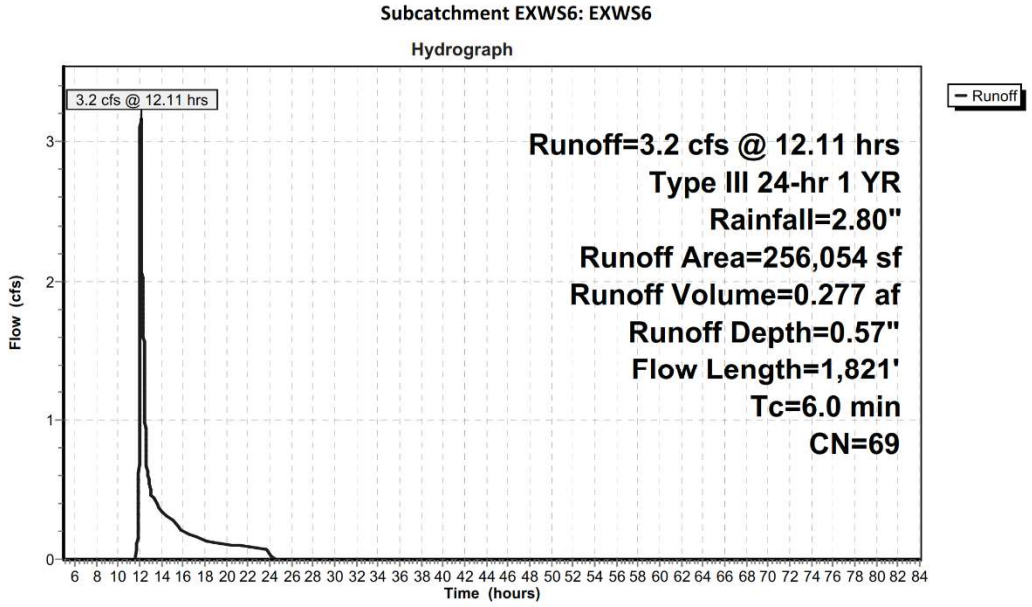

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Summary for Subcatchment EXWS7: EXWS7

Runoff = 0.7 cfs @ 12.10 hrs, Volume= 0.072 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

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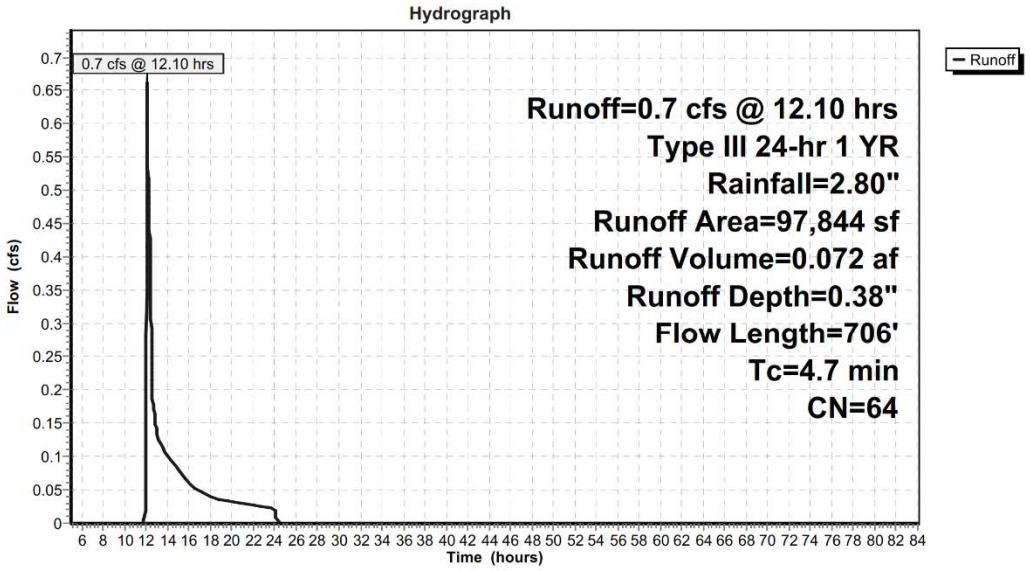
Subcatchment EXWS7: EXWS7



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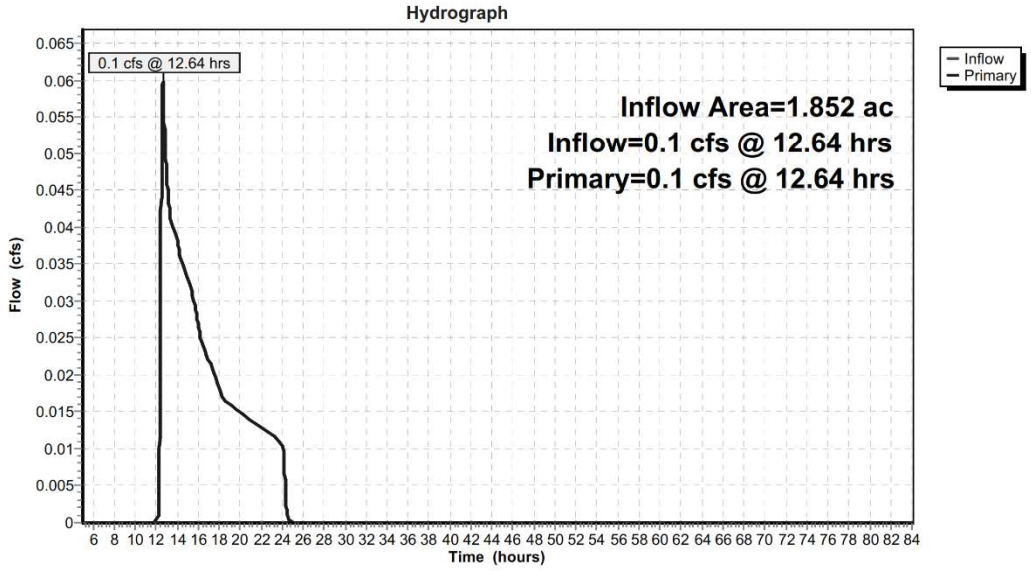
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1 YR event
Inflow = 0.1 cfs @ 12.64 hrs, Volume= 0.022 af
Primary = 0.1 cfs @ 12.64 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



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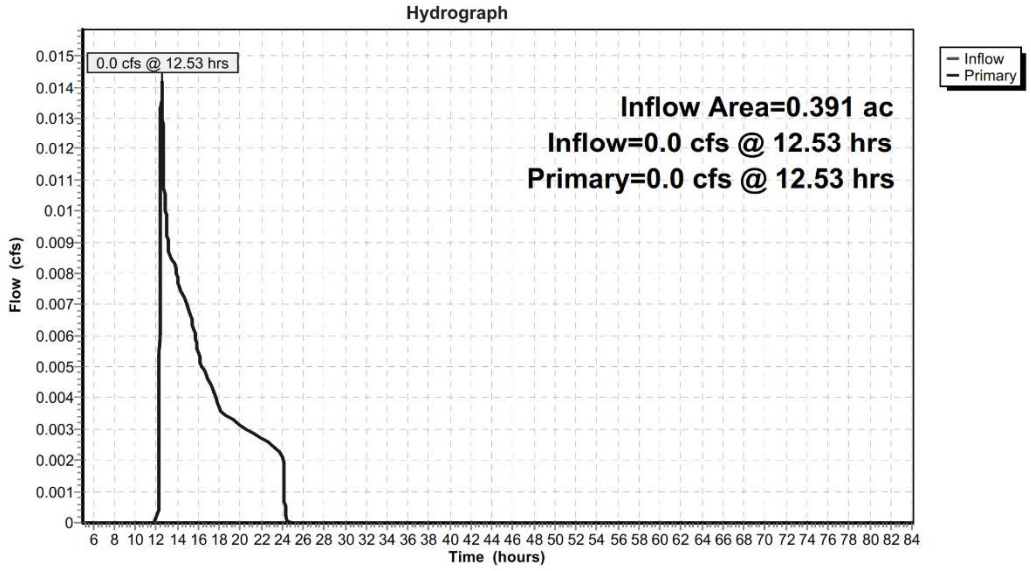
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1 YR event
Inflow = 0.0 cfs @ 12.53 hrs, Volume= 0.005 af
Primary = 0.0 cfs @ 12.53 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



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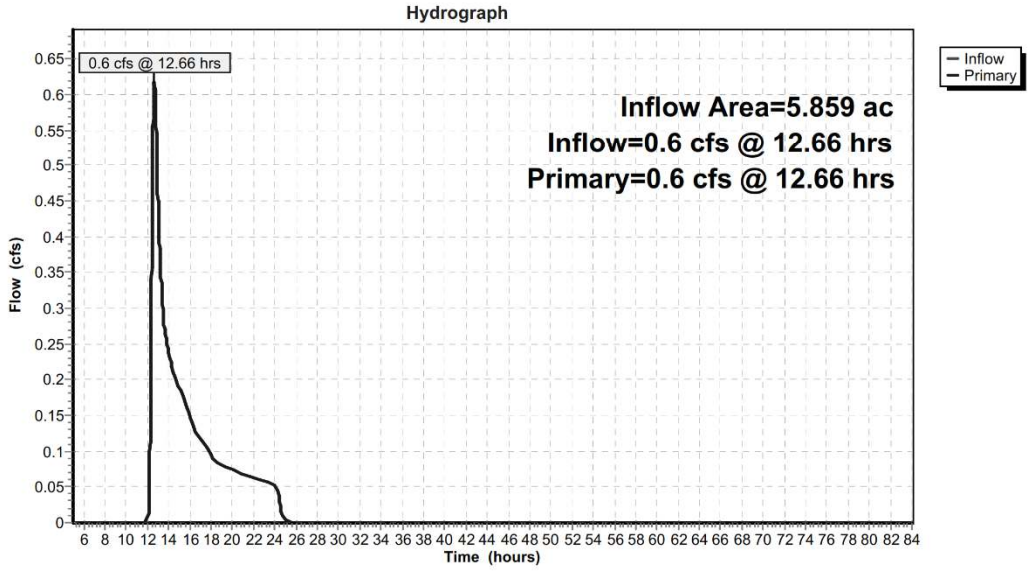
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 0.29" for 1 YR event
Inflow = 0.6 cfs @ 12.66 hrs, Volume= 0.143 af
Primary = 0.6 cfs @ 12.66 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



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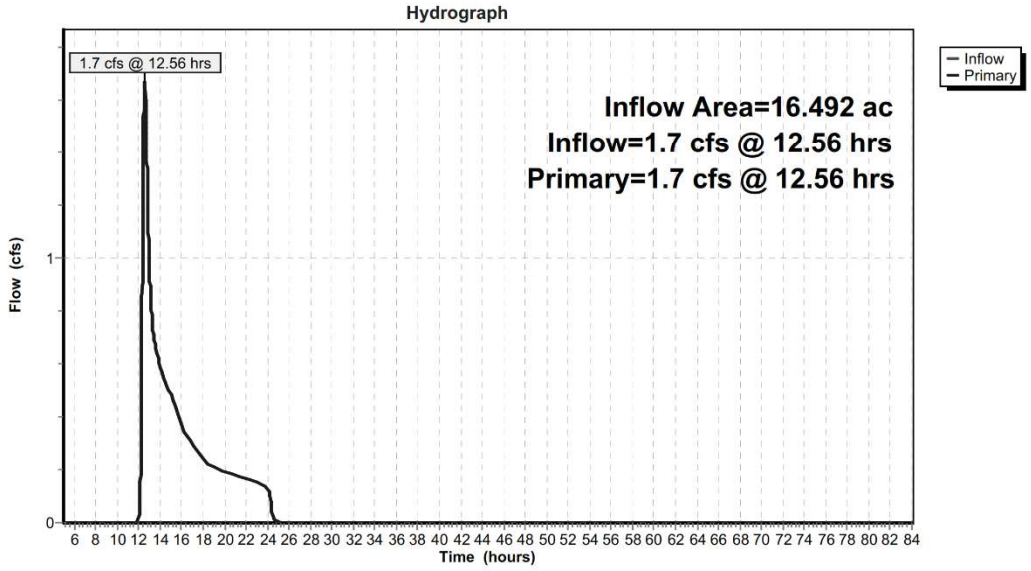
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 0.26" for 1 YR event
Inflow = 1.7 cfs @ 12.56 hrs, Volume= 0.363 af
Primary = 1.7 cfs @ 12.56 hrs, Volume= 0.363 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4



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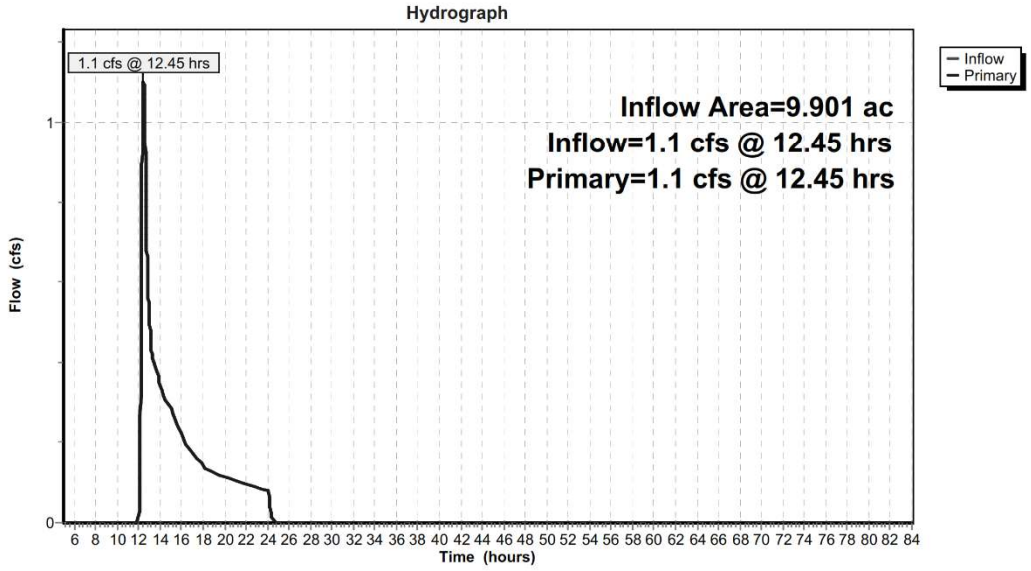
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 0.26" for 1 YR event
Inflow = 1.1 cfs @ 12.45 hrs, Volume= 0.218 af
Primary = 1.1 cfs @ 12.45 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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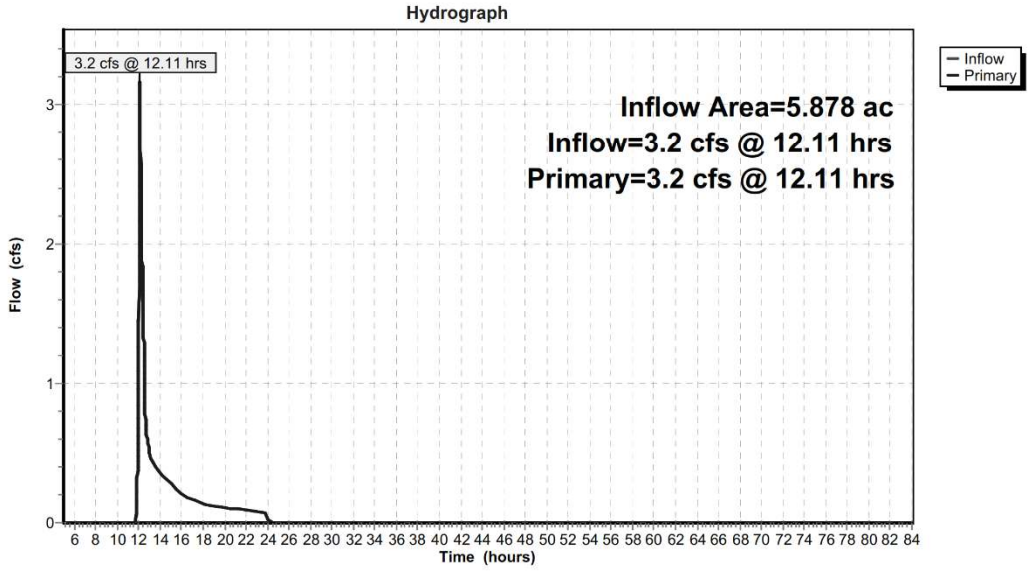
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 0.57" for 1 YR event
Inflow = 3.2 cfs @ 12.11 hrs, Volume= 0.277 af
Primary = 3.2 cfs @ 12.11 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 1 YR Rainfall=2.80"*
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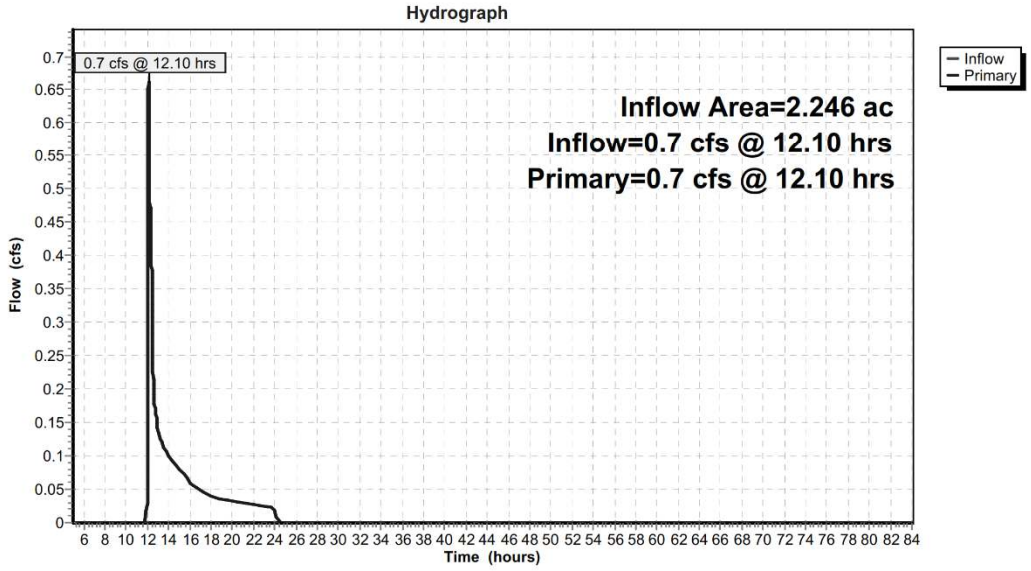
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 0.38" for 1 YR event
Inflow = 0.7 cfs @ 12.10 hrs, Volume= 0.072 af
Primary = 0.7 cfs @ 12.10 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.2 cfs 0.050 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.1 cfs 0.011 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=0.54"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=1.5 cfs 0.264 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=0.50"
Flow Length=759' Tc=23.7 min CN=60 Runoff=4.2 cfs 0.689 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=0.50"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=2.8 cfs 0.414 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=0.91"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=5.7 cfs 0.447 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=0.67"
Flow Length=706' Tc=4.7 min CN=64 Runoff=1.5 cfs 0.125 af

Link EXDP1: EXDP1 Inflow=0.2 cfs 0.050 af
Primary=0.2 cfs 0.050 af

Link EXDP2: EXDP2 Inflow=0.1 cfs 0.011 af
Primary=0.1 cfs 0.011 af

Link EXDP3: EXDP3 Inflow=1.5 cfs 0.264 af
Primary=1.5 cfs 0.264 af

Link EXDP4: EXDP4 Inflow=4.2 cfs 0.689 af
Primary=4.2 cfs 0.689 af

Link EXDP5: EXDP5 Inflow=2.8 cfs 0.414 af
Primary=2.8 cfs 0.414 af

Link EXDP6: EXDP6 Inflow=5.7 cfs 0.447 af
Primary=5.7 cfs 0.447 af

Link EXDP7: EXDP7 Inflow=1.5 cfs 0.125 af
Primary=1.5 cfs 0.125 af

Total Runoff Area = 42.620 ac Runoff Volume = 2.000 af Average Runoff Depth = 0.56"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment EXWS1: EXWS1

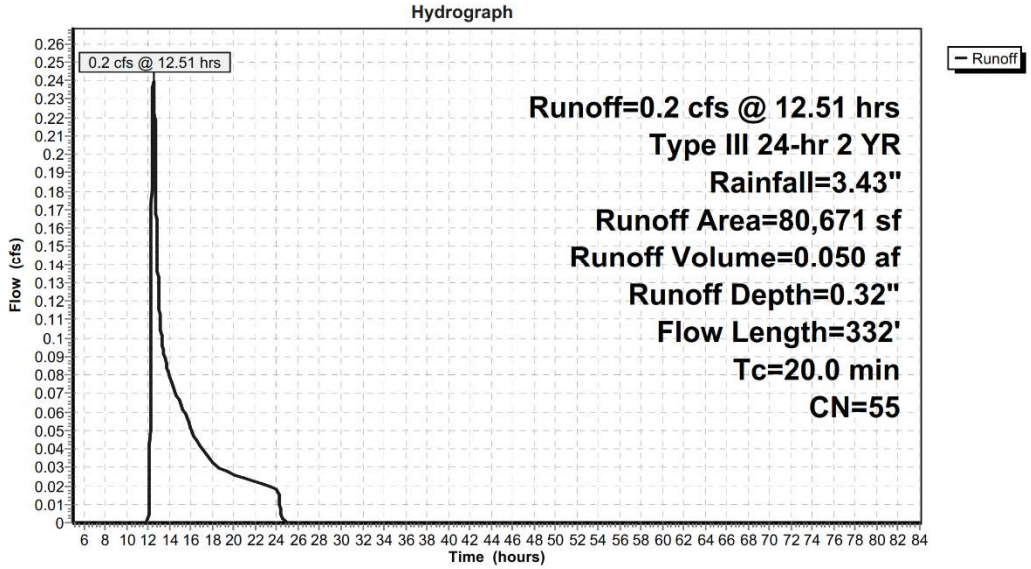
Runoff = 0.2 cfs @ 12.51 hrs, Volume= 0.050 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment EXWS2: EXWS2

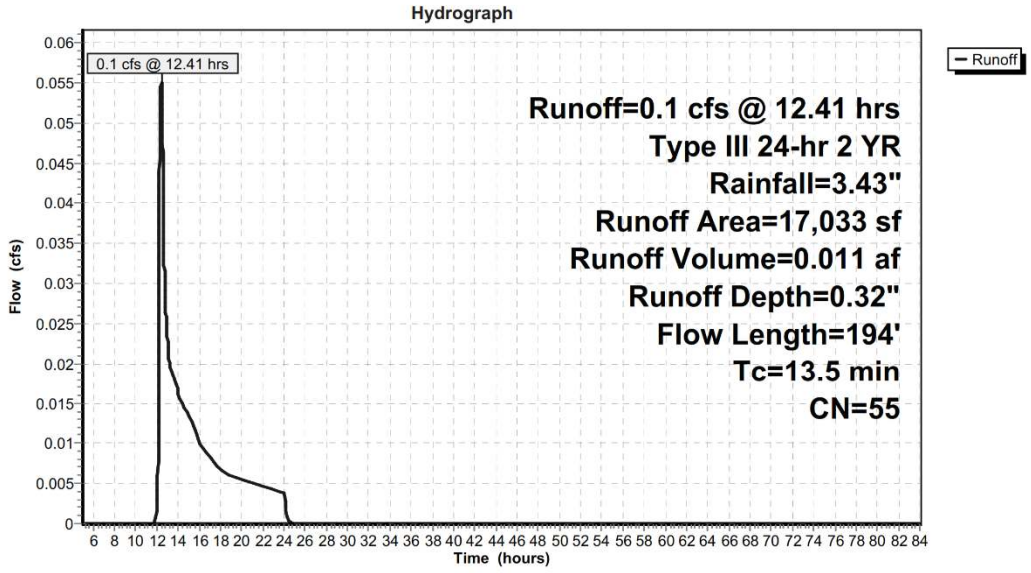
Runoff = 0.1 cfs @ 12.41 hrs, Volume= 0.011 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment EXWS3: EXWS3

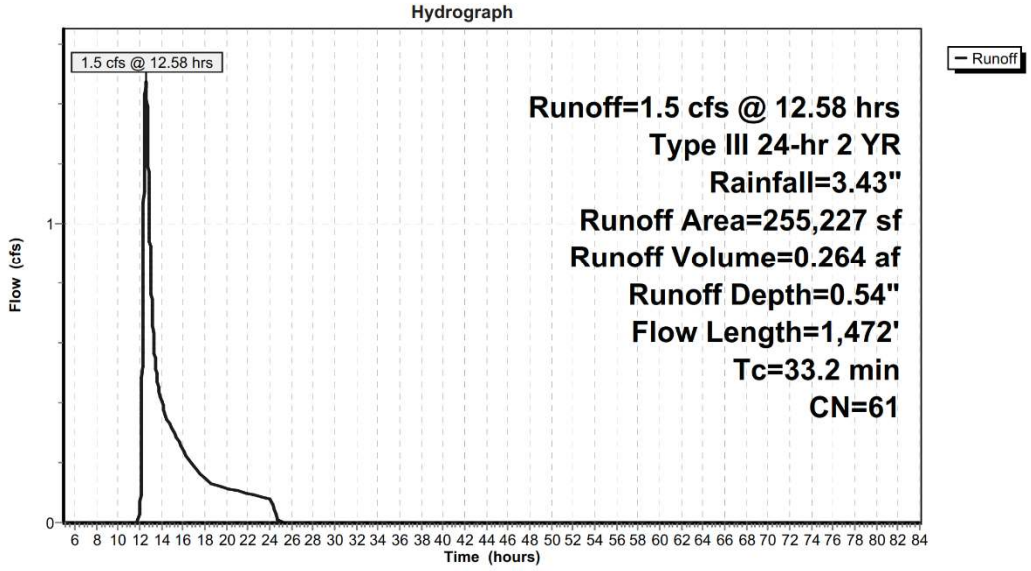
Runoff = 1.5 cfs @ 12.58 hrs, Volume= 0.264 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment EXWS4: EXWS4

Runoff = 4.2 cfs @ 12.45 hrs, Volume= 0.689 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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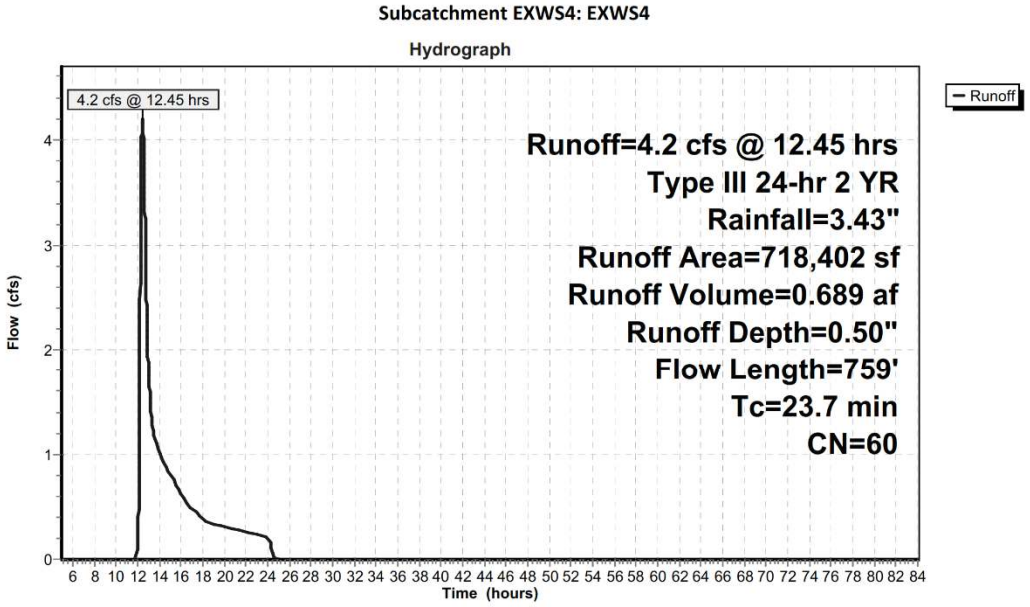

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS5: EXWS5

Runoff = 2.8 cfs @ 12.32 hrs, Volume= 0.414 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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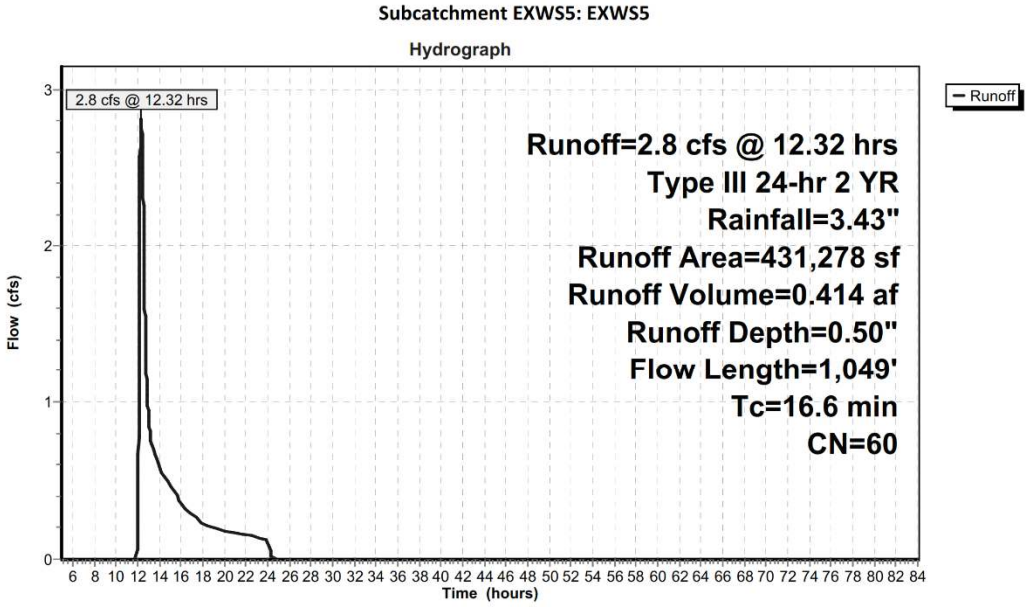

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Summary for Subcatchment EXWS6: EXWS6

Runoff = 5.7 cfs @ 12.10 hrs, Volume= 0.447 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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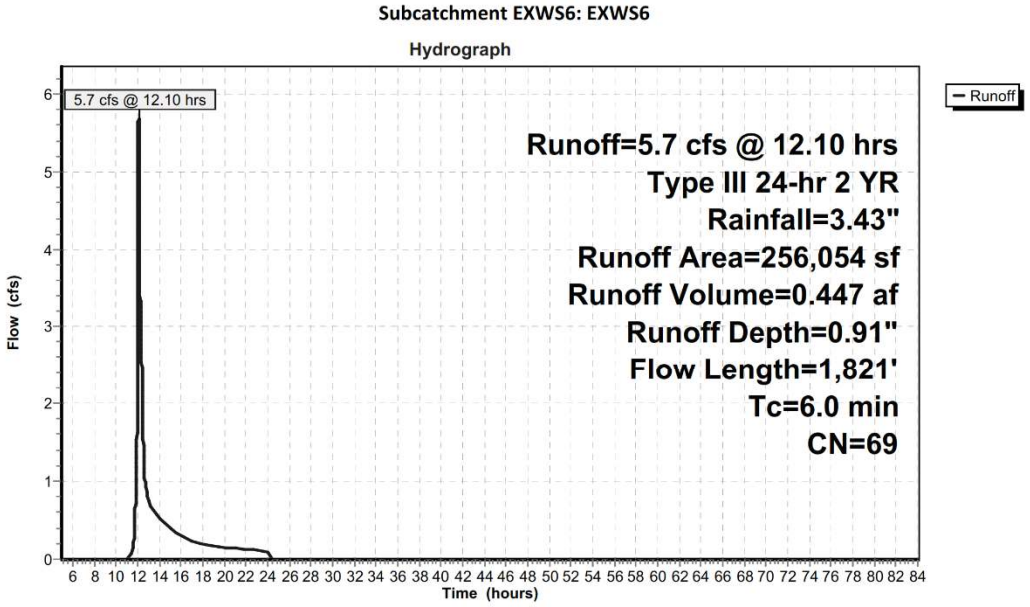

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Summary for Subcatchment EXWS7: EXWS7

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 0.125 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

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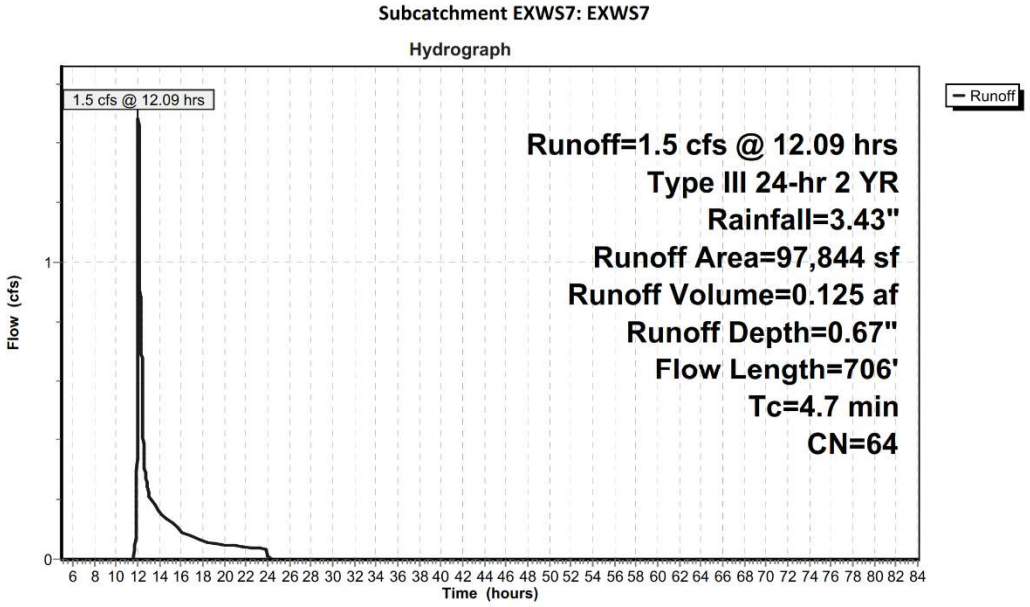

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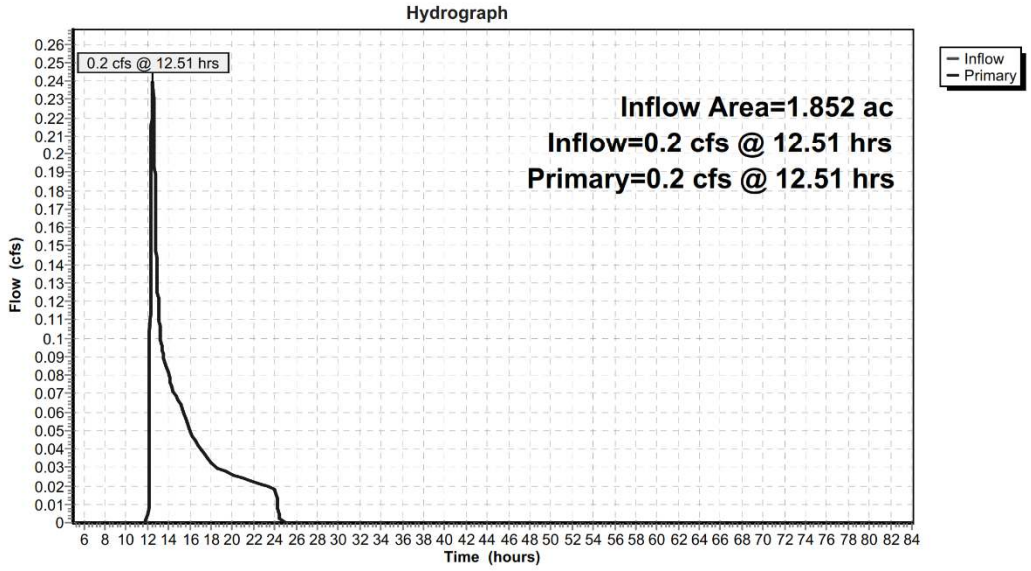
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 0.2 cfs @ 12.51 hrs, Volume= 0.050 af
Primary = 0.2 cfs @ 12.51 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



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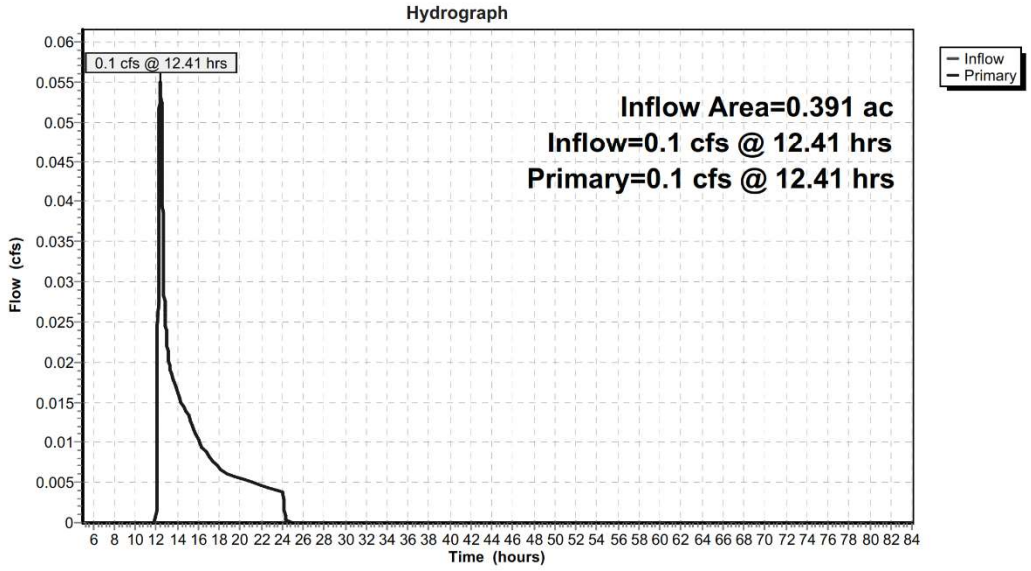
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 0.1 cfs @ 12.41 hrs, Volume= 0.011 af
Primary = 0.1 cfs @ 12.41 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



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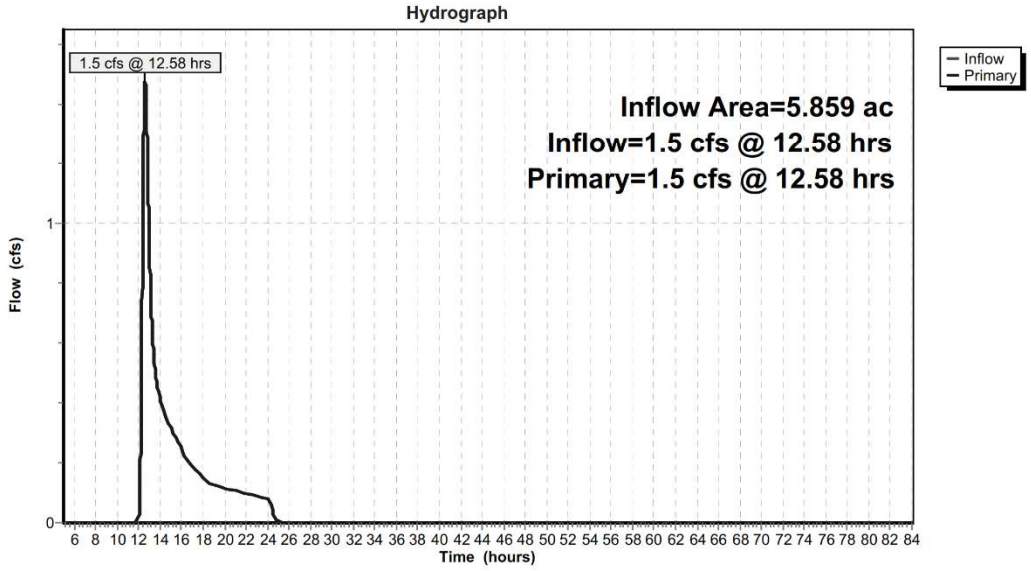
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 0.54" for 2 YR event
Inflow = 1.5 cfs @ 12.58 hrs, Volume= 0.264 af
Primary = 1.5 cfs @ 12.58 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



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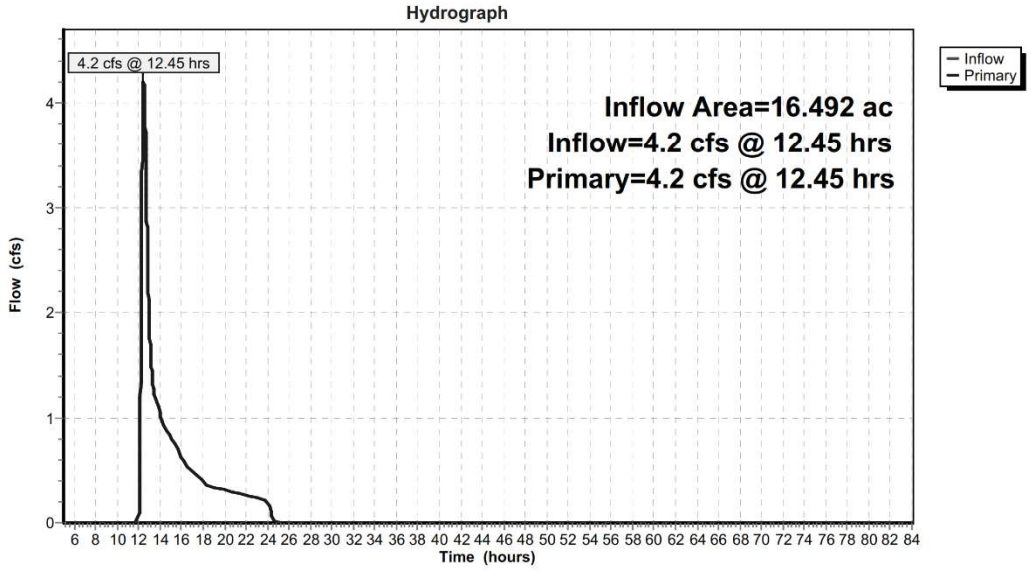
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 0.50" for 2 YR event
Inflow = 4.2 cfs @ 12.45 hrs, Volume= 0.689 af
Primary = 4.2 cfs @ 12.45 hrs, Volume= 0.689 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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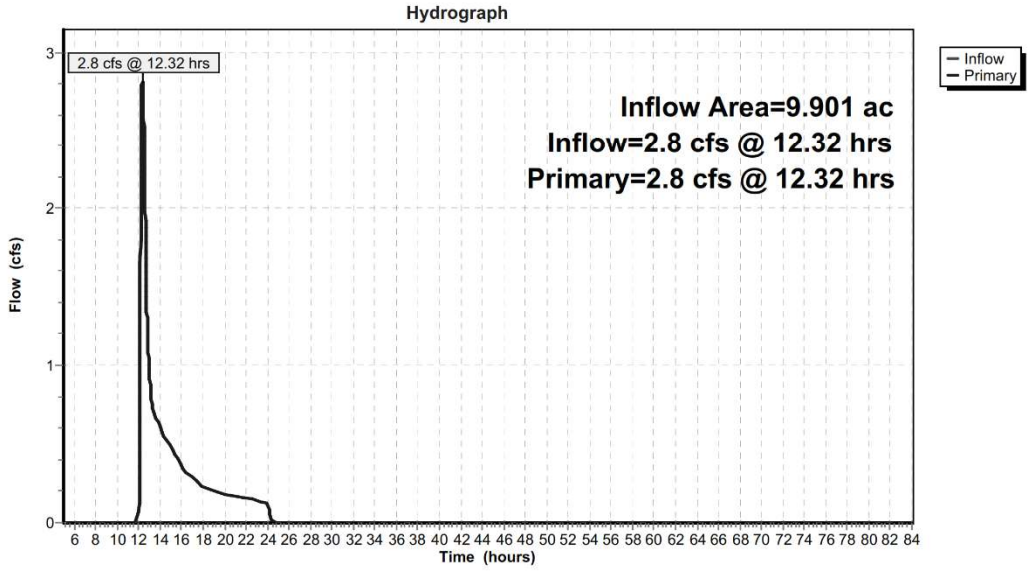
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 0.50" for 2 YR event
Inflow = 2.8 cfs @ 12.32 hrs, Volume= 0.414 af
Primary = 2.8 cfs @ 12.32 hrs, Volume= 0.414 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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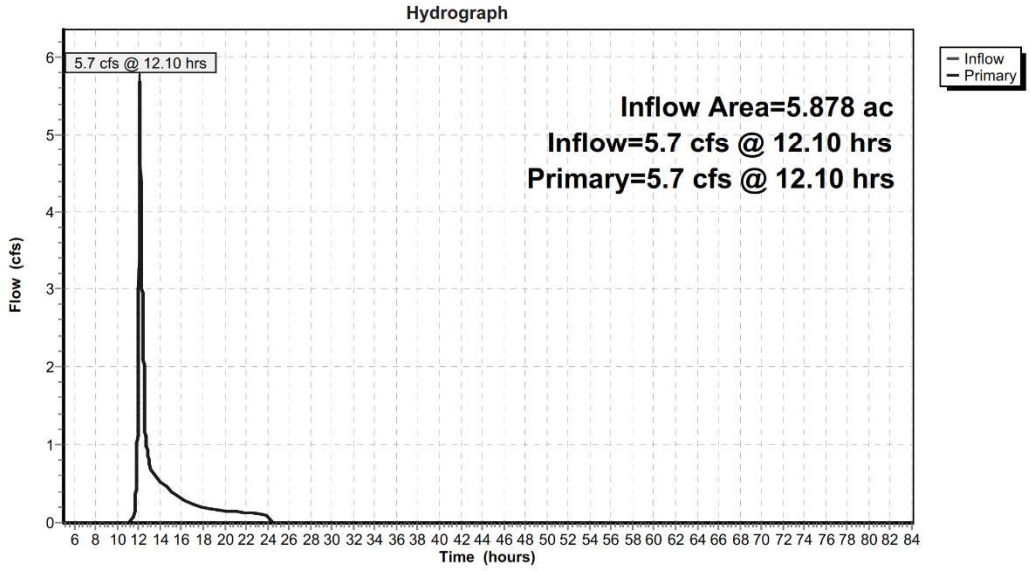
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 0.91" for 2 YR event
Inflow = 5.7 cfs @ 12.10 hrs, Volume= 0.447 af
Primary = 5.7 cfs @ 12.10 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 2 YR Rainfall=3.43"*
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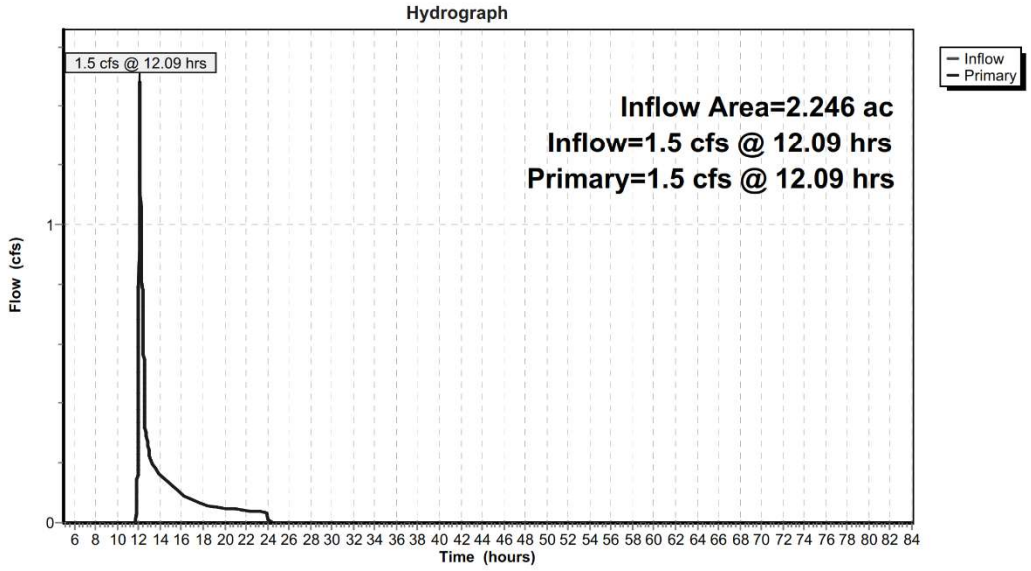
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 0.67" for 2 YR event
Inflow = 1.5 cfs @ 12.09 hrs, Volume= 0.125 af
Primary = 1.5 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.7 cfs 0.102 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.2 cfs 0.021 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=0.97"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=3.1 cfs 0.476 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=0.92"
Flow Length=759' Tc=23.7 min CN=60 Runoff=9.3 cfs 1.263 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=0.92"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=6.4 cfs 0.758 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=1.47"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=9.7 cfs 0.721 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=1.15"
Flow Length=706' Tc=4.7 min CN=64 Runoff=2.9 cfs 0.216 af

Link EXDP1: EXDP1 Inflow=0.7 cfs 0.102 af
Primary=0.7 cfs 0.102 af

Link EXDP2: EXDP2 Inflow=0.2 cfs 0.021 af
Primary=0.2 cfs 0.021 af

Link EXDP3: EXDP3 Inflow=3.1 cfs 0.476 af
Primary=3.1 cfs 0.476 af

Link EXDP4: EXDP4 Inflow=9.3 cfs 1.263 af
Primary=9.3 cfs 1.263 af

Link EXDP5: EXDP5 Inflow=6.4 cfs 0.758 af
Primary=6.4 cfs 0.758 af

Link EXDP6: EXDP6 Inflow=9.7 cfs 0.721 af
Primary=9.7 cfs 0.721 af

Link EXDP7: EXDP7 Inflow=2.9 cfs 0.216 af
Primary=2.9 cfs 0.216 af

Total Runoff Area = 42.620 ac Runoff Volume = 3.557 af Average Runoff Depth = 1.00"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment EXWS1: EXWS1

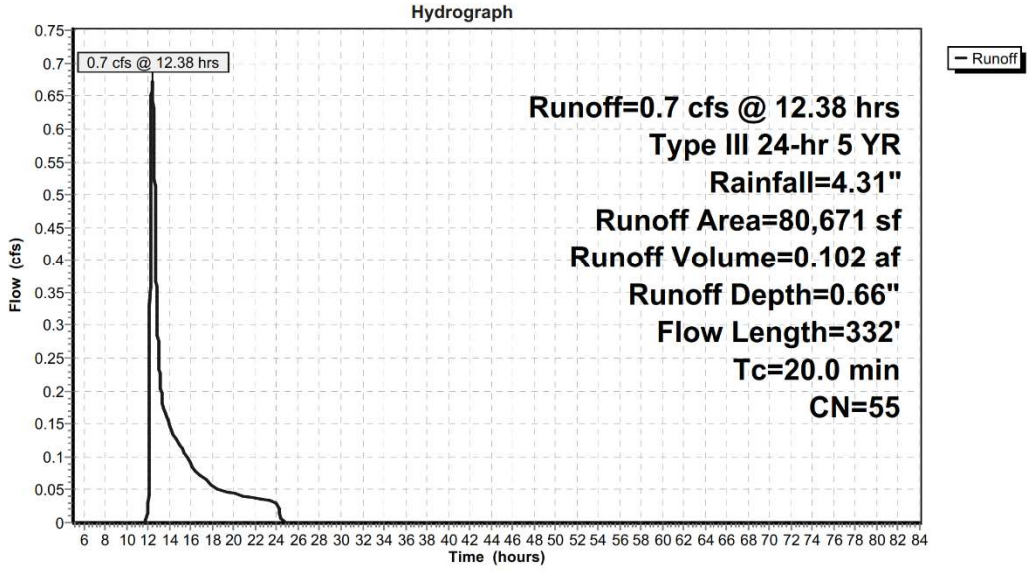
Runoff = 0.7 cfs @ 12.38 hrs, Volume= 0.102 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment EXWS2: EXWS2

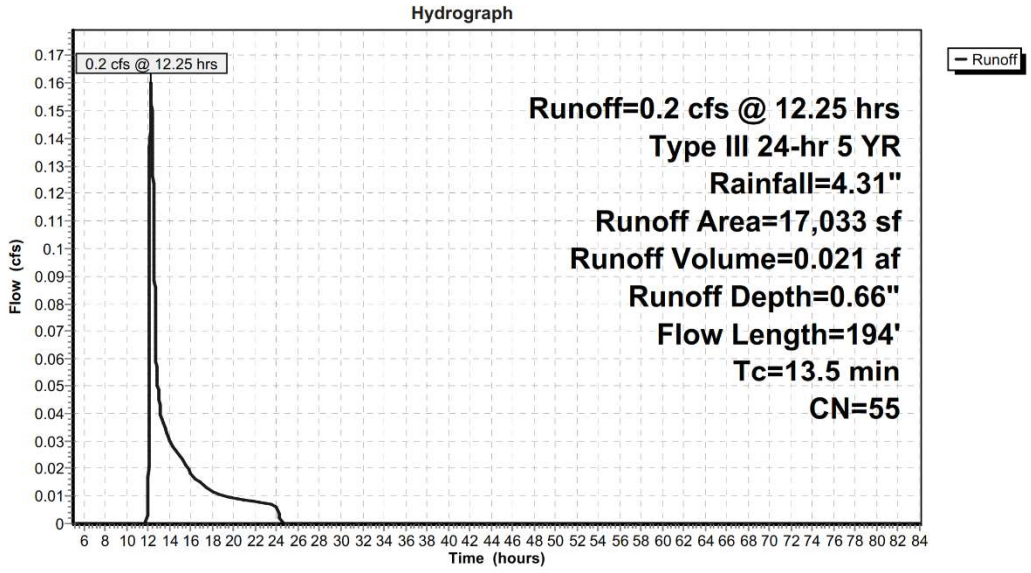
Runoff = 0.2 cfs @ 12.25 hrs, Volume= 0.021 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment EXWS3: EXWS3

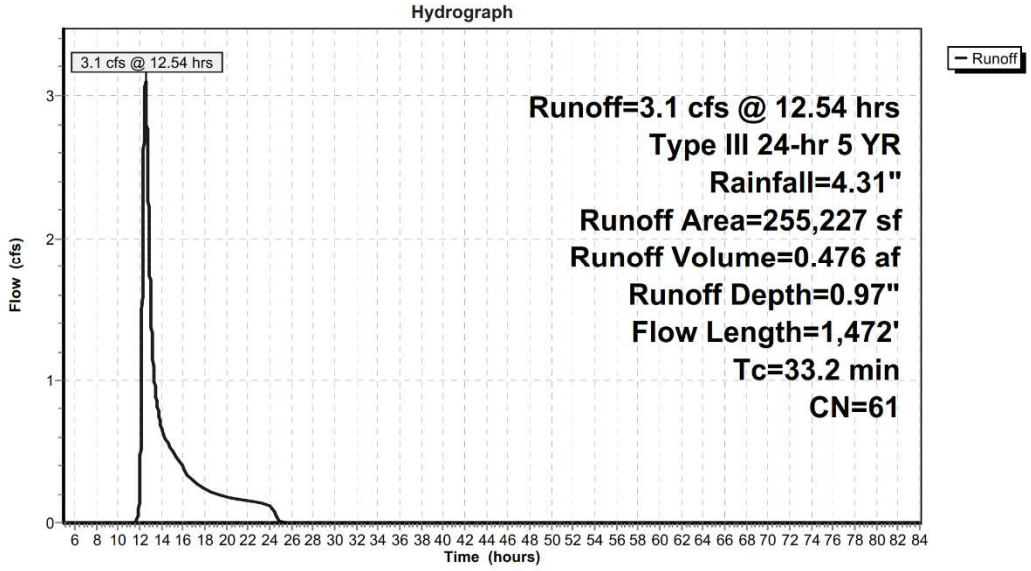
Runoff = 3.1 cfs @ 12.54 hrs, Volume= 0.476 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS4: EXWS4

Runoff = 9.3 cfs @ 12.40 hrs, Volume= 1.263 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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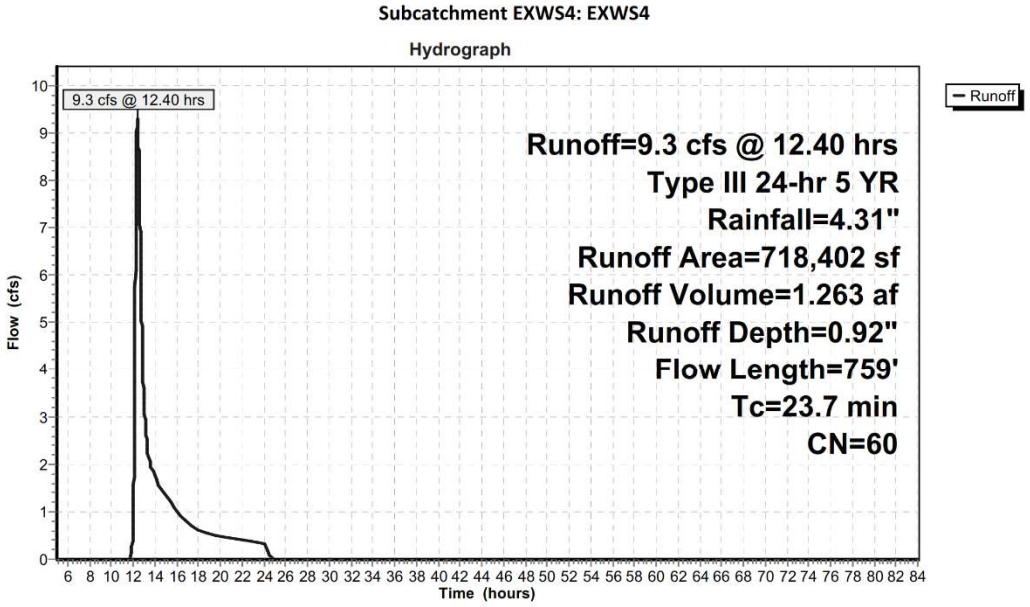

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS5: EXWS5

Runoff = 6.4 cfs @ 12.27 hrs, Volume= 0.758 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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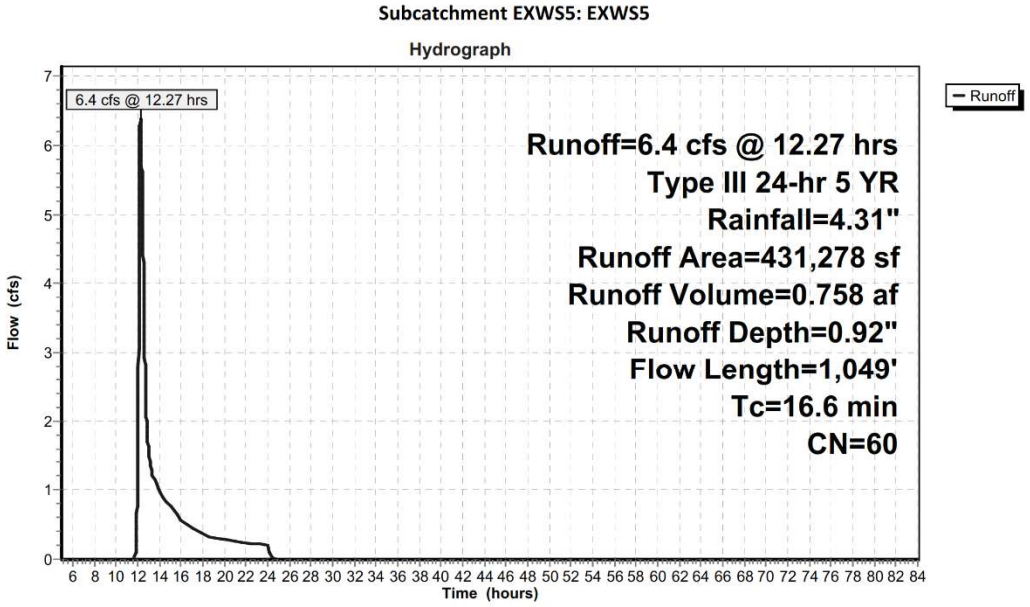

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Summary for Subcatchment EXWS6: EXWS6

Runoff = 9.7 cfs @ 12.09 hrs, Volume= 0.721 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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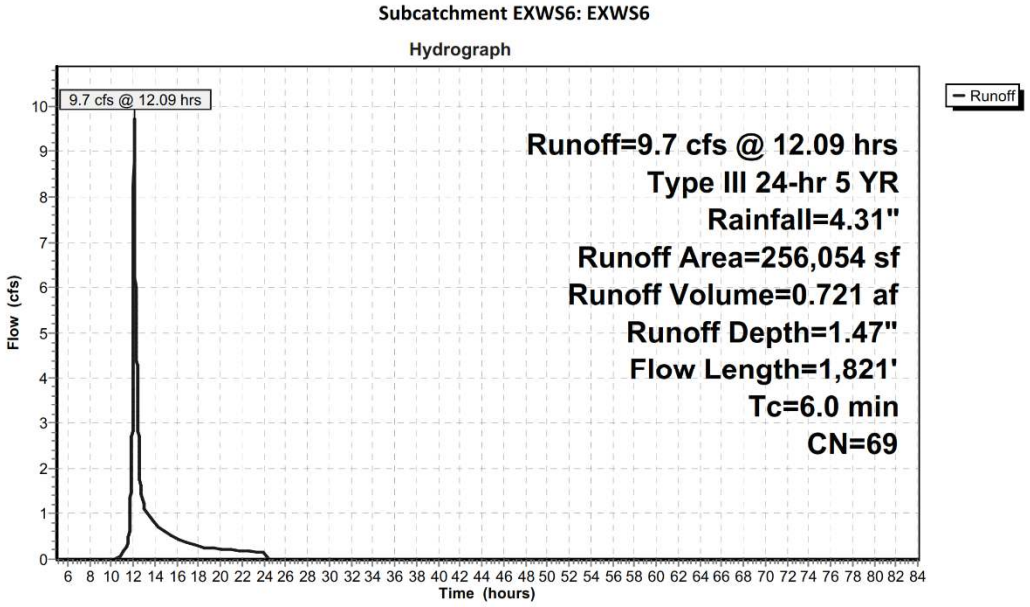

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS7: EXWS7

Runoff = 2.9 cfs @ 12.08 hrs, Volume= 0.216 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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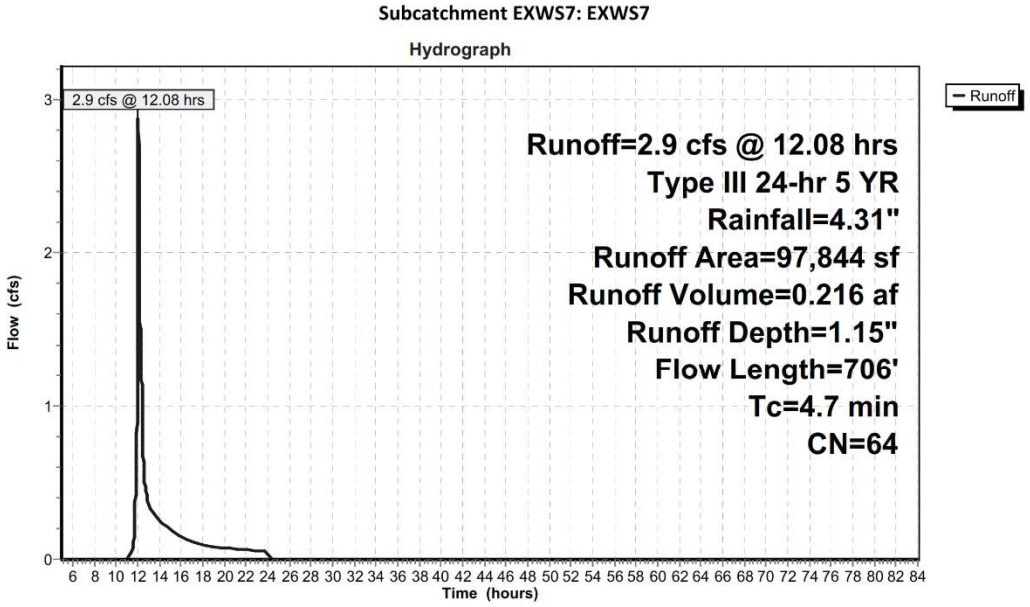

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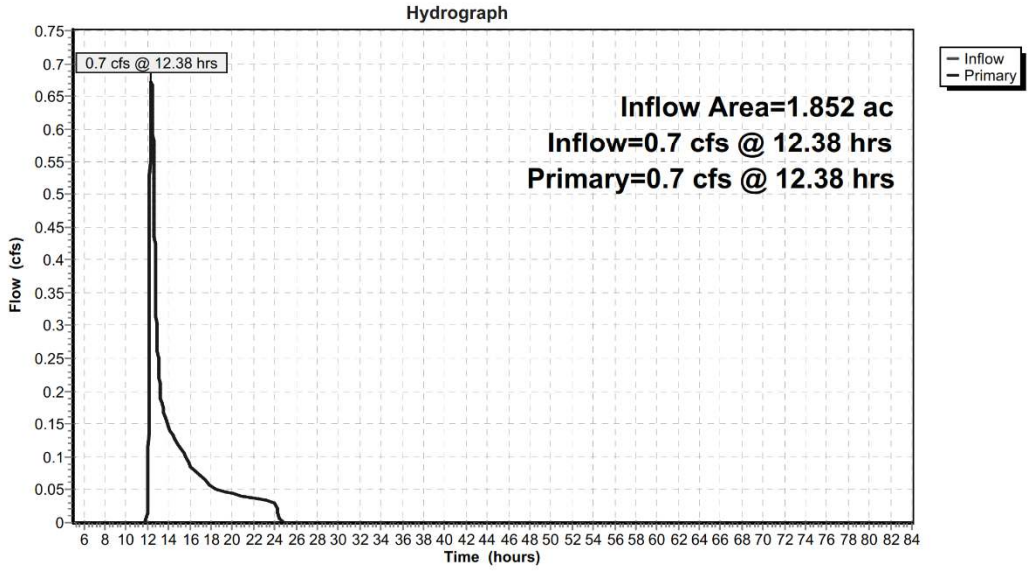
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 0.66" for 5 YR event
Inflow = 0.7 cfs @ 12.38 hrs, Volume= 0.102 af
Primary = 0.7 cfs @ 12.38 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



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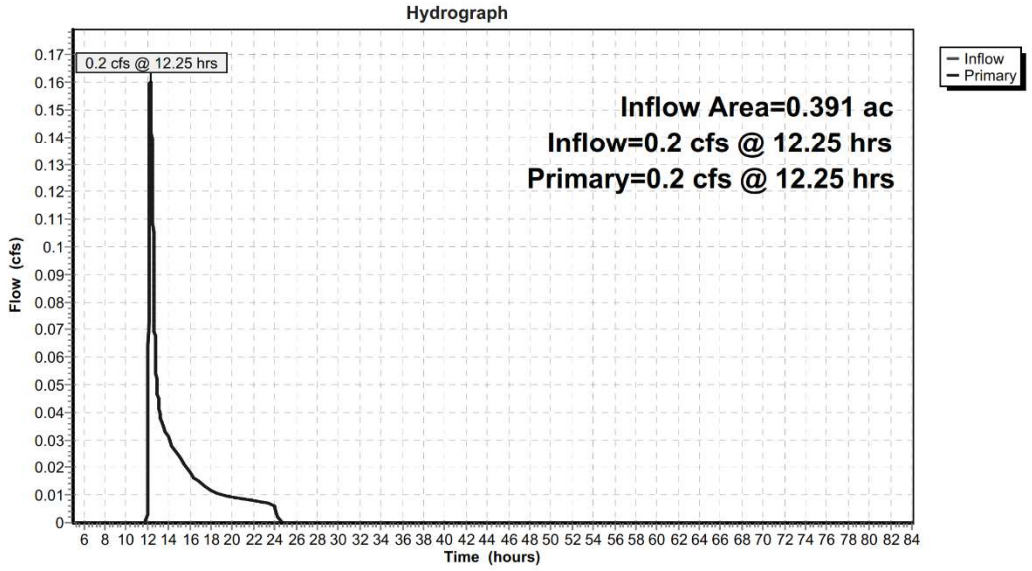
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 0.66" for 5 YR event
Inflow = 0.2 cfs @ 12.25 hrs, Volume= 0.021 af
Primary = 0.2 cfs @ 12.25 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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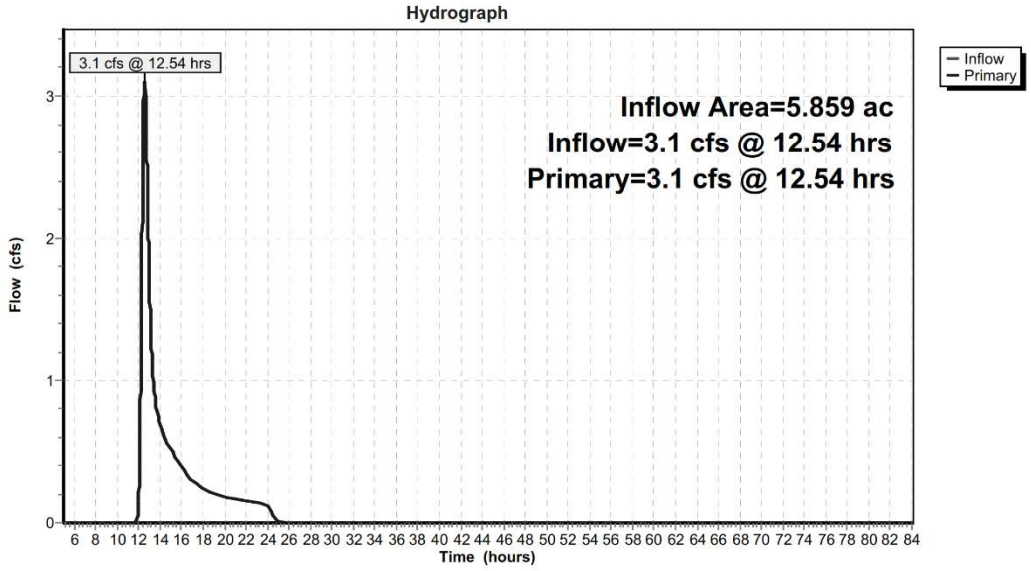
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 0.97" for 5 YR event
Inflow = 3.1 cfs @ 12.54 hrs, Volume= 0.476 af
Primary = 3.1 cfs @ 12.54 hrs, Volume= 0.476 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
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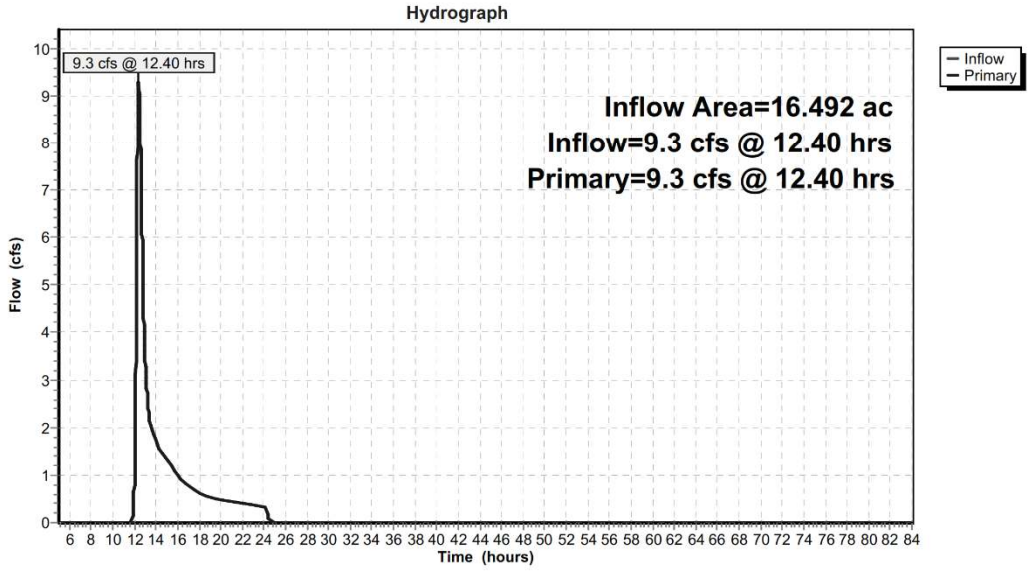
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 0.92" for 5 YR event
Inflow = 9.3 cfs @ 12.40 hrs, Volume= 1.263 af
Primary = 9.3 cfs @ 12.40 hrs, Volume= 1.263 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4



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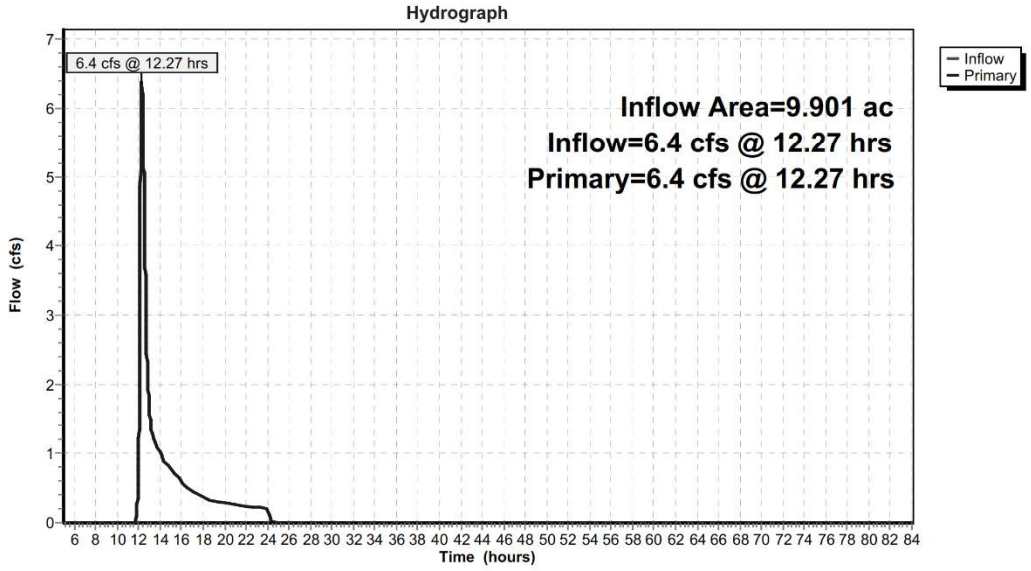
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 0.92" for 5 YR event
Inflow = 6.4 cfs @ 12.27 hrs, Volume= 0.758 af
Primary = 6.4 cfs @ 12.27 hrs, Volume= 0.758 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

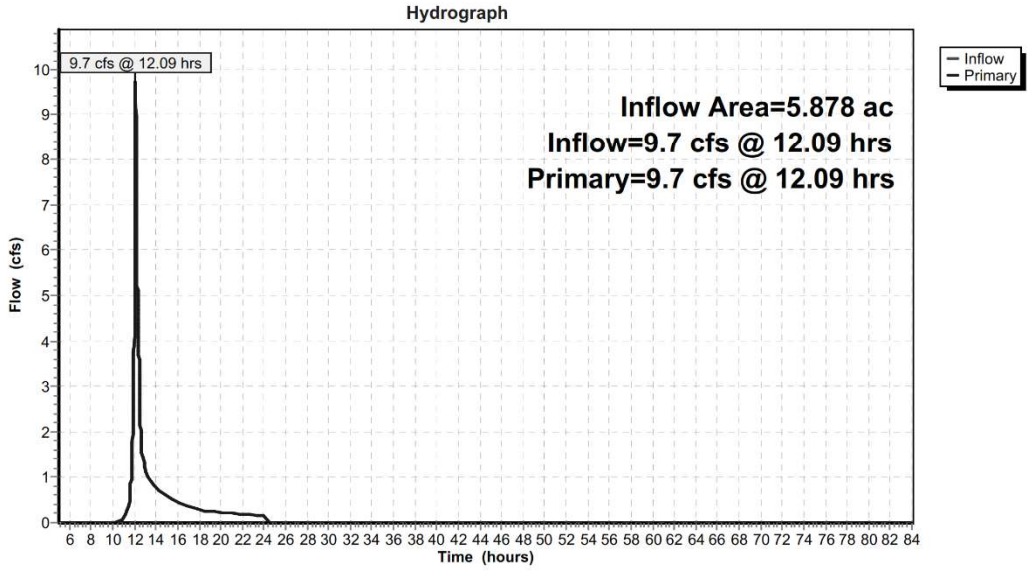
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 1.47" for 5 YR event
Inflow = 9.7 cfs @ 12.09 hrs, Volume= 0.721 af
Primary = 9.7 cfs @ 12.09 hrs, Volume= 0.721 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6

Hydrograph



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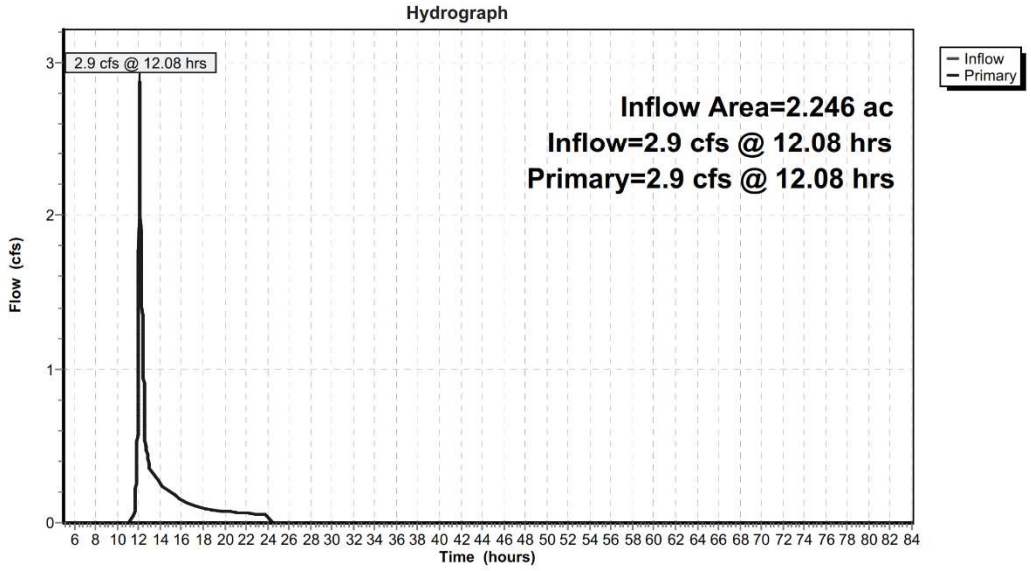
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 1.15" for 5 YR event
Inflow = 2.9 cfs @ 12.08 hrs, Volume= 0.216 af
Primary = 2.9 cfs @ 12.08 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=1.05"
Flow Length=332' Tc=20.0 min CN=55 Runoff=1.2 cfs 0.161 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=1.05"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.3 cfs 0.034 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=1.45"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=4.9 cfs 0.707 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=1.38"
Flow Length=759' Tc=23.7 min CN=60 Runoff=15.0 cfs 1.893 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=1.38"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=10.4 cfs 1.137 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=2.05"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=13.9 cfs 1.005 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=1.67"
Flow Length=706' Tc=4.7 min CN=64 Runoff=4.4 cfs 0.312 af

Link EXDP1: EXDP1 Inflow=1.2 cfs 0.161 af
Primary=1.2 cfs 0.161 af

Link EXDP2: EXDP2 Inflow=0.3 cfs 0.034 af
Primary=0.3 cfs 0.034 af

Link EXDP3: EXDP3 Inflow=4.9 cfs 0.707 af
Primary=4.9 cfs 0.707 af

Link EXDP4: EXDP4 Inflow=15.0 cfs 1.893 af
Primary=15.0 cfs 1.893 af

Link EXDP5: EXDP5 Inflow=10.4 cfs 1.137 af
Primary=10.4 cfs 1.137 af

Link EXDP6: EXDP6 Inflow=13.9 cfs 1.005 af
Primary=13.9 cfs 1.005 af

Link EXDP7: EXDP7 Inflow=4.4 cfs 0.312 af
Primary=4.4 cfs 0.312 af

Total Runoff Area = 42.620 ac Runoff Volume = 5.249 af Average Runoff Depth = 1.48"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment EXWS1: EXWS1

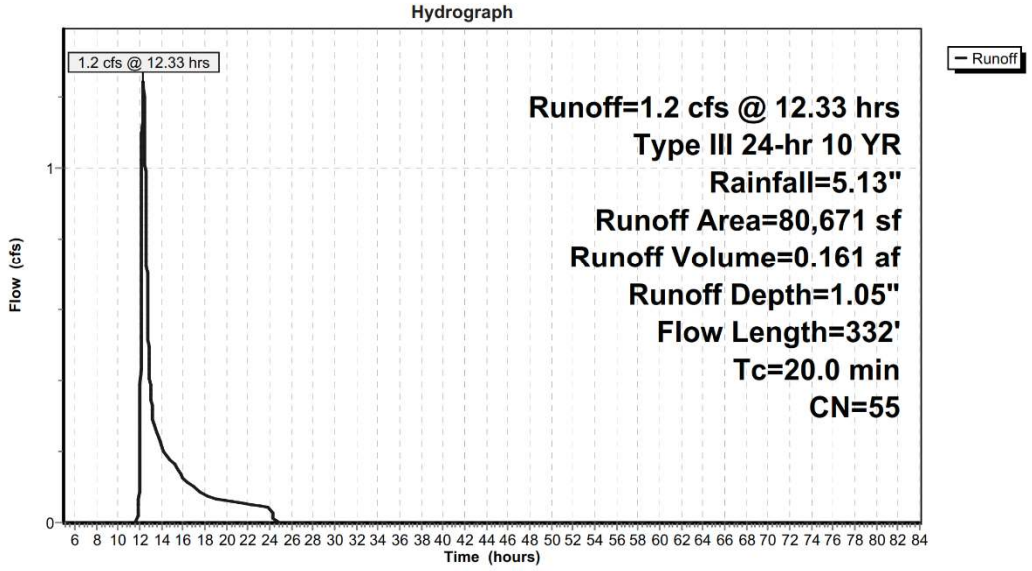
Runoff = 1.2 cfs @ 12.33 hrs, Volume= 0.161 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



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Summary for Subcatchment EXWS2: EXWS2

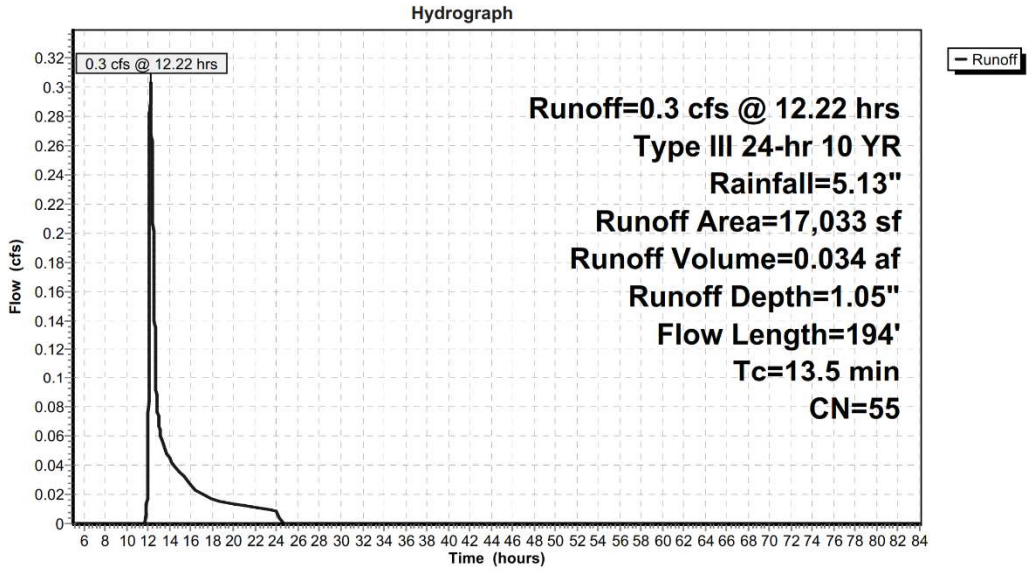
Runoff = 0.3 cfs @ 12.22 hrs, Volume= 0.034 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



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Summary for Subcatchment EXWS3: EXWS3

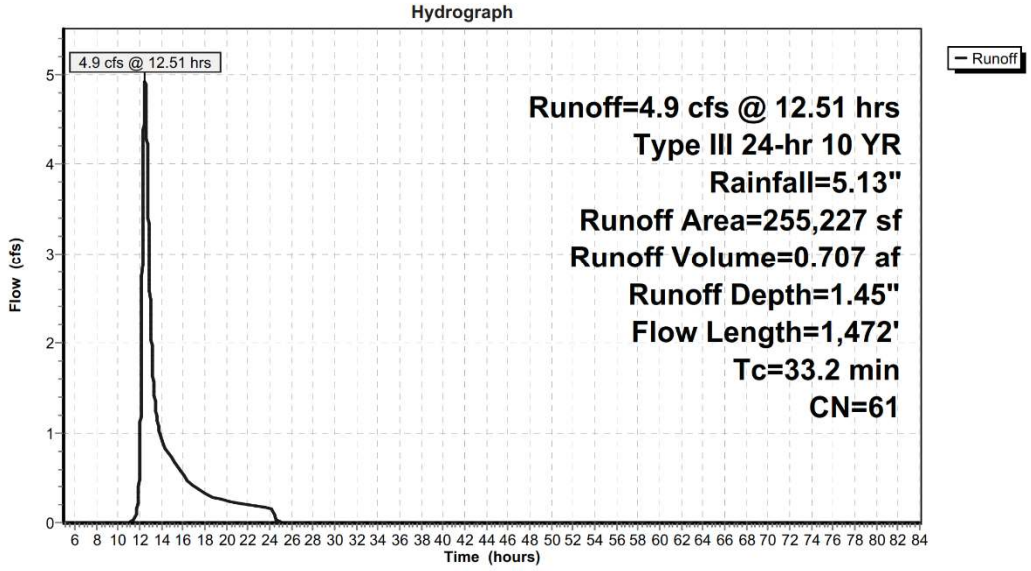
Runoff = 4.9 cfs @ 12.51 hrs, Volume= 0.707 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment EXWS4: EXWS4

Runoff = 15.0 cfs @ 12.37 hrs, Volume= 1.893 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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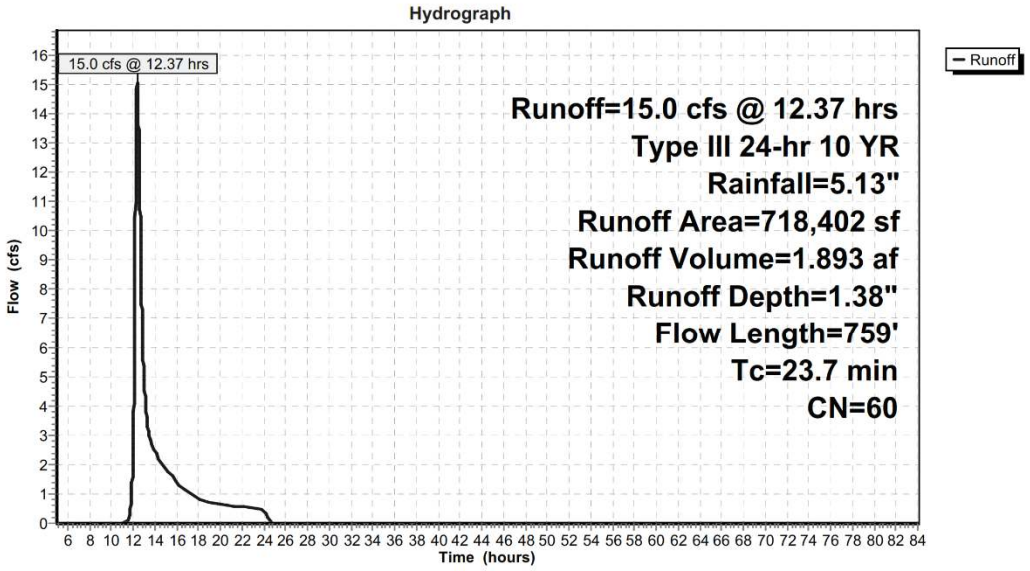
Subcatchment EXWS4: EXWS4



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment EXWS5: EXWS5

Runoff = 10.4 cfs @ 12.26 hrs, Volume= 1.137 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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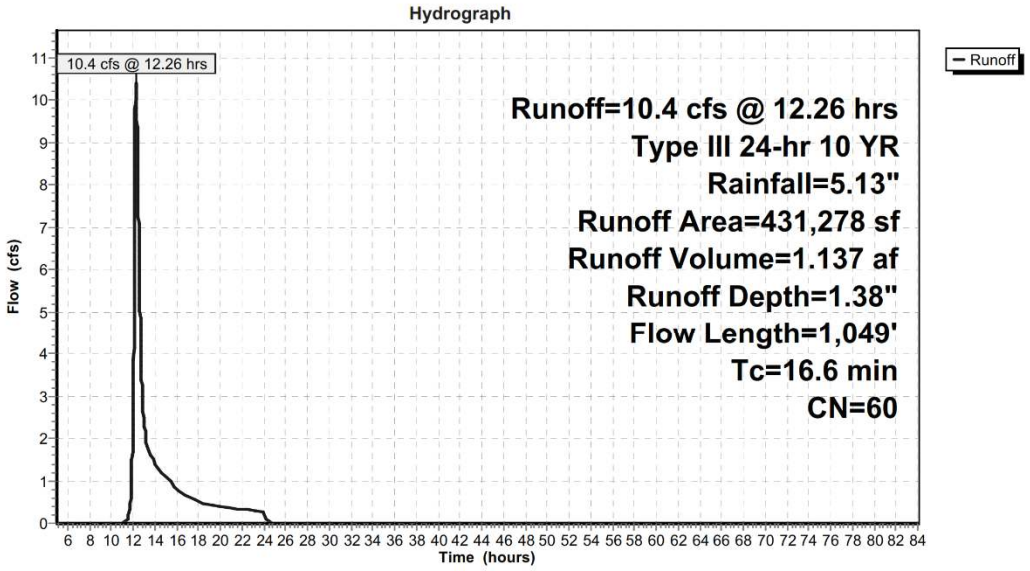
Subcatchment EXWS5: EXWS5



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Summary for Subcatchment EXWS6: EXWS6

Runoff = 13.9 cfs @ 12.09 hrs, Volume= 1.005 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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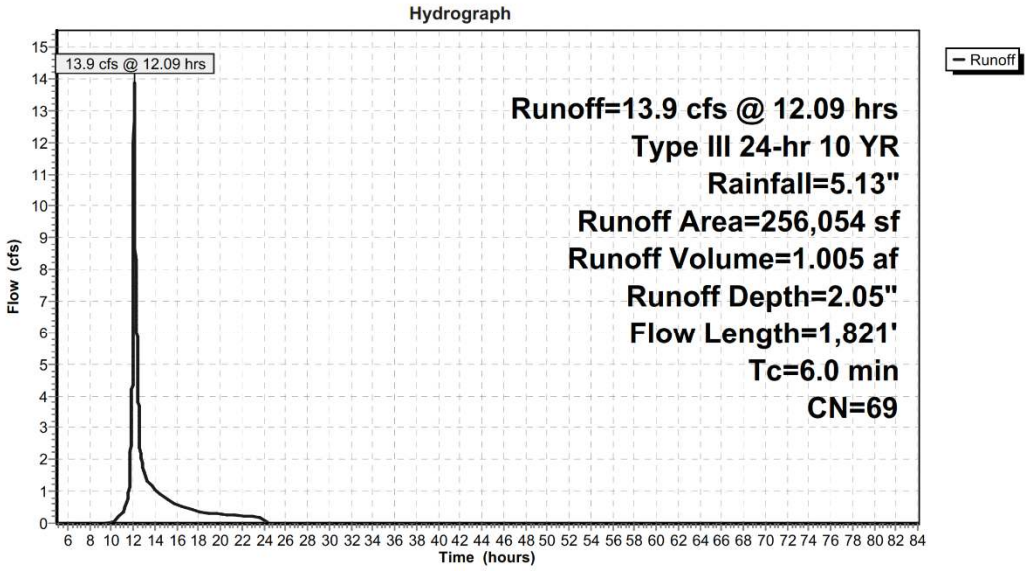
Subcatchment EXWS6: EXWS6



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Summary for Subcatchment EXWS7: EXWS7

Runoff = 4.4 cfs @ 12.08 hrs, Volume= 0.312 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

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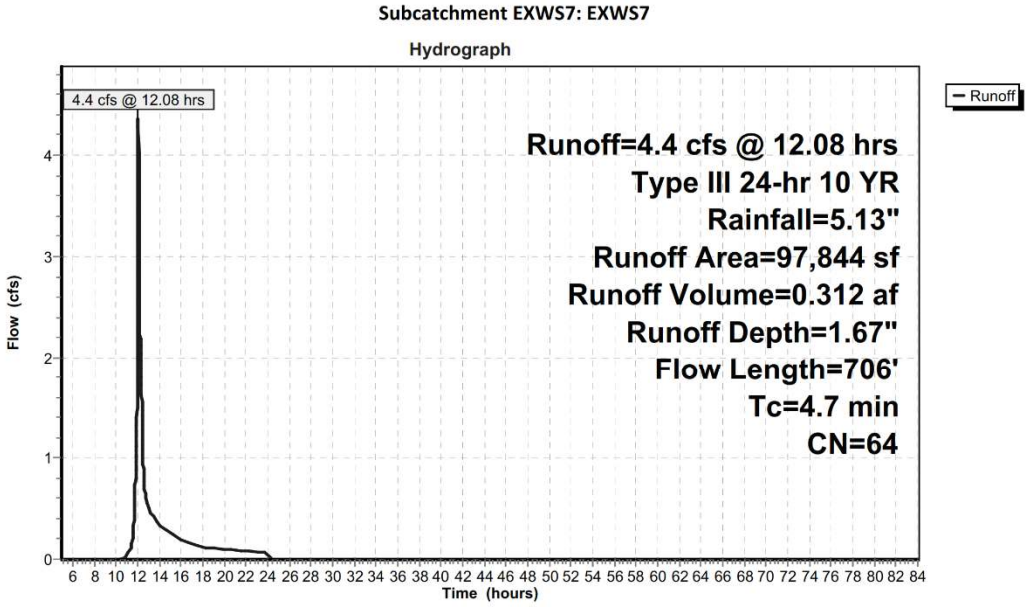

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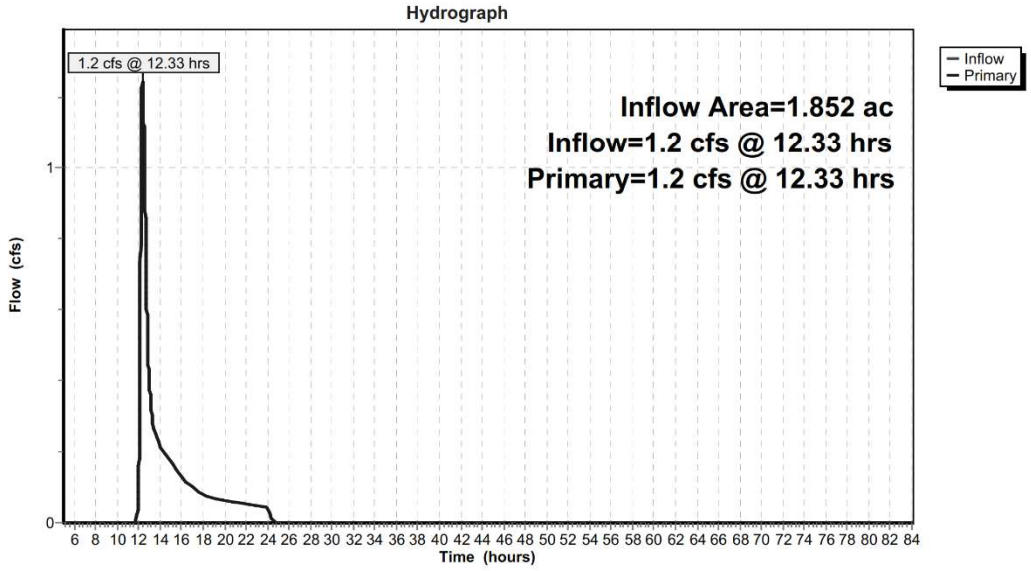
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 1.05" for 10 YR event
Inflow = 1.2 cfs @ 12.33 hrs, Volume= 0.161 af
Primary = 1.2 cfs @ 12.33 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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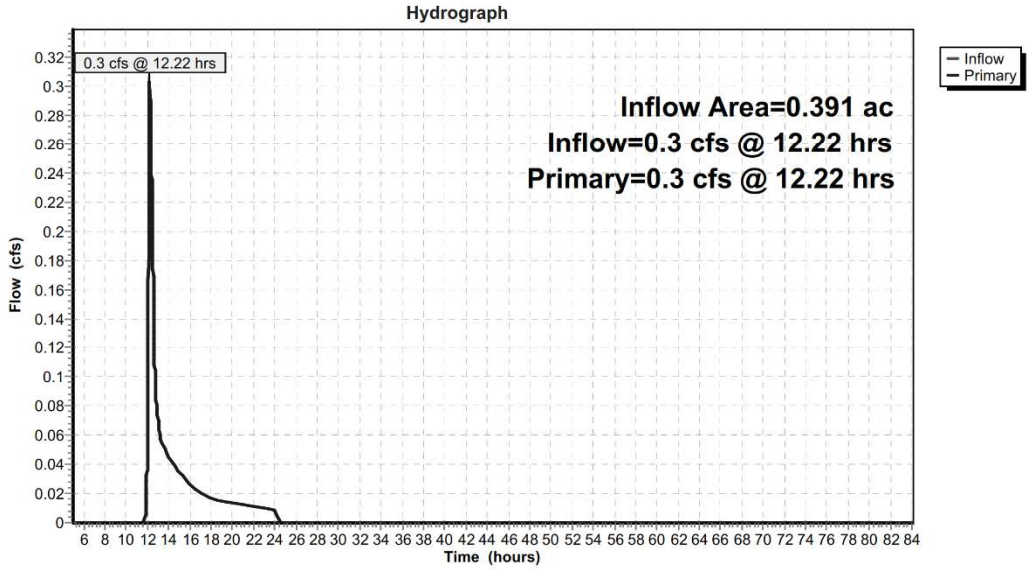
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 1.05" for 10 YR event
Inflow = 0.3 cfs @ 12.22 hrs, Volume= 0.034 af
Primary = 0.3 cfs @ 12.22 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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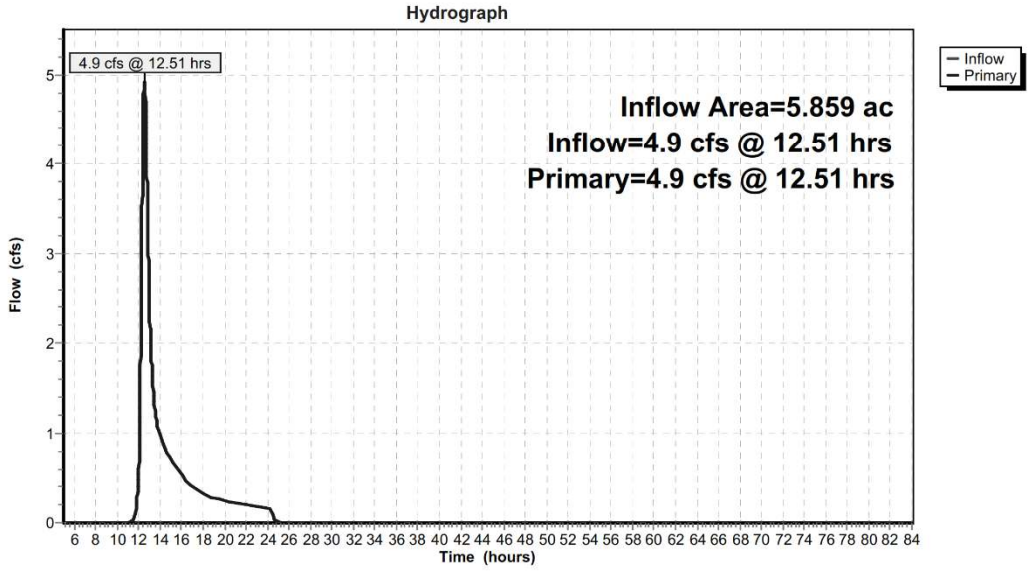
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 1.45" for 10 YR event
Inflow = 4.9 cfs @ 12.51 hrs, Volume= 0.707 af
Primary = 4.9 cfs @ 12.51 hrs, Volume= 0.707 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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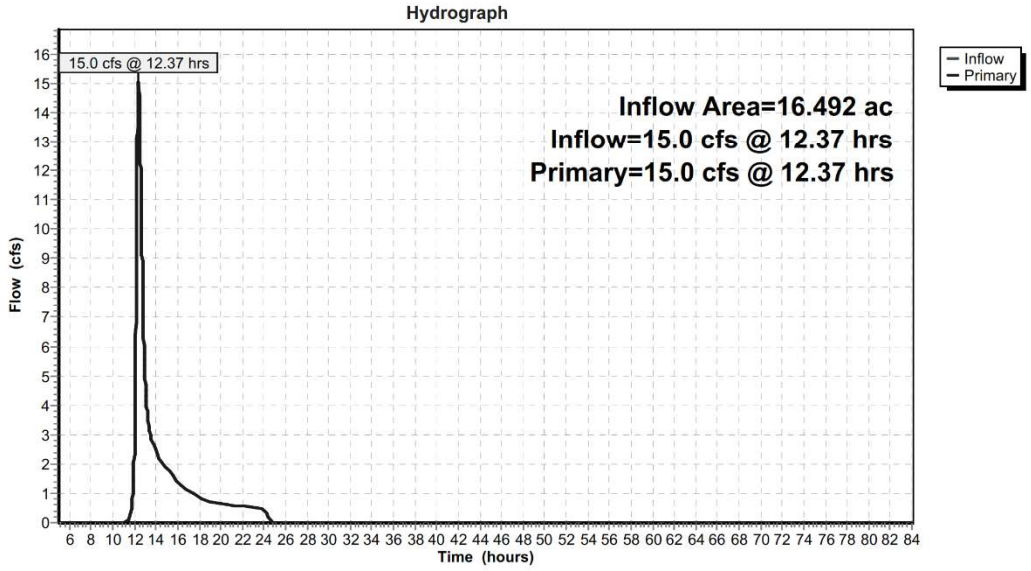
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 1.38" for 10 YR event
Inflow = 15.0 cfs @ 12.37 hrs, Volume= 1.893 af
Primary = 15.0 cfs @ 12.37 hrs, Volume= 1.893 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 10 YR Rainfall=5.13"*
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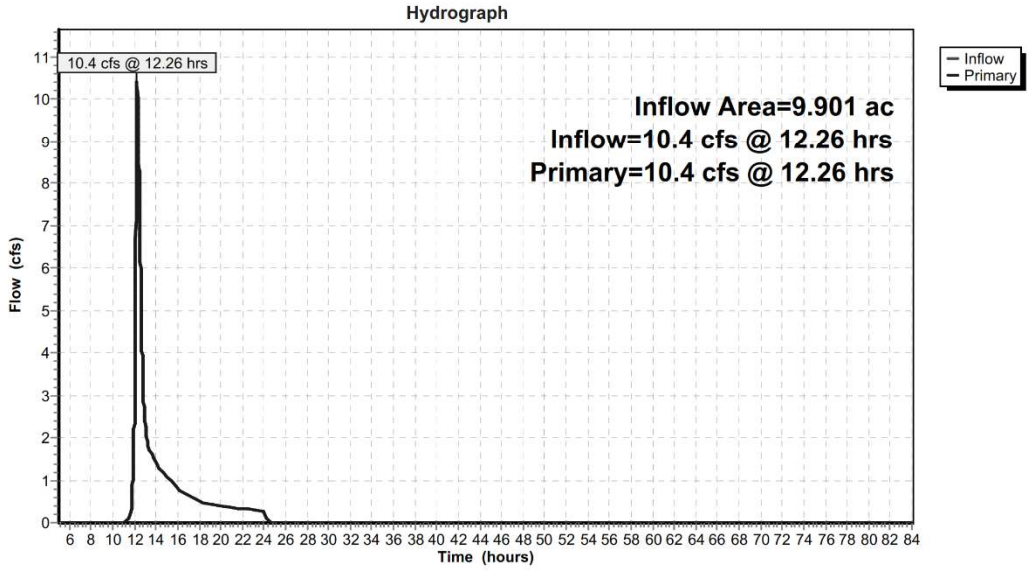
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 1.38" for 10 YR event
Inflow = 10.4 cfs @ 12.26 hrs, Volume= 1.137 af
Primary = 10.4 cfs @ 12.26 hrs, Volume= 1.137 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5

Hydrograph



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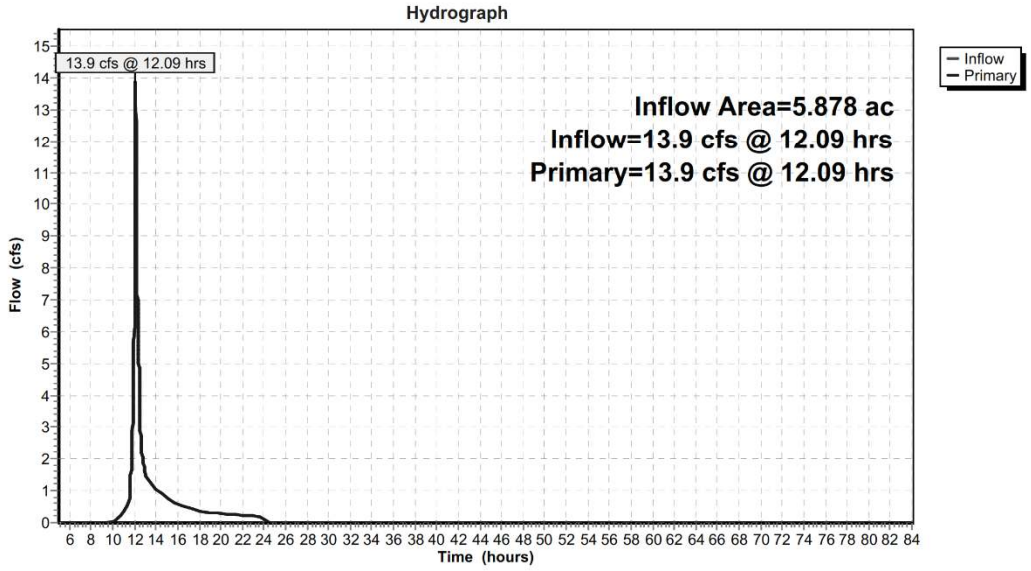
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 2.05" for 10 YR event
Inflow = 13.9 cfs @ 12.09 hrs, Volume= 1.005 af
Primary = 13.9 cfs @ 12.09 hrs, Volume= 1.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6

Hydrograph



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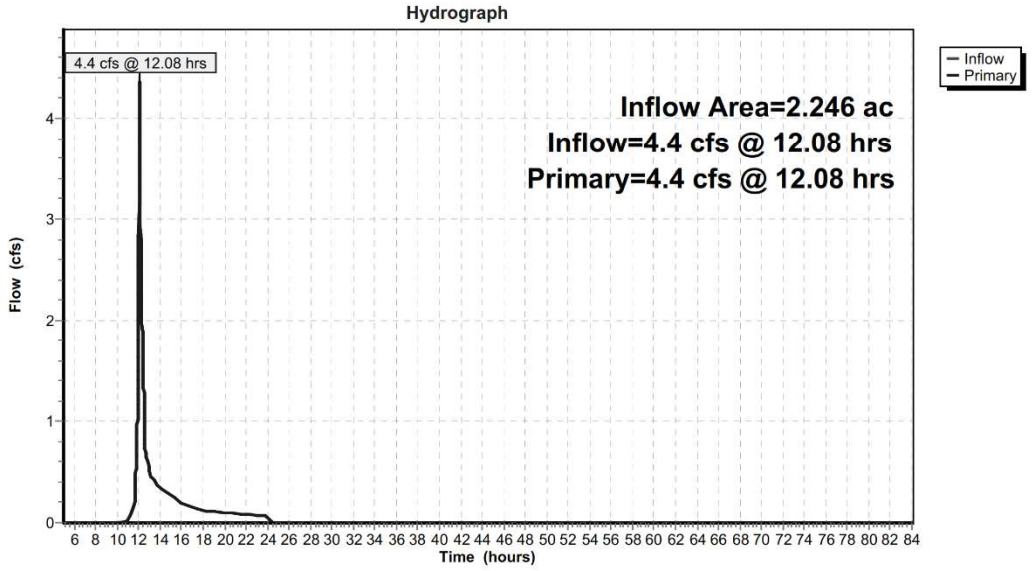
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 1.67" for 10 YR event
Inflow = 4.4 cfs @ 12.08 hrs, Volume= 0.312 af
Primary = 4.4 cfs @ 12.08 hrs, Volume= 0.312 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=332' Tc=20.0 min CN=55 Runoff=2.4 cfs 0.276 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.6 cfs 0.058 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=2.32"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=8.3 cfs 1.132 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=2.23"
Flow Length=759' Tc=23.7 min CN=60 Runoff=25.8 cfs 3.063 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=2.23"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=17.9 cfs 1.839 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=3.08"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=21.1 cfs 1.507 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=2.60"
Flow Length=706' Tc=4.7 min CN=64 Runoff=7.0 cfs 0.486 af

Link EXDP1: EXDP1 Inflow=2.4 cfs 0.276 af
Primary=2.4 cfs 0.276 af

Link EXDP2: EXDP2 Inflow=0.6 cfs 0.058 af
Primary=0.6 cfs 0.058 af

Link EXDP3: EXDP3 Inflow=8.3 cfs 1.132 af
Primary=8.3 cfs 1.132 af

Link EXDP4: EXDP4 Inflow=25.8 cfs 3.063 af
Primary=25.8 cfs 3.063 af

Link EXDP5: EXDP5 Inflow=17.9 cfs 1.839 af
Primary=17.9 cfs 1.839 af

Link EXDP6: EXDP6 Inflow=21.1 cfs 1.507 af
Primary=21.1 cfs 1.507 af

Link EXDP7: EXDP7 Inflow=7.0 cfs 0.486 af
Primary=7.0 cfs 0.486 af

Total Runoff Area = 42.620 ac Runoff Volume = 8.362 af Average Runoff Depth = 2.35"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment EXWS1: EXWS1

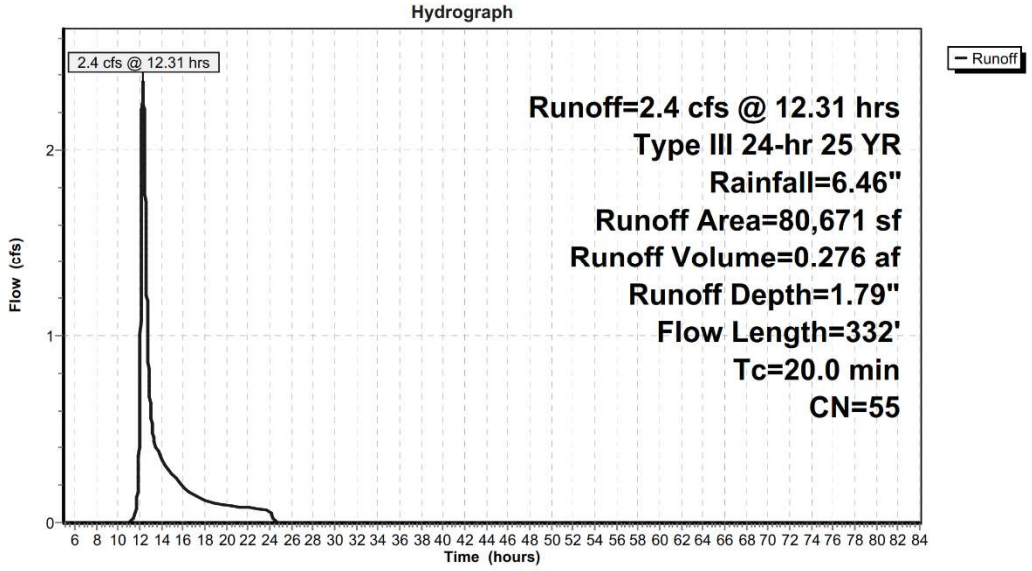
Runoff = 2.4 cfs @ 12.31 hrs, Volume= 0.276 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment EXWS2: EXWS2

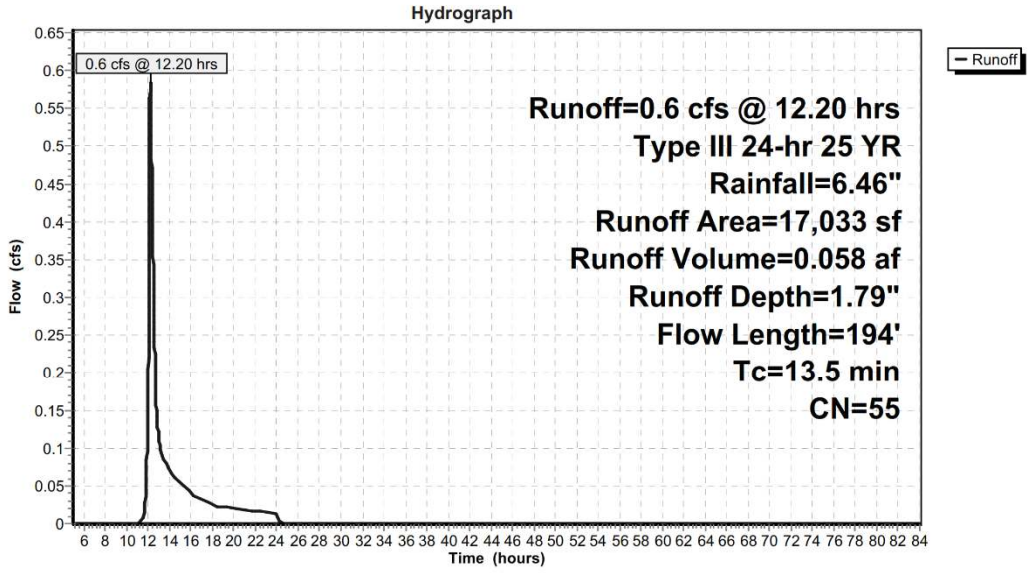
Runoff = 0.6 cfs @ 12.20 hrs, Volume= 0.058 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment EXWS3: EXWS3

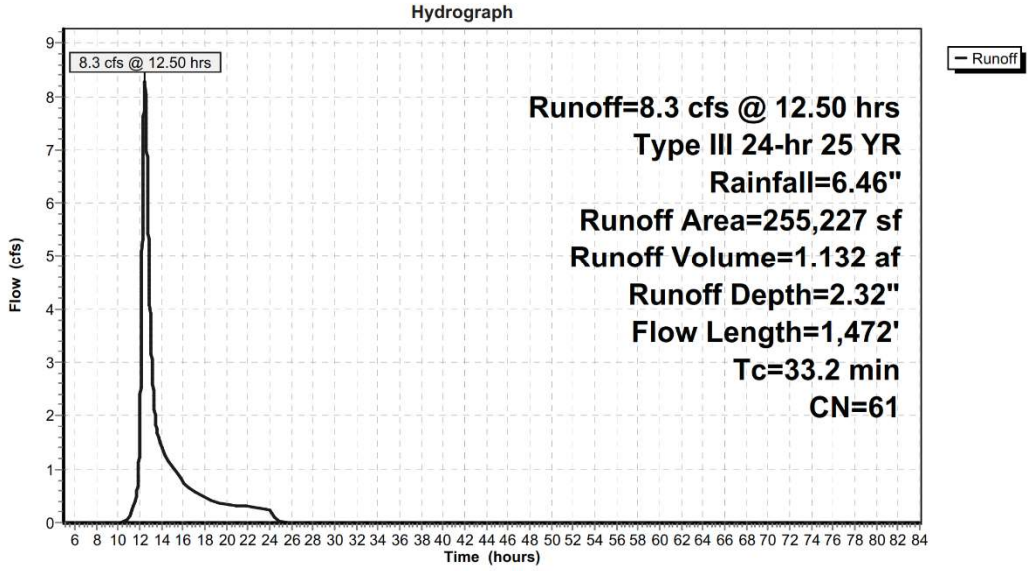
Runoff = 8.3 cfs @ 12.50 hrs, Volume= 1.132 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment EXWS4: EXWS4

Runoff = 25.8 cfs @ 12.35 hrs, Volume= 3.063 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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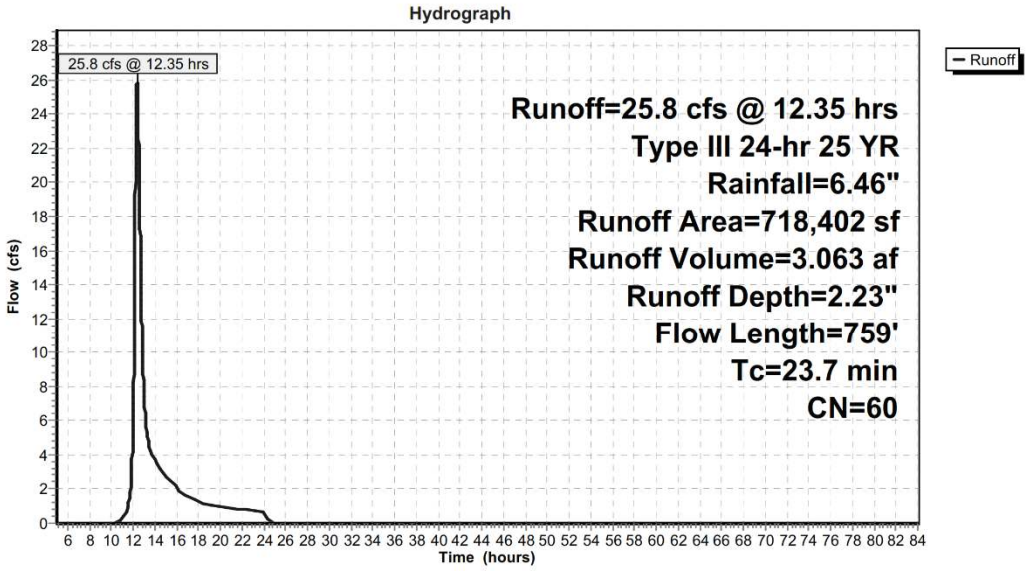
Subcatchment EXWS4: EXWS4



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment EXWS5: EXWS5

Runoff = 17.9 cfs @ 12.24 hrs, Volume= 1.839 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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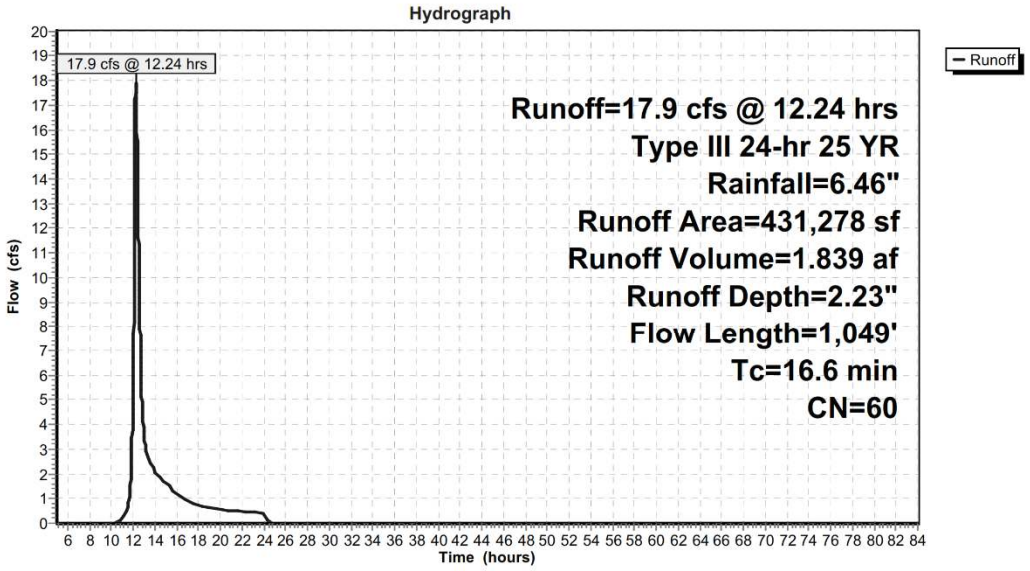
Subcatchment EXWS5: EXWS5



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Summary for Subcatchment EXWS6: EXWS6

Runoff = 21.1 cfs @ 12.09 hrs, Volume= 1.507 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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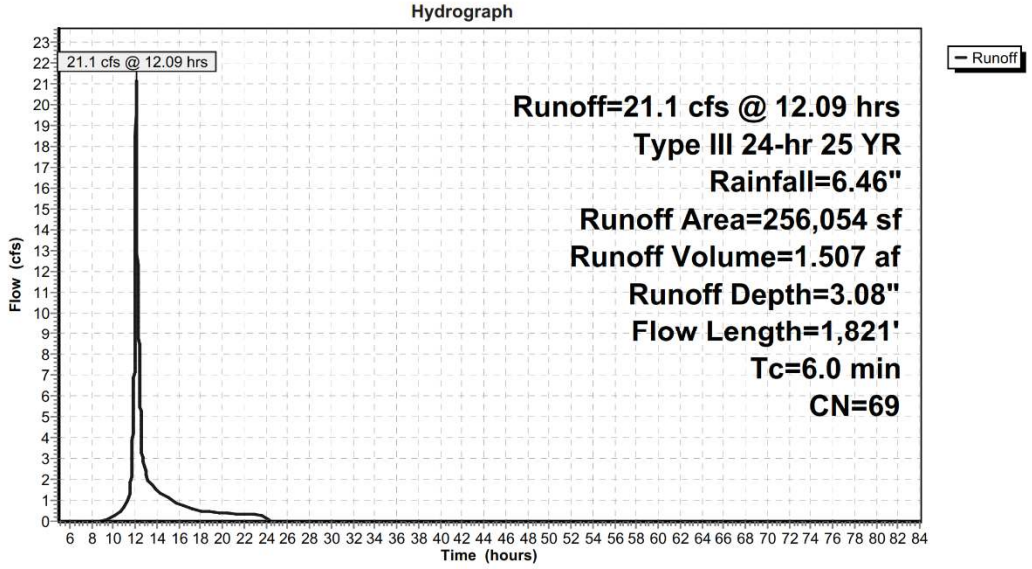
Subcatchment EXWS6: EXWS6

Hydrograph



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Summary for Subcatchment EXWS7: EXWS7

Runoff = 7.0 cfs @ 12.07 hrs, Volume= 0.486 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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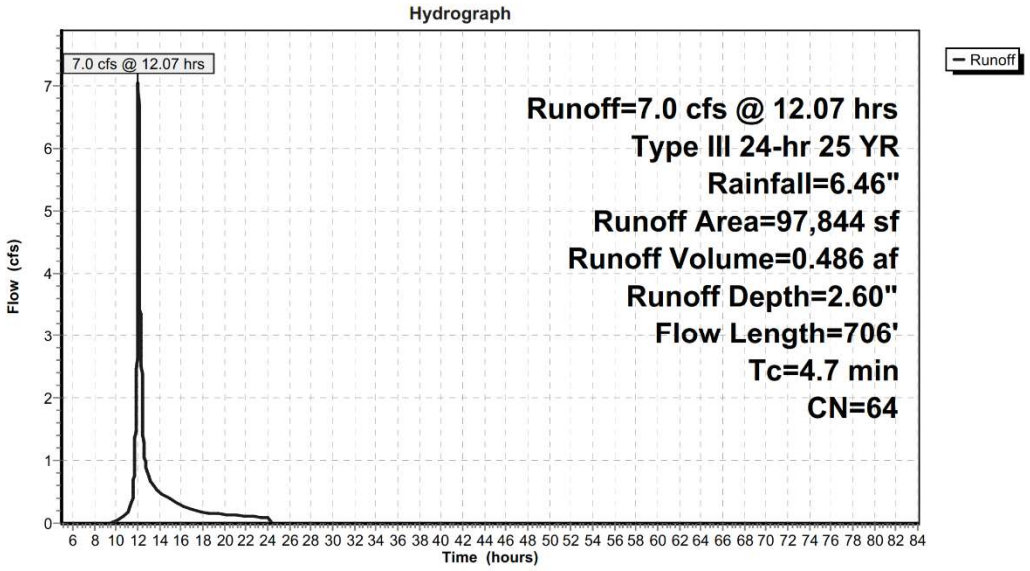
Subcatchment EXWS7: EXWS7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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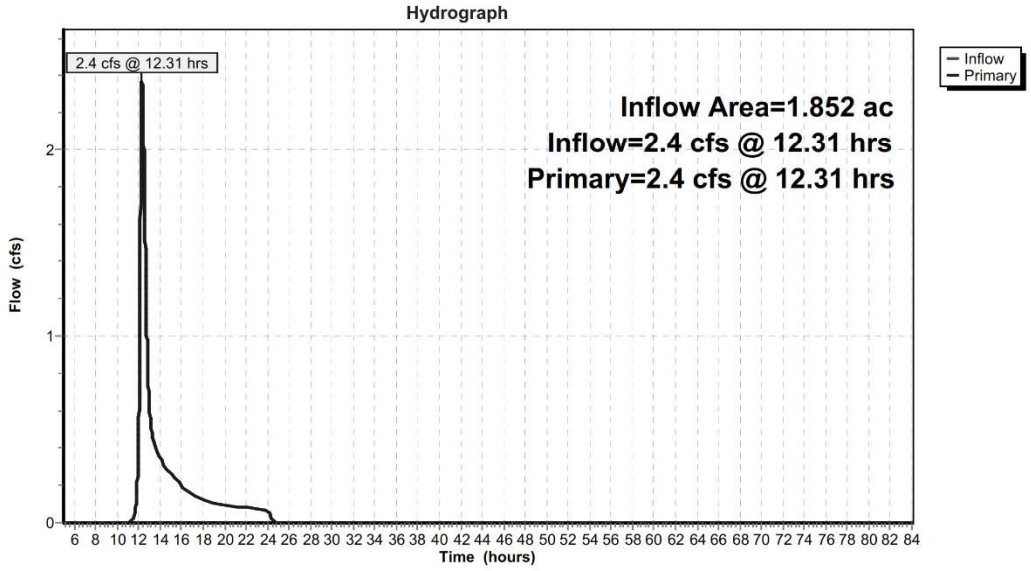
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25 YR event
Inflow = 2.4 cfs @ 12.31 hrs, Volume= 0.276 af
Primary = 2.4 cfs @ 12.31 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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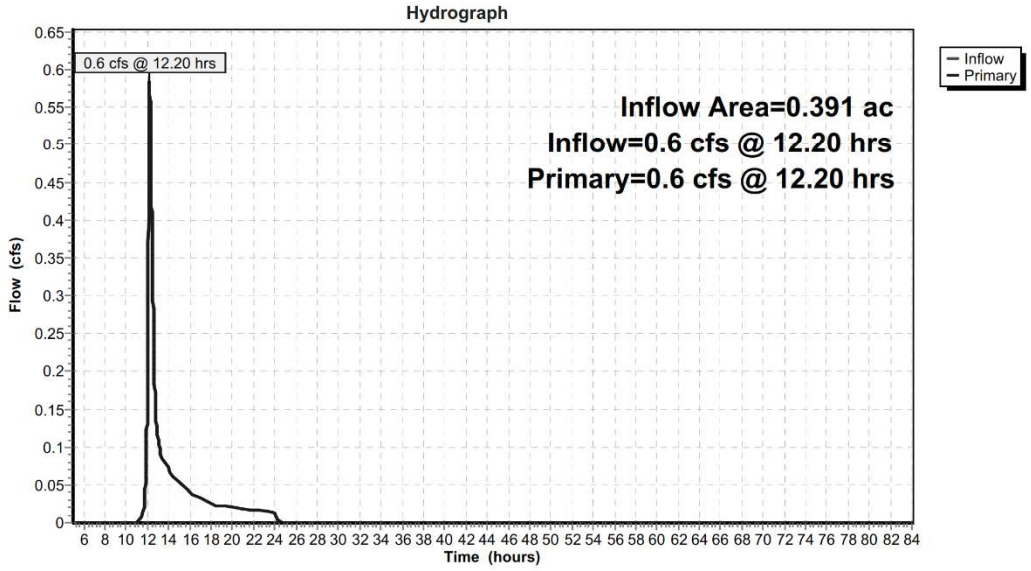
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25 YR event
Inflow = 0.6 cfs @ 12.20 hrs, Volume= 0.058 af
Primary = 0.6 cfs @ 12.20 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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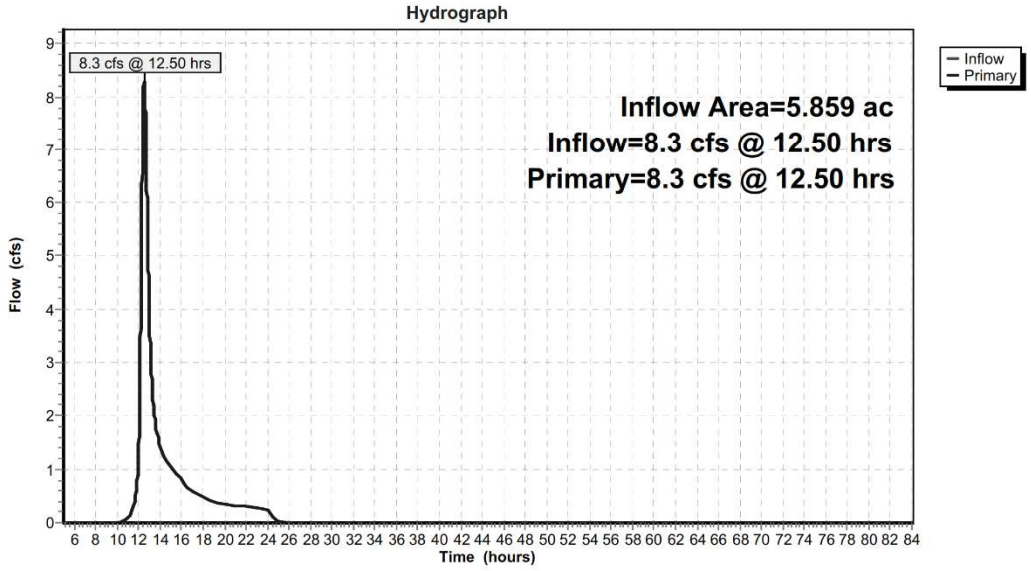
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 2.32" for 25 YR event
Inflow = 8.3 cfs @ 12.50 hrs, Volume= 1.132 af
Primary = 8.3 cfs @ 12.50 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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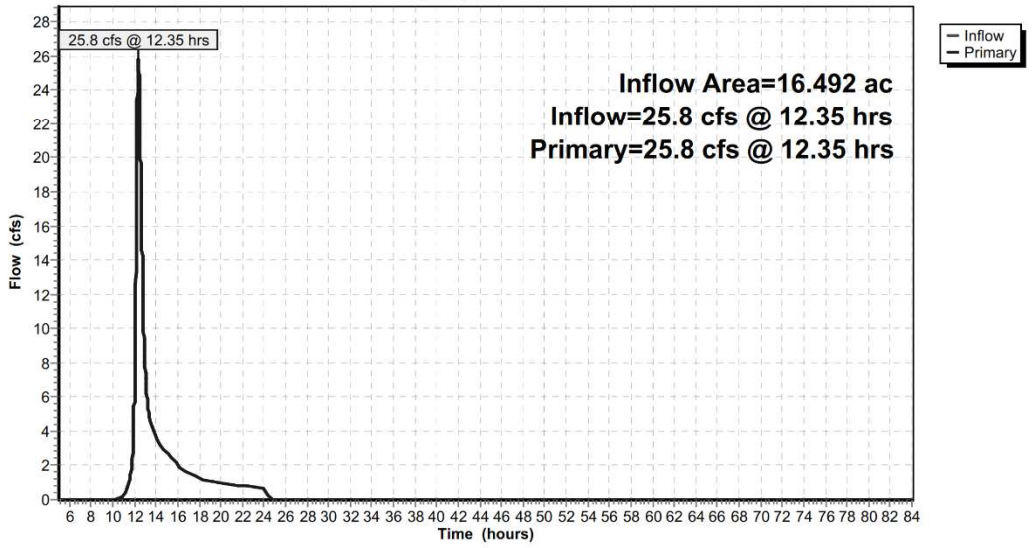
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 2.23" for 25 YR event
Inflow = 25.8 cfs @ 12.35 hrs, Volume= 3.063 af
Primary = 25.8 cfs @ 12.35 hrs, Volume= 3.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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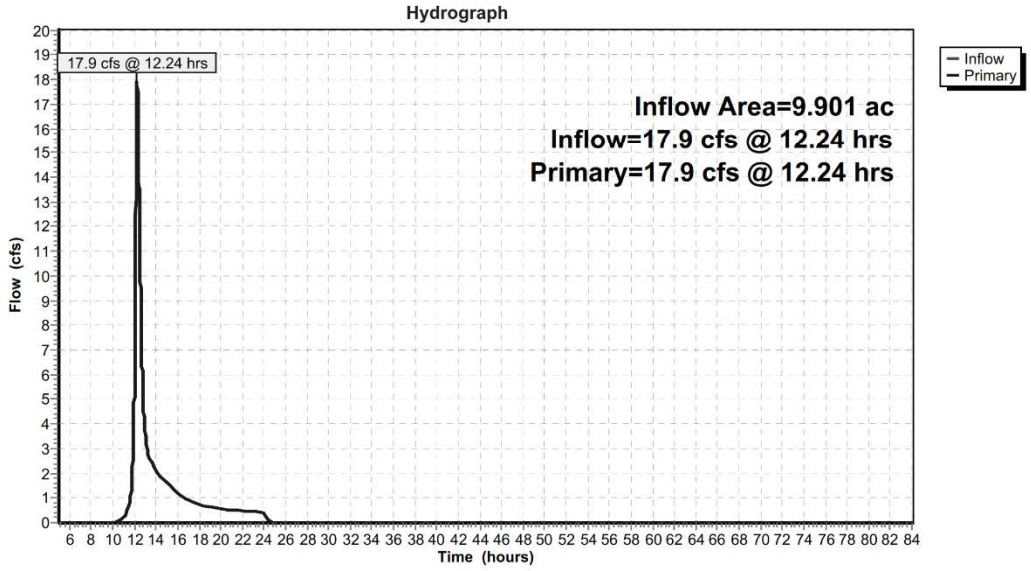
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 2.23" for 25 YR event
Inflow = 17.9 cfs @ 12.24 hrs, Volume= 1.839 af
Primary = 17.9 cfs @ 12.24 hrs, Volume= 1.839 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 25 YR Rainfall=6.46"*
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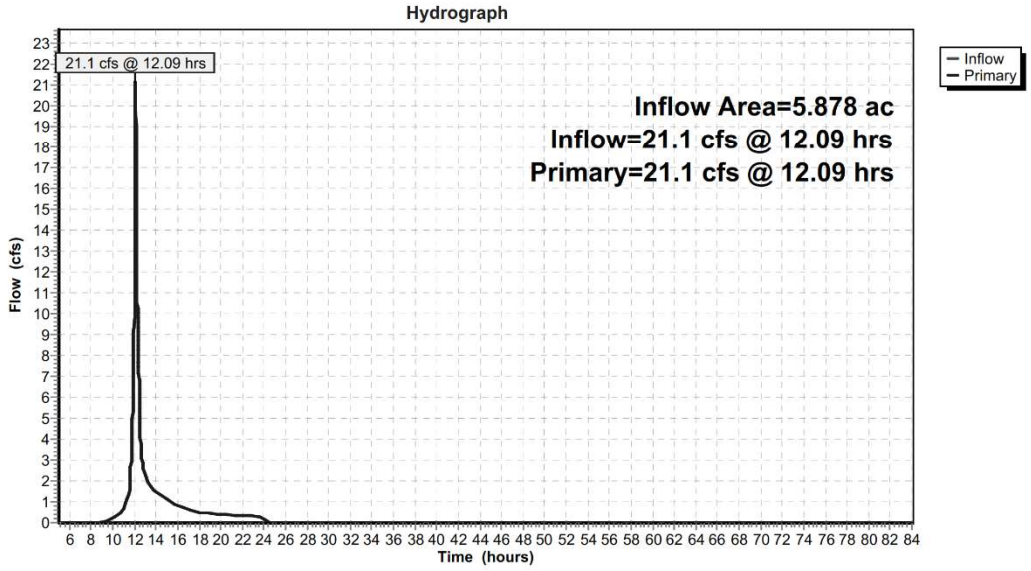
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 3.08" for 25 YR event
Inflow = 21.1 cfs @ 12.09 hrs, Volume= 1.507 af
Primary = 21.1 cfs @ 12.09 hrs, Volume= 1.507 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6



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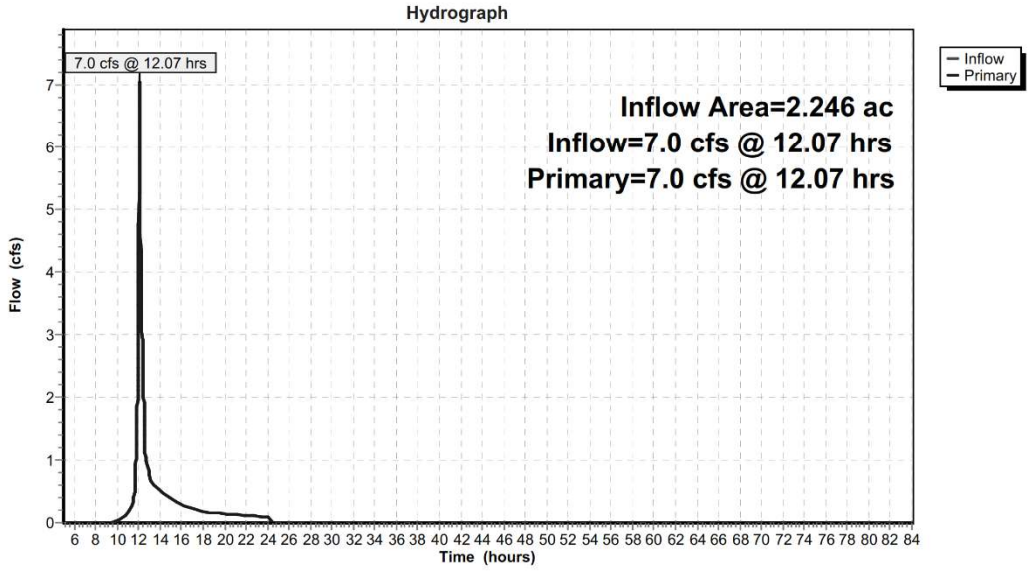
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 2.60" for 25 YR event
Inflow = 7.0 cfs @ 12.07 hrs, Volume= 0.486 af
Primary = 7.0 cfs @ 12.07 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=332' Tc=20.0 min CN=55 Runoff=3.6 cfs 0.397 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.9 cfs 0.084 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=3.21"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=11.7 cfs 1.567 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=3.10"
Flow Length=759' Tc=23.7 min CN=60 Runoff=36.8 cfs 4.264 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=3.10"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=25.6 cfs 2.560 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=4.09"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=28.2 cfs 2.002 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=3.54"
Flow Length=706' Tc=4.7 min CN=64 Runoff=9.7 cfs 0.662 af

Link EXDP1: EXDP1 Inflow=3.6 cfs 0.397 af
Primary=3.6 cfs 0.397 af

Link EXDP2: EXDP2 Inflow=0.9 cfs 0.084 af
Primary=0.9 cfs 0.084 af

Link EXDP3: EXDP3 Inflow=11.7 cfs 1.567 af
Primary=11.7 cfs 1.567 af

Link EXDP4: EXDP4 Inflow=36.8 cfs 4.264 af
Primary=36.8 cfs 4.264 af

Link EXDP5: EXDP5 Inflow=25.6 cfs 2.560 af
Primary=25.6 cfs 2.560 af

Link EXDP6: EXDP6 Inflow=28.2 cfs 2.002 af
Primary=28.2 cfs 2.002 af

Link EXDP7: EXDP7 Inflow=9.7 cfs 0.662 af
Primary=9.7 cfs 0.662 af

Total Runoff Area = 42.620 ac Runoff Volume = 11.537 af Average Runoff Depth = 3.25"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

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Summary for Subcatchment EXWS1: EXWS1

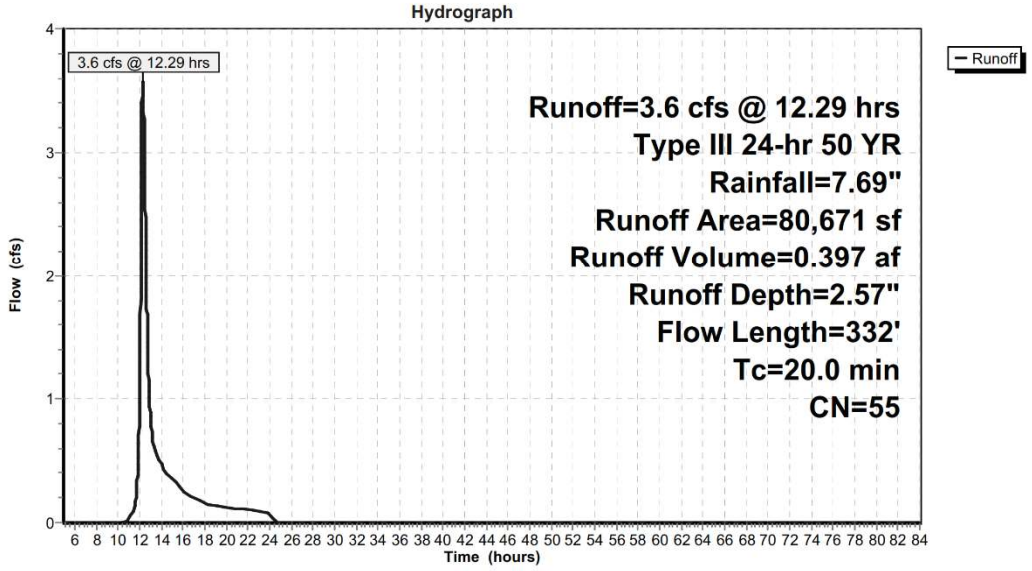
Runoff = 3.6 cfs @ 12.29 hrs, Volume= 0.397 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment EXWS2: EXWS2

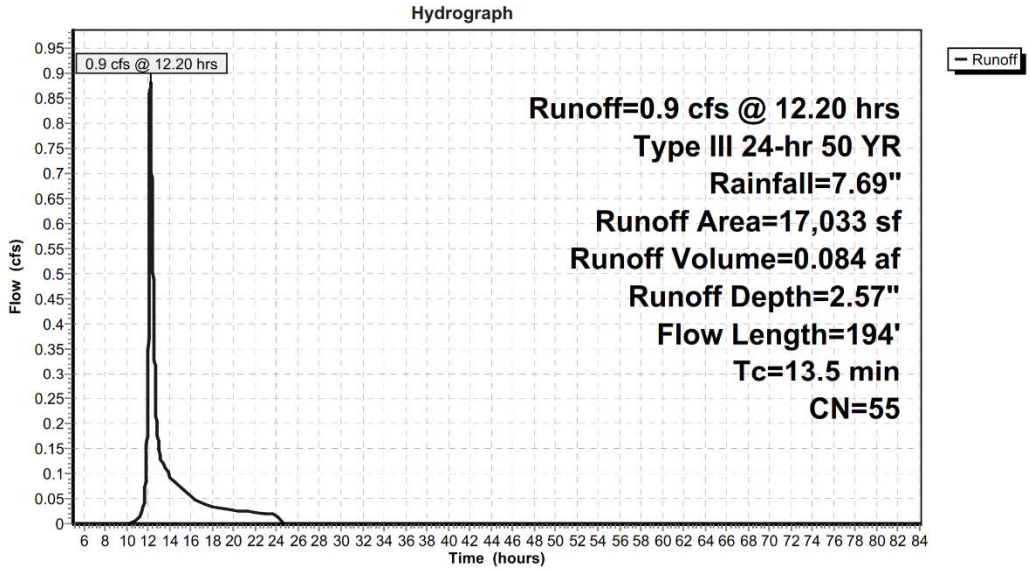
Runoff = 0.9 cfs @ 12.20 hrs, Volume= 0.084 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment EXWS3: EXWS3

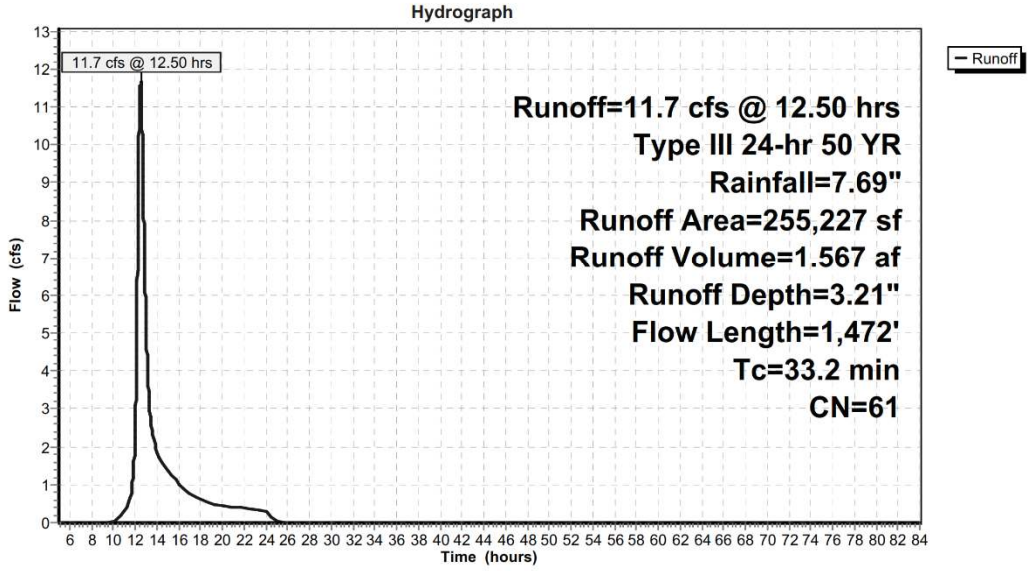
Runoff = 11.7 cfs @ 12.50 hrs, Volume= 1.567 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment EXWS4: EXWS4

Runoff = 36.8 cfs @ 12.35 hrs, Volume= 4.264 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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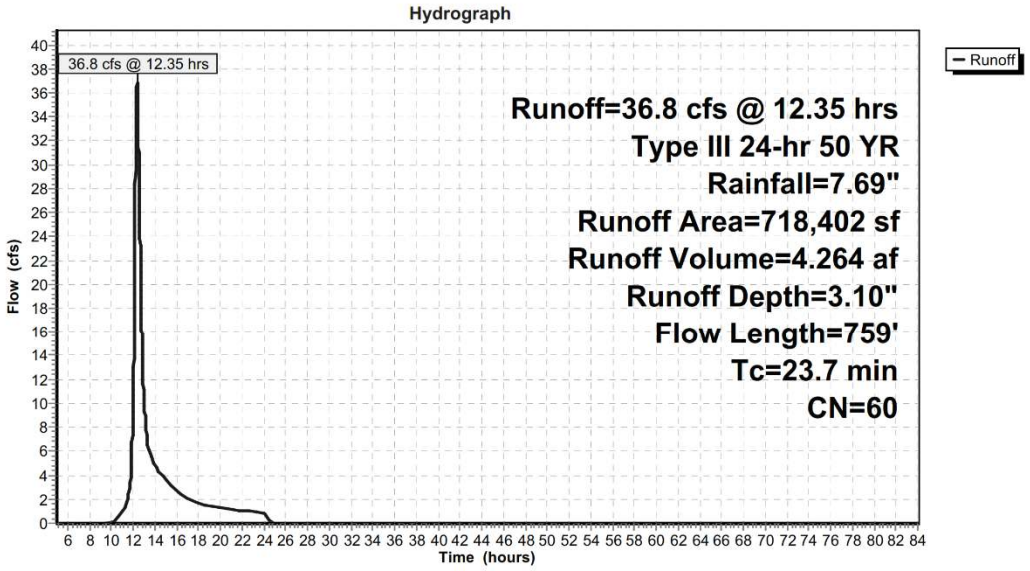
Subcatchment EXWS4: EXWS4



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment EXWS5: EXWS5

Runoff = 25.6 cfs @ 12.23 hrs, Volume= 2.560 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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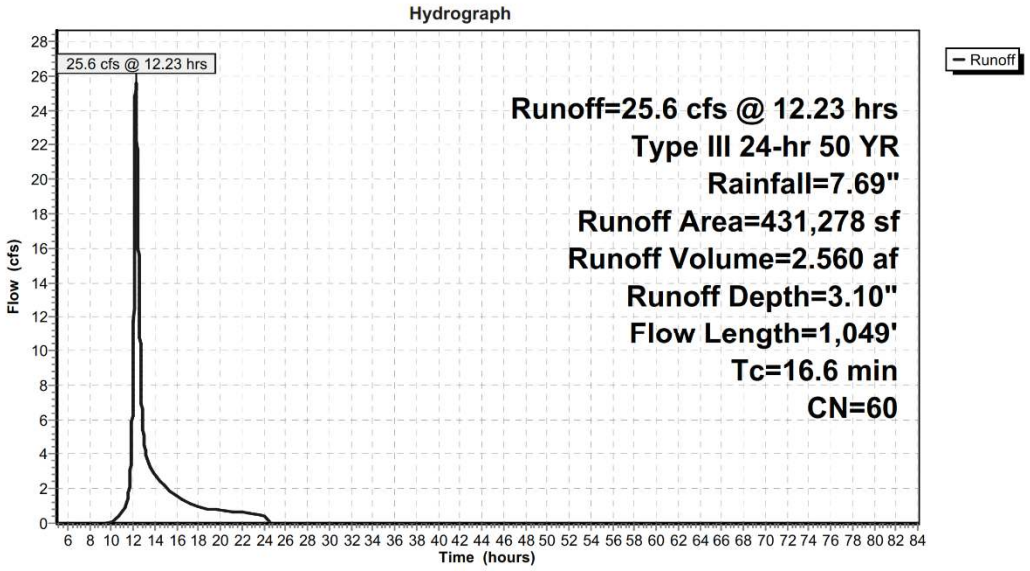
Subcatchment EXWS5: EXWS5



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Summary for Subcatchment EXWS6: EXWS6

Runoff = 28.2 cfs @ 12.09 hrs, Volume= 2.002 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

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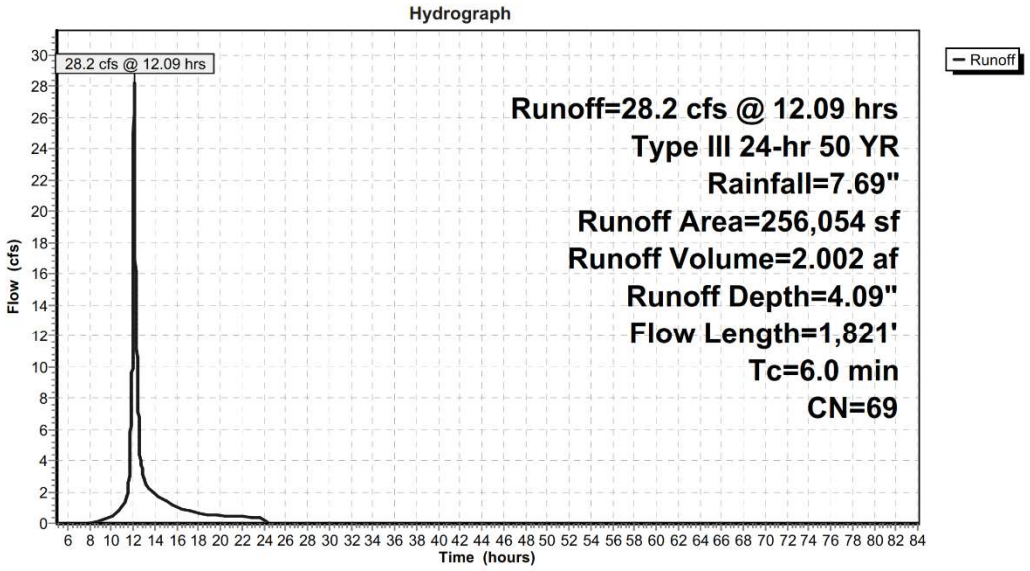
Subcatchment EXWS6: EXWS6



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment EXWS7: EXWS7

Runoff = 9.7 cfs @ 12.07 hrs, Volume= 0.662 af, Depth= 3.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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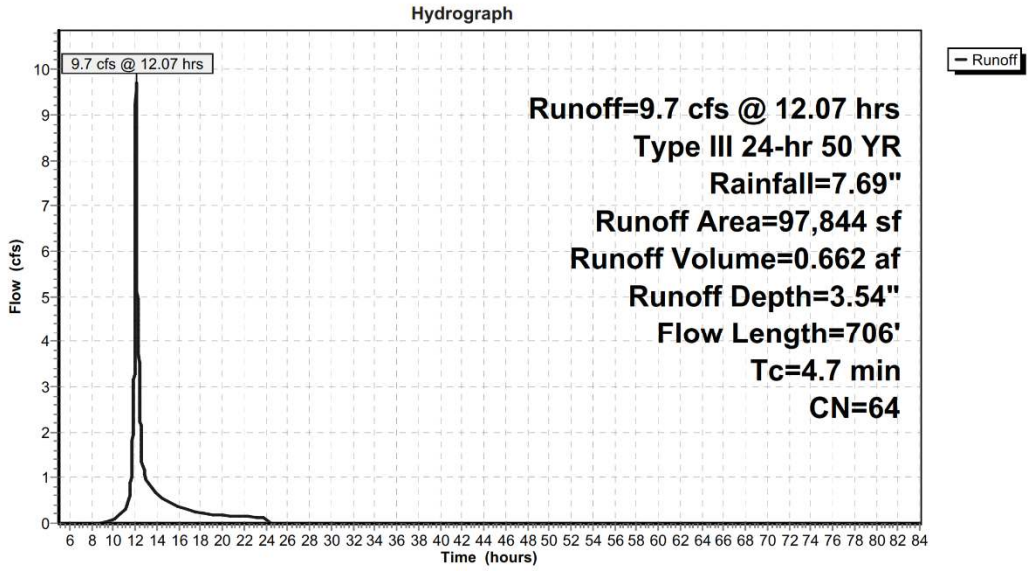
Subcatchment EXWS7: EXWS7



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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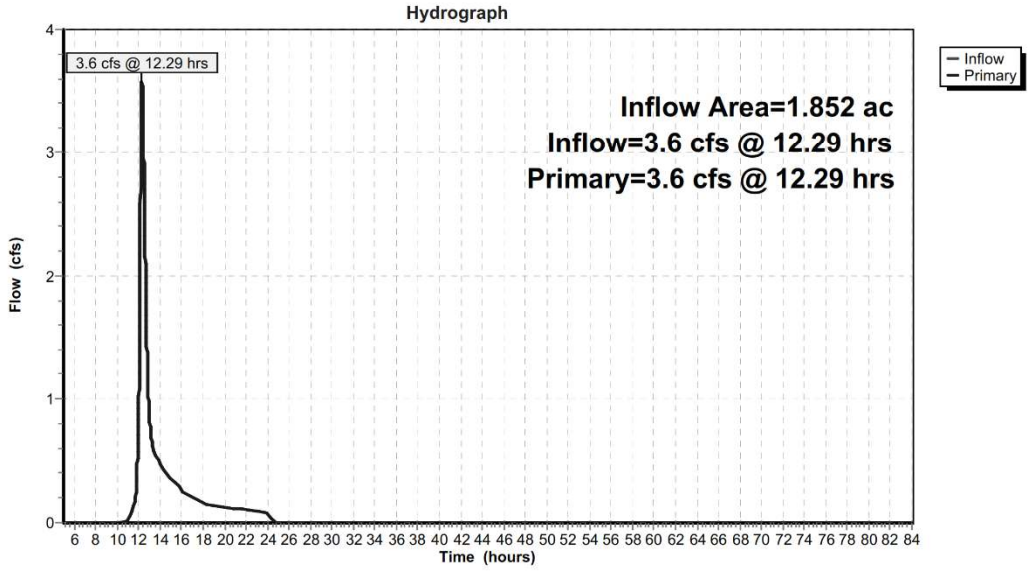
Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 2.57" for 50 YR event
Inflow = 3.6 cfs @ 12.29 hrs, Volume= 0.397 af
Primary = 3.6 cfs @ 12.29 hrs, Volume= 0.397 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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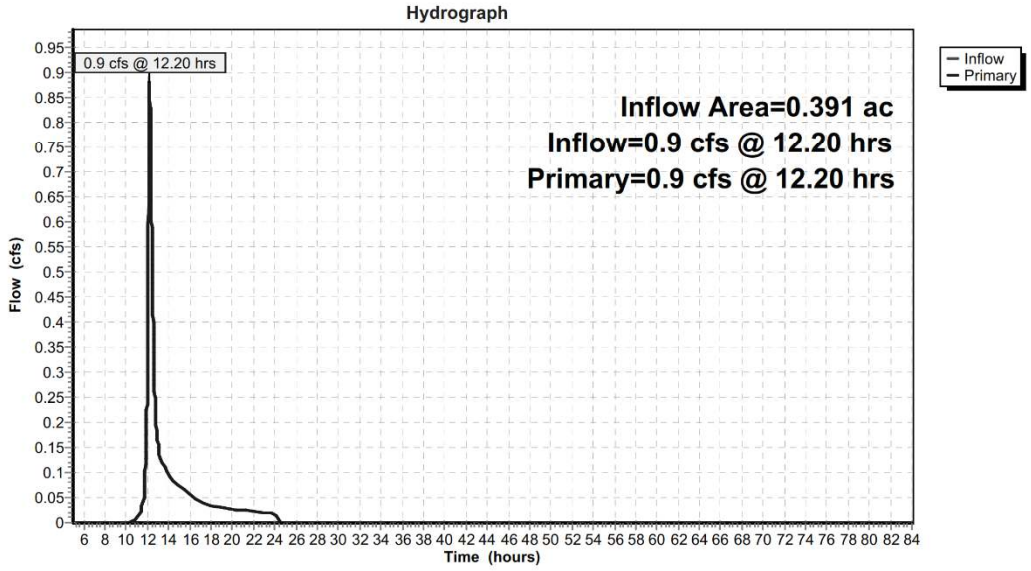
Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 2.57" for 50 YR event
Inflow = 0.9 cfs @ 12.20 hrs, Volume= 0.084 af
Primary = 0.9 cfs @ 12.20 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



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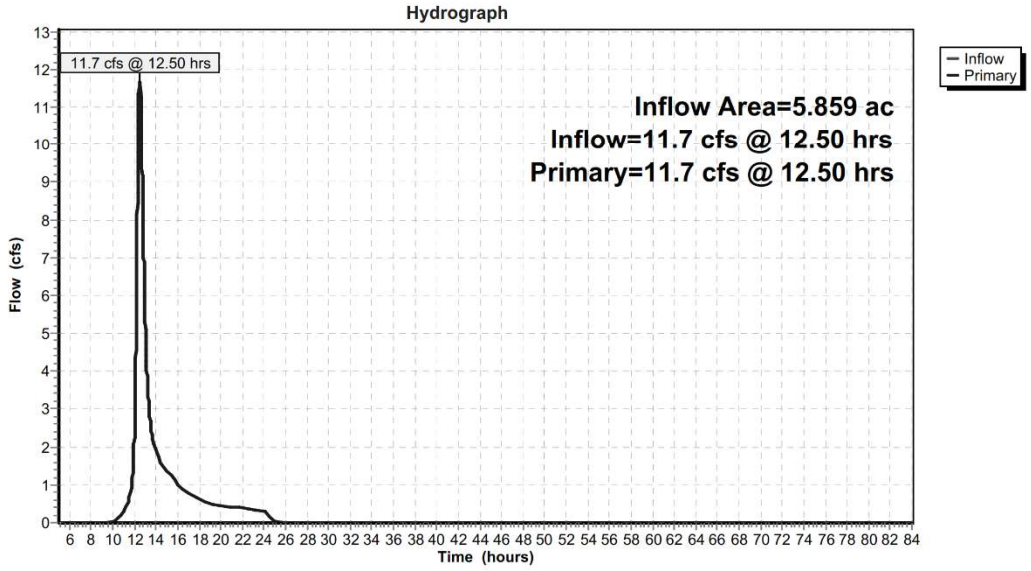
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 3.21" for 50 YR event
Inflow = 11.7 cfs @ 12.50 hrs, Volume= 1.567 af
Primary = 11.7 cfs @ 12.50 hrs, Volume= 1.567 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3



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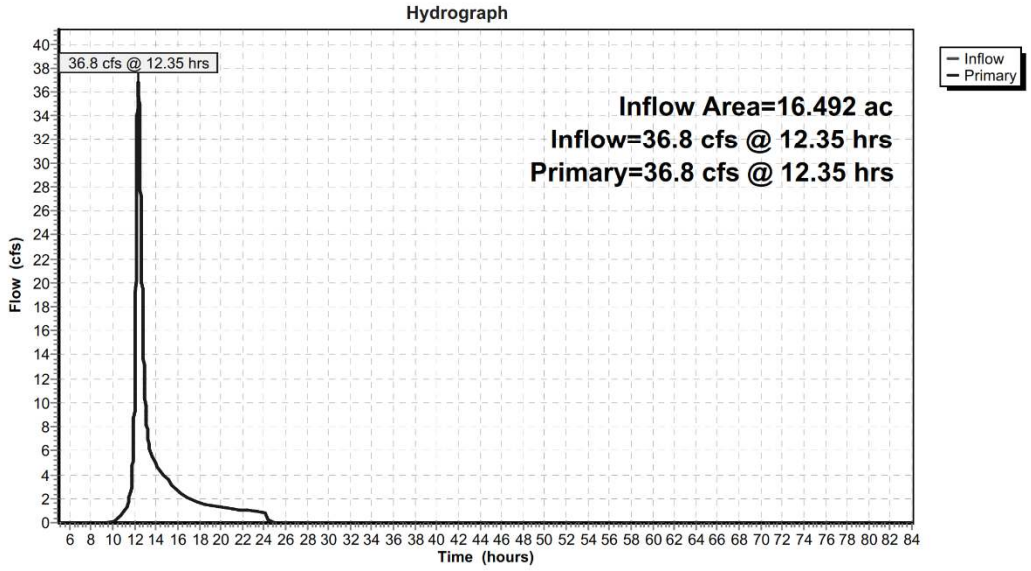
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 3.10" for 50 YR event
Inflow = 36.8 cfs @ 12.35 hrs, Volume= 4.264 af
Primary = 36.8 cfs @ 12.35 hrs, Volume= 4.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4



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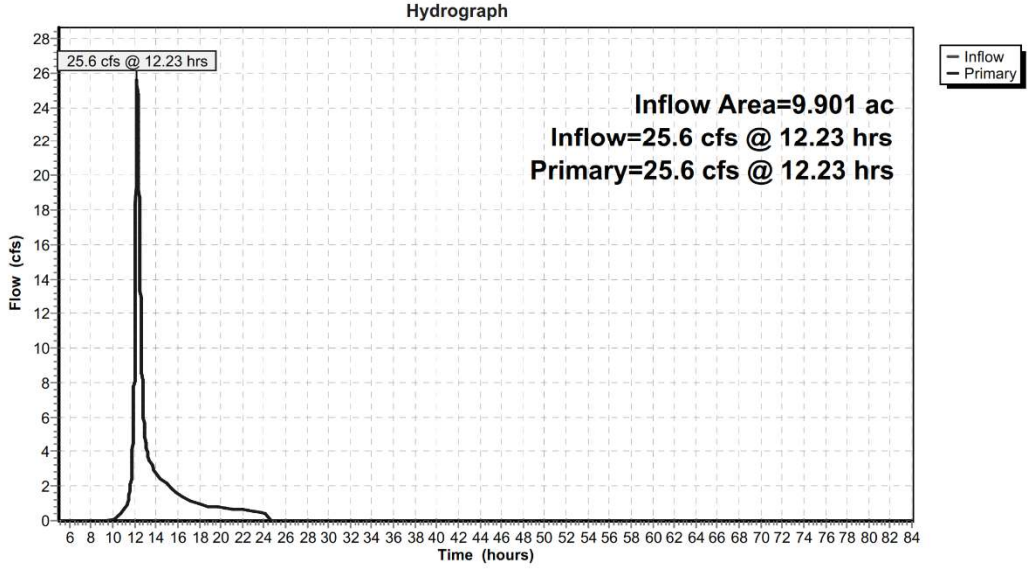
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 3.10" for 50 YR event
Inflow = 25.6 cfs @ 12.23 hrs, Volume= 2.560 af
Primary = 25.6 cfs @ 12.23 hrs, Volume= 2.560 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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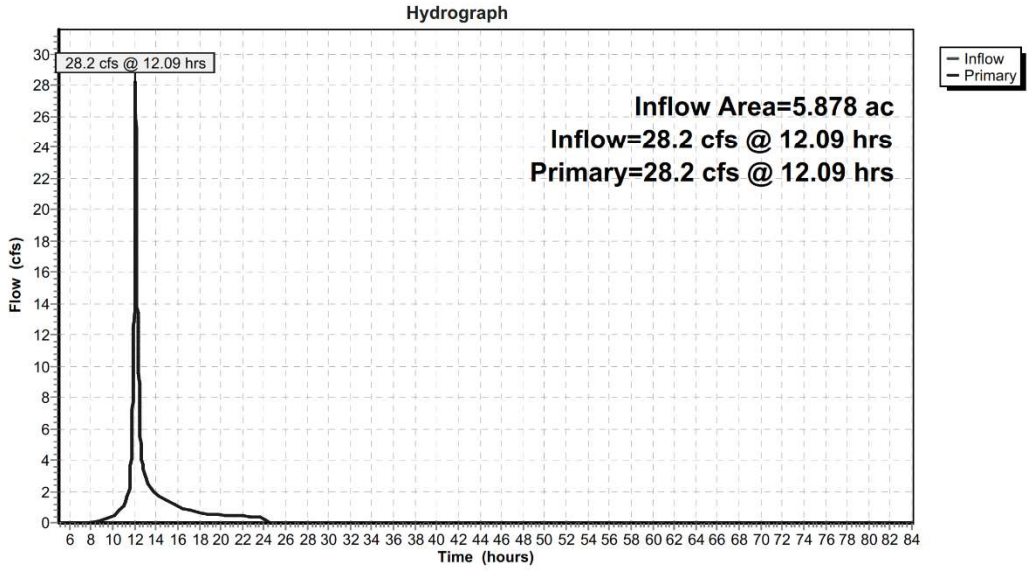
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 4.09" for 50 YR event
Inflow = 28.2 cfs @ 12.09 hrs, Volume= 2.002 af
Primary = 28.2 cfs @ 12.09 hrs, Volume= 2.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 50 YR Rainfall=7.69"*
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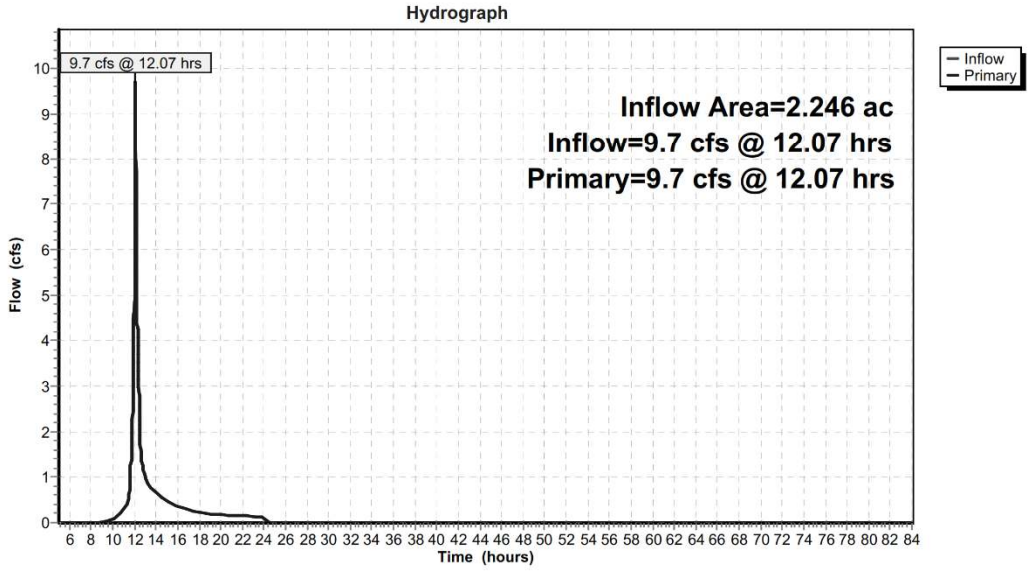
Summary for Link EXDP7: EXDP7

Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 3.54" for 50 YR event
Inflow = 9.7 cfs @ 12.07 hrs, Volume= 0.662 af
Primary = 9.7 cfs @ 12.07 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Time span=5.00-84.00 hrs, dt=0.01 hrs, 7901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXWS1: EXWS1 Runoff Area=80,671 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=332' Tc=20.0 min CN=55 Runoff=5.2 cfs 0.557 af

Subcatchment EXWS2: EXWS2 Runoff Area=17,033 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=194' Tc=13.5 min CN=55 Runoff=1.3 cfs 0.118 af

Subcatchment EXWS3: EXWS3 Runoff Area=255,227 sf 4.07% Impervious Runoff Depth=4.36"
Flow Length=1,472' Tc=33.2 min CN=61 Runoff=16.0 cfs 2.129 af

Subcatchment EXWS4: EXWS4 Runoff Area=718,402 sf 5.52% Impervious Runoff Depth=4.23"
Flow Length=759' Tc=23.7 min CN=60 Runoff=50.9 cfs 5.820 af

Subcatchment EXWS5: EXWS5 Runoff Area=431,278 sf 11.64% Impervious Runoff Depth=4.23"
Flow Length=1,049' Tc=16.6 min CN=60 Runoff=35.5 cfs 3.494 af

Subcatchment EXWS6: EXWS6 Runoff Area=256,054 sf 22.42% Impervious Runoff Depth=5.36"
Flow Length=1,821' Tc=6.0 min CN=69 Runoff=36.9 cfs 2.626 af

Subcatchment EXWS7: EXWS7 Runoff Area=97,844 sf 14.41% Impervious Runoff Depth=4.73"
Flow Length=706' Tc=4.7 min CN=64 Runoff=13.1 cfs 0.886 af

Link EXDP1: EXDP1 Inflow=5.2 cfs 0.557 af
Primary=5.2 cfs 0.557 af

Link EXDP2: EXDP2 Inflow=1.3 cfs 0.118 af
Primary=1.3 cfs 0.118 af

Link EXDP3: EXDP3 Inflow=16.0 cfs 2.129 af
Primary=16.0 cfs 2.129 af

Link EXDP4: EXDP4 Inflow=50.9 cfs 5.820 af
Primary=50.9 cfs 5.820 af

Link EXDP5: EXDP5 Inflow=35.5 cfs 3.494 af
Primary=35.5 cfs 3.494 af

Link EXDP6: EXDP6 Inflow=36.9 cfs 2.626 af
Primary=36.9 cfs 2.626 af

Link EXDP7: EXDP7 Inflow=13.1 cfs 0.886 af
Primary=13.1 cfs 0.886 af

Total Runoff Area = 42.620 ac Runoff Volume = 15.629 af Average Runoff Depth = 4.40"
90.75% Pervious = 38.676 ac 9.25% Impervious = 3.943 ac

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Summary for Subcatchment EXWS1: EXWS1

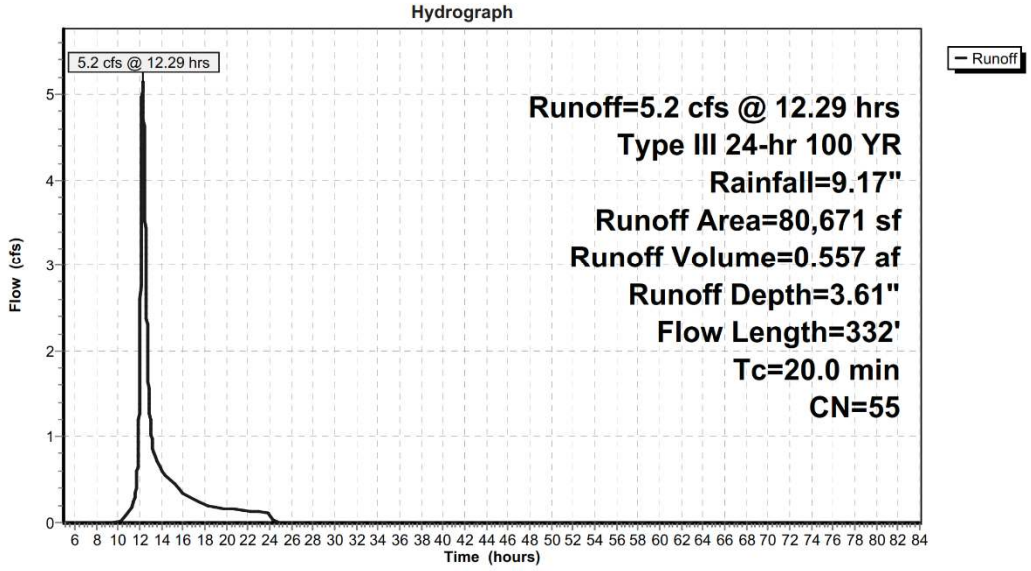
Runoff = 5.2 cfs @ 12.29 hrs, Volume= 0.557 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
1,983	61	>75% Grass cover, Good, HSG B
17,152	55	Woods, Good, HSG B
61,536	55	Woods, Good, HSG B
80,671	55	Weighted Average
80,671		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment EXWS1: EXWS1



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Summary for Subcatchment EXWS2: EXWS2

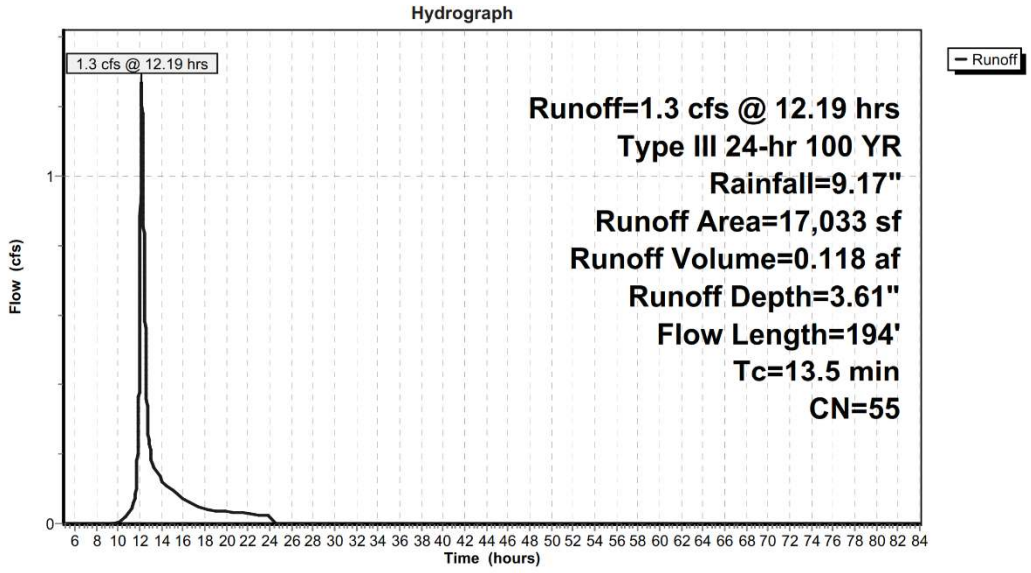
Runoff = 1.3 cfs @ 12.19 hrs, Volume= 0.118 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
17,033	55	Woods, Good, HSG B
17,033		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment EXWS2: EXWS2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment EXWS3: EXWS3

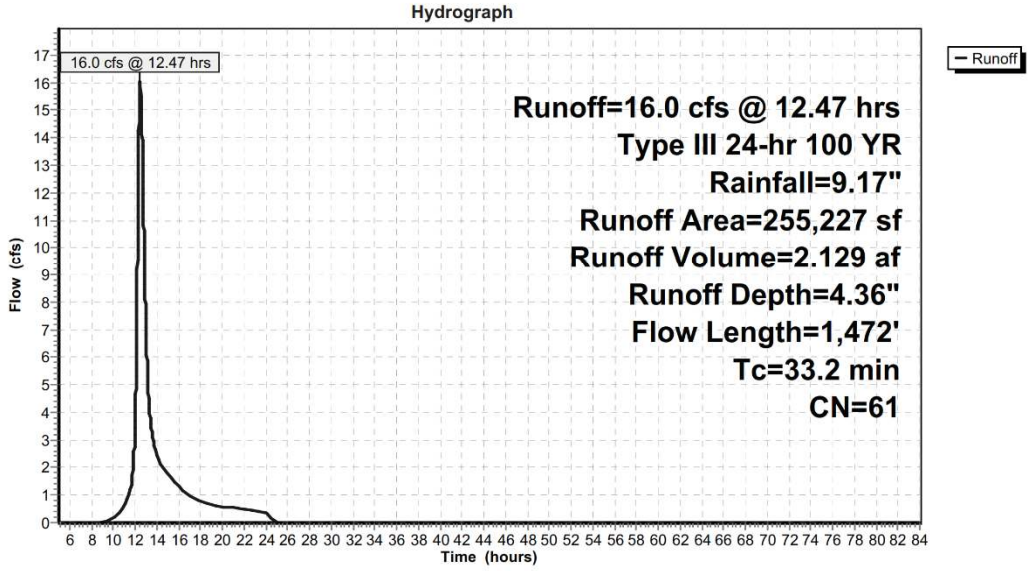
Runoff = 16.0 cfs @ 12.47 hrs, Volume= 2.129 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
81,245	55	Woods, Good, HSG B
162,736	61	>75% Grass cover, Good, HSG B
10,397	98	Paved parking, HSG B
849	61	>75% Grass cover, Good, HSG B
255,227	61	Weighted Average
244,830		95.93% Pervious Area
10,397		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	150	0.0430	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
6.2	529	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	793	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.2	1,472	Total			

Subcatchment EXWS3: EXWS3



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS4: EXWS4

Runoff = 50.9 cfs @ 12.35 hrs, Volume= 5.820 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
1,090	61	>75% Grass cover, Good, HSG B
31,029	98	Paved parking, HSG B
359,184	55	Woods, Good, HSG B
314,447	61	>75% Grass cover, Good, HSG B
8,523	98	Paved parking, HSG B
271	61	>75% Grass cover, Good, HSG B
118	98	Paved parking, HSG B
3,740	61	>75% Grass cover, Good, HSG B
718,402	60	Weighted Average
678,732		94.48% Pervious Area
39,670		5.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	150	0.0620	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.5	48	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	74	0.1350	1.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	172	0.1160	1.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	56	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	59	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	91	0.3840	3.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	759	Total			

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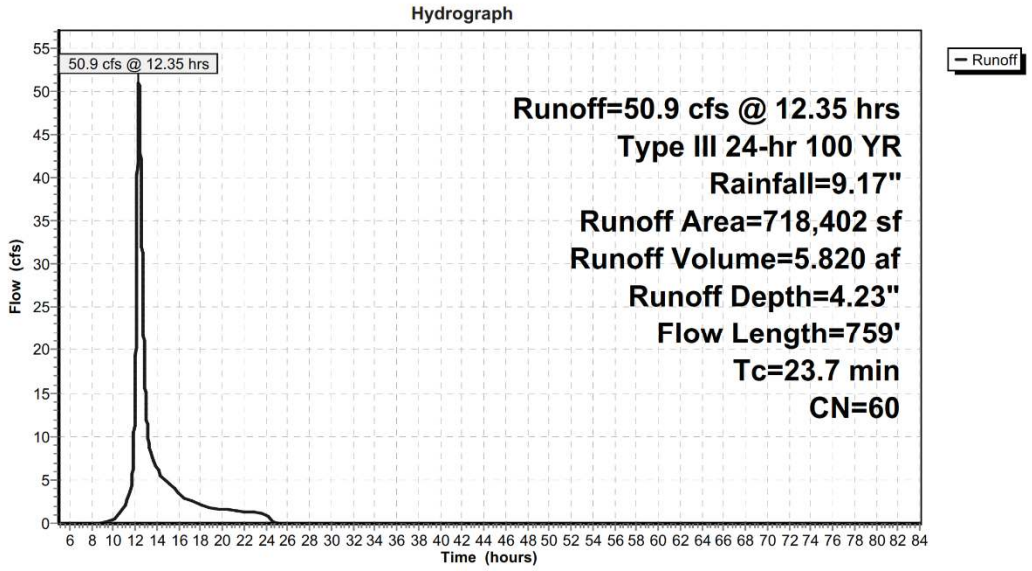
Subcatchment EXWS4: EXWS4



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Summary for Subcatchment EXWS5: EXWS5

Runoff = 35.5 cfs @ 12.23 hrs, Volume= 3.494 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
87,490	55	Woods, Good, HSG B
50,967	55	Woods, Good, HSG B
22,785	55	Woods, Good, HSG B
87,991	55	Woods, Good, HSG B
50,189	98	Paved parking, HSG B
1,904	61	>75% Grass cover, Good, HSG B
7,163	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
431,278	60	Weighted Average
381,089		88.36% Pervious Area
50,189		11.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	345	0.0520	4.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	105	0.1840	17.23	9.40	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3000	8.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.6	1,049	Total			

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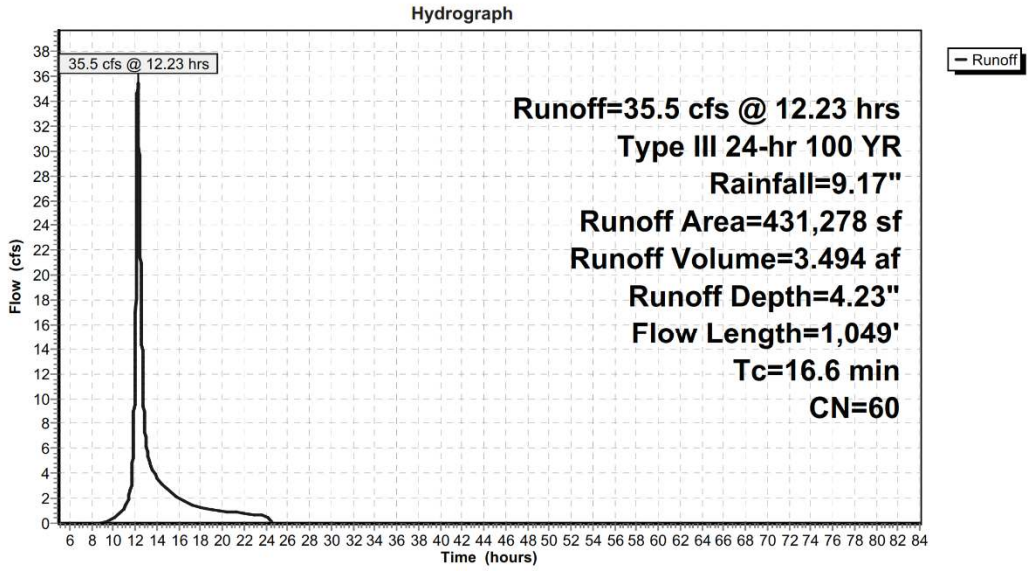
Subcatchment EXWS5: EXWS5



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment EXWS6: EXWS6

Runoff = 36.9 cfs @ 12.09 hrs, Volume= 2.626 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
30,242	61	>75% Grass cover, Good, HSG B
150,793	61	>75% Grass cover, Good, HSG B
4,924	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
295	61	>75% Grass cover, Good, HSG B
41,631	98	Paved parking, HSG B
2,635	61	>75% Grass cover, Good, HSG B
7,567	61	>75% Grass cover, Good, HSG B
15,787	98	Paved parking, HSG B
1,191	61	>75% Grass cover, Good, HSG B
256,054	69	Weighted Average
198,636		77.58% Pervious Area
57,418		22.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	28	0.0890	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.6	72	0.0490	1.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
0.2	50	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	450	0.0710	4.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.58	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.41	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.85	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.50	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
6.0	1,821	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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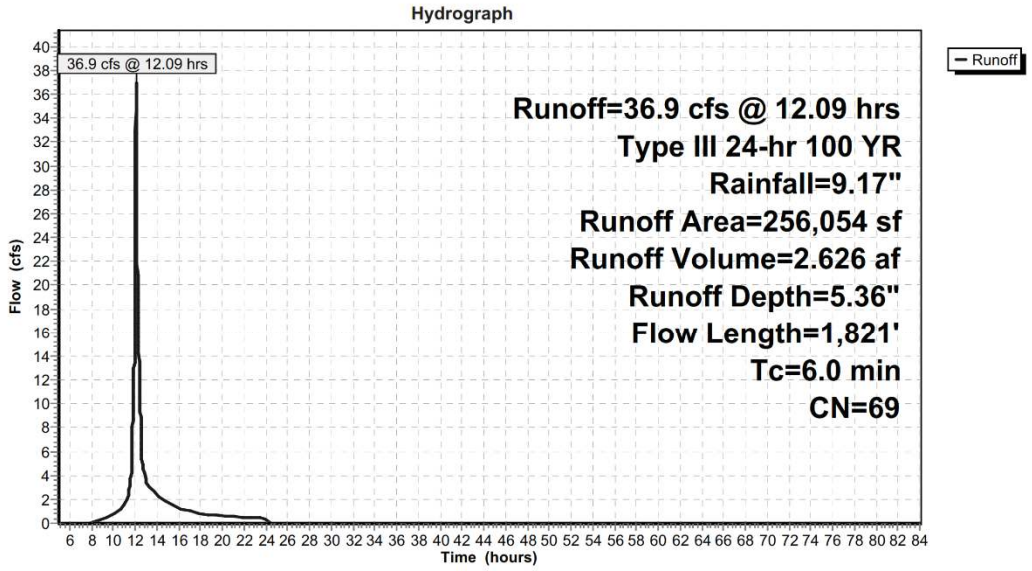
Subcatchment EXWS6: EXWS6



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment EXWS7: EXWS7

Runoff = 13.1 cfs @ 12.07 hrs, Volume= 0.886 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,433	61	>75% Grass cover, Good, HSG B
14,290	55	Woods, Good, HSG B
14,905	61	>75% Grass cover, Good, HSG B
29,839	55	Woods, Good, HSG B
12,976	61	>75% Grass cover, Good, HSG B
4,785	98	Paved parking, HSG B
2,157	61	>75% Grass cover, Good, HSG B
913	61	>75% Grass cover, Good, HSG B
989	61	>75% Grass cover, Good, HSG B
2,242	61	>75% Grass cover, Good, HSG B
9,315	98	Paved parking, HSG B
97,844	64	Weighted Average
83,744		85.59% Pervious Area
14,100		14.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	40	0.0740	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	60	0.0670	2.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.1	346	0.0685	5.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	260	0.0400	10.44	5.70	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010 PVC, smooth interior
4.7	706	Total			

EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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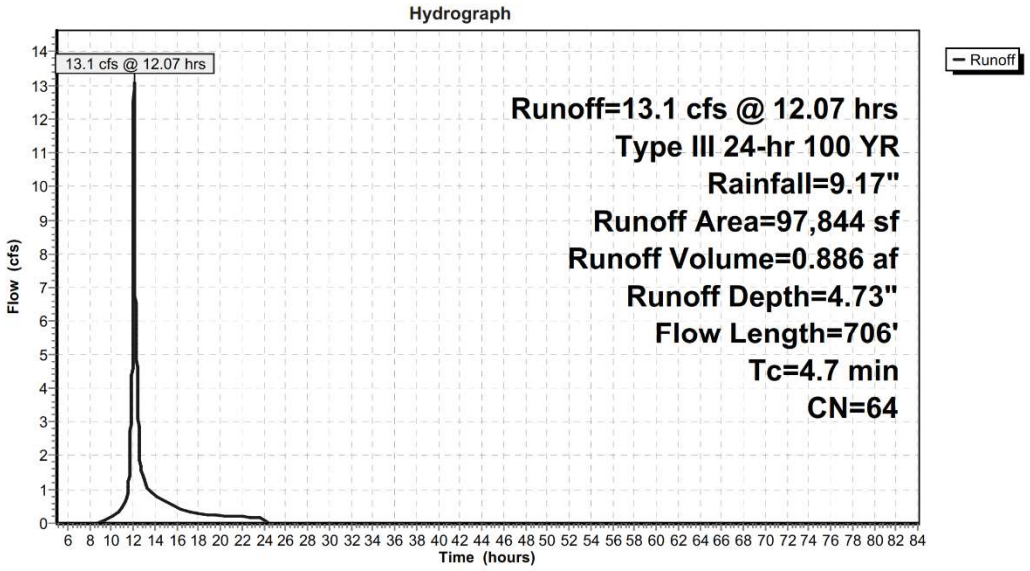
Subcatchment EXWS7: EXWS7



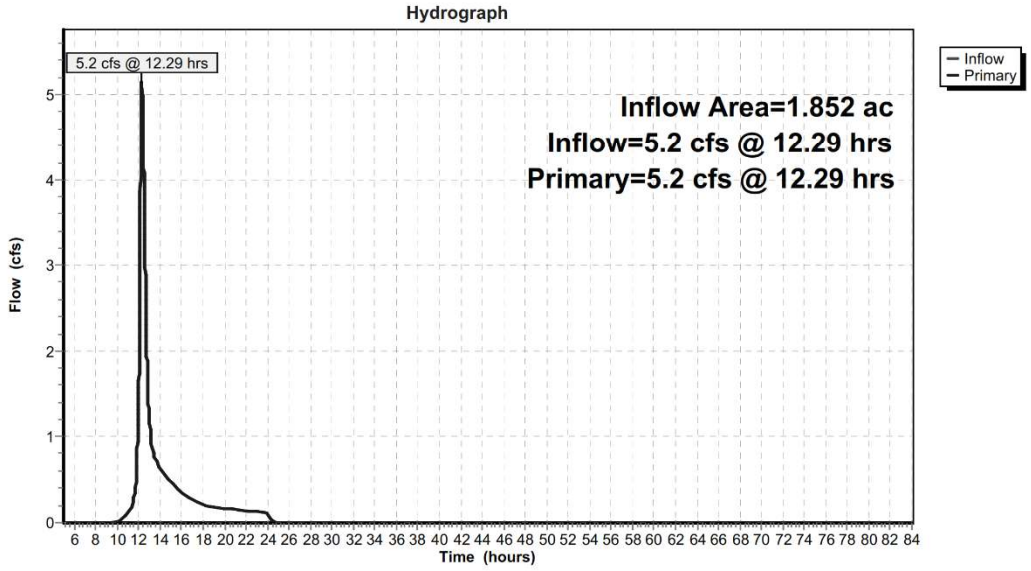
EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link EXDP1: EXDP1

Inflow Area = 1.852 ac, 0.00% Impervious, Inflow Depth = 3.61" for 100 YR event
Inflow = 5.2 cfs @ 12.29 hrs, Volume= 0.557 af
Primary = 5.2 cfs @ 12.29 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP1: EXDP1



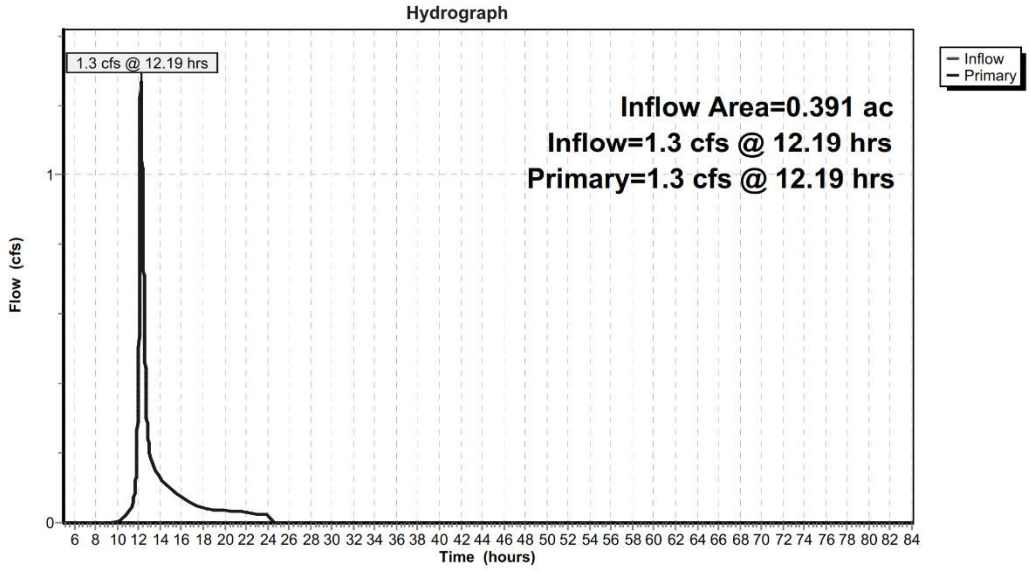
EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link EXDP2: EXDP2

Inflow Area = 0.391 ac, 0.00% Impervious, Inflow Depth = 3.61" for 100 YR event
Inflow = 1.3 cfs @ 12.19 hrs, Volume= 0.118 af
Primary = 1.3 cfs @ 12.19 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP2: EXDP2



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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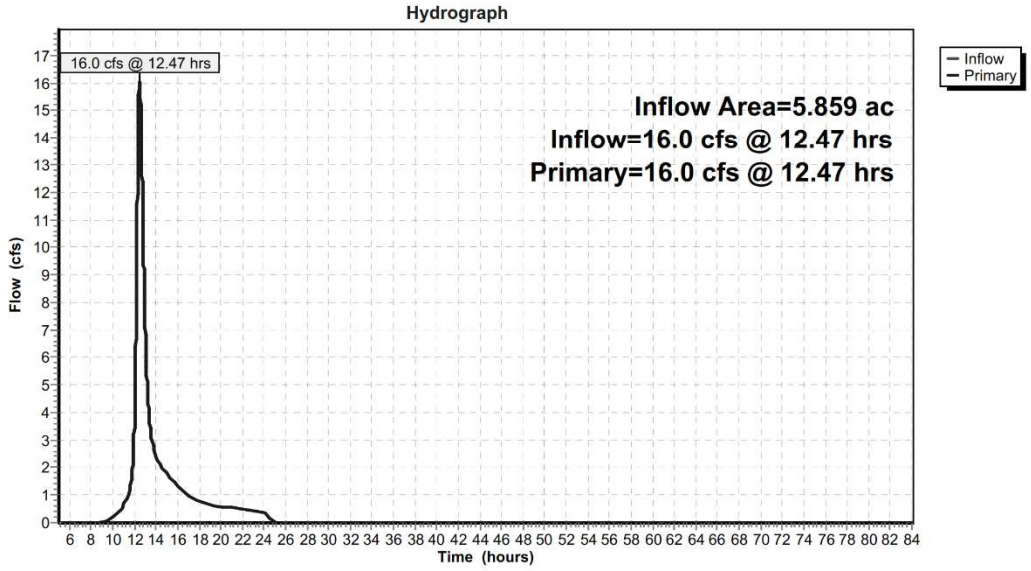
Summary for Link EXDP3: EXDP3

Inflow Area = 5.859 ac, 4.07% Impervious, Inflow Depth = 4.36" for 100 YR event
Inflow = 16.0 cfs @ 12.47 hrs, Volume= 2.129 af
Primary = 16.0 cfs @ 12.47 hrs, Volume= 2.129 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP3: EXDP3

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

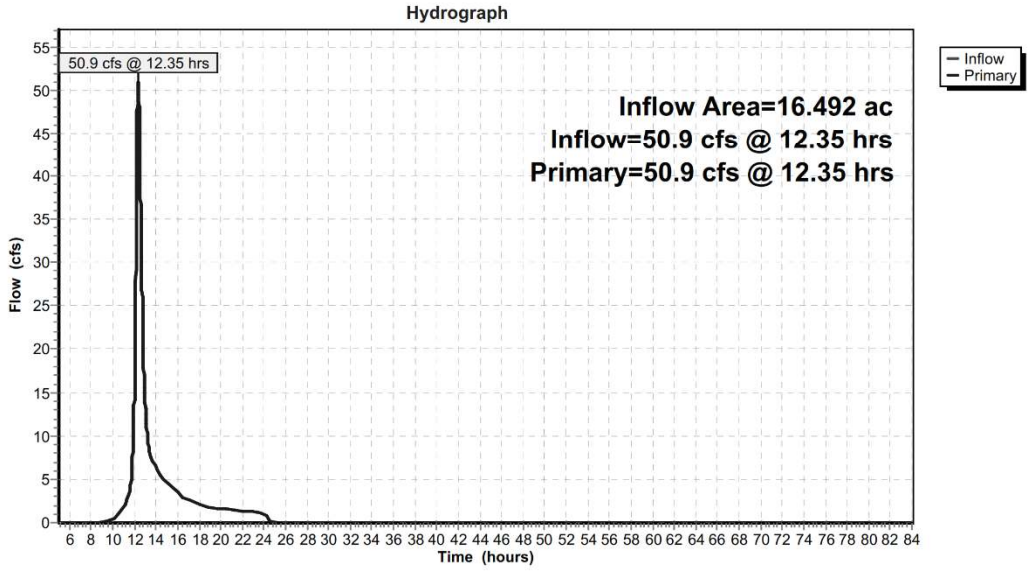
Summary for Link EXDP4: EXDP4

Inflow Area = 16.492 ac, 5.52% Impervious, Inflow Depth = 4.23" for 100 YR event
Inflow = 50.9 cfs @ 12.35 hrs, Volume= 5.820 af
Primary = 50.9 cfs @ 12.35 hrs, Volume= 5.820 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP4: EXDP4

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
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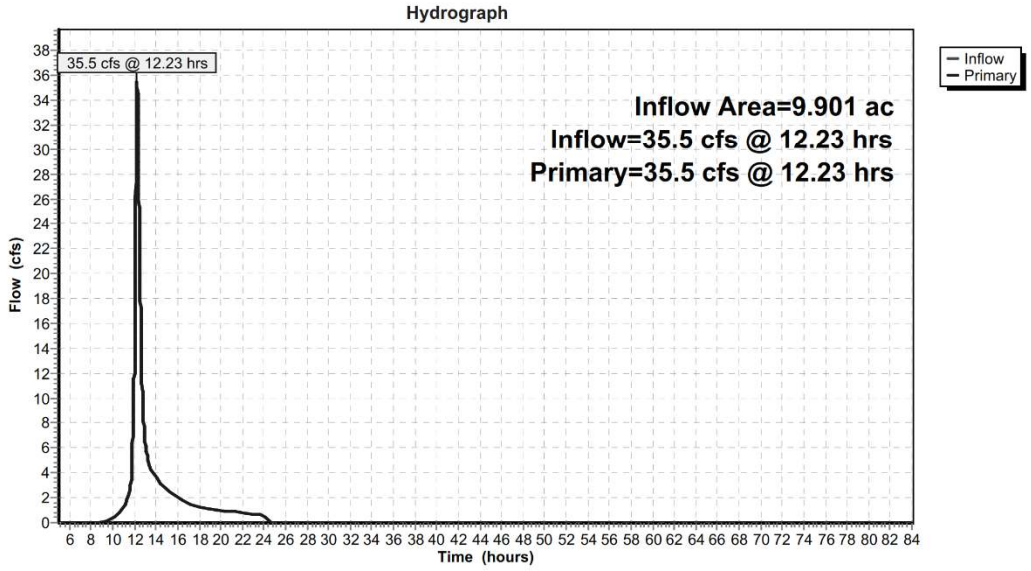
Summary for Link EXDP5: EXDP5

Inflow Area = 9.901 ac, 11.64% Impervious, Inflow Depth = 4.23" for 100 YR event
Inflow = 35.5 cfs @ 12.23 hrs, Volume= 3.494 af
Primary = 35.5 cfs @ 12.23 hrs, Volume= 3.494 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP5: EXDP5

Hydrograph



EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

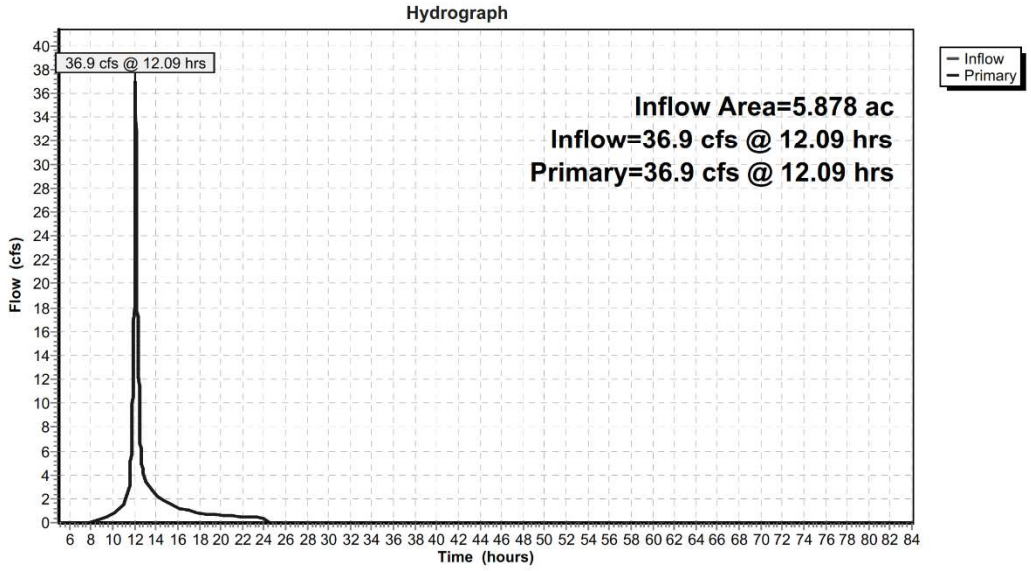
Summary for Link EXDP6: EXDP6

Inflow Area = 5.878 ac, 22.42% Impervious, Inflow Depth = 5.36" for 100 YR event
Inflow = 36.9 cfs @ 12.09 hrs, Volume= 2.626 af
Primary = 36.9 cfs @ 12.09 hrs, Volume= 2.626 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP6: EXDP6

Hydrograph



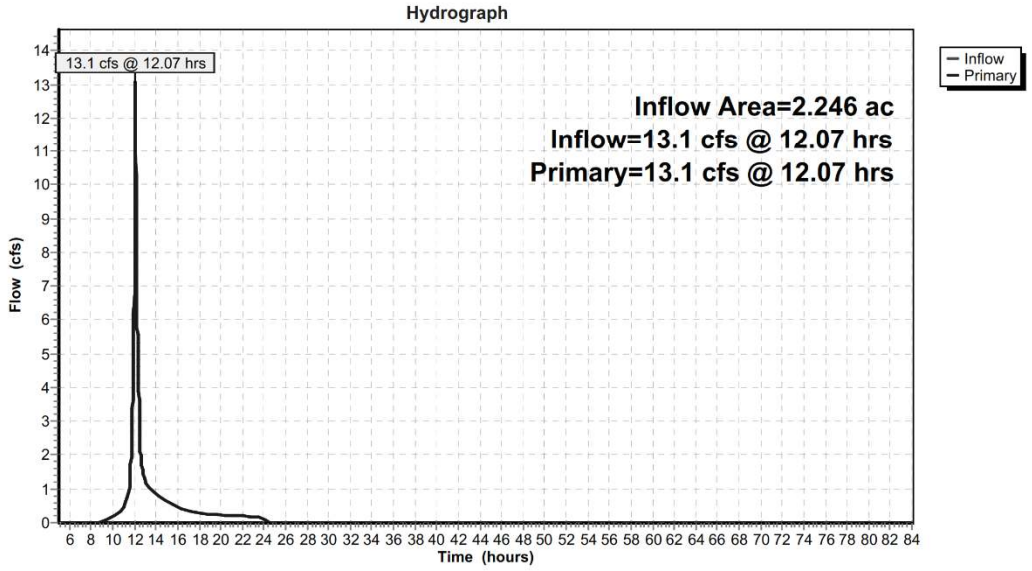
EAGLE RIDGE PRELIMINARY EXISTING *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link EXDP7: EXDP7

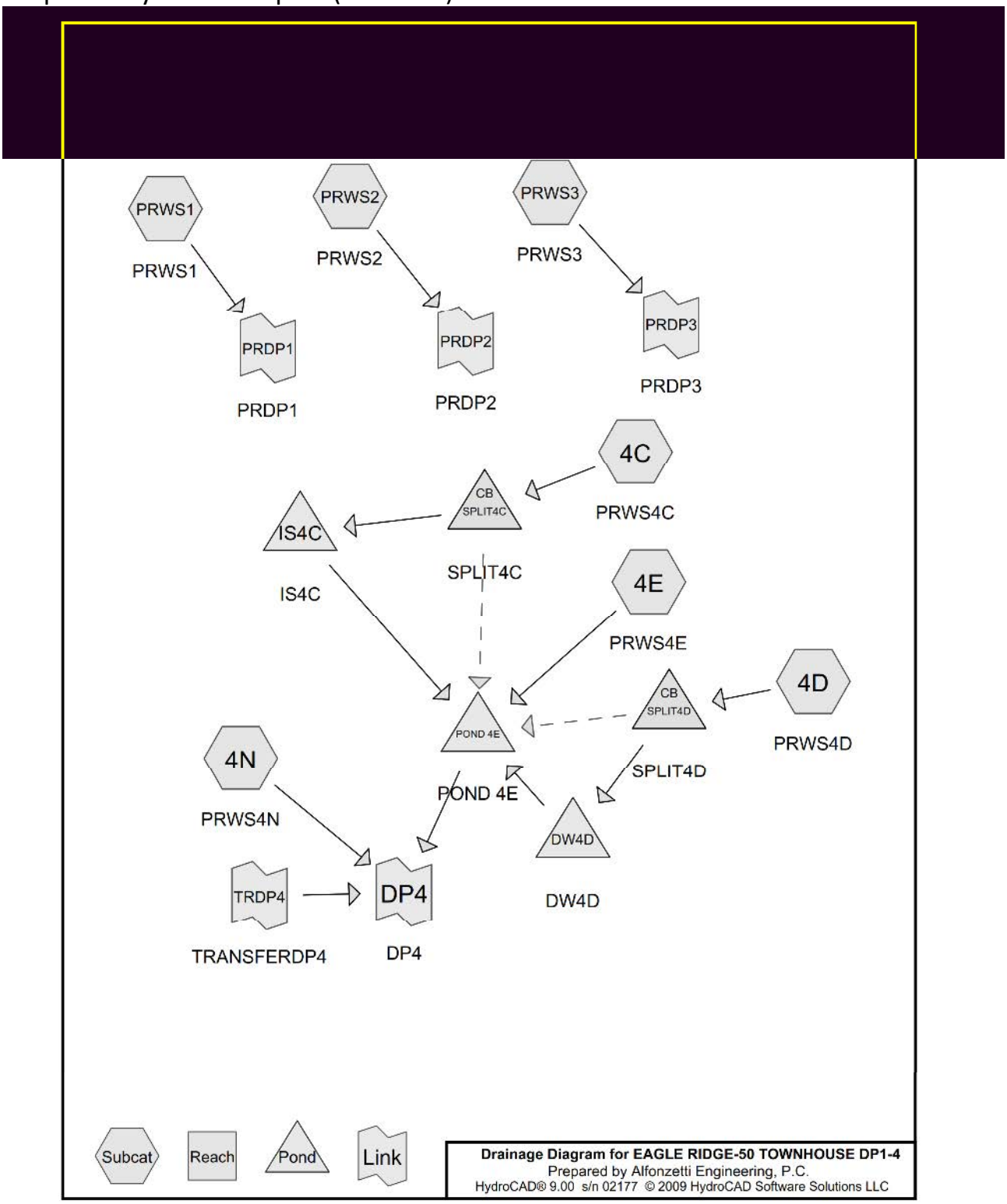
Inflow Area = 2.246 ac, 14.41% Impervious, Inflow Depth = 4.73" for 100 YR event
Inflow = 13.1 cfs @ 12.07 hrs, Volume= 0.886 af
Primary = 13.1 cfs @ 12.07 hrs, Volume= 0.886 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-84.00 hrs, dt= 0.01 hrs

Link EXDP7: EXDP7



Proposed HydroCad Report (DP1-DP4):



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=0.7 cfs 2,192 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=1.72"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=2.4 cfs 6,383 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=0.0 cfs 278 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=0.19"
Flow Length=430' Tc=6.4 min CN=57 Runoff=0.5 cfs 4,940 cf

Link DP4: DP4 Inflow=0.5 cfs 5,218 cf
Primary=0.5 cfs 5,218 cf

Pond DW4D: DW4D Peak Elev=463.40' Storage=4,919 cf Inflow=2.4 cfs 6,383 cf
Discarded=0.0 cfs 6,383 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 6,383 cf

Pond IS4C: IS4C Peak Elev=492.60' Storage=803 cf Inflow=0.7 cfs 2,192 cf
Discarded=0.1 cfs 2,192 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 2,192 cf

Pond POND 4E: POND 4E Peak Elev=456.07' Storage=34 cf Inflow=0.0 cfs 278 cf
Outflow=0.0 cfs 278 cf

Link PRDP1: PRDP1 Inflow=0.1 cfs 974 cf
Primary=0.1 cfs 974 cf

Link PRDP2: PRDP2 Inflow=0.0 cfs 206 cf
Primary=0.0 cfs 206 cf

Link PRDP3: PRDP3 Inflow=0.1 cfs 908 cf
Primary=0.1 cfs 908 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.1 cfs 974 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.0 cfs 206 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=0.17"
Flow Length=301' Tc=12.6 min CN=56 Runoff=0.1 cfs 908 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.05' Inflow=0.7 cfs 2,192 cf
Primary=0.7 cfs 2,192 cf Secondary=0.0 cfs 0 cf Outflow=0.7 cfs 2,192 cf

Pond SPLIT4D: SPLIT4D Peak Elev=458.08' Inflow=2.4 cfs 6,383 cf
Primary=2.4 cfs 6,383 cf Secondary=0.0 cfs 0 cf Outflow=2.4 cfs 6,383 cf

Link TRDP4: TRANSFERDP4 1 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=0.0 cfs 0 cf
Area= 380,920 sf 47.16% Imperv. Primary=0.0 cfs 0 cf

Total Runoff Area = 543,626 sf Runoff Volume = 15,882 cf Average Runoff Depth = 0.35"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4C: PRWS4C

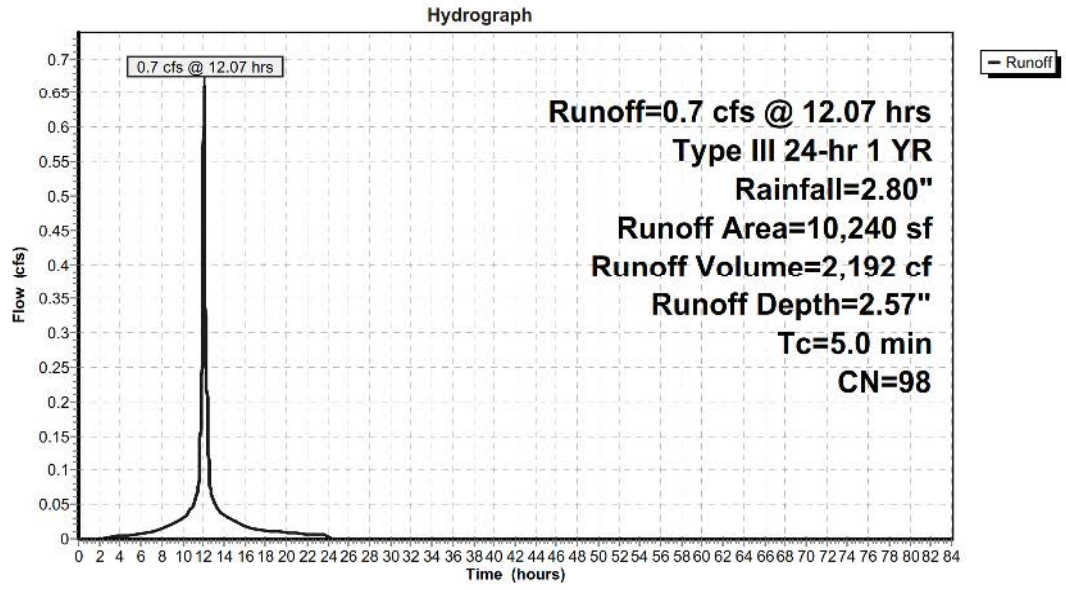
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4D: PRWS4D

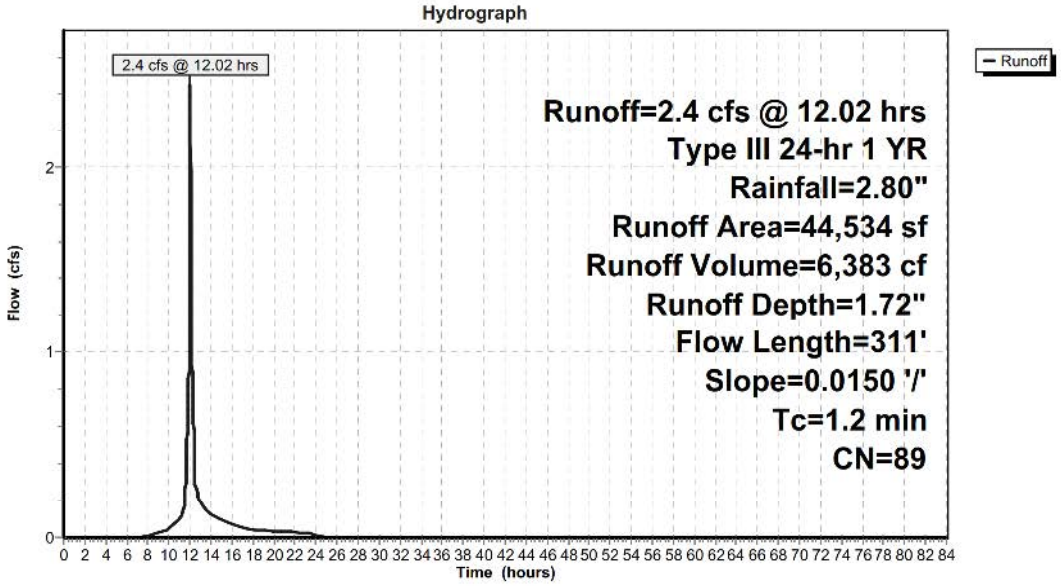
Runoff = 2.4 cfs @ 12.02 hrs, Volume= 6,383 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4E: PRWS4E

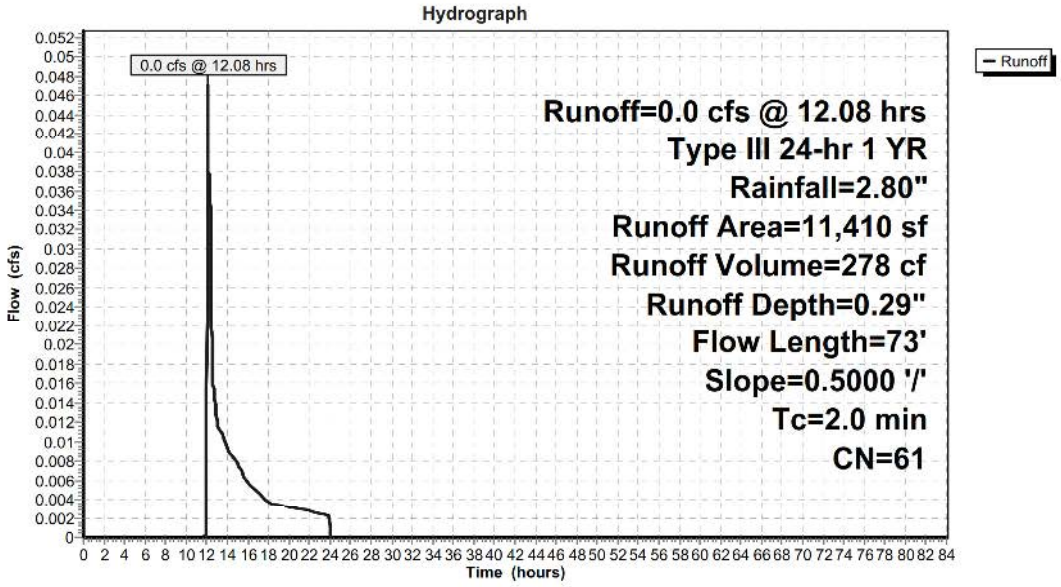
Runoff = 0.0 cfs @ 12.08 hrs, Volume= 278 cf, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4N: PRWS4N

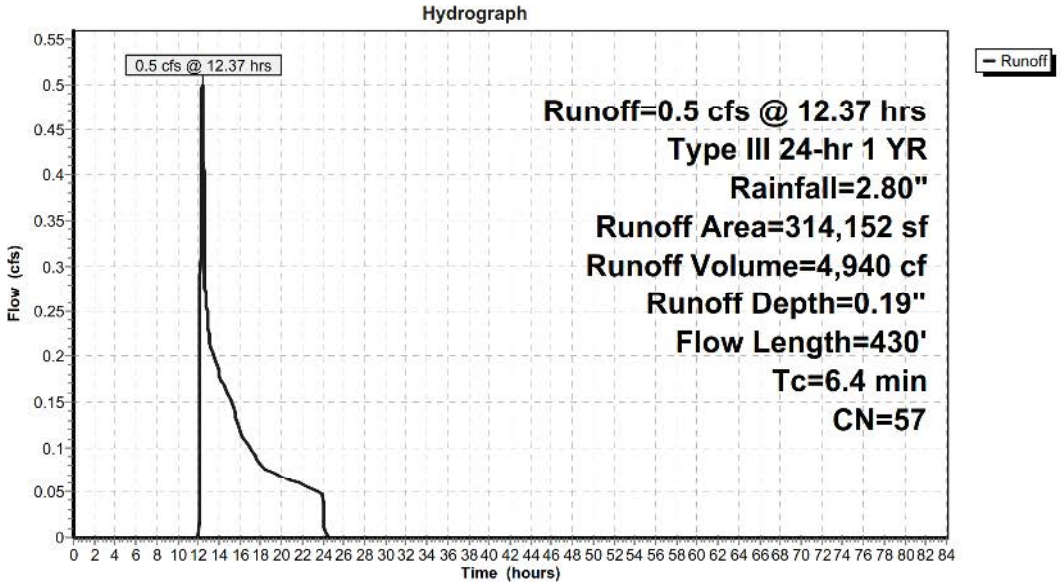
Runoff = 0.5 cfs @ 12.37 hrs, Volume= 4,940 cf, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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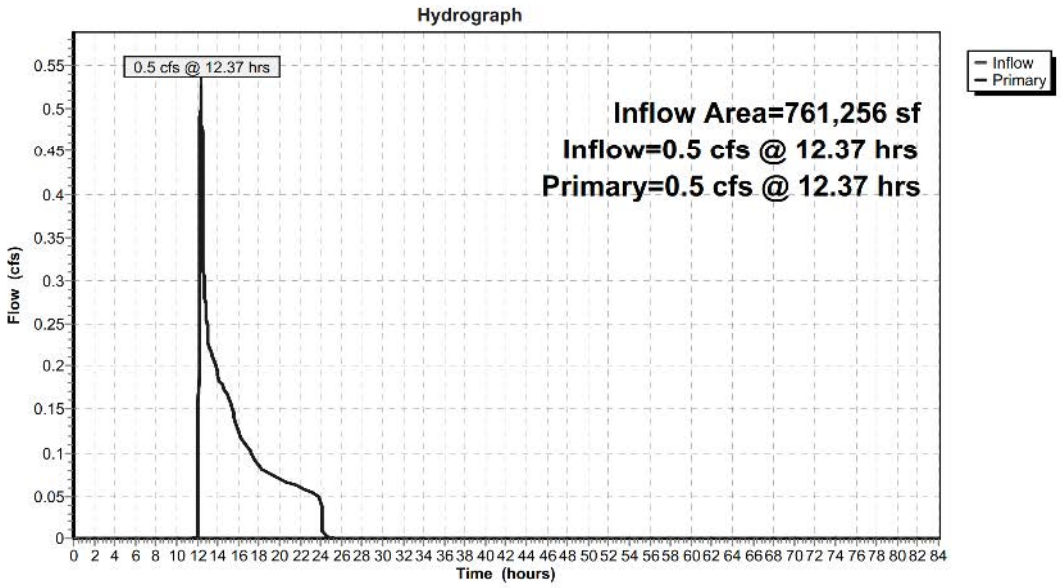
Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 0.08" for 1 YR event
Inflow = 0.5 cfs @ 12.37 hrs, Volume= 5,218 cf
Primary = 0.5 cfs @ 12.37 hrs, Volume= 5,218 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 1.72" for 1 YR event
Inflow = 2.4 cfs @ 12.02 hrs, Volume= 6,383 cf
Outflow = 0.0 cfs @ 9.51 hrs, Volume= 6,383 cf, Atten= 99%, Lag= 0.0 min
Discarded = 0.0 cfs @ 9.51 hrs, Volume= 6,383 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 463.40' @ 22.36 hrs Surf.Area= 1,152 sf Storage= 4,919 cf

Plug-Flow detention time= 1,699.8 min calculated for 6,383 cf (100% of inflow)
Center-of-Mass det. time= 1,699.9 min (2,512.0 - 812.1)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 9.51 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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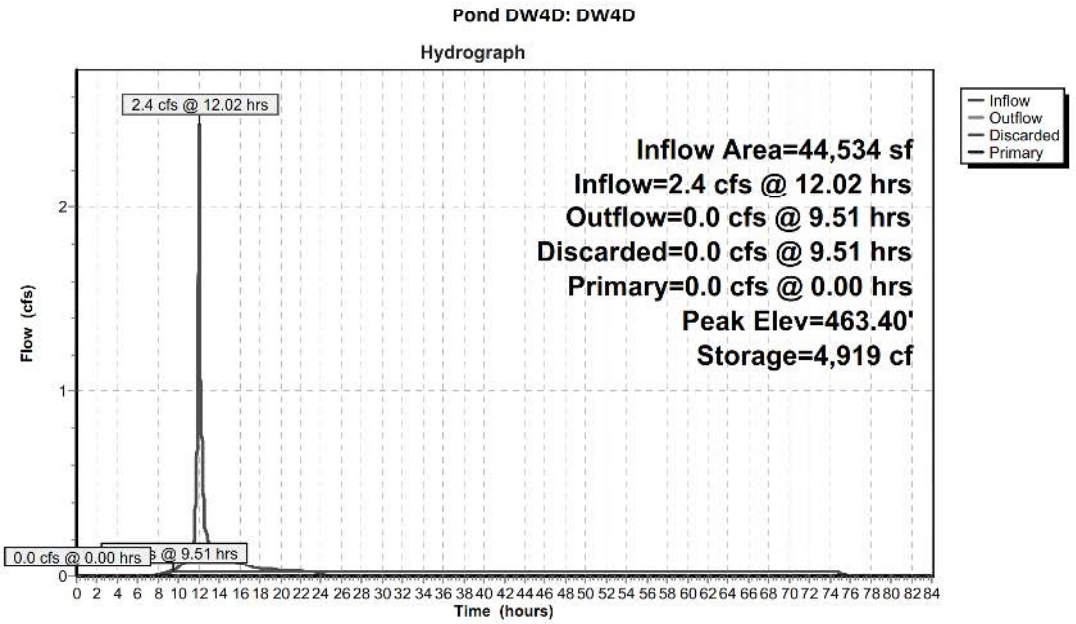

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Outflow = 0.1 cfs @ 11.29 hrs, Volume= 2,192 cf, Atten= 92%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.29 hrs, Volume= 2,192 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.60' @ 12.99 hrs Surf.Area= 1,152 sf Storage= 803 cf

Plug-Flow detention time= 109.8 min calculated for 2,192 cf (100% of inflow)
Center-of-Mass det. time= 109.8 min (868.2 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 11.29 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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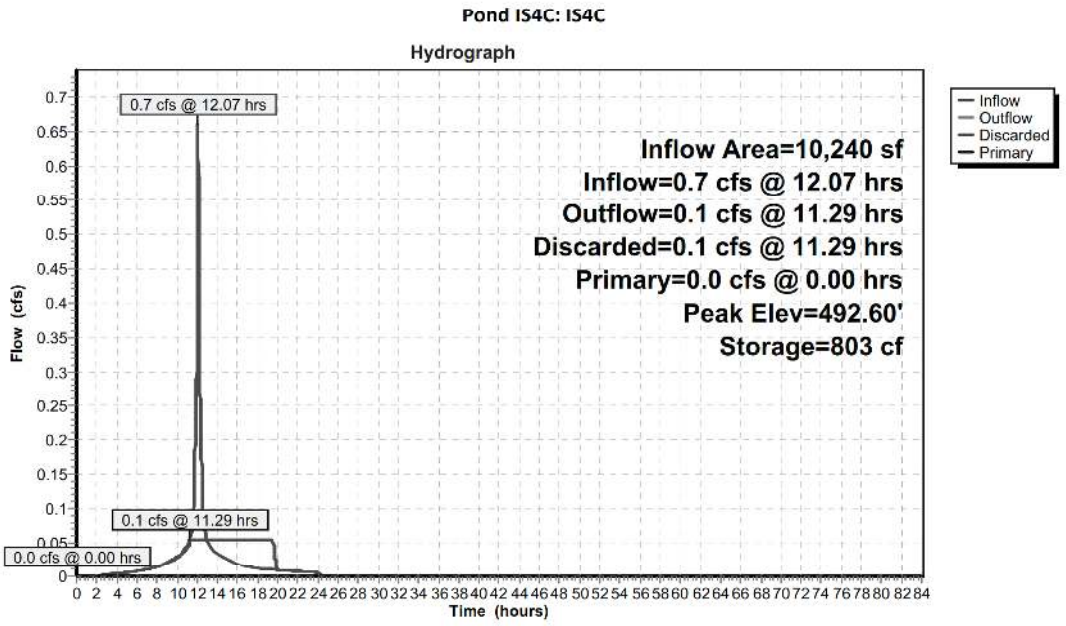

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 0.05" for 1 YR event
Inflow = 0.0 cfs @ 12.08 hrs, Volume= 278 cf
Outflow = 0.0 cfs @ 12.44 hrs, Volume= 278 cf, Atten= 45%, Lag= 21.5 min
Primary = 0.0 cfs @ 12.44 hrs, Volume= 278 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 456.07' @ 12.44 hrs Surf.Area= 535 sf Storage= 34 cf

Plug-Flow detention time= 33.7 min calculated for 278 cf (100% of inflow)
Center-of-Mass det. time= 33.7 min (964.2 - 930.6)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500
			Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 12.44 hrs HW=456.07' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.0 cfs @ 0.88 fps)
↑**2=Orifice/Grate** (Passes 0.0 cfs of 0.1 cfs potential flow)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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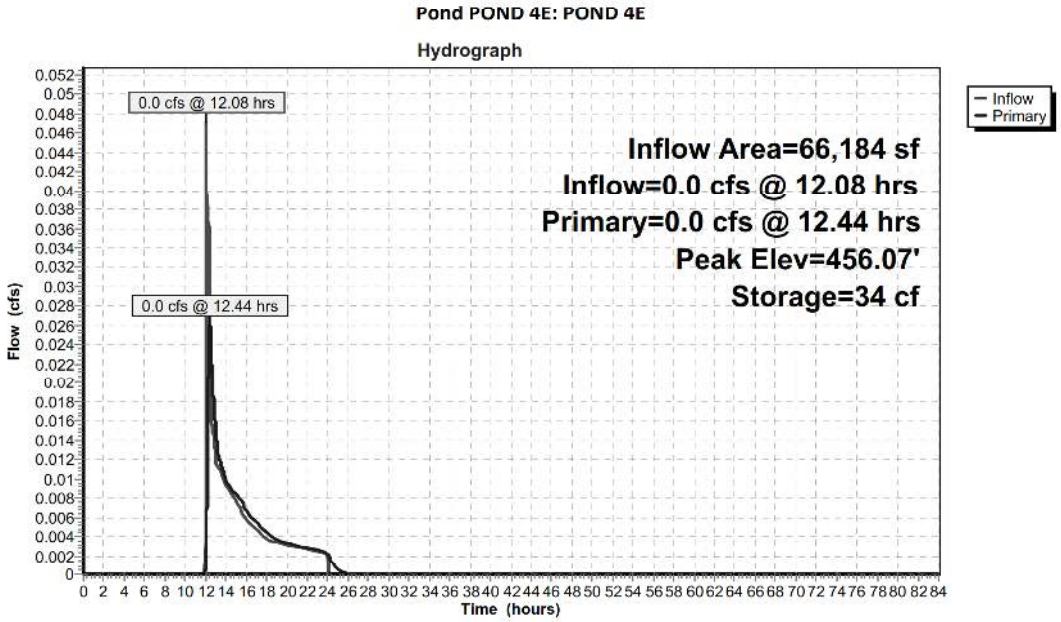


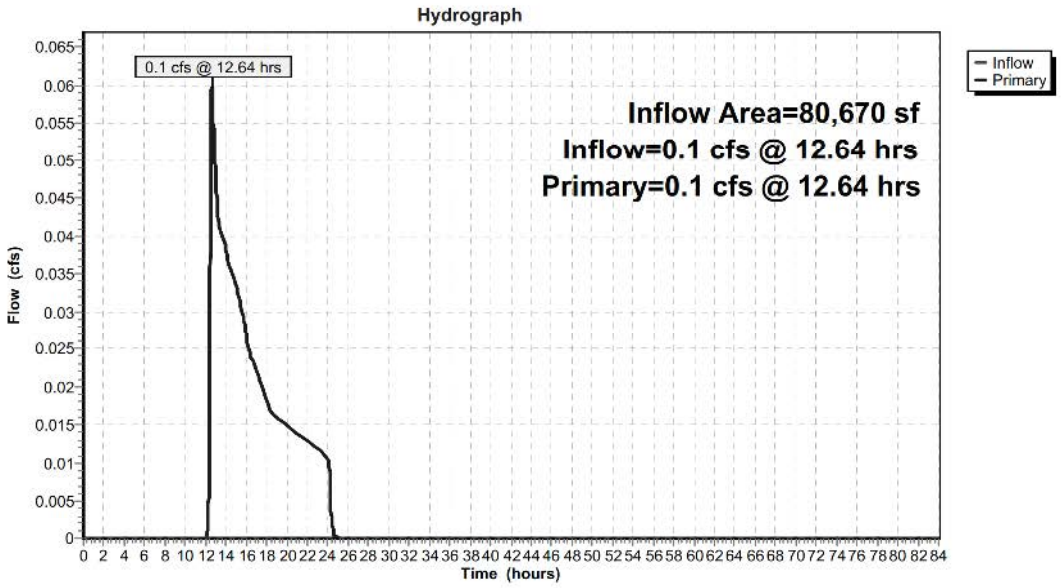
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 0.14" for 1 YR event
Inflow = 0.1 cfs @ 12.64 hrs, Volume= 974 cf
Primary = 0.1 cfs @ 12.64 hrs, Volume= 974 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



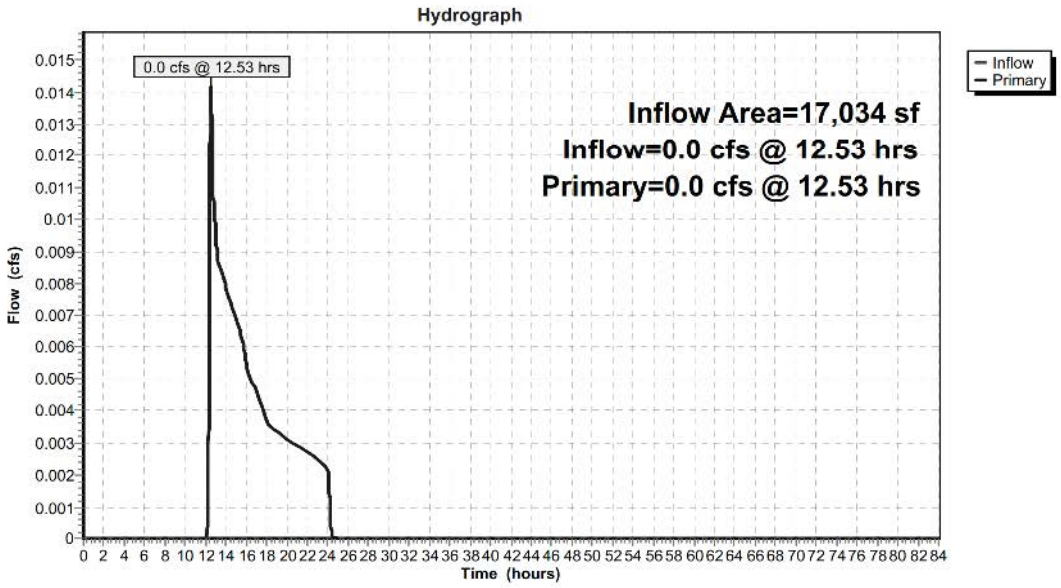
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 0.14" for 1 YR event
Inflow = 0.0 cfs @ 12.53 hrs, Volume= 206 cf
Primary = 0.0 cfs @ 12.53 hrs, Volume= 206 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



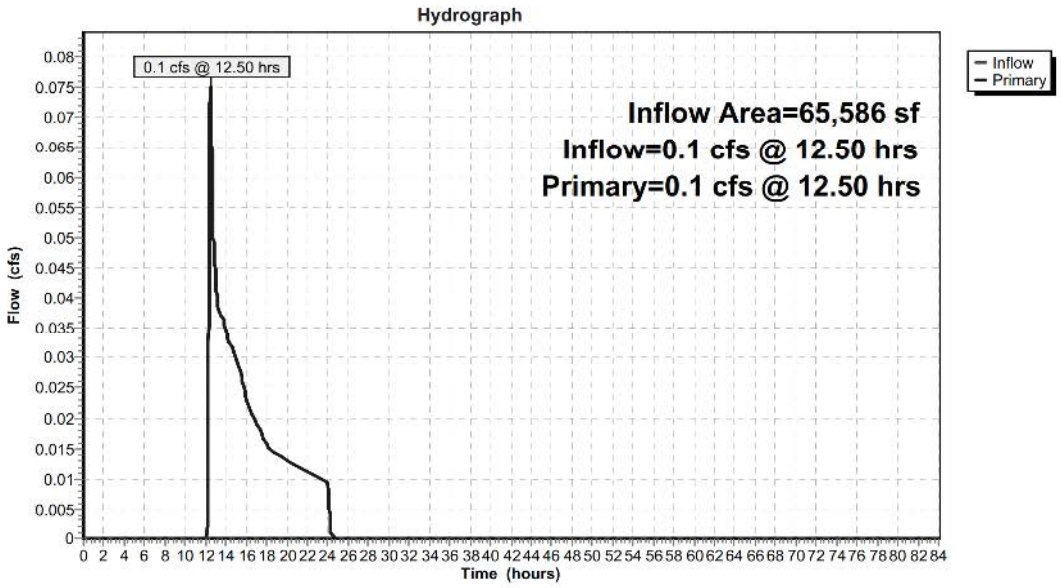
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 0.17" for 1 YR event
Inflow = 0.1 cfs @ 12.50 hrs, Volume= 908 cf
Primary = 0.1 cfs @ 12.50 hrs, Volume= 908 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS1: PRWS1

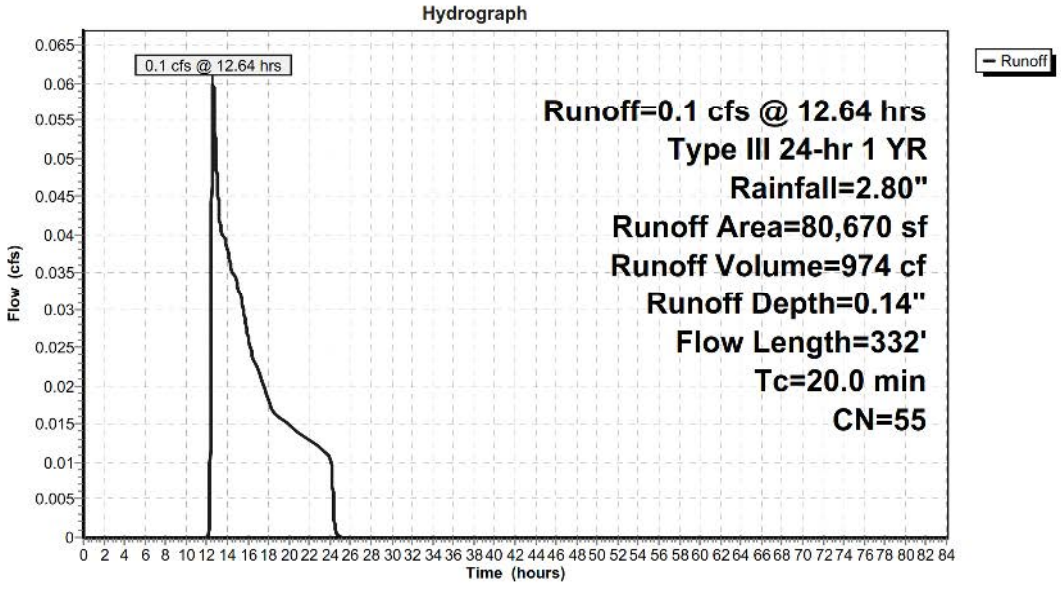
Runoff = 0.1 cfs @ 12.64 hrs, Volume= 974 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS2: PRWS2

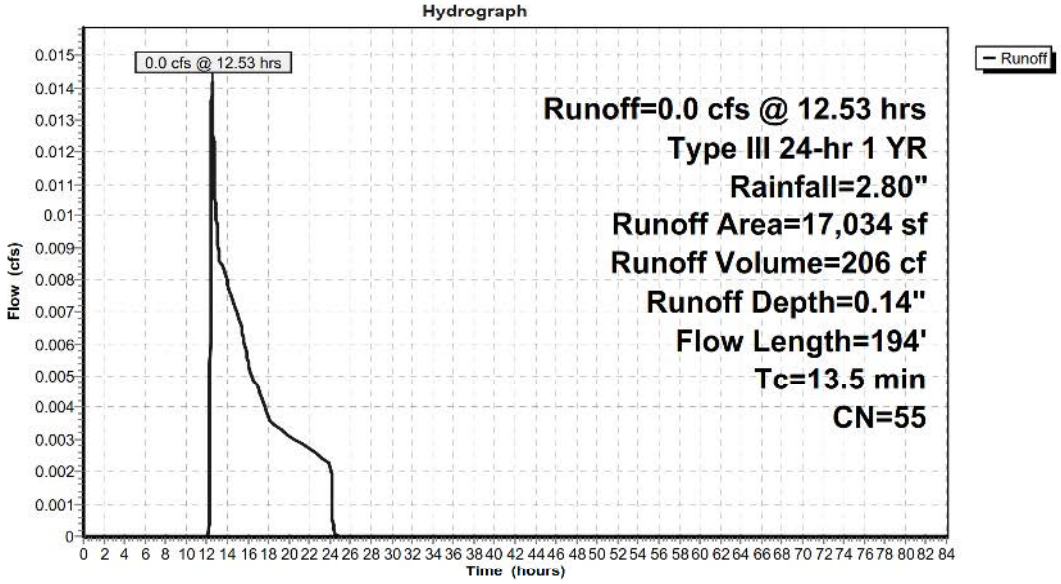
Runoff = 0.0 cfs @ 12.53 hrs, Volume= 206 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment PRWS3: PRWS3

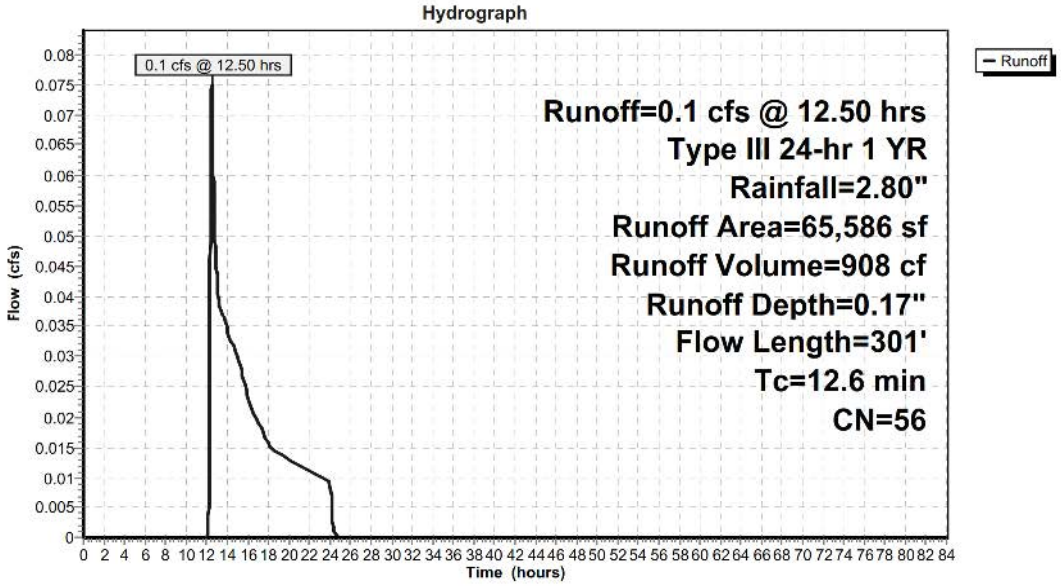
Runoff = 0.1 cfs @ 12.50 hrs, Volume= 908 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Outflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

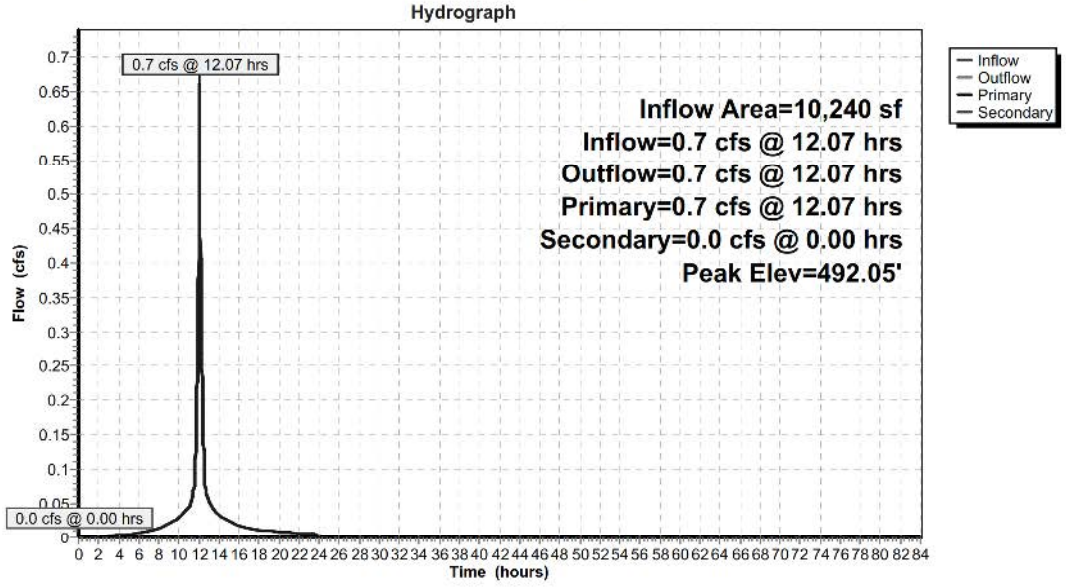
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.05' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.7 cfs @ 12.07 hrs HW=492.05' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.7 cfs @ 1.86 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 1.72" for 1 YR event
Inflow = 2.4 cfs @ 12.02 hrs, Volume= 6,383 cf
Outflow = 2.4 cfs @ 12.02 hrs, Volume= 6,383 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.02 hrs, Volume= 6,383 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

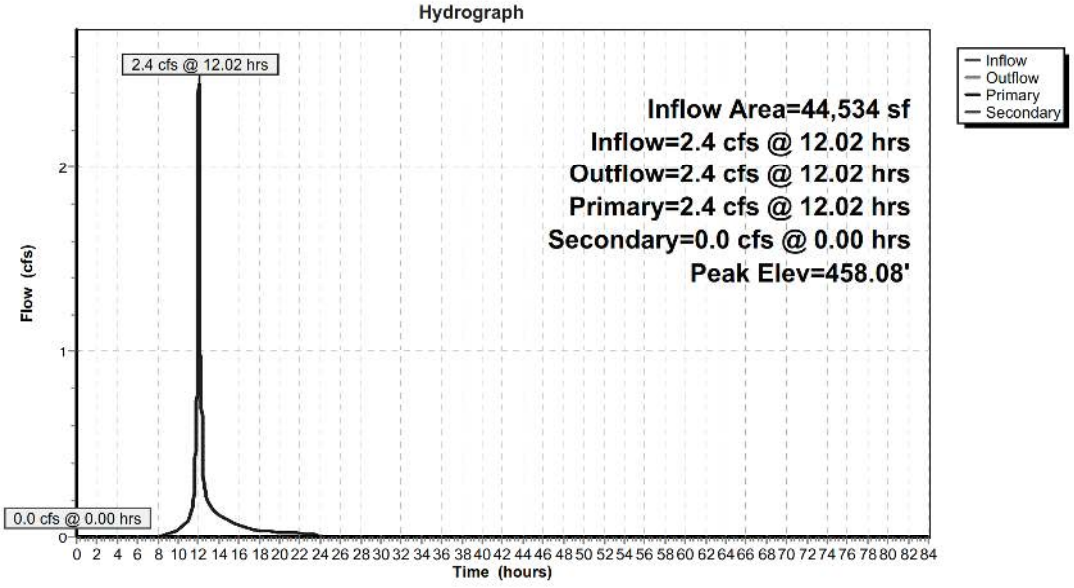
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.08' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.4 cfs @ 12.02 hrs HW=458.08' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.4 cfs @ 2.89 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

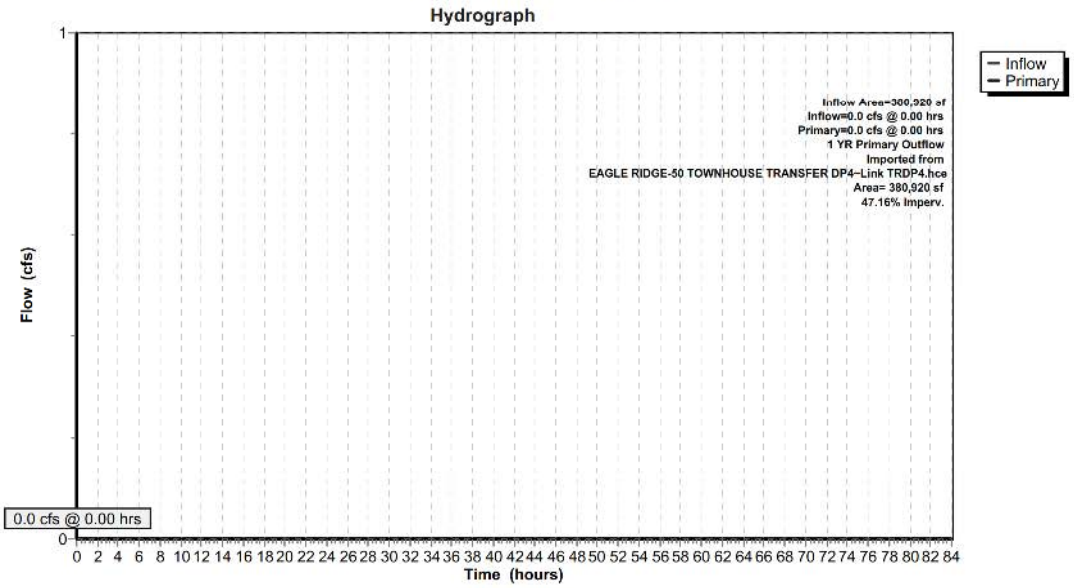
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.00" for 1 YR event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

1 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=0.8 cfs 2,728 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=2.29"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=3.2 cfs 8,508 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=0.1 cfs 515 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=430' Tc=6.4 min CN=57 Runoff=1.6 cfs 10,209 cf

Link DP4: DP4 Inflow=1.7 cfs 12,674 cf
Primary=1.7 cfs 12,674 cf

Pond DW4D: DW4D Peak Elev=463.77' Storage=5,210 cf Inflow=3.2 cfs 8,508 cf
Discarded=0.0 cfs 6,593 cf Primary=0.2 cfs 1,915 cf Outflow=0.2 cfs 8,508 cf

Pond IS4C: IS4C Peak Elev=492.90' Storage=1,078 cf Inflow=0.8 cfs 2,728 cf
Discarded=0.1 cfs 2,728 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 2,728 cf

Pond POND 4E: POND 4E Peak Elev=456.19' Storage=108 cf Inflow=0.2 cfs 2,430 cf
Outflow=0.2 cfs 2,430 cf

Link PRDP1: PRDP1 Inflow=0.2 cfs 2,168 cf
Primary=0.2 cfs 2,168 cf

Link PRDP2: PRDP2 Inflow=0.1 cfs 458 cf
Primary=0.1 cfs 458 cf

Link PRDP3: PRDP3 Inflow=0.3 cfs 1,943 cf
Primary=0.3 cfs 1,943 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.2 cfs 2,168 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.1 cfs 458 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=0.36"
Flow Length=301' Tc=12.6 min CN=56 Runoff=0.3 cfs 1,943 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.11' Inflow=0.8 cfs 2,728 cf
Primary=0.8 cfs 2,728 cf Secondary=0.0 cfs 0 cf Outflow=0.8 cfs 2,728 cf

Pond SPLIT4D: SPLIT4D Peak Elev=458.29' Inflow=3.2 cfs 8,508 cf
Primary=3.2 cfs 8,508 cf Secondary=0.0 cfs 0 cf Outflow=3.2 cfs 8,508 cf

Link TRDP4: TRANSFERDP4 2 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=0.0 cfs 35 cf
Area= 380,920 sf 47.16% Imperv. Primary=0.0 cfs 35 cf

Total Runoff Area = 543,626 sf Runoff Volume = 26,529 cf Average Runoff Depth = 0.59"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4C: PRWS4C

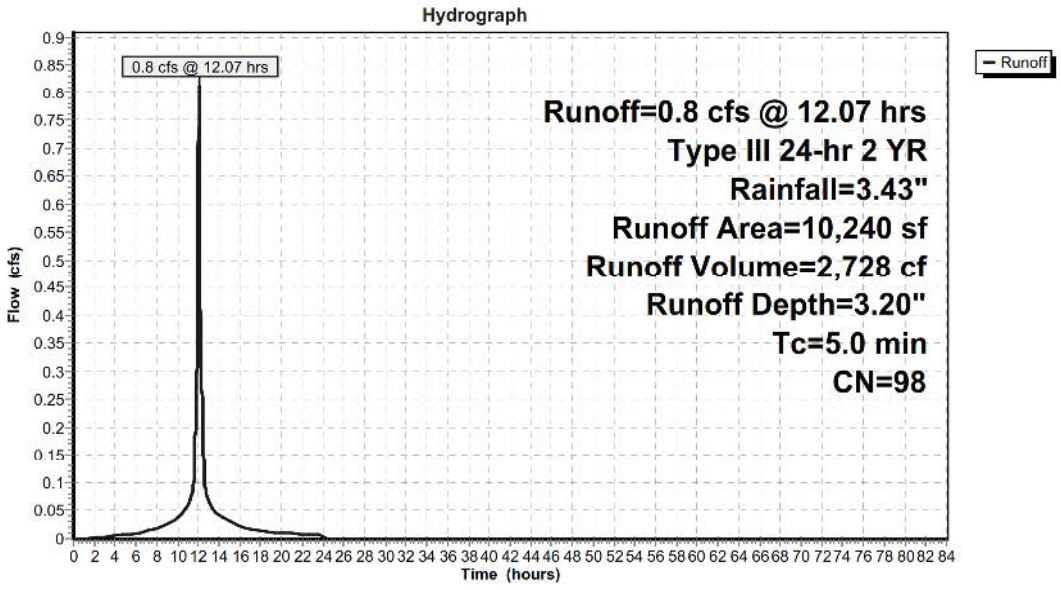
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4D: PRWS4D

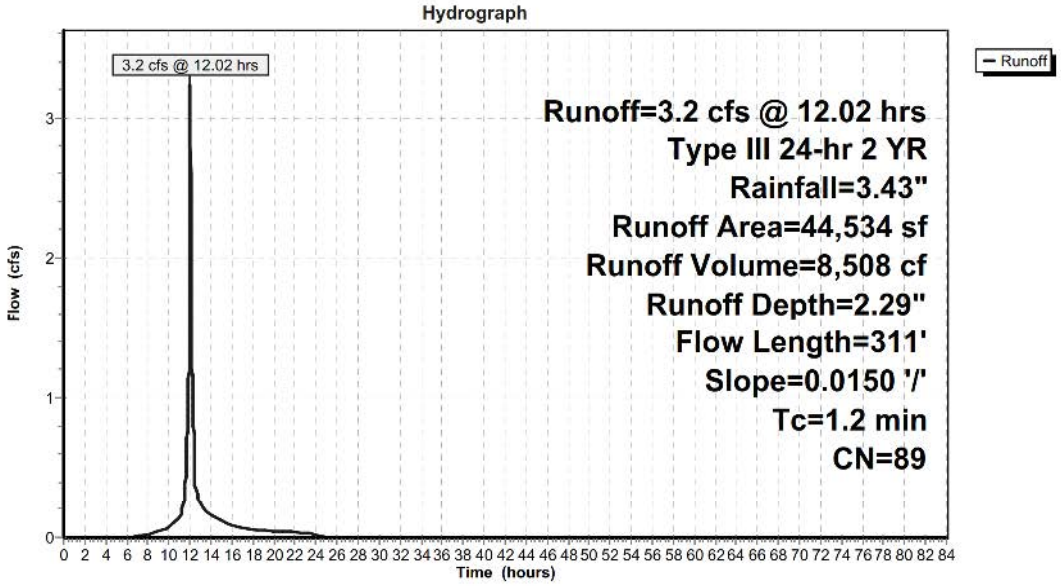
Runoff = 3.2 cfs @ 12.02 hrs, Volume= 8,508 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4E: PRWS4E

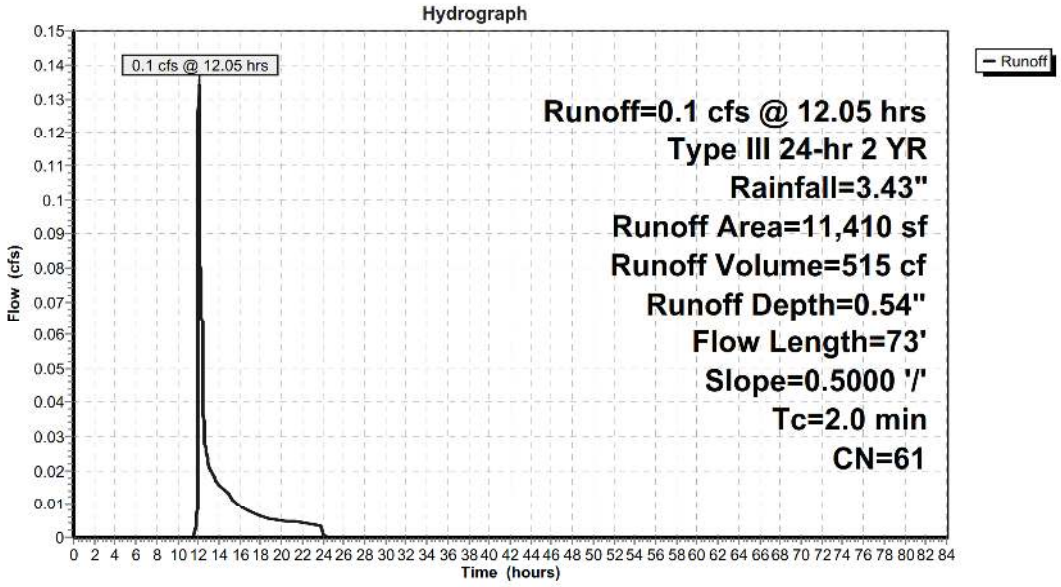
Runoff = 0.1 cfs @ 12.05 hrs, Volume= 515 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4N: PRWS4N

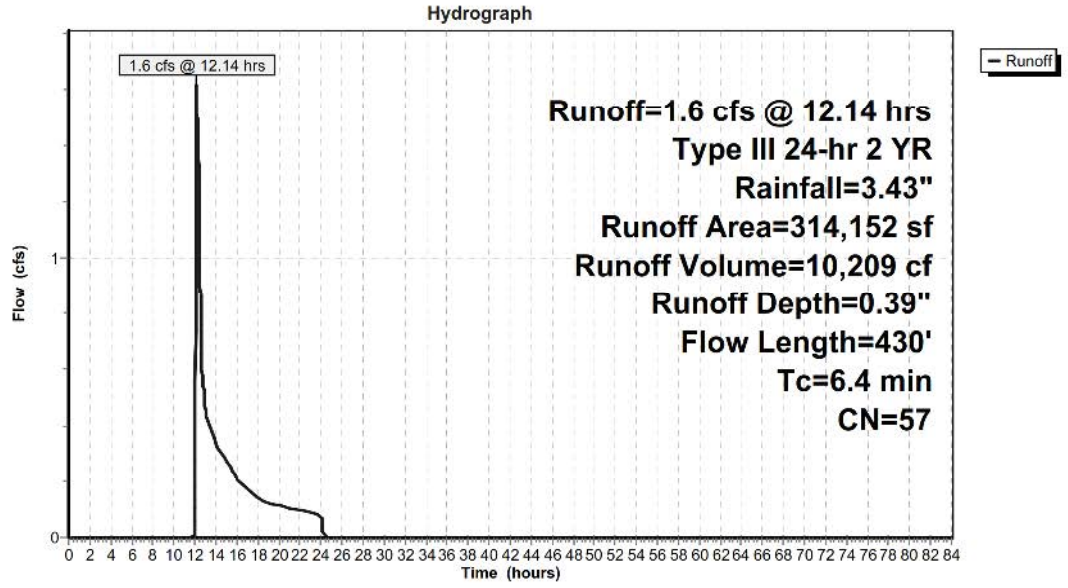
Runoff = 1.6 cfs @ 12.14 hrs, Volume= 10,209 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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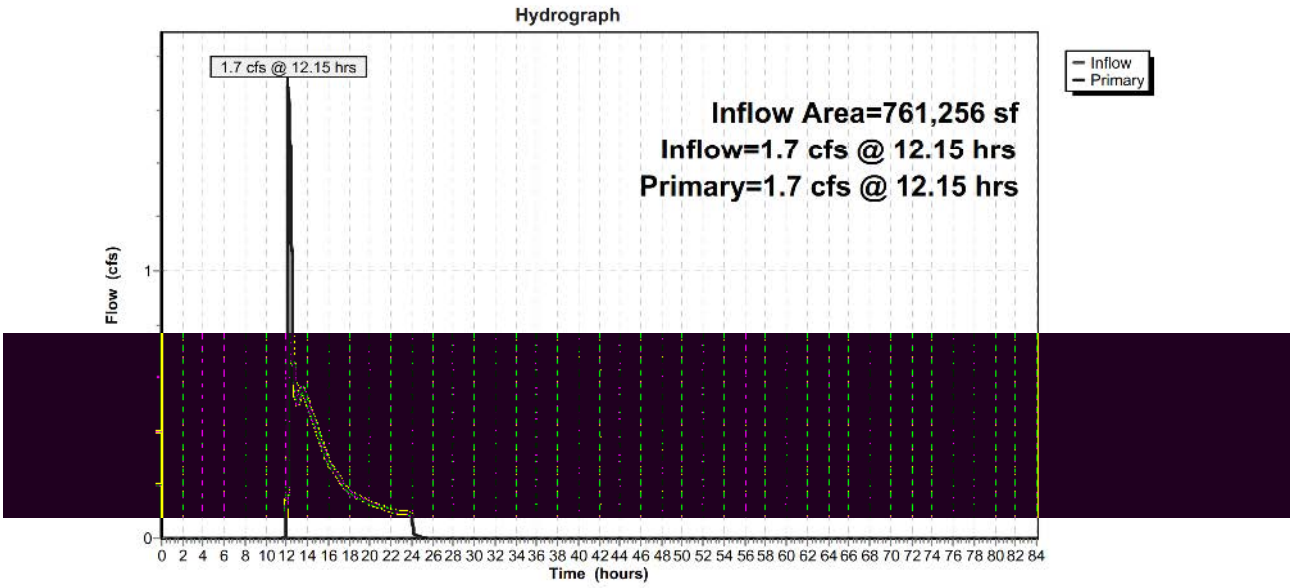
Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 0.20" for 2 YR event
Inflow = 1.7 cfs @ 12.15 hrs, Volume= 12,674 cf
Primary = 1.7 cfs @ 12.15 hrs, Volume= 12,674 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 2.29" for 2 YR event
Inflow = 3.2 cfs @ 12.02 hrs, Volume= 8,508 cf
Outflow = 0.2 cfs @ 13.48 hrs, Volume= 8,508 cf, Atten= 94%, Lag= 87.8 min
Discarded = 0.0 cfs @ 8.77 hrs, Volume= 6,593 cf
Primary = 0.2 cfs @ 13.48 hrs, Volume= 1,915 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 463.77' @ 13.48 hrs Surf.Area= 1,152 sf Storage= 5,210 cf

Plug-Flow detention time= 1,369.2 min calculated for 8,508 cf (100% of inflow)
Center-of-Mass det. time= 1,369.1 min (2,173.0 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 8.77 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.2 cfs @ 13.48 hrs HW=463.77' (Free Discharge)
↳**2=Culvert** (Barrel Controls 0.2 cfs @ 1.18 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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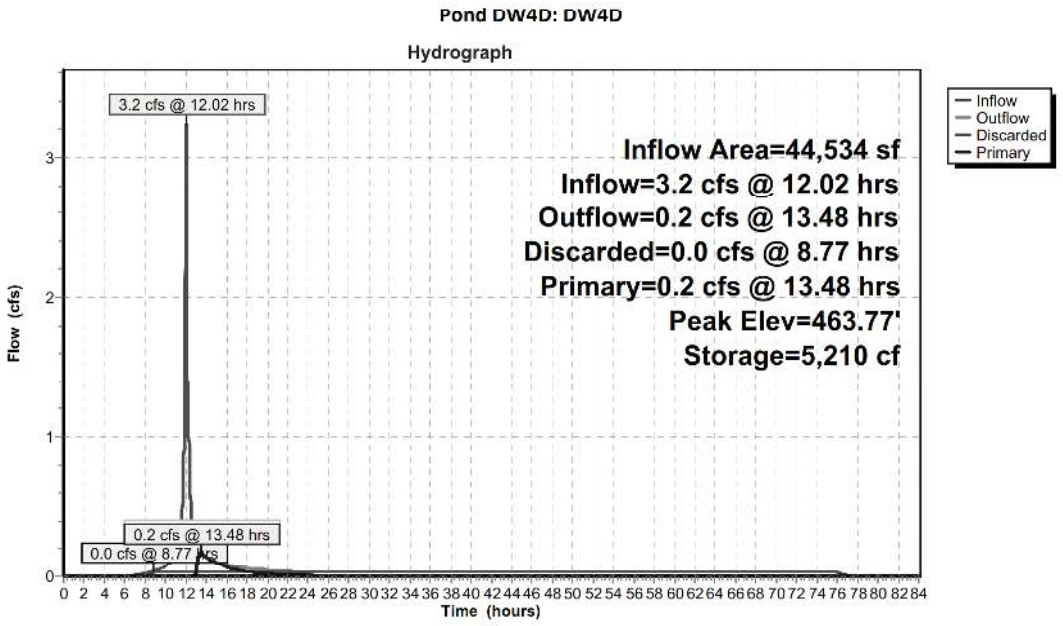

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Outflow = 0.1 cfs @ 10.98 hrs, Volume= 2,728 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.98 hrs, Volume= 2,728 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.90' @ 13.37 hrs Surf.Area= 1,152 sf Storage= 1,078 cf

Plug-Flow detention time= 155.2 min calculated for 2,728 cf (100% of inflow)
Center-of-Mass det. time= 155.2 min (909.2 - 754.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 10.98 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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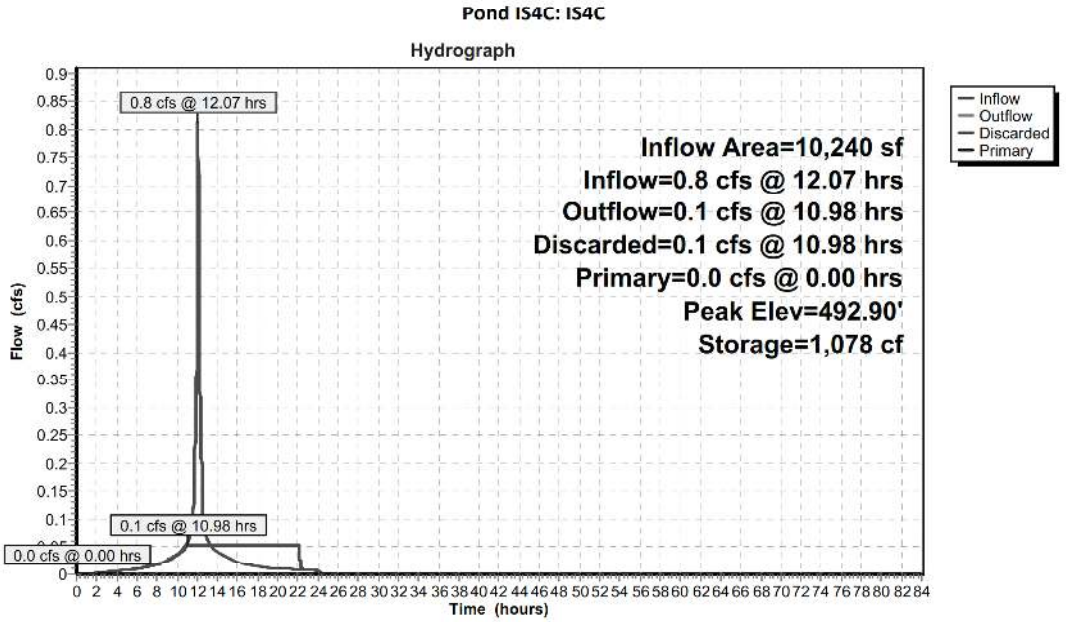

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 0.44" for 2 YR event
Inflow = 0.2 cfs @ 13.47 hrs, Volume= 2,430 cf
Outflow = 0.2 cfs @ 13.66 hrs, Volume= 2,430 cf, Atten= 3%, Lag= 11.0 min
Primary = 0.2 cfs @ 13.66 hrs, Volume= 2,430 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 456.19' @ 13.66 hrs Surf.Area= 638 sf Storage= 108 cf

Plug-Flow detention time= 14.7 min calculated for 2,430 cf (100% of inflow)
Center-of-Mass det. time= 14.7 min (951.5 - 936.8)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500
			Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.2 cfs @ 13.66 hrs HW=456.19' (Free Discharge)
1=Culvert (Passes 0.2 cfs of 0.2 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.2 cfs @ 2.12 fps)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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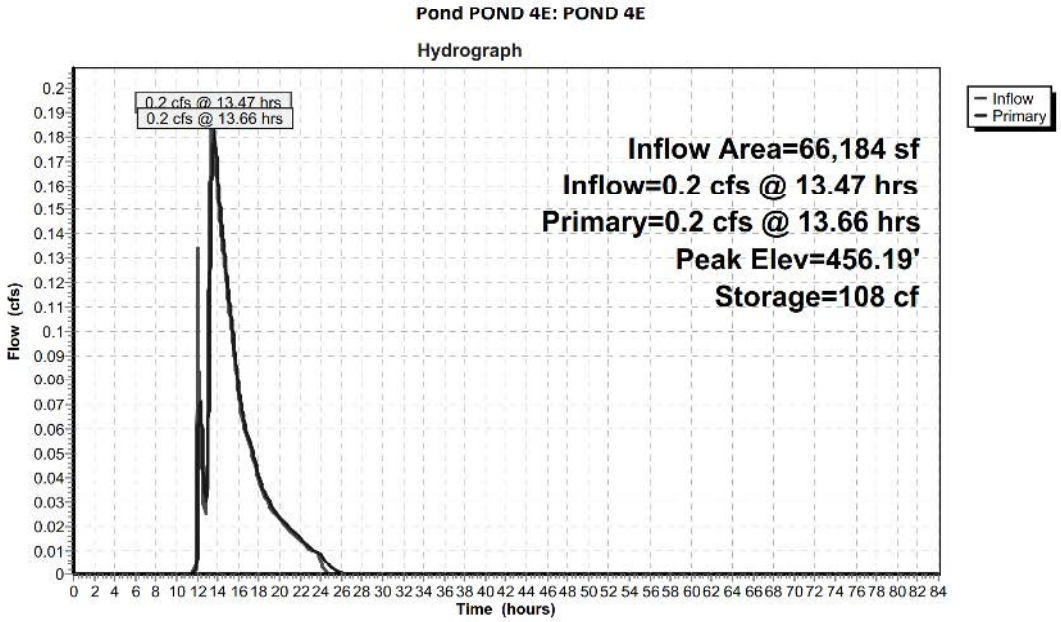


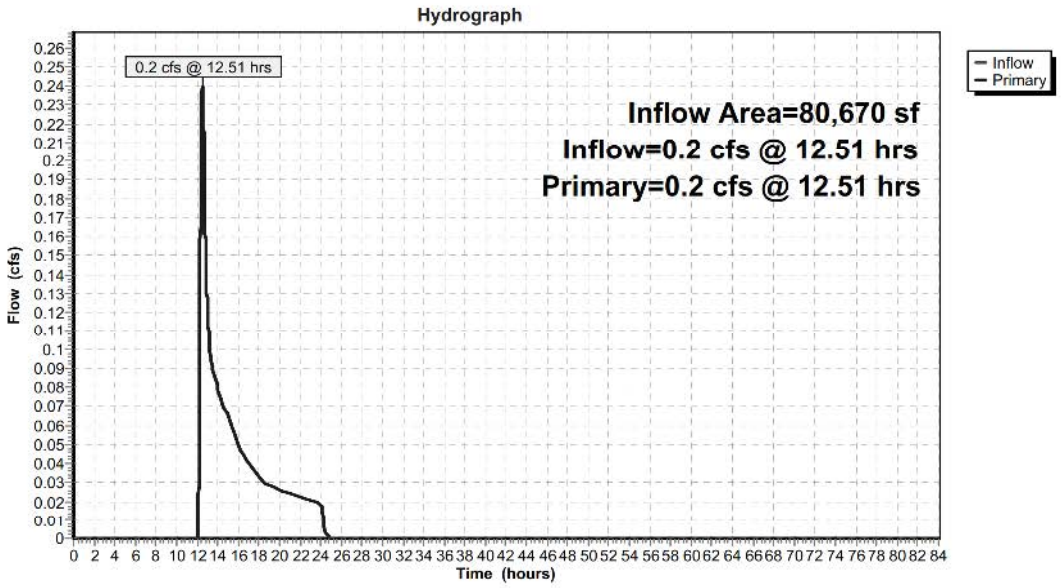
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 0.2 cfs @ 12.51 hrs, Volume= 2,168 cf
Primary = 0.2 cfs @ 12.51 hrs, Volume= 2,168 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



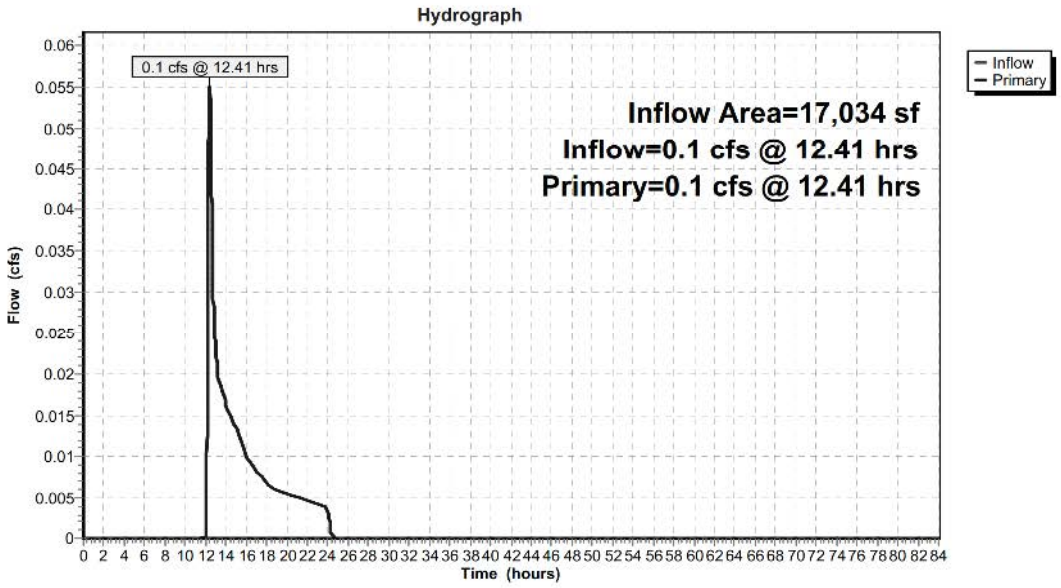
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 0.1 cfs @ 12.41 hrs, Volume= 458 cf
Primary = 0.1 cfs @ 12.41 hrs, Volume= 458 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



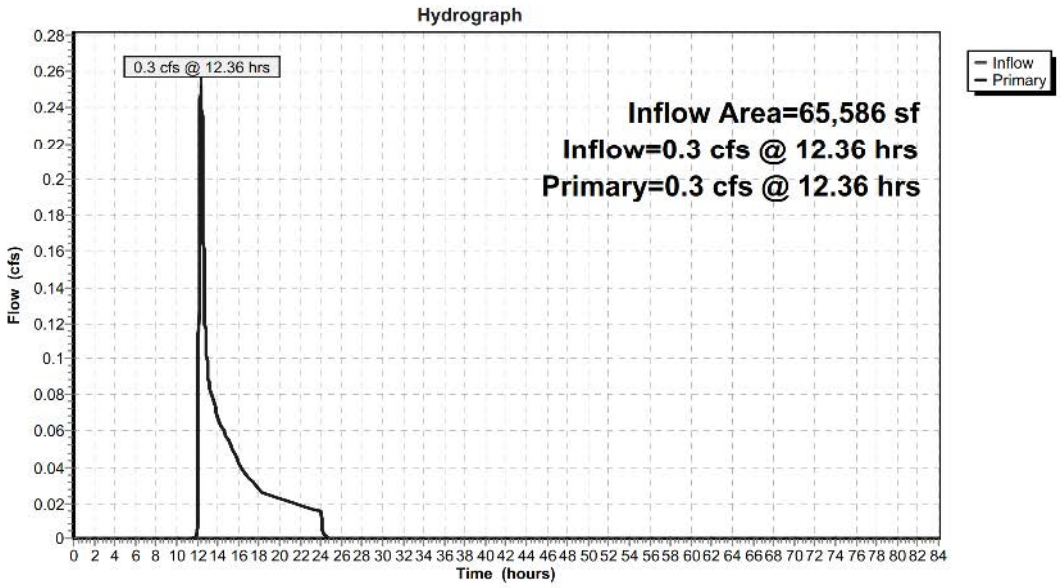
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 0.36" for 2 YR event
Inflow = 0.3 cfs @ 12.36 hrs, Volume= 1,943 cf
Primary = 0.3 cfs @ 12.36 hrs, Volume= 1,943 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS1: PRWS1

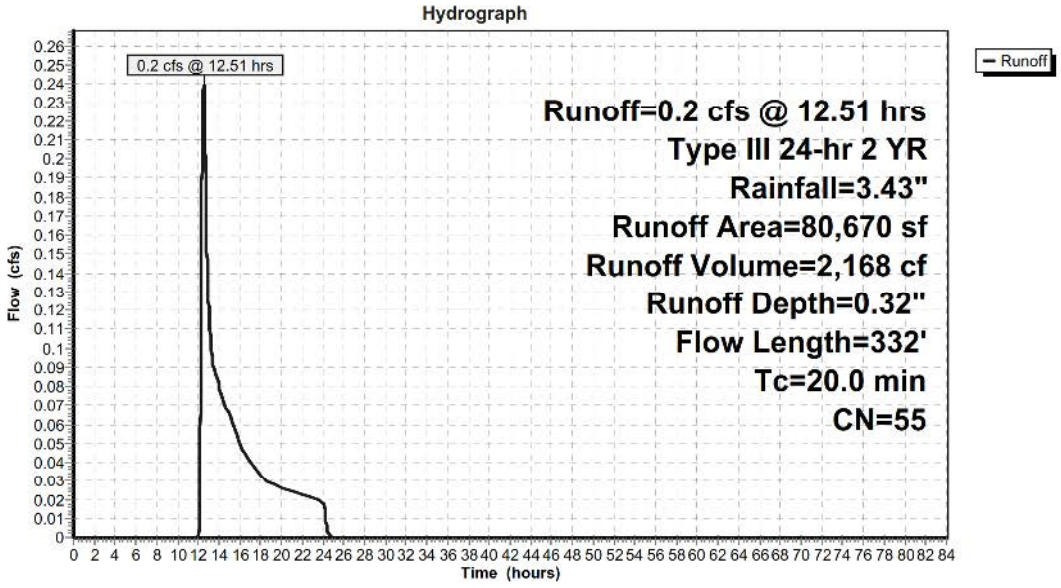
Runoff = 0.2 cfs @ 12.51 hrs, Volume= 2,168 cf, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment PRWS2: PRWS2

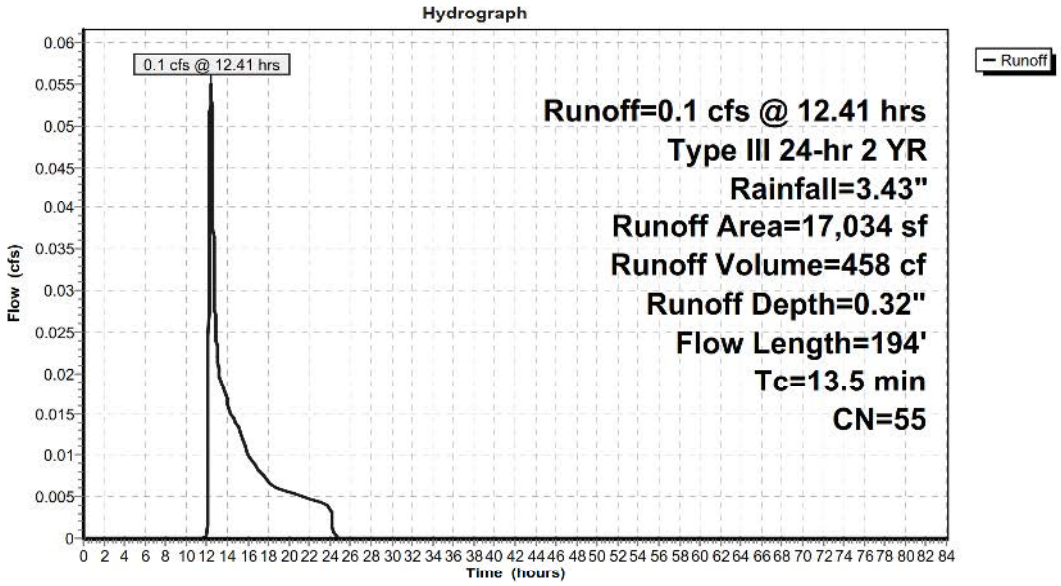
Runoff = 0.1 cfs @ 12.41 hrs, Volume= 458 cf, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment PRWS3: PRWS3

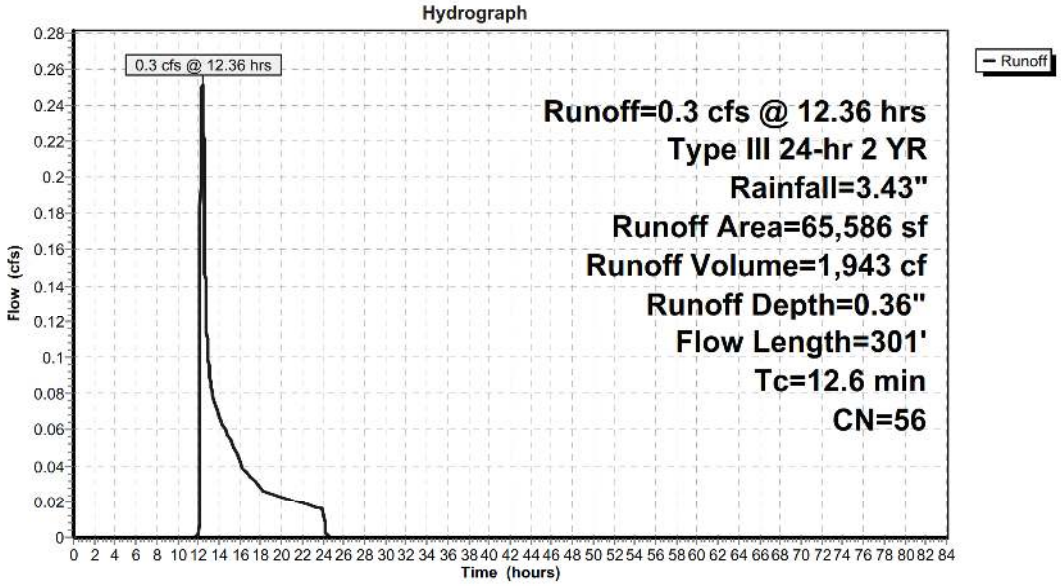
Runoff = 0.3 cfs @ 12.36 hrs, Volume= 1,943 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Outflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

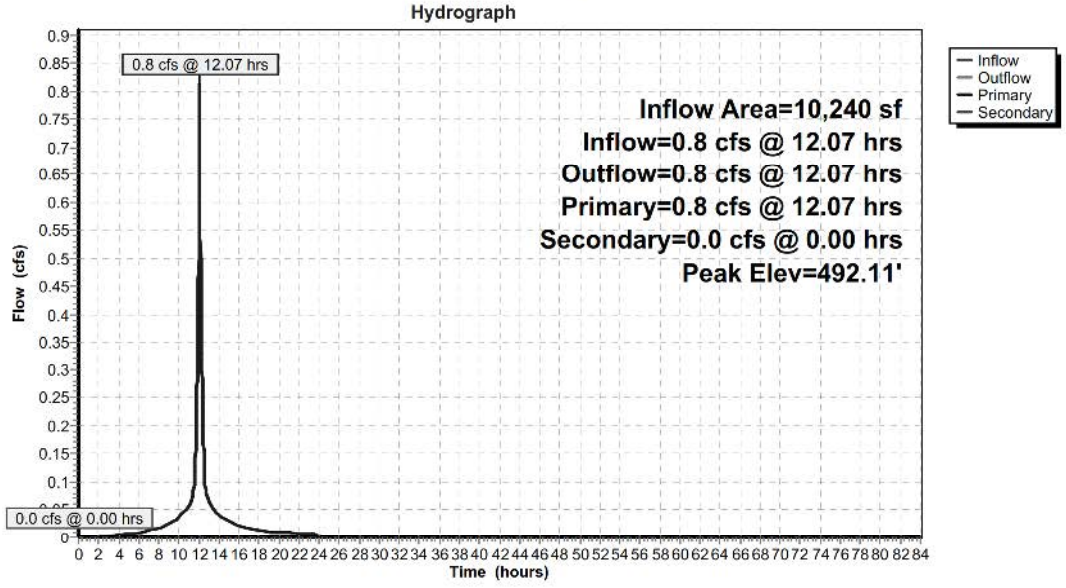
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.11' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.8 cfs @ 12.07 hrs HW=492.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.8 cfs @ 2.00 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 2.29" for 2 YR event
Inflow = 3.2 cfs @ 12.02 hrs, Volume= 8,508 cf
Outflow = 3.2 cfs @ 12.02 hrs, Volume= 8,508 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.2 cfs @ 12.02 hrs, Volume= 8,508 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

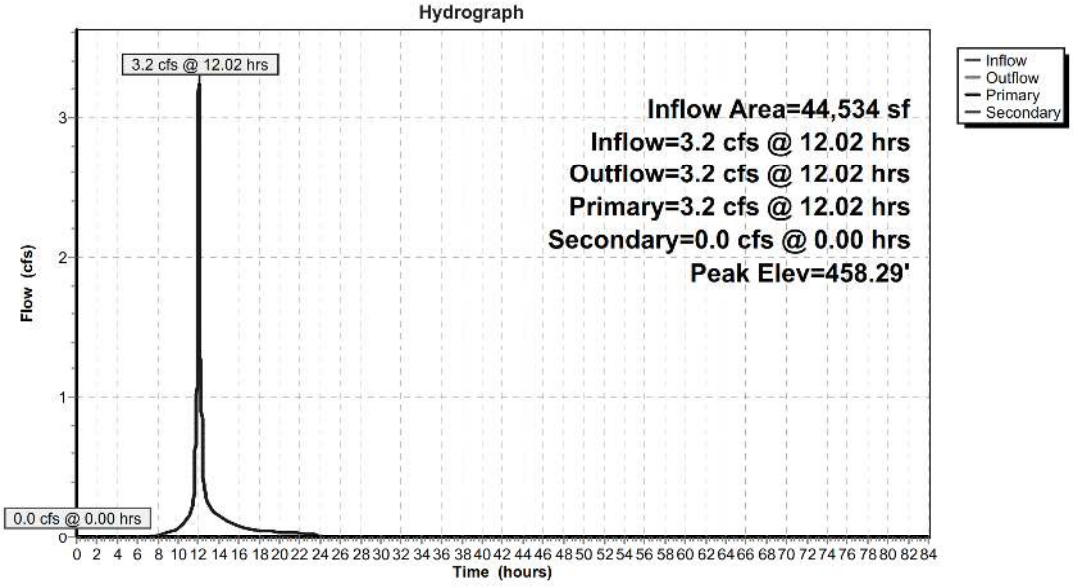
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.29' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.2 cfs @ 12.02 hrs HW=458.28' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.2 cfs @ 3.18 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

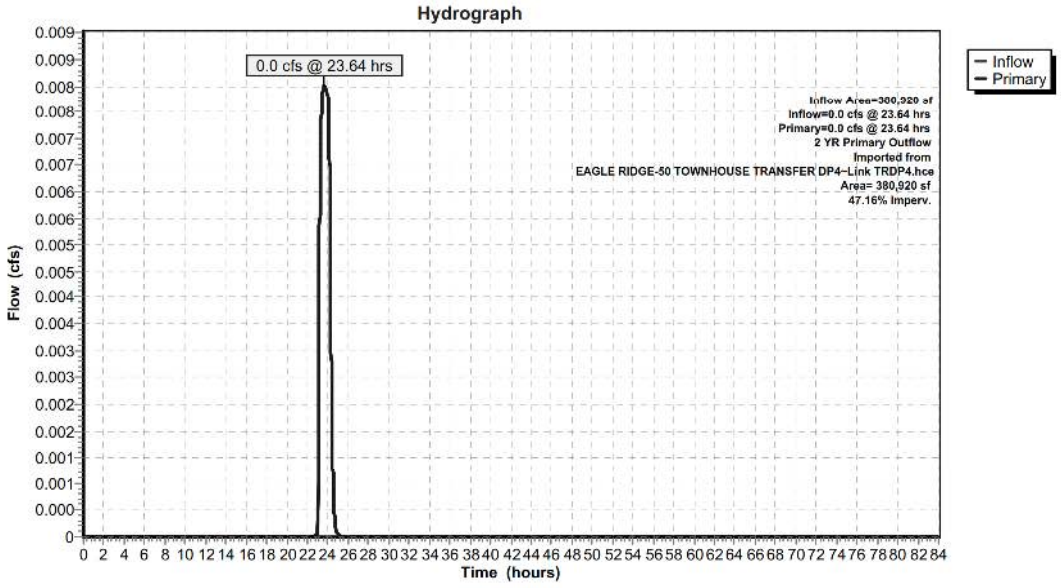
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.0 cfs @ 23.64 hrs, Volume= 35 cf
Primary = 0.0 cfs @ 23.64 hrs, Volume= 35 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

2 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=1.0 cfs 3,477 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=3.12"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=4.3 cfs 11,561 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=0.3 cfs 927 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=0.76"
Flow Length=430' Tc=6.4 min CN=57 Runoff=4.7 cfs 19,857 cf

Link DP4: DP4 Inflow=4.9 cfs 29,364 cf
Primary=4.9 cfs 29,364 cf

Pond DW4D: DW4D Peak Elev=464.16' Storage=5,527 cf Inflow=4.3 cfs 11,561 cf
Discarded=0.0 cfs 6,701 cf Primary=1.2 cfs 4,860 cf Outflow=1.2 cfs 11,561 cf

Pond IS4C: IS4C Peak Elev=493.38' Storage=1,512 cf Inflow=1.0 cfs 3,477 cf
Discarded=0.1 cfs 3,477 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 3,477 cf

Pond POND 4E: POND 4E Peak Elev=457.15' Storage=1,093 cf Inflow=1.3 cfs 5,787 cf
Outflow=0.5 cfs 5,787 cf

Link PRDP1: PRDP1 Inflow=0.7 cfs 4,427 cf
Primary=0.7 cfs 4,427 cf

Link PRDP2: PRDP2 Inflow=0.2 cfs 935 cf
Primary=0.2 cfs 935 cf

Link PRDP3: PRDP3 Inflow=0.7 cfs 3,869 cf
Primary=0.7 cfs 3,869 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=332' Tc=20.0 min CN=55 Runoff=0.7 cfs 4,427 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.2 cfs 935 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=0.71"
Flow Length=301' Tc=12.6 min CN=56 Runoff=0.7 cfs 3,869 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.18' Inflow=1.0 cfs 3,477 cf
Primary=1.0 cfs 3,477 cf Secondary=0.0 cfs 0 cf Outflow=1.0 cfs 3,477 cf

Pond SPLIT4D: SPLIT4D Peak Elev=458.67' Inflow=4.3 cfs 11,561 cf
Primary=4.3 cfs 11,561 cf Secondary=0.0 cfs 0 cf Outflow=4.3 cfs 11,561 cf

Link TRDP4: TRANSFERDP4 5 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=0.1 cfs 3,720 cf
Area= 380,920 sf 47.16% Imperv. Primary=0.1 cfs 3,720 cf

Total Runoff Area = 543,626 sf Runoff Volume = 45,052 cf Average Runoff Depth = 0.99"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4C: PRWS4C

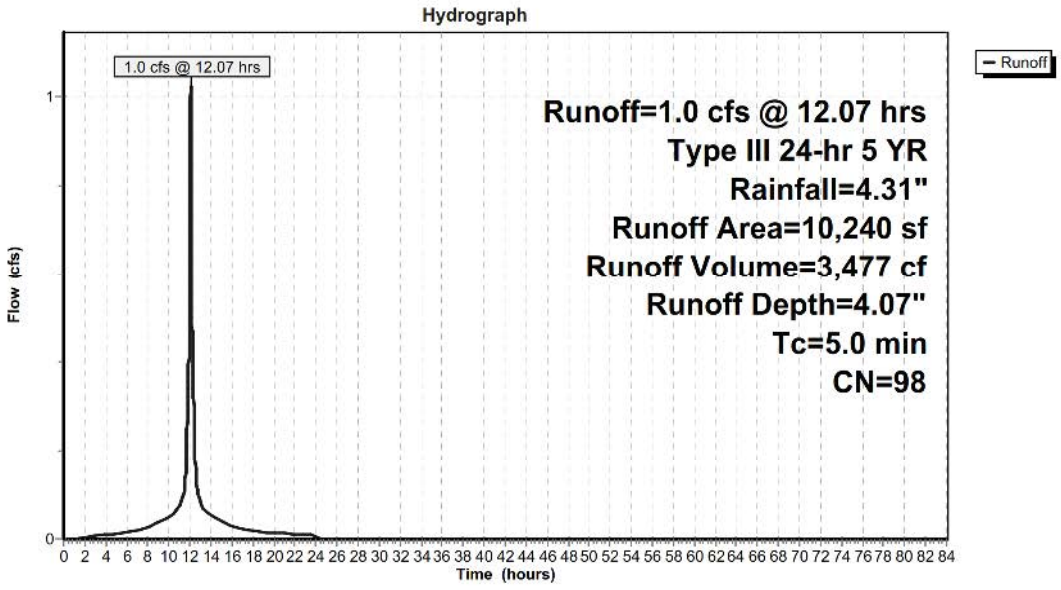
Runoff = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4D: PRWS4D

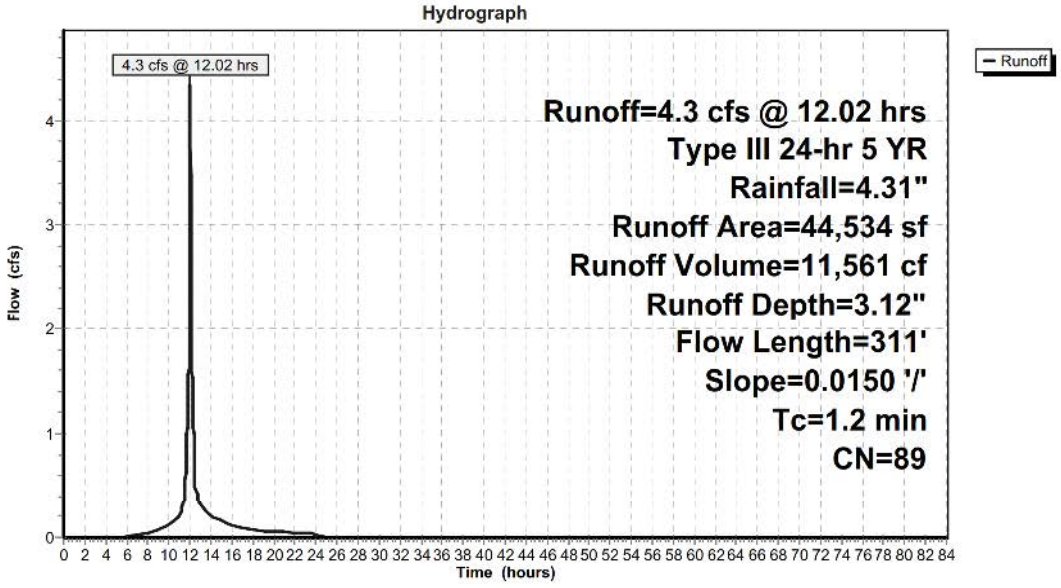
Runoff = 4.3 cfs @ 12.02 hrs, Volume= 11,561 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 4E: PRWS4E

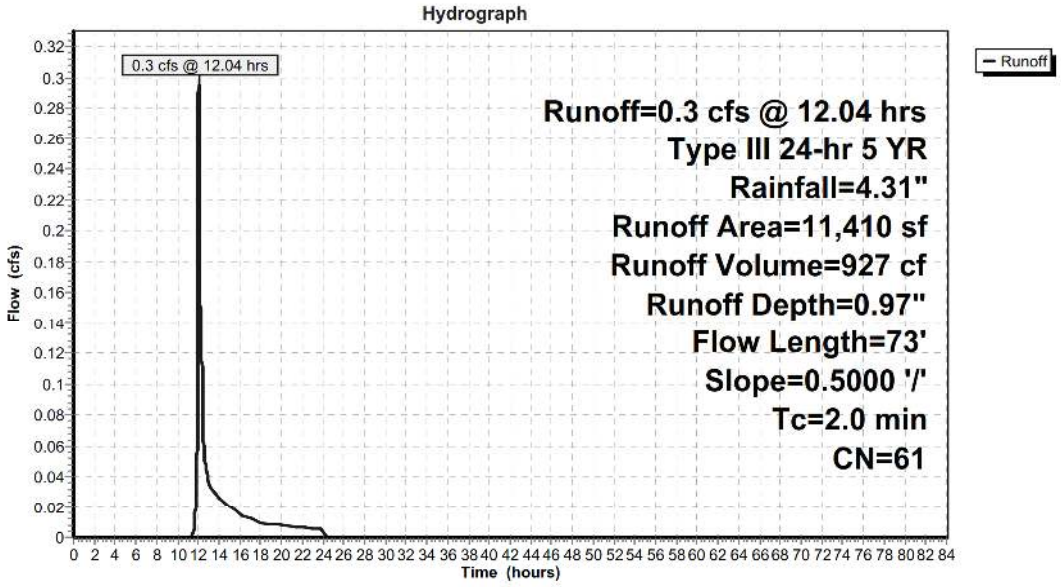
Runoff = 0.3 cfs @ 12.04 hrs, Volume= 927 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 4N: PRWS4N

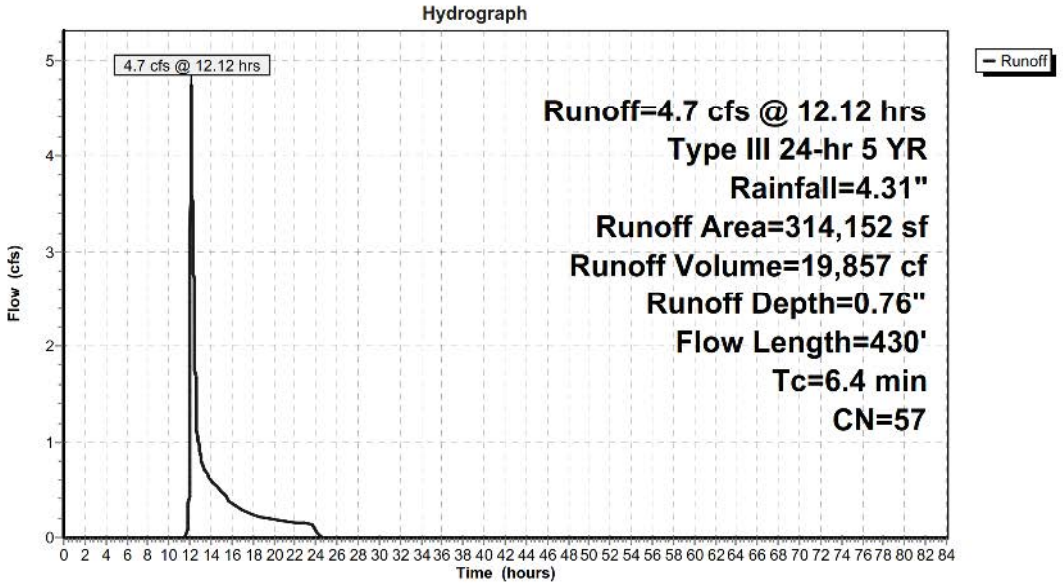
Runoff = 4.7 cfs @ 12.12 hrs, Volume= 19,857 cf, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



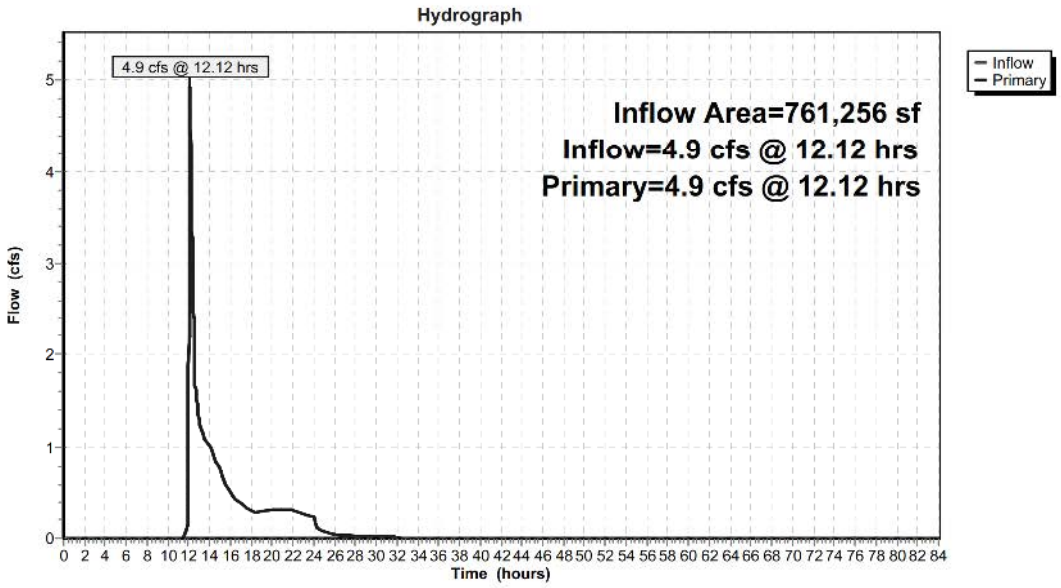
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 0.46" for 5 YR event
Inflow = 4.9 cfs @ 12.12 hrs, Volume= 29,364 cf
Primary = 4.9 cfs @ 12.12 hrs, Volume= 29,364 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 3.12" for 5 YR event
Inflow = 4.3 cfs @ 12.02 hrs, Volume= 11,561 cf
Outflow = 1.2 cfs @ 12.31 hrs, Volume= 11,561 cf, Atten= 72%, Lag= 17.6 min
Discarded = 0.0 cfs @ 7.90 hrs, Volume= 6,701 cf
Primary = 1.2 cfs @ 12.31 hrs, Volume= 4,860 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 464.16' @ 12.31 hrs Surf.Area= 1,152 sf Storage= 5,527 cf

Plug-Flow detention time= 1,023.4 min calculated for 11,561 cf (100% of inflow)
Center-of-Mass det. time= 1,023.3 min (1,818.6 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 7.90 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=1.2 cfs @ 12.31 hrs HW=464.16' (Free Discharge)
↳**2=Culvert** (Barrel Controls 1.2 cfs @ 2.28 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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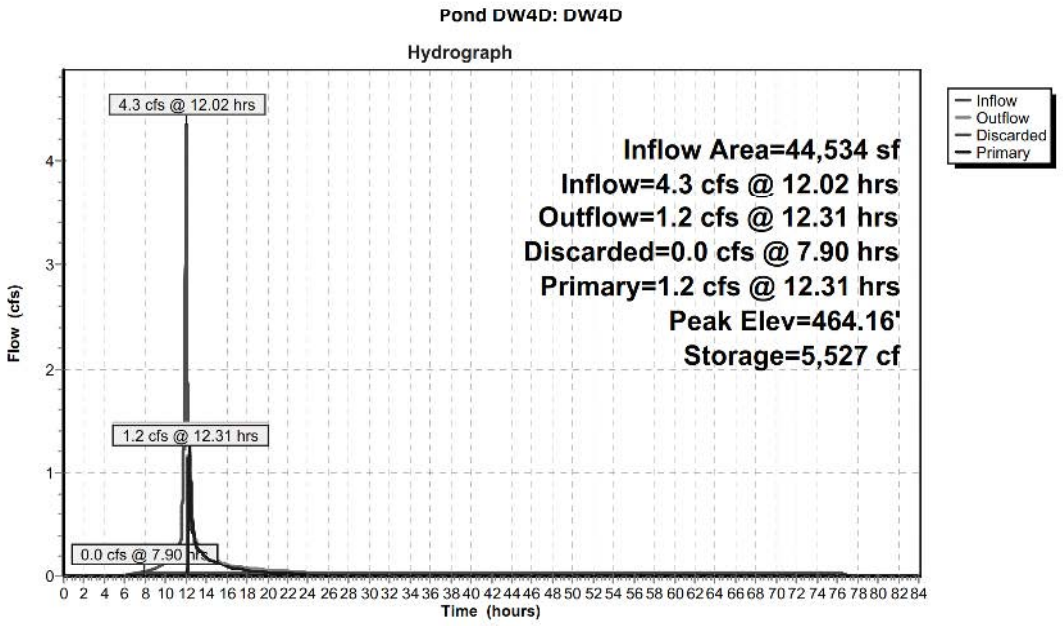

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Outflow = 0.1 cfs @ 10.39 hrs, Volume= 3,477 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.39 hrs, Volume= 3,477 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.38' @ 13.94 hrs Surf.Area= 1,152 sf Storage= 1,512 cf

Plug-Flow detention time= 229.1 min calculated for 3,476 cf (100% of inflow)
Center-of-Mass det. time= 229.1 min (978.8 - 749.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 10.39 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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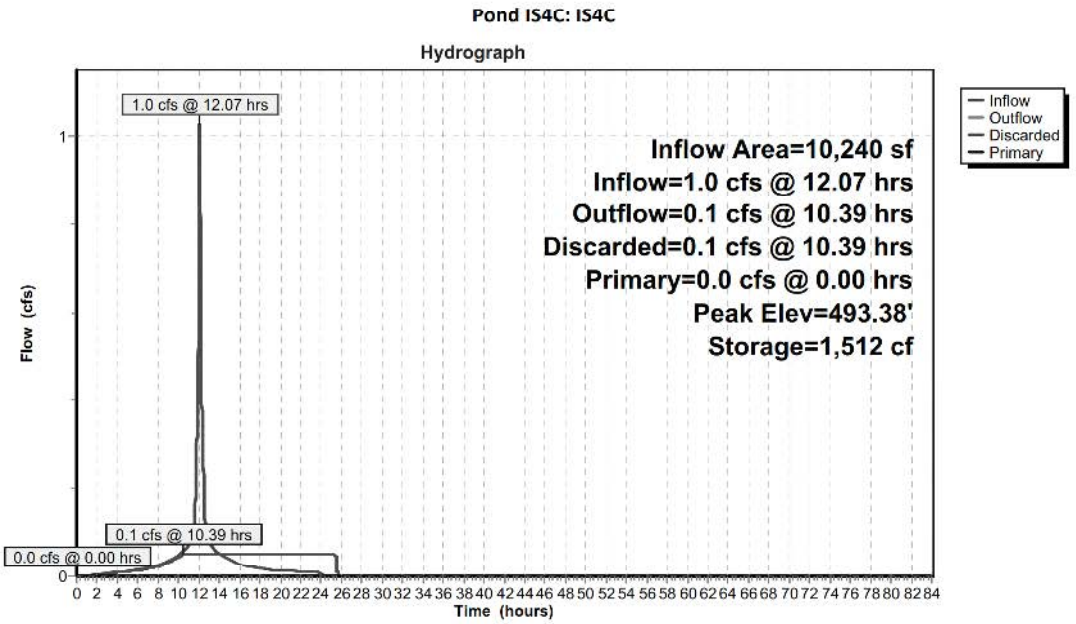

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 1.05" for 5 YR event
Inflow = 1.3 cfs @ 12.31 hrs, Volume= 5,787 cf
Outflow = 0.5 cfs @ 12.78 hrs, Volume= 5,787 cf, Atten= 65%, Lag= 28.2 min
Primary = 0.5 cfs @ 12.78 hrs, Volume= 5,787 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 457.15' @ 12.78 hrs Surf.Area= 1,416 sf Storage= 1,093 cf

Plug-Flow detention time= 24.8 min calculated for 5,786 cf (100% of inflow)
Center-of-Mass det. time= 24.8 min (898.2 - 873.4)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.5 cfs @ 12.78 hrs HW=457.15' (Free Discharge)
↑**1=Culvert** (Passes 0.5 cfs of 5.3 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 5.17 fps)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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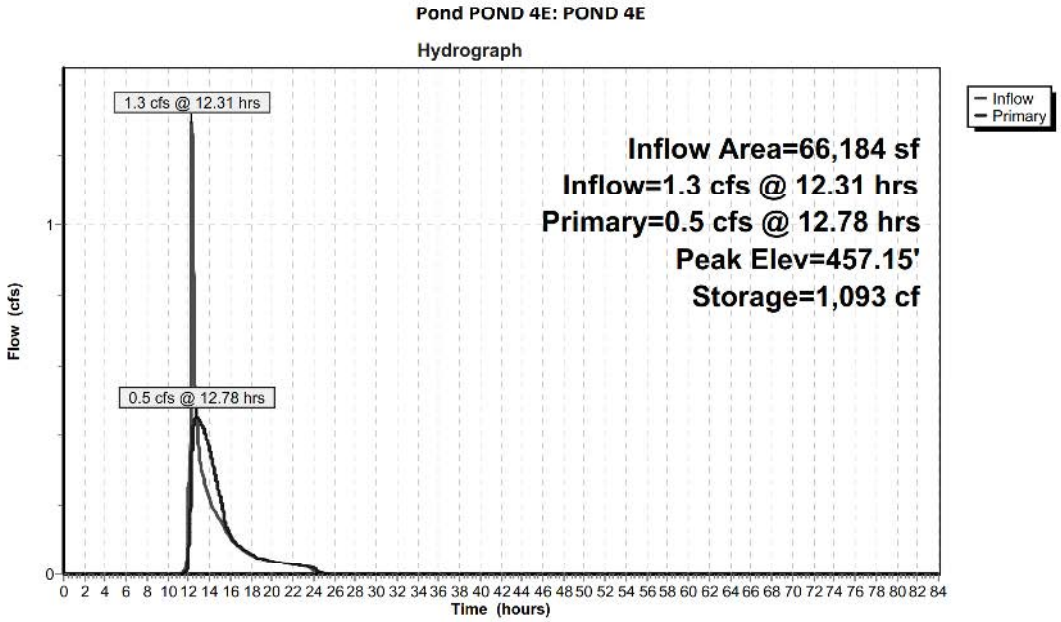


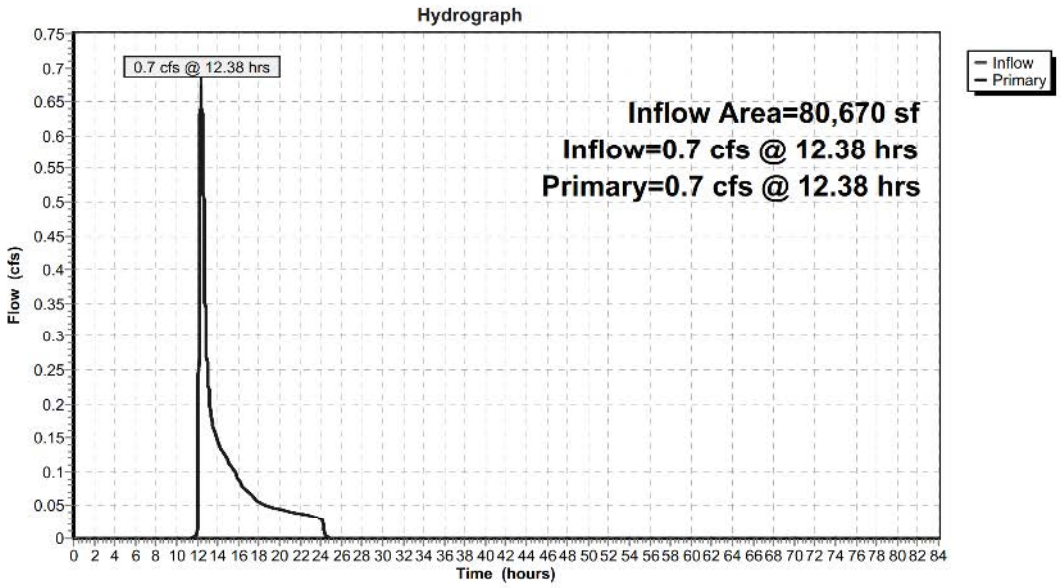
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 0.66" for 5 YR event
Inflow = 0.7 cfs @ 12.38 hrs, Volume= 4,427 cf
Primary = 0.7 cfs @ 12.38 hrs, Volume= 4,427 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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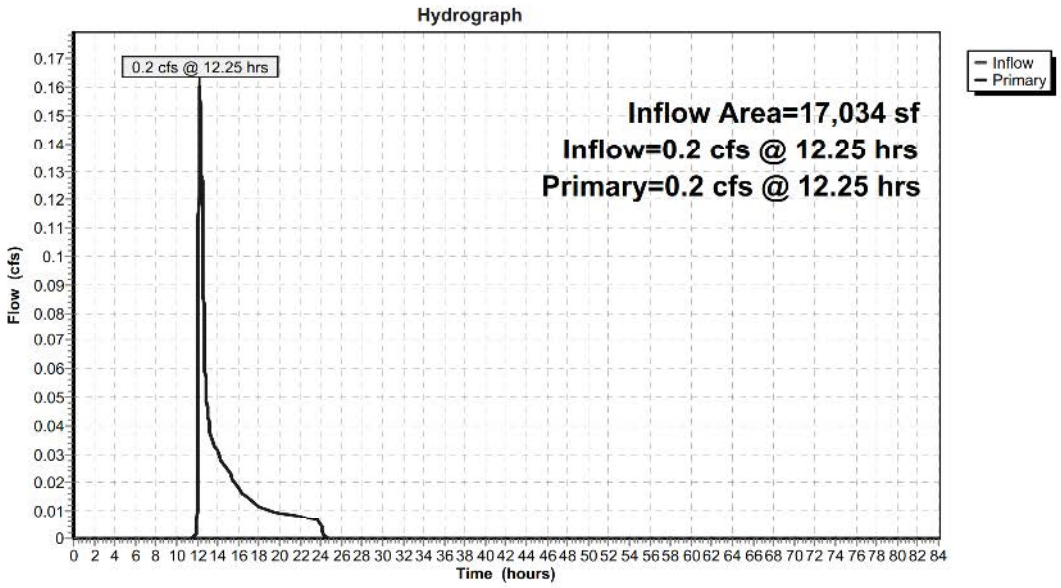
Summary for LInk PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 0.66" for 5 YR event
Inflow = 0.2 cfs @ 12.25 hrs, Volume= 935 cf
Primary = 0.2 cfs @ 12.25 hrs, Volume= 935 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



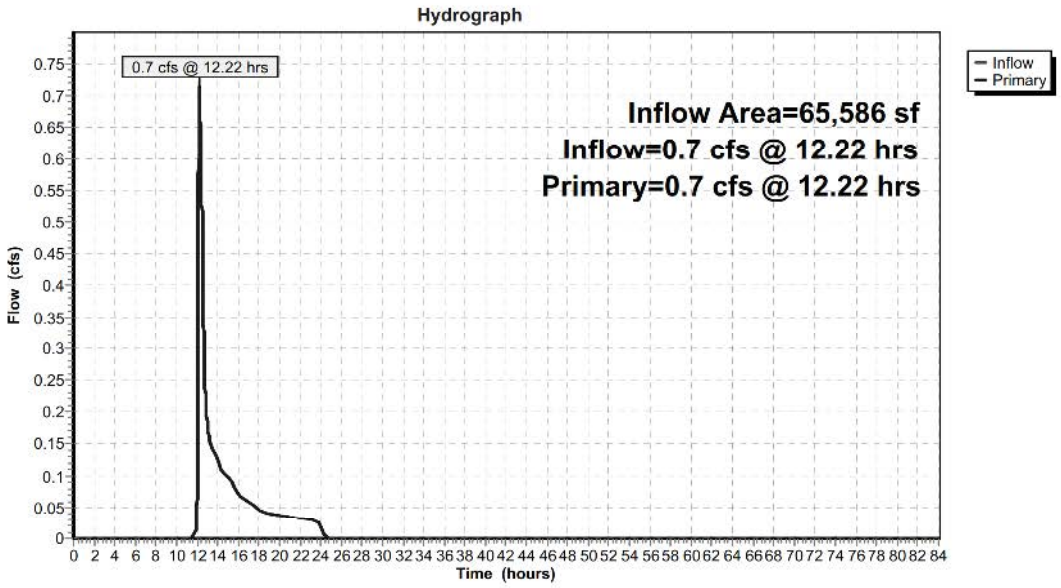
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 0.71" for 5 YR event
Inflow = 0.7 cfs @ 12.22 hrs, Volume= 3,869 cf
Primary = 0.7 cfs @ 12.22 hrs, Volume= 3,869 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment PRWS1: PRWS1

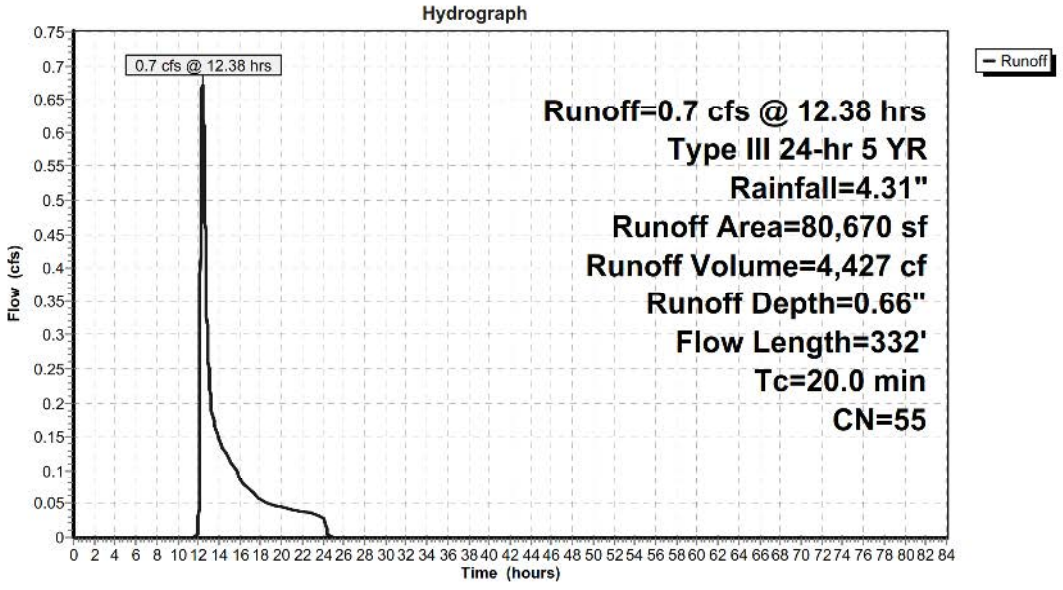
Runoff = 0.7 cfs @ 12.38 hrs, Volume= 4,427 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS2: PRWS2

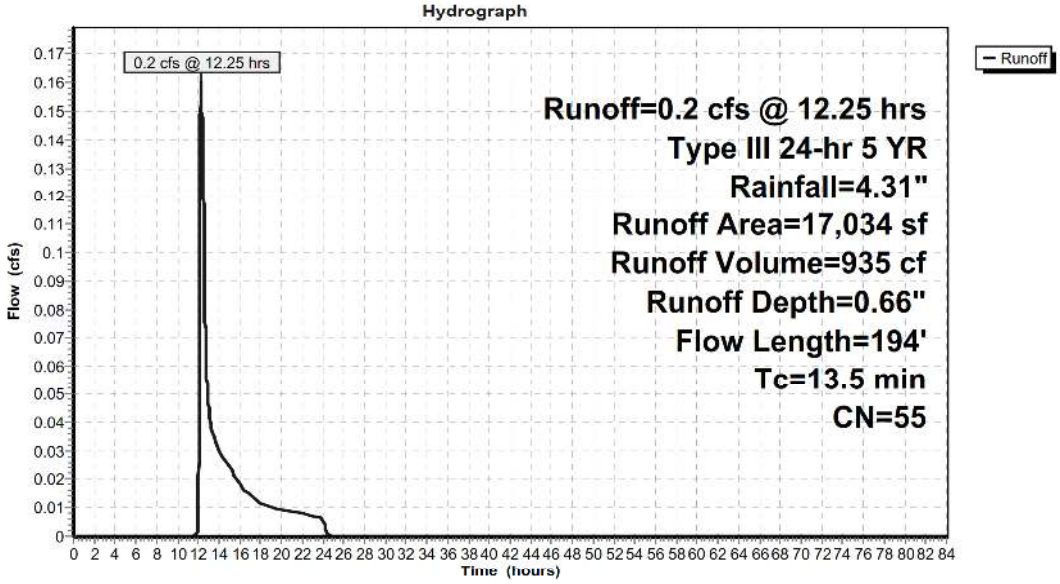
Runoff = 0.2 cfs @ 12.25 hrs, Volume= 935 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS3: PRWS3

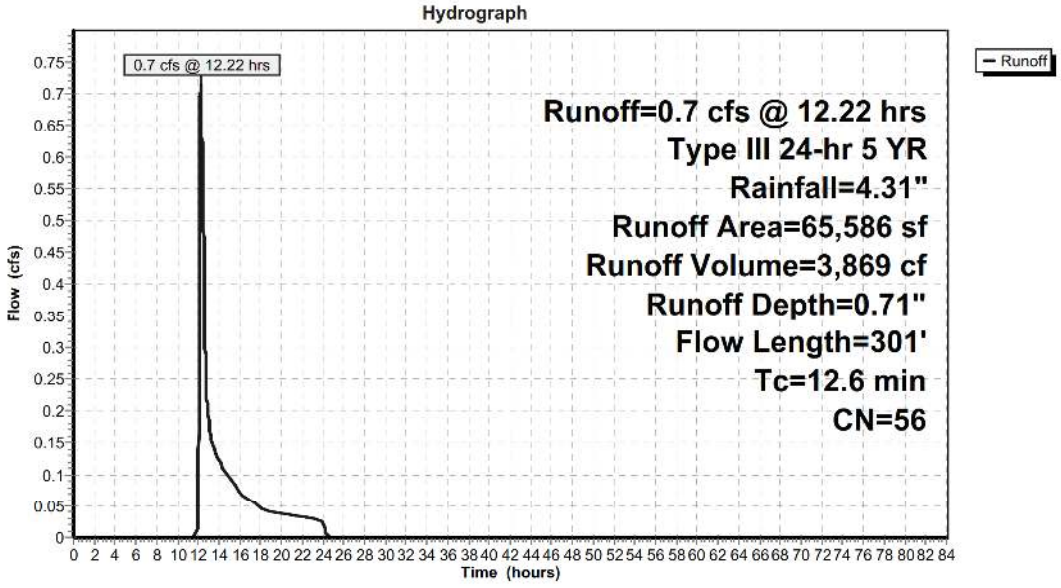
Runoff = 0.7 cfs @ 12.22 hrs, Volume= 3,869 cf, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Outflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

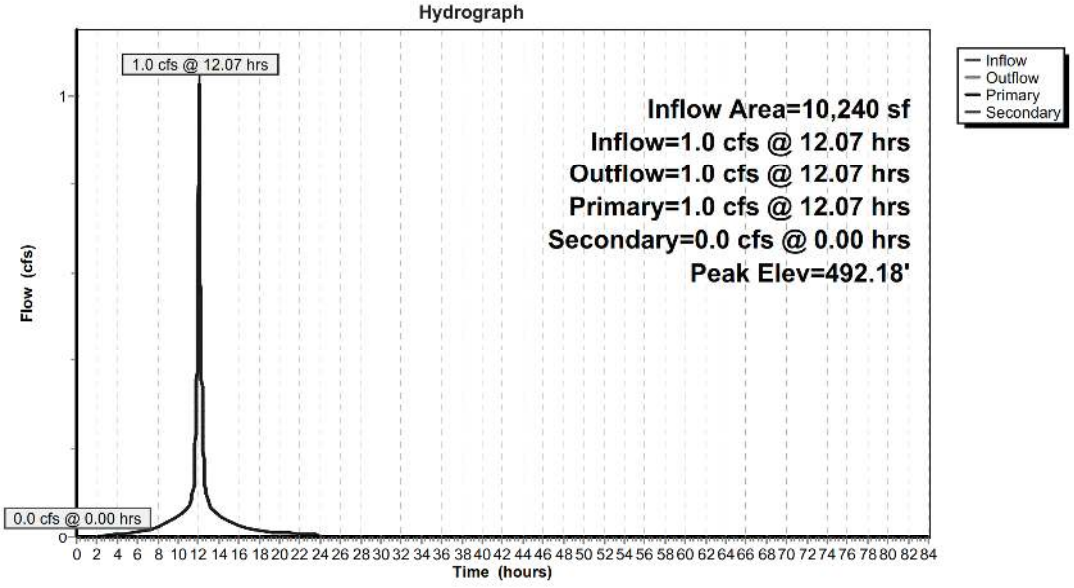
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.18' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.0 cfs @ 12.07 hrs HW=492.18' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.0 cfs @ 2.17 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 3.12" for 5 YR event
Inflow = 4.3 cfs @ 12.02 hrs, Volume= 11,561 cf
Outflow = 4.3 cfs @ 12.02 hrs, Volume= 11,561 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.02 hrs, Volume= 11,561 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

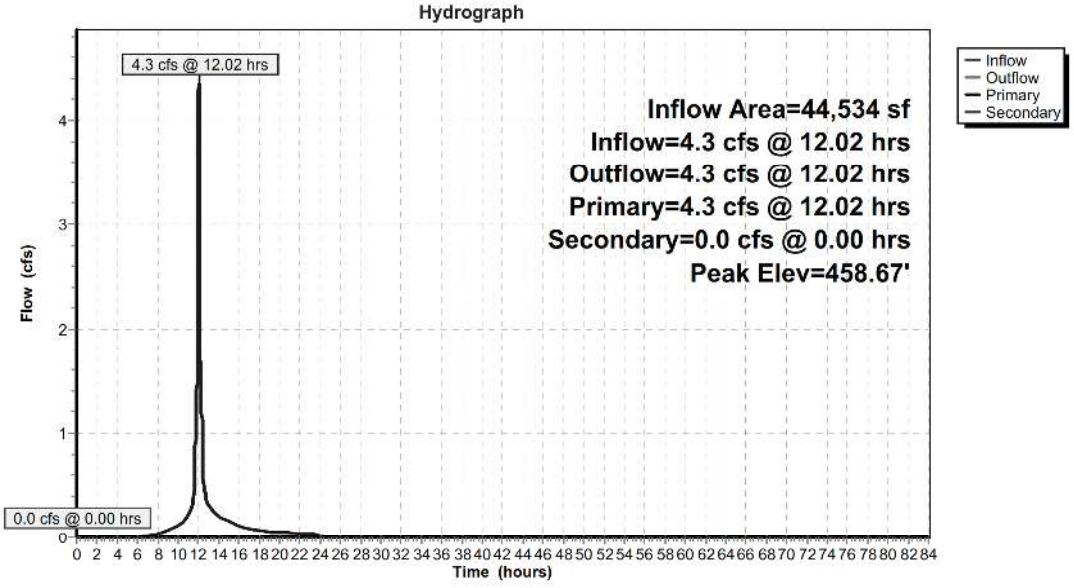
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.67' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.3 cfs @ 12.02 hrs HW=458.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.3 cfs @ 3.51 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

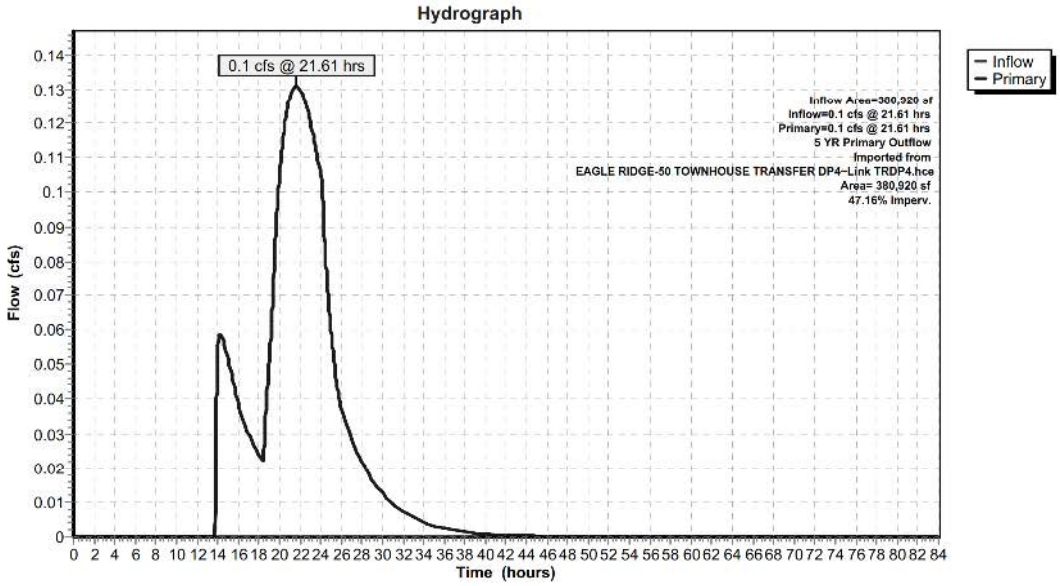
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.12" for 5 YR event
Inflow = 0.1 cfs @ 21.61 hrs, Volume= 3,720 cf
Primary = 0.1 cfs @ 21.61 hrs, Volume= 3,720 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

5 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=1.2 cfs 4,175 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=3.90"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=5.4 cfs 14,461 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=0.5 cfs 1,377 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=1.17"
Flow Length=430' Tc=6.4 min CN=57 Runoff=8.4 cfs 30,747 cf

Link DP4: DP4 Inflow=8.8 cfs 60,761 cf
Primary=8.8 cfs 60,761 cf

Pond DW4D: DW4D Peak Elev=464.53' Storage=5,823 cf Inflow=5.4 cfs 14,461 cf
Discarded=0.0 cfs 6,782 cf Primary=2.7 cfs 7,679 cf Outflow=2.8 cfs 14,461 cf

Pond IS4C: IS4C Peak Elev=493.65' Storage=1,740 cf Inflow=1.2 cfs 4,175 cf
Discarded=0.1 cfs 3,863 cf Primary=0.1 cfs 312 cf Outflow=0.1 cfs 4,175 cf

Pond POND 4E: POND 4E Peak Elev=458.06' Storage=2,704 cf Inflow=3.1 cfs 9,367 cf
Outflow=0.8 cfs 9,367 cf

Link PRDP1: PRDP1 Inflow=1.2 cfs 7,028 cf
Primary=1.2 cfs 7,028 cf

Link PRDP2: PRDP2 Inflow=0.3 cfs 1,484 cf
Primary=0.3 cfs 1,484 cf

Link PRDP3: PRDP3 Inflow=1.3 cfs 6,063 cf
Primary=1.3 cfs 6,063 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=1.05"
Flow Length=332' Tc=20.0 min CN=55 Runoff=1.2 cfs 7,028 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=1.05"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.3 cfs 1,484 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=1.11"
Flow Length=301' Tc=12.6 min CN=56 Runoff=1.3 cfs 6,063 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.25' Inflow=1.2 cfs 4,175 cf
Primary=1.2 cfs 4,175 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 4,175 cf

Pond SPLIT4D: SPLIT4D Peak Elev=458.91' Inflow=5.4 cfs 14,461 cf
Primary=5.4 cfs 14,461 cf Secondary=0.0 cfs 0 cf Outflow=5.4 cfs 14,461 cf

Link TRDP4: 10 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=0.7 cfs 20,646 cf
Area= 380,920 sf 47.16% Imperv. Primary=0.7 cfs 20,646 cf

Total Runoff Area = 543,626 sf Runoff Volume = 65,334 cf Average Runoff Depth = 1.44"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4C: PRWS4C

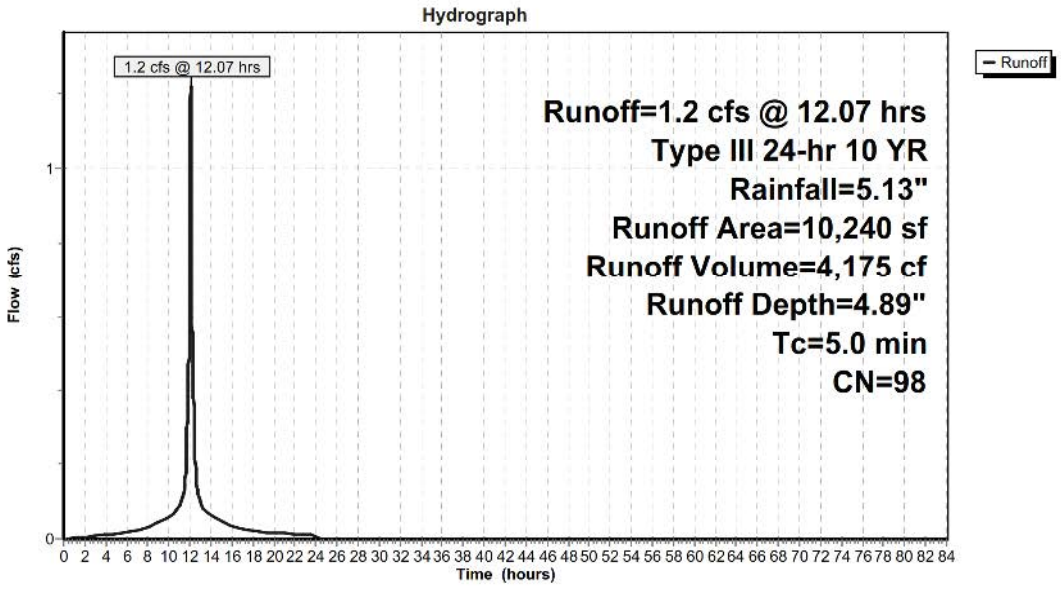
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4D: PRWS4D

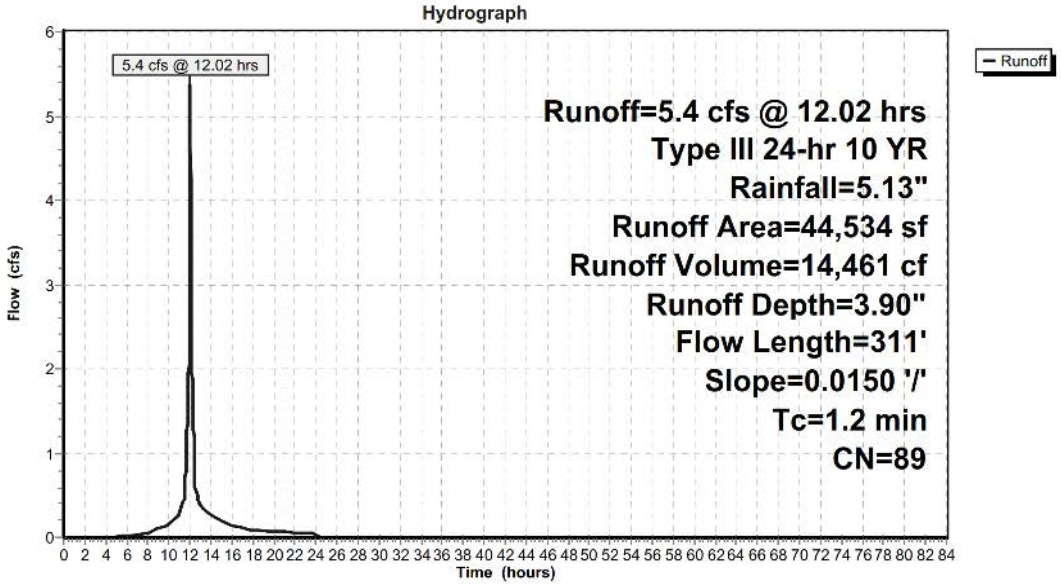
Runoff = 5.4 cfs @ 12.02 hrs, Volume= 14,461 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4E: PRWS4E

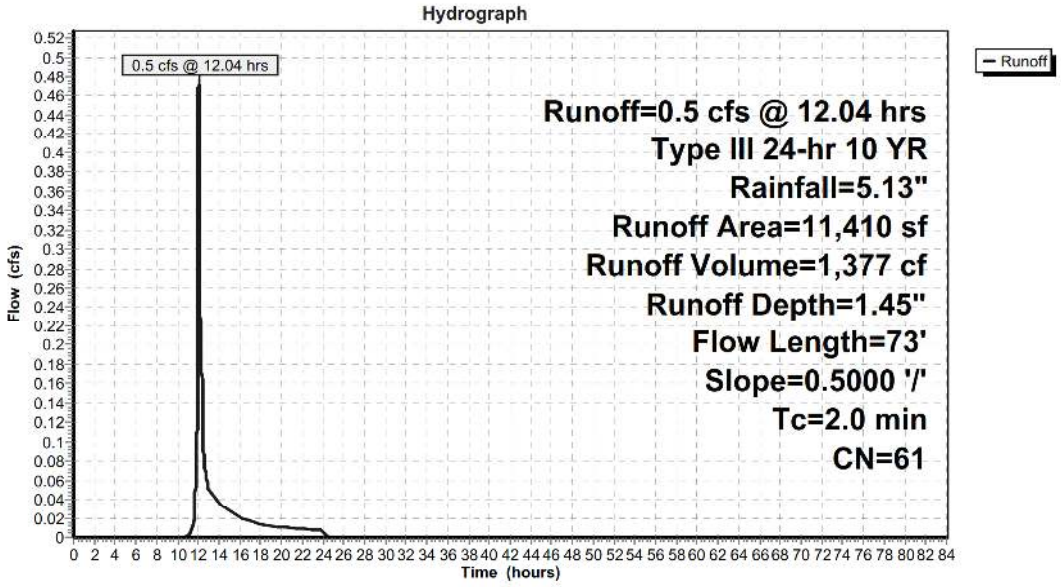
Runoff = 0.5 cfs @ 12.04 hrs, Volume= 1,377 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4N: PRWS4N

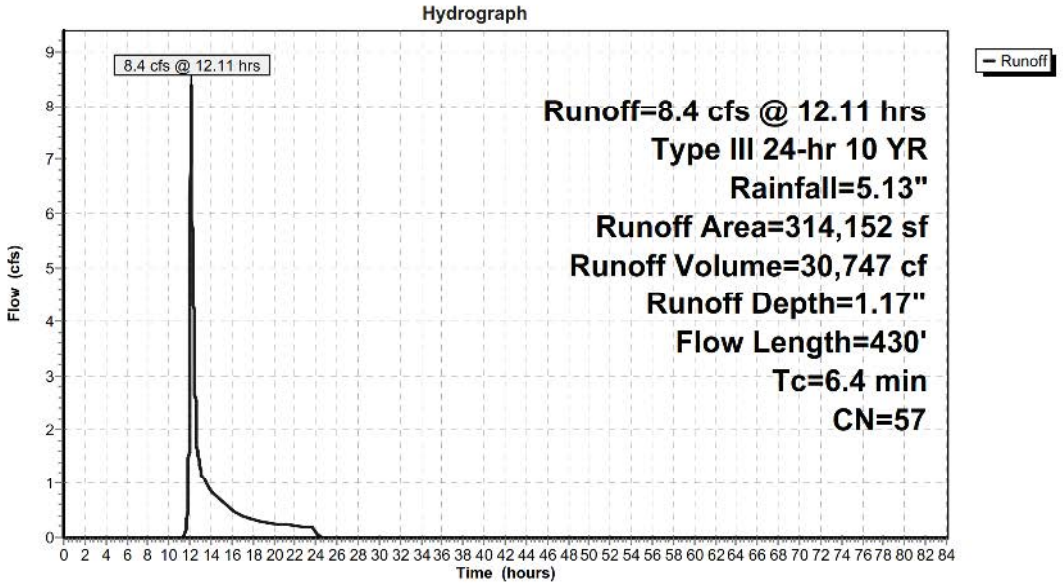
Runoff = 8.4 cfs @ 12.11 hrs, Volume= 30,747 cf, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



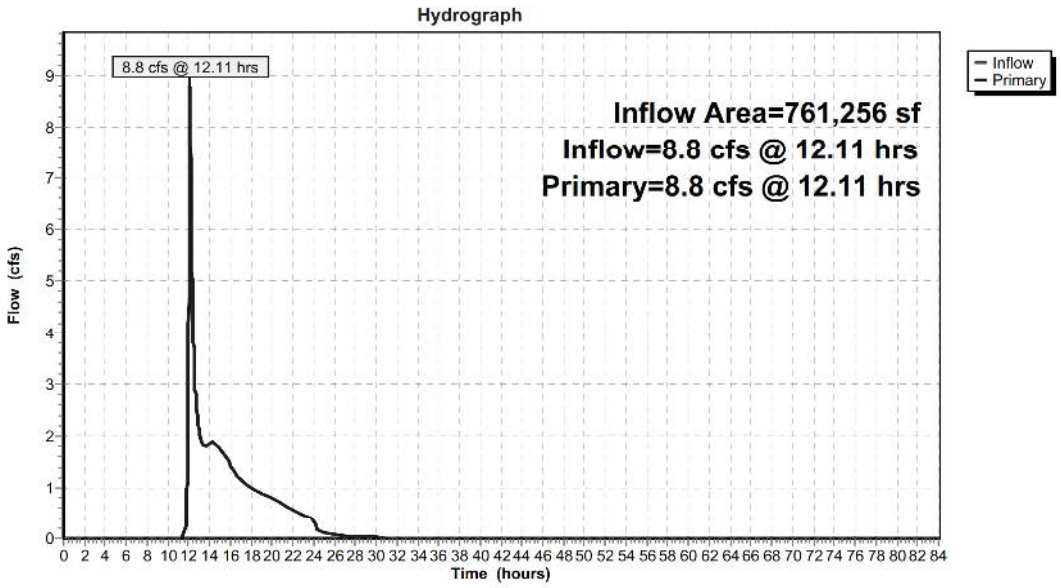
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 0.96" for 10 YR event
Inflow = 8.8 cfs @ 12.11 hrs, Volume= 60,761 cf
Primary = 8.8 cfs @ 12.11 hrs, Volume= 60,761 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 3.90" for 10 YR event
Inflow = 5.4 cfs @ 12.02 hrs, Volume= 14,461 cf
Outflow = 2.8 cfs @ 12.10 hrs, Volume= 14,461 cf, Atten= 48%, Lag= 5.1 min
Discarded = 0.0 cfs @ 7.14 hrs, Volume= 6,782 cf
Primary = 2.7 cfs @ 12.10 hrs, Volume= 7,679 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 464.53' @ 12.10 hrs Surf.Area= 1,152 sf Storage= 5,823 cf

Plug-Flow detention time= 827.1 min calculated for 14,461 cf (100% of inflow)
Center-of-Mass det. time= 827.1 min (1,616.2 - 789.0)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 7.14 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=2.7 cfs @ 12.10 hrs HW=464.53' (Free Discharge)
↳**2=Culvert** (Barrel Controls 2.7 cfs @ 2.99 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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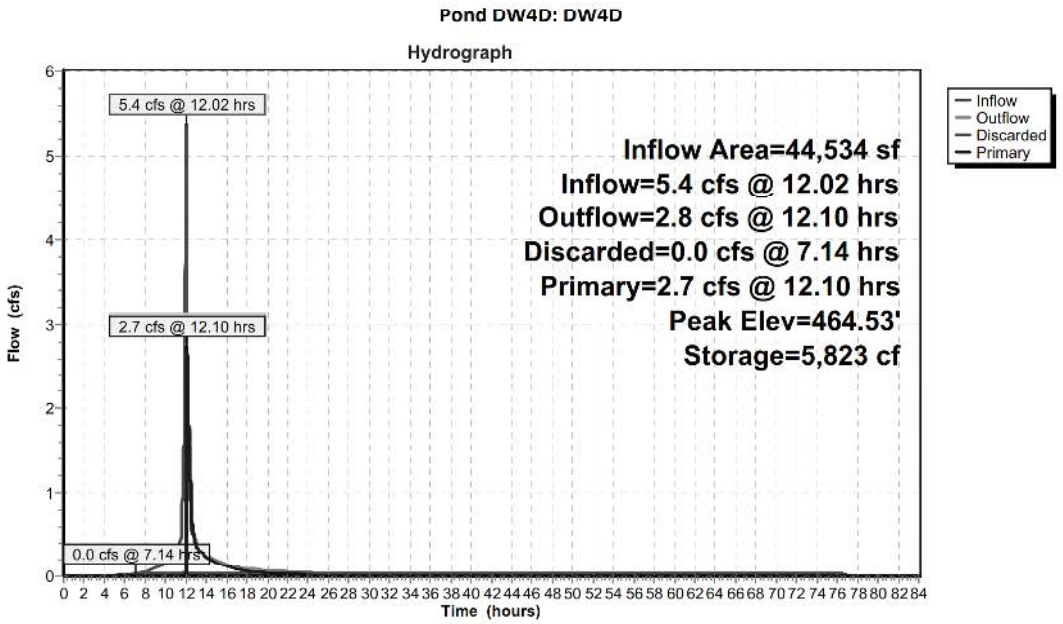


EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Outflow = 0.1 cfs @ 12.71 hrs, Volume= 4,175 cf, Atten= 89%, Lag= 38.1 min
Discarded = 0.1 cfs @ 9.87 hrs, Volume= 3,863 cf
Primary = 0.1 cfs @ 12.71 hrs, Volume= 312 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.65' @ 12.71 hrs Surf.Area= 1,152 sf Storage= 1,740 cf

Plug-Flow detention time= 238.5 min calculated for 4,175 cf (100% of inflow)
Center-of-Mass det. time= 238.5 min (985.2 - 746.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

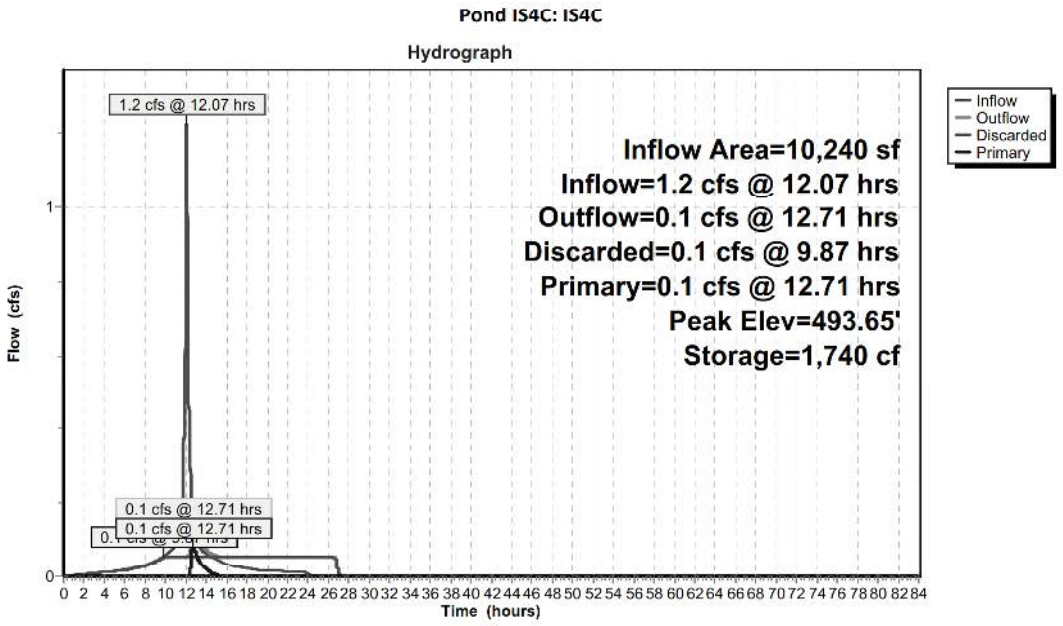
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 9.87 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.1 cfs @ 12.71 hrs HW=493.65' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 1.31 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 1.70" for 10 YR event
Inflow = 3.1 cfs @ 12.10 hrs, Volume= 9,367 cf
Outflow = 0.8 cfs @ 12.62 hrs, Volume= 9,367 cf, Atten= 75%, Lag= 31.3 min
Primary = 0.8 cfs @ 12.62 hrs, Volume= 9,367 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.06' @ 12.62 hrs Surf.Area= 2,155 sf Storage= 2,704 cf

Plug-Flow detention time= 44.7 min calculated for 9,366 cf (100% of inflow)
Center-of-Mass det. time= 44.8 min (894.4 - 849.7)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.8 cfs @ 12.62 hrs HW=458.06' (Free Discharge)
↑**1=Culvert** (Passes 0.8 cfs of 9.7 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.6 cfs @ 6.90 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 0.1 cfs @ 0.66 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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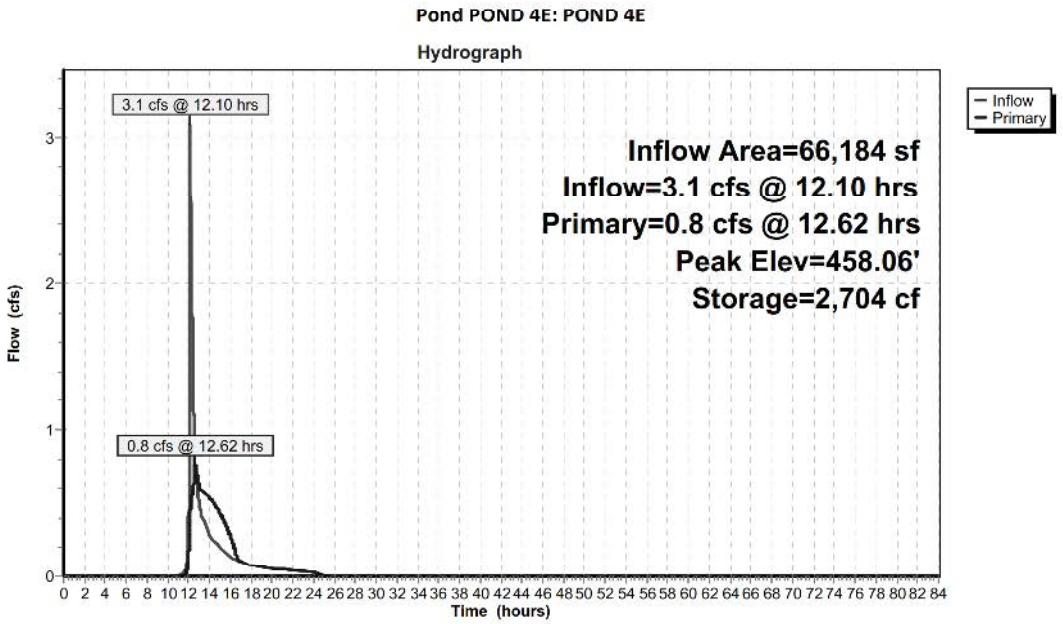

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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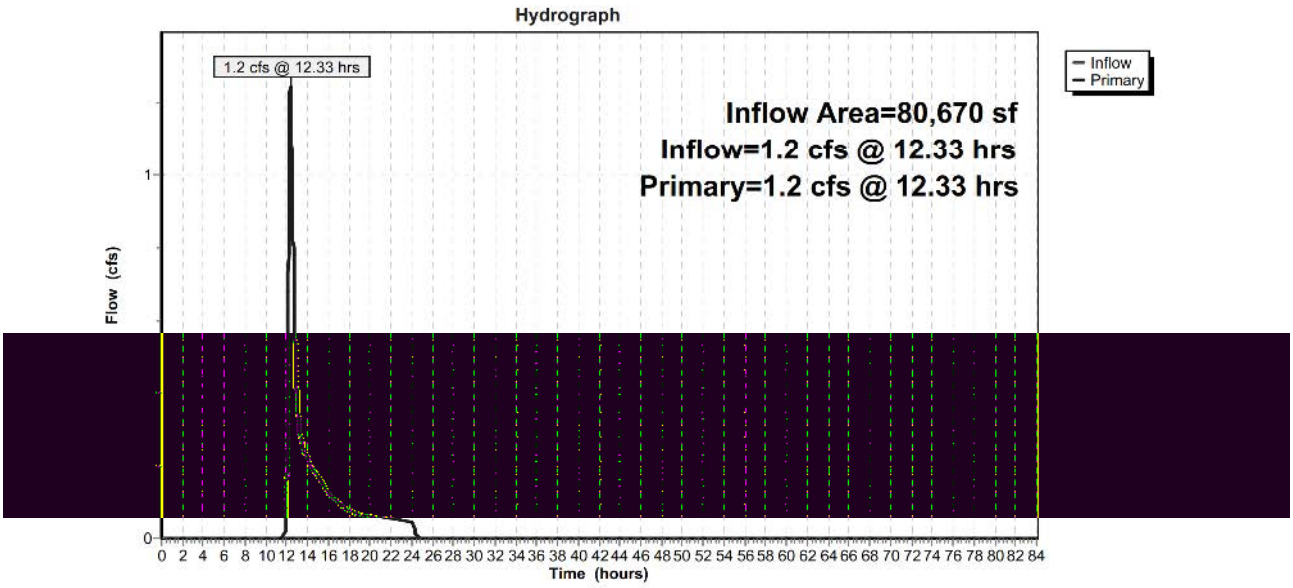
Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 1.05" for 10 YR event
Inflow = 1.2 cfs @ 12.33 hrs, Volume= 7,028 cf
Primary = 1.2 cfs @ 12.33 hrs, Volume= 7,028 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



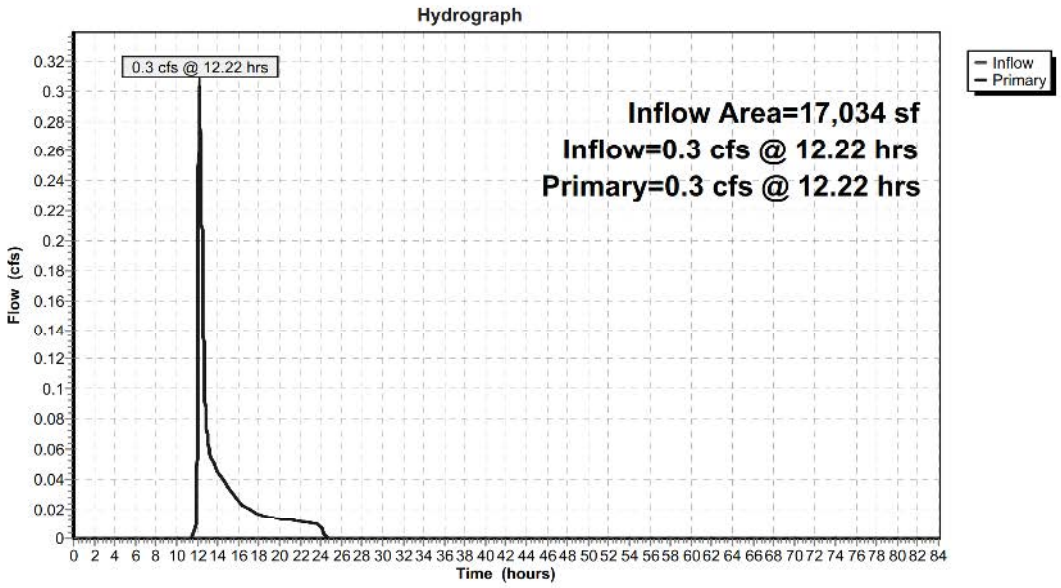
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 1.05" for 10 YR event
Inflow = 0.3 cfs @ 12.22 hrs, Volume= 1,484 cf
Primary = 0.3 cfs @ 12.22 hrs, Volume= 1,484 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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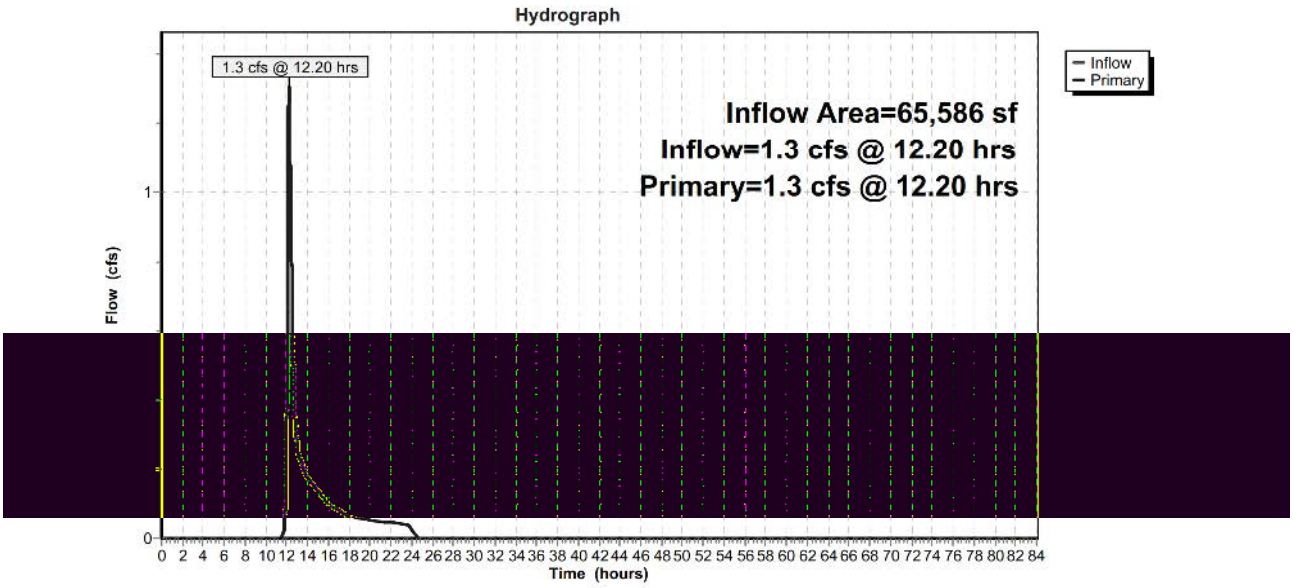
Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 1.11" for 10 YR event
Inflow = 1.3 cfs @ 12.20 hrs, Volume= 6,063 cf
Primary = 1.3 cfs @ 12.20 hrs, Volume= 6,063 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment PRWS1: PRWS1

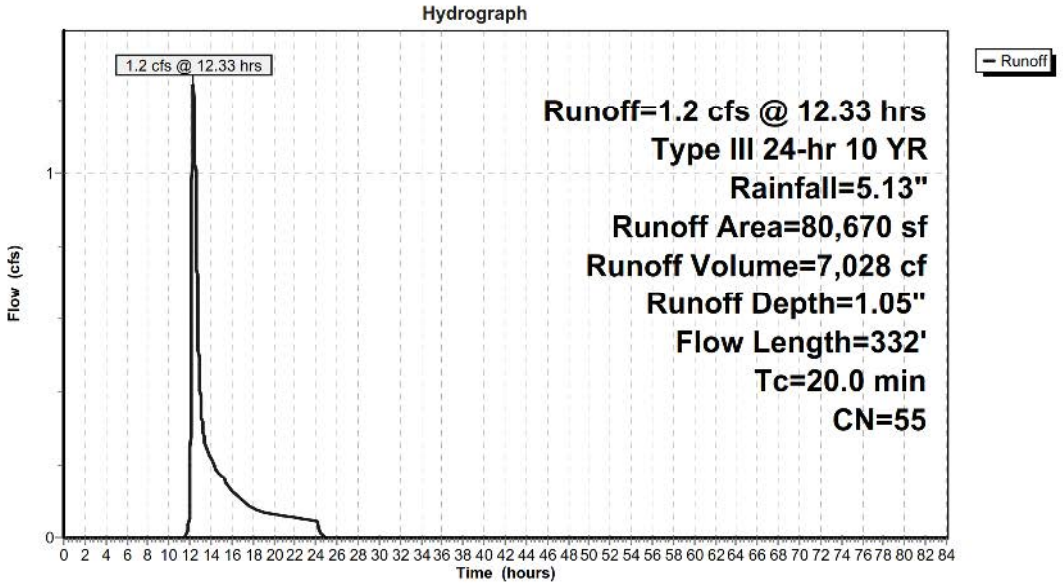
Runoff = 1.2 cfs @ 12.33 hrs, Volume= 7,028 cf, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment PRWS2: PRWS2

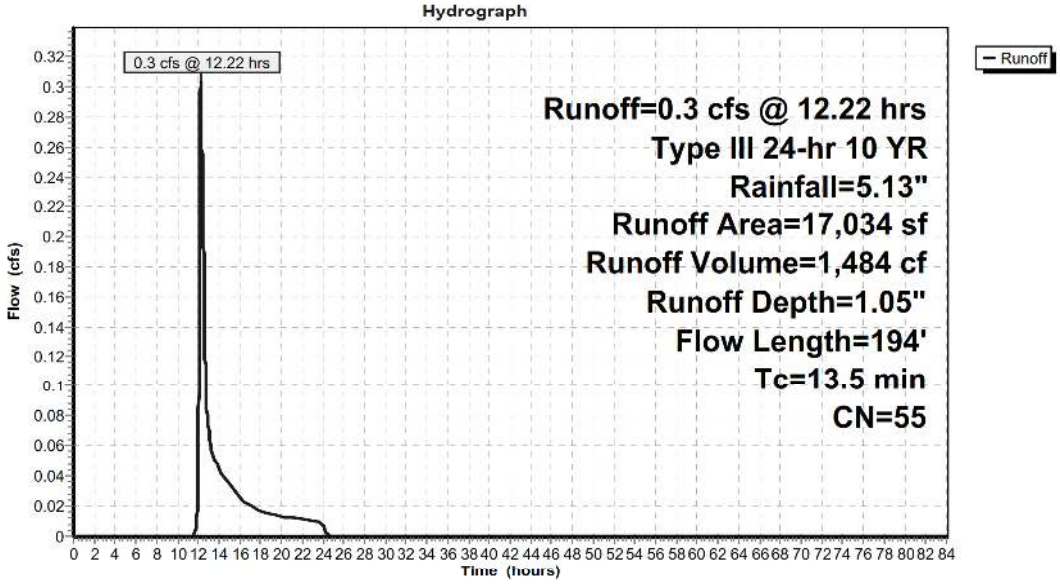
Runoff = 0.3 cfs @ 12.22 hrs, Volume= 1,484 cf, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS3: PRWS3

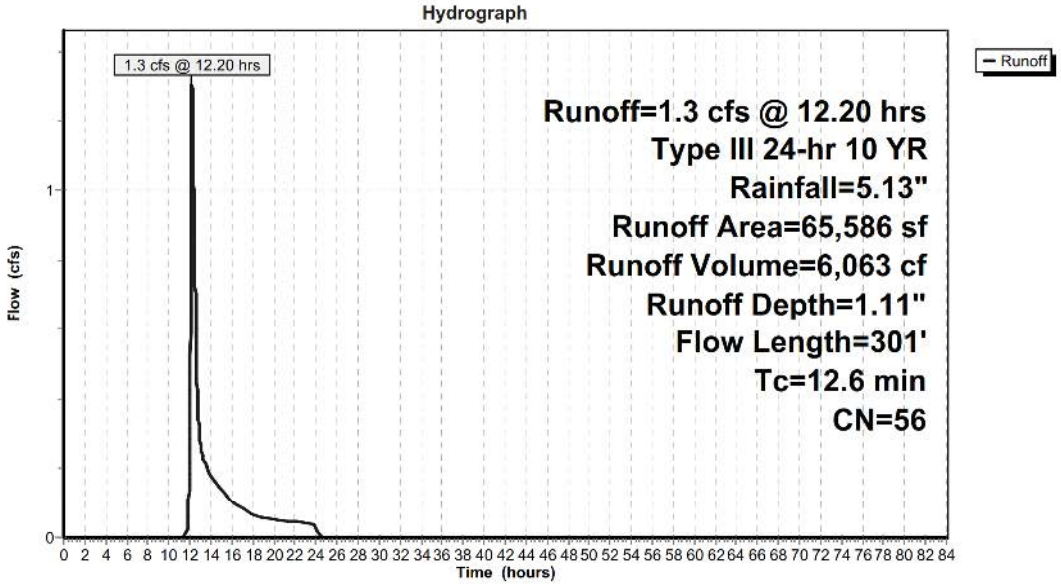
Runoff = 1.3 cfs @ 12.20 hrs, Volume= 6,063 cf, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Outflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

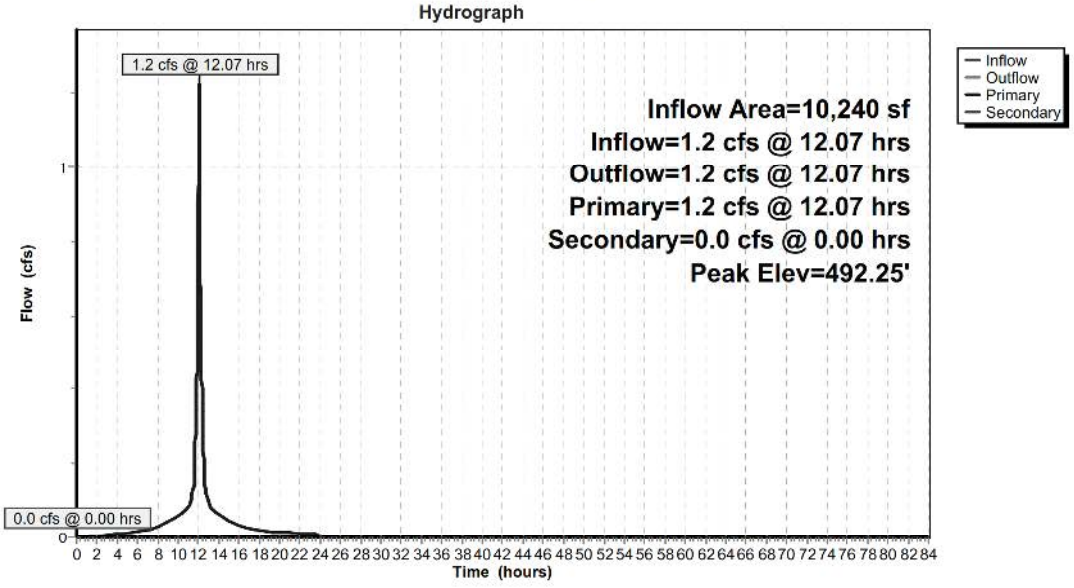
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.25' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.2 cfs @ 12.07 hrs HW=492.25' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.2 cfs @ 2.30 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 3.90" for 10 YR event
Inflow = 5.4 cfs @ 12.02 hrs, Volume= 14,461 cf
Outflow = 5.4 cfs @ 12.02 hrs, Volume= 14,461 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.4 cfs @ 12.02 hrs, Volume= 14,461 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

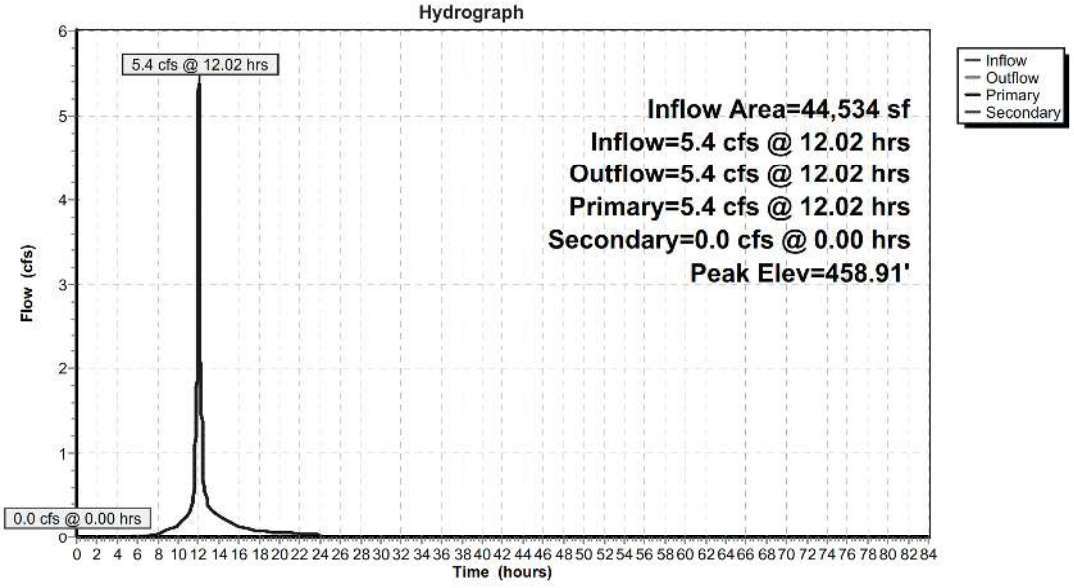
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.91' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=5.4 cfs @ 12.02 hrs HW=458.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.4 cfs @ 4.37 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

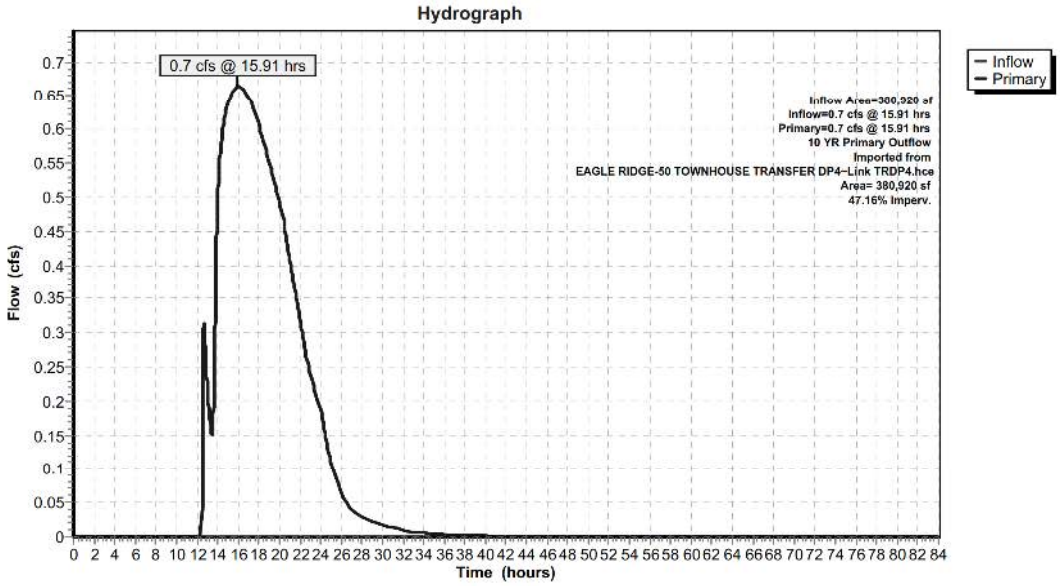
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.65" for 10 YR event
Inflow = 0.7 cfs @ 15.91 hrs, Volume= 20,646 cf
Primary = 0.7 cfs @ 15.91 hrs, Volume= 20,646 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

10 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=1.5 cfs 5,309 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=5.18"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=7.0 cfs 19,231 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=0.8 cfs 2,205 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=1.96"
Flow Length=430' Tc=6.4 min CN=57 Runoff=15.3 cfs 51,362 cf

Link DP4: DP4 Inflow=16.8 cfs 117,764 cf
Primary=16.8 cfs 117,764 cf

Pond DW4D: DW4D Peak Elev=465.12' Storage=6,298 cf Inflow=7.0 cfs 19,231 cf
Discarded=0.0 cfs 6,889 cf Primary=5.9 cfs 12,342 cf Outflow=5.9 cfs 19,231 cf

Pond IS4C: IS4C Peak Elev=493.88' Storage=1,927 cf Inflow=1.5 cfs 5,309 cf
Discarded=0.1 cfs 4,207 cf Primary=0.4 cfs 1,102 cf Outflow=0.5 cfs 5,309 cf

Pond POND 4E: POND 4E Peak Elev=458.37' Storage=3,432 cf Inflow=6.7 cfs 15,649 cf
Outflow=3.3 cfs 15,649 cf

Link PRDP1: PRDP1 Inflow=2.4 cfs 12,027 cf
Primary=2.4 cfs 12,027 cf

Link PRDP2: PRDP2 Inflow=0.6 cfs 2,540 cf
Primary=0.6 cfs 2,540 cf

Link PRDP3: PRDP3 Inflow=2.4 cfs 10,248 cf
Primary=2.4 cfs 10,248 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=332' Tc=20.0 min CN=55 Runoff=2.4 cfs 12,027 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.6 cfs 2,540 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=1.87"
Flow Length=301' Tc=12.6 min CN=56 Runoff=2.4 cfs 10,248 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.34' Inflow=1.5 cfs 5,309 cf
Primary=1.5 cfs 5,309 cf Secondary=0.0 cfs 0 cf Outflow=1.5 cfs 5,309 cf

Pond SPLIT4D: SPLIT4D Peak Elev=459.37' Inflow=7.0 cfs 19,231 cf
Primary=7.0 cfs 19,231 cf Secondary=0.0 cfs 0 cf Outflow=7.0 cfs 19,231 cf

Link TRDP4: 25 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=2.1 cfs 50,753 cf
Area= 380,920 sf 47.16% Imperv. Primary=2.1 cfs 50,753 cf

Total Runoff Area = 543,626 sf Runoff Volume = 102,922 cf Average Runoff Depth = 2.27"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4C: PRWS4C

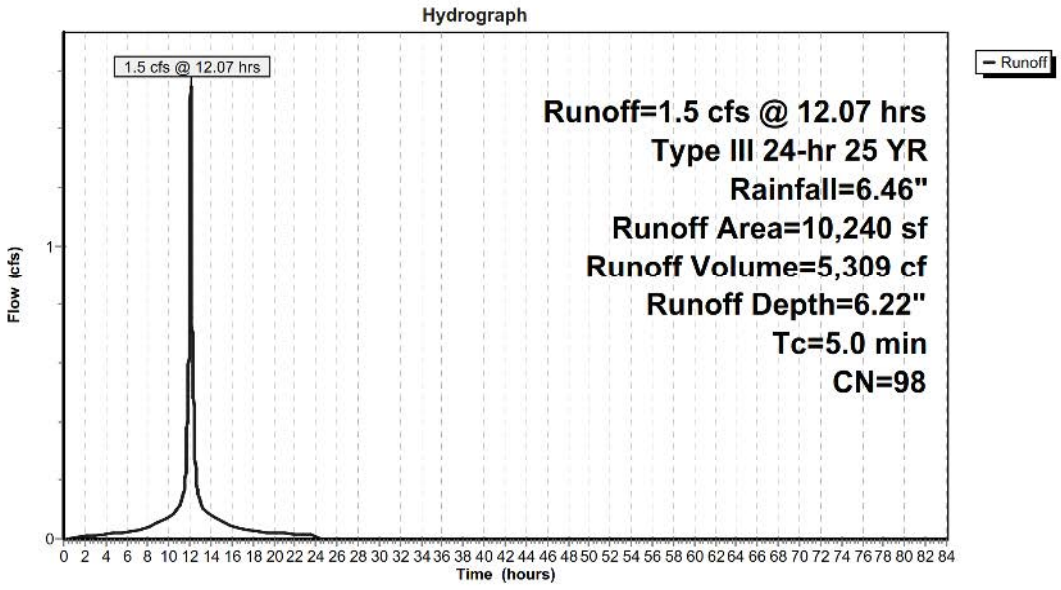
Runoff = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4D: PRWS4D

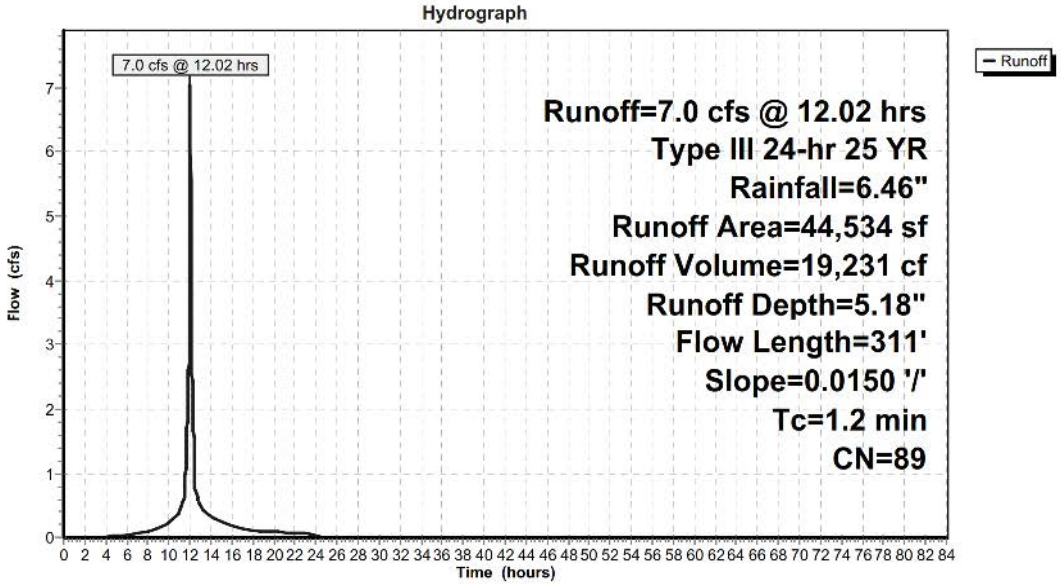
Runoff = 7.0 cfs @ 12.02 hrs, Volume= 19,231 cf, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4E: PRWS4E

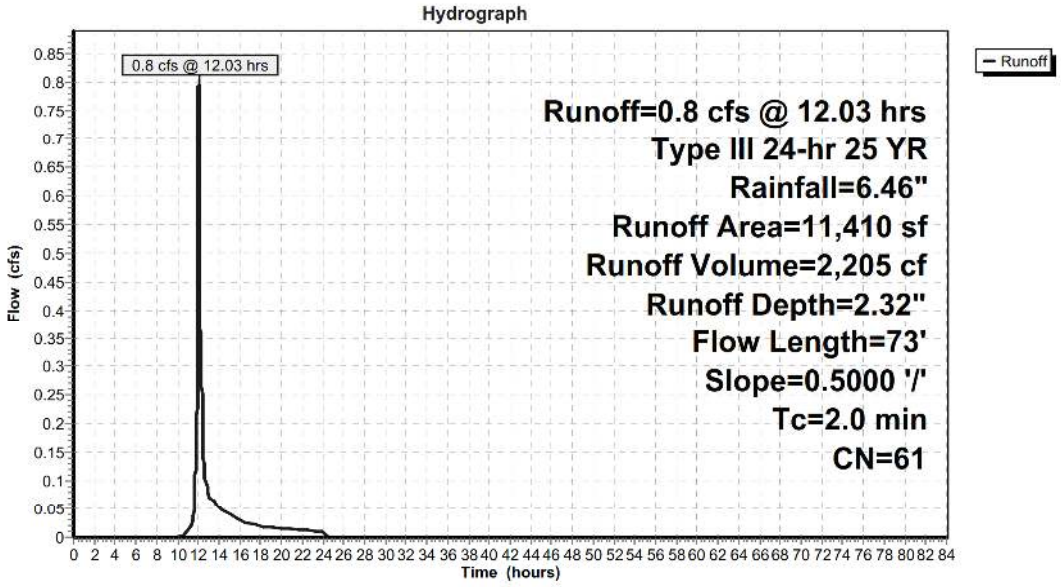
Runoff = 0.8 cfs @ 12.03 hrs, Volume= 2,205 cf, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4N: PRWS4N

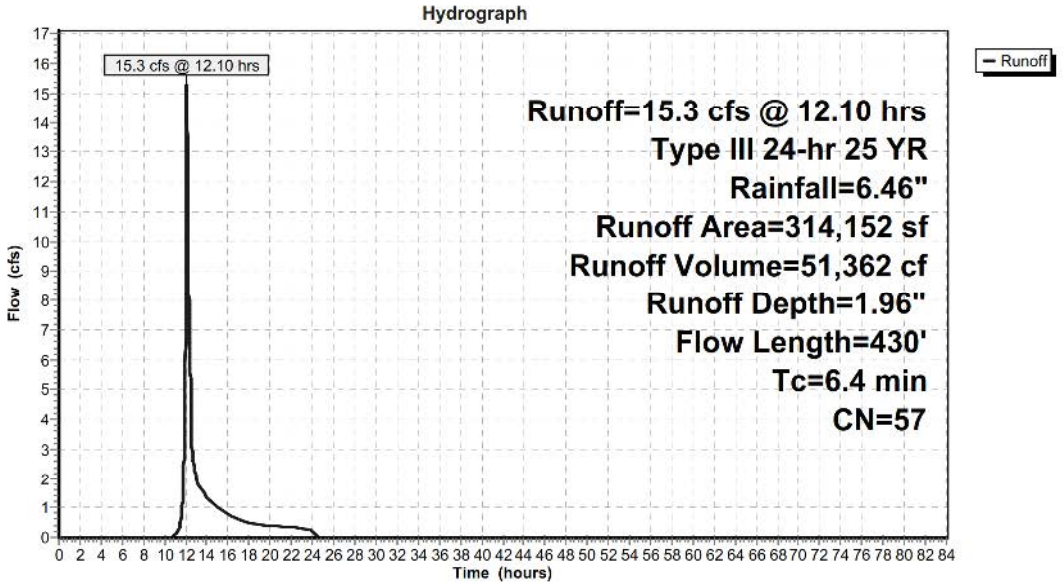
Runoff = 15.3 cfs @ 12.10 hrs, Volume= 51,362 cf, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



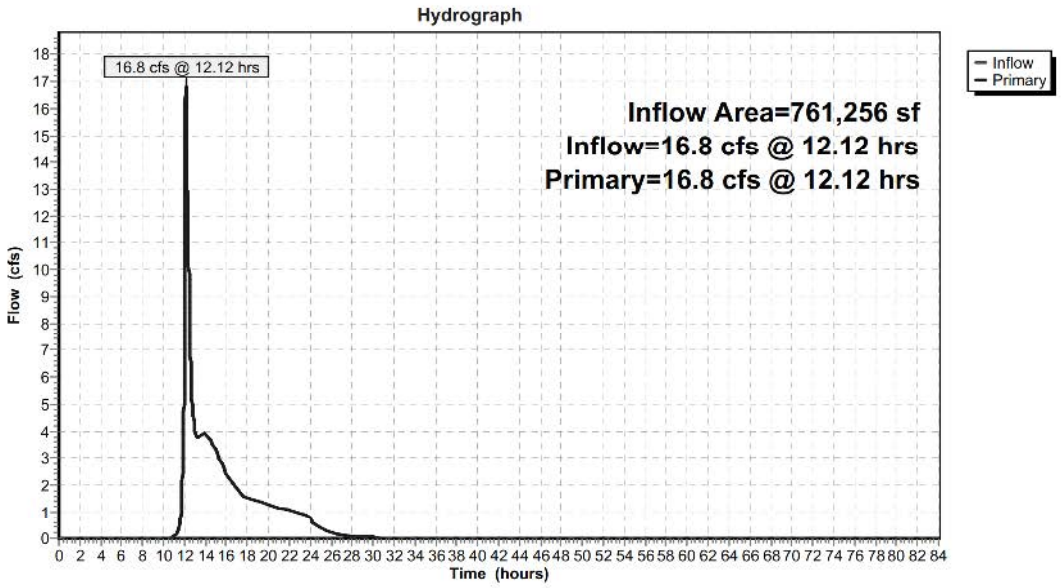
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 1.86" for 25 YR event
Inflow = 16.8 cfs @ 12.12 hrs, Volume= 117,764 cf
Primary = 16.8 cfs @ 12.12 hrs, Volume= 117,764 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 5.18" for 25 YR event
Inflow = 7.0 cfs @ 12.02 hrs, Volume= 19,231 cf
Outflow = 5.9 cfs @ 12.05 hrs, Volume= 19,231 cf, Atten= 16%, Lag= 2.0 min
Discarded = 0.0 cfs @ 6.15 hrs, Volume= 6,889 cf
Primary = 5.9 cfs @ 12.05 hrs, Volume= 12,342 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 465.12' @ 12.05 hrs Surf.Area= 1,152 sf Storage= 6,298 cf

Plug-Flow detention time= 633.0 min calculated for 19,231 cf (100% of inflow)
Center-of-Mass det. time= 632.9 min (1,414.2 - 781.3)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 6.15 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=5.9 cfs @ 12.05 hrs HW=465.12' (Free Discharge)
↳**2=Culvert** (Barrel Controls 5.9 cfs @ 3.83 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.
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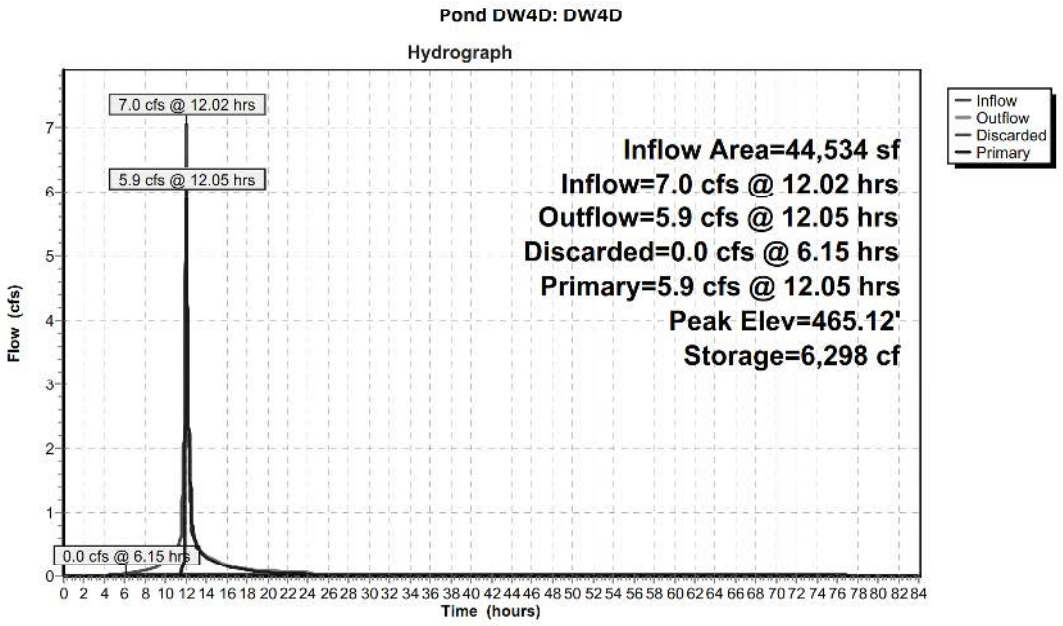

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Outflow = 0.5 cfs @ 12.35 hrs, Volume= 5,309 cf, Atten= 68%, Lag= 16.7 min
Discarded = 0.1 cfs @ 9.05 hrs, Volume= 4,207 cf
Primary = 0.4 cfs @ 12.35 hrs, Volume= 1,102 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.88' @ 12.35 hrs Surf.Area= 1,152 sf Storage= 1,927 cf

Plug-Flow detention time= 211.1 min calculated for 5,308 cf (100% of inflow)
Center-of-Mass det. time= 211.1 min (954.3 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 9.05 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.4 cfs @ 12.35 hrs HW=493.88' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 2.11 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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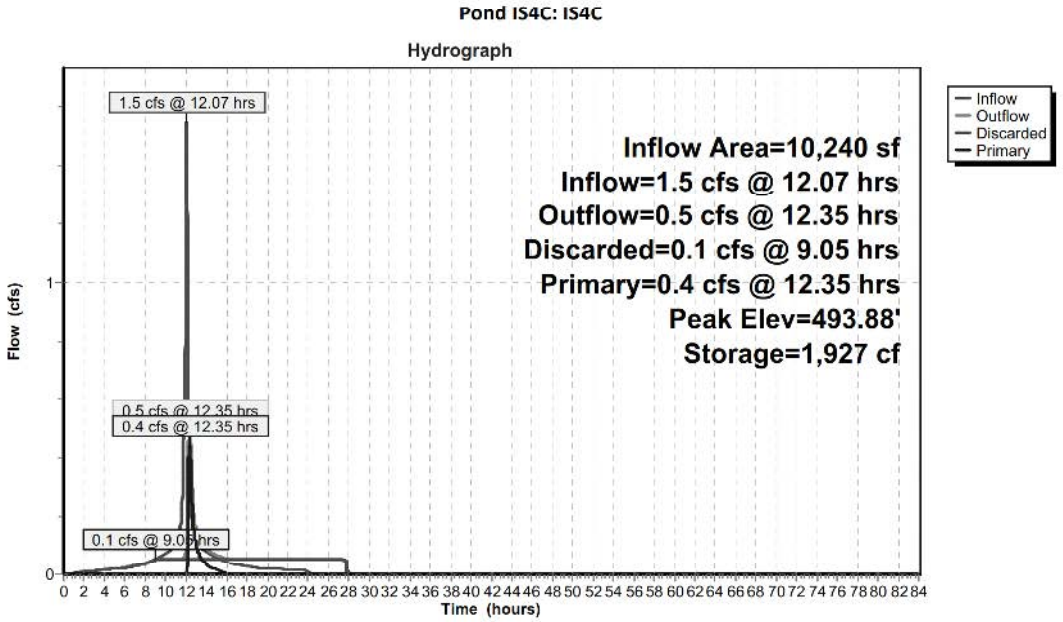

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 2.84" for 25 YR event
Inflow = 6.7 cfs @ 12.05 hrs, Volume= 15,649 cf
Outflow = 3.3 cfs @ 12.23 hrs, Volume= 15,649 cf, Atten= 51%, Lag= 10.8 min
Primary = 3.3 cfs @ 12.23 hrs, Volume= 15,649 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.37' @ 12.23 hrs Surf.Area= 2,448 sf Storage= 3,432 cf

Plug-Flow detention time= 36.6 min calculated for 15,647 cf (100% of inflow)
Center-of-Mass det. time= 36.6 min (866.9 - 830.3)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.3 cfs @ 12.23 hrs HW=458.37' (Free Discharge)
↑**1=Culvert** (Passes 3.3 cfs of 10.8 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.6 cfs @ 7.42 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 2.6 cfs @ 1.77 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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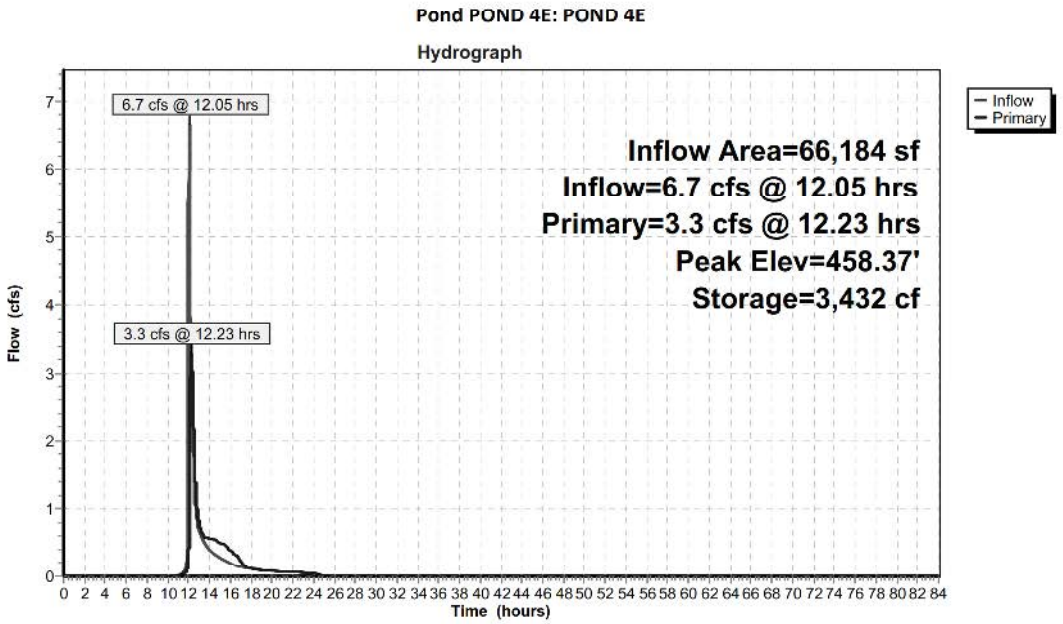

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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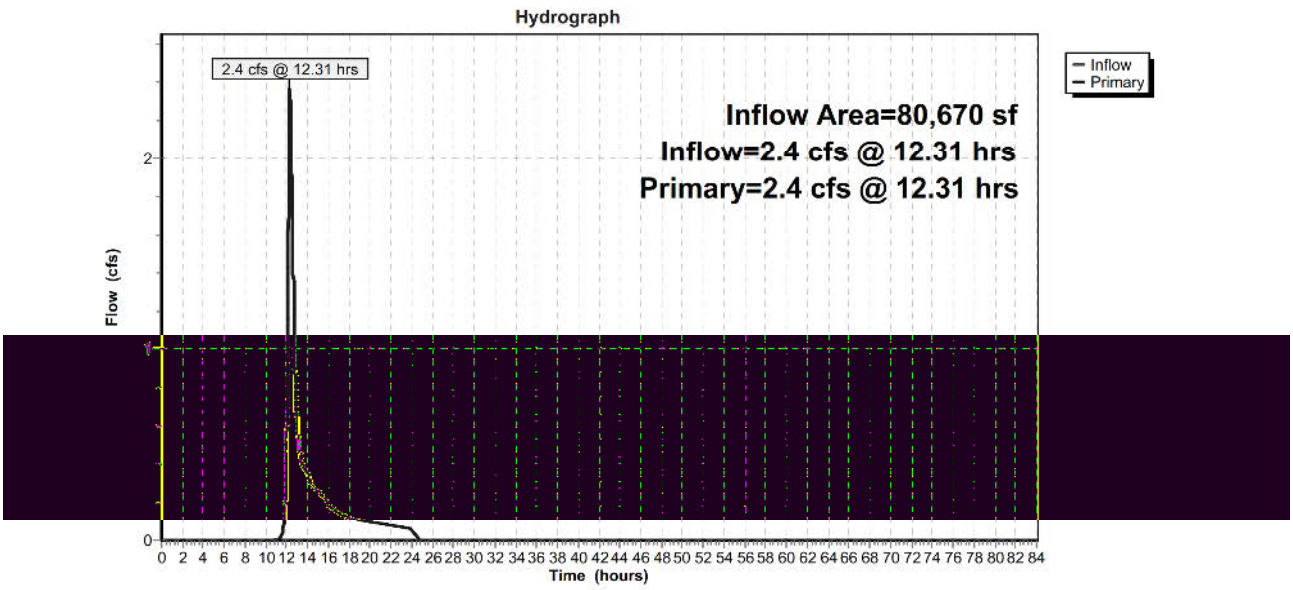
Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 1.79" for 25 YR event
Inflow = 2.4 cfs @ 12.31 hrs, Volume= 12,027 cf
Primary = 2.4 cfs @ 12.31 hrs, Volume= 12,027 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



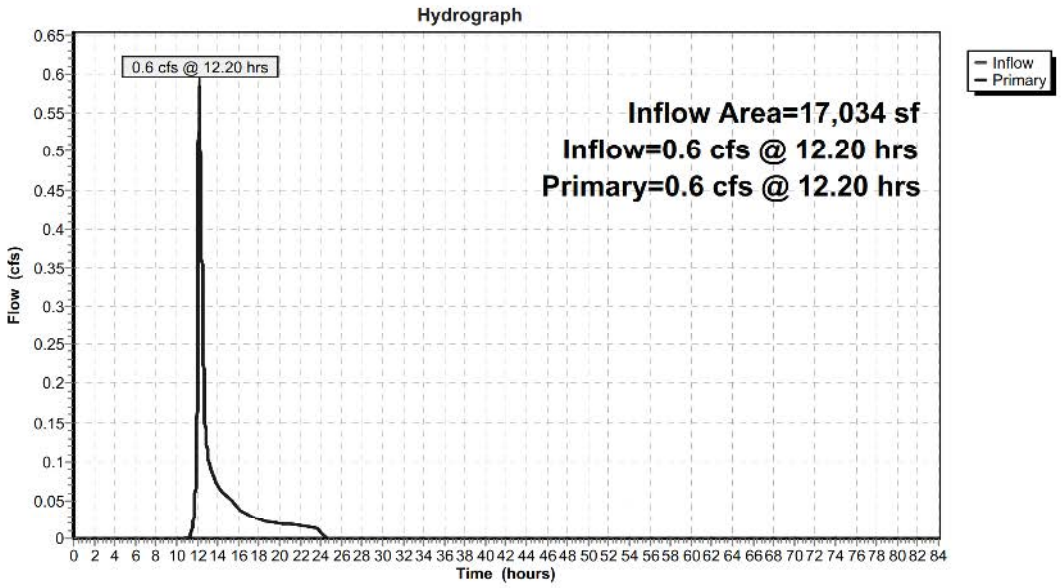
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 1.79" for 25 YR event
Inflow = 0.6 cfs @ 12.20 hrs, Volume= 2,540 cf
Primary = 0.6 cfs @ 12.20 hrs, Volume= 2,540 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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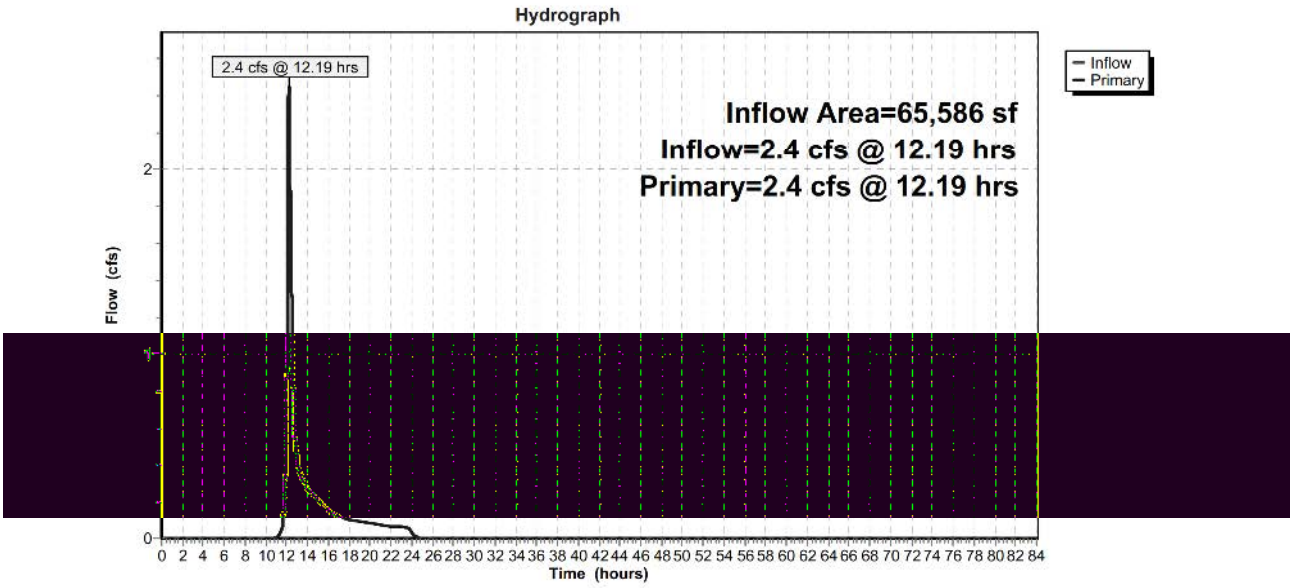
Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 1.87" for 25 YR event
Inflow = 2.4 cfs @ 12.19 hrs, Volume= 10,248 cf
Primary = 2.4 cfs @ 12.19 hrs, Volume= 10,248 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS1: PRWS1

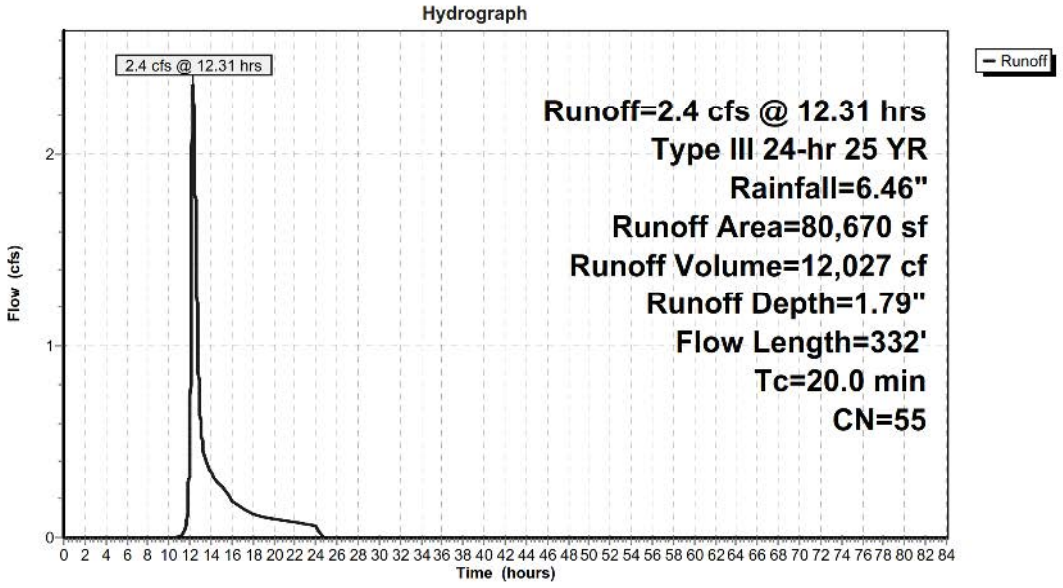
Runoff = 2.4 cfs @ 12.31 hrs, Volume= 12,027 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment PRWS2: PRWS2

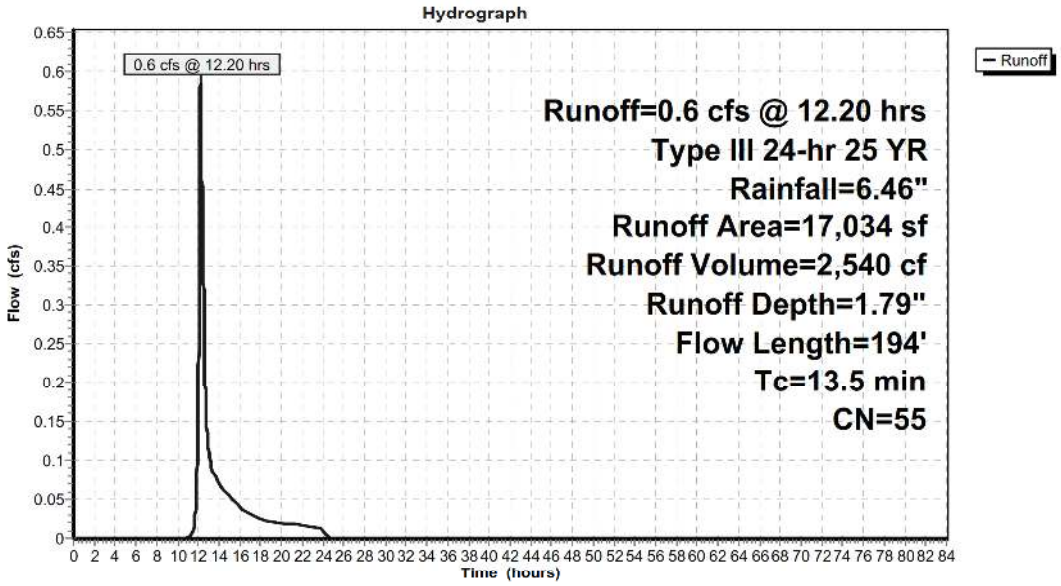
Runoff = 0.6 cfs @ 12.20 hrs, Volume= 2,540 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment PRWS3: PRWS3

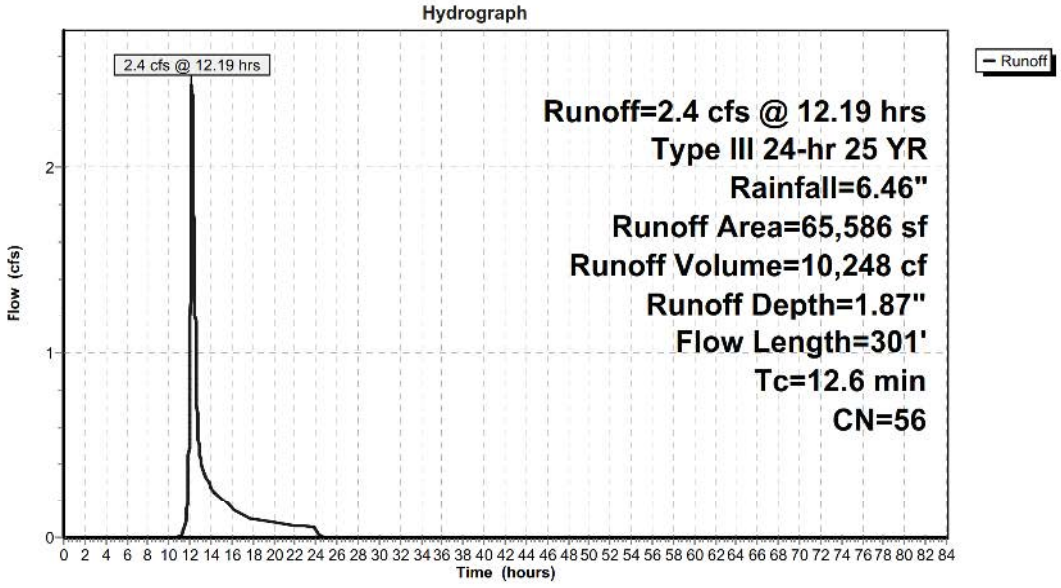
Runoff = 2.4 cfs @ 12.19 hrs, Volume= 10,248 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Outflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

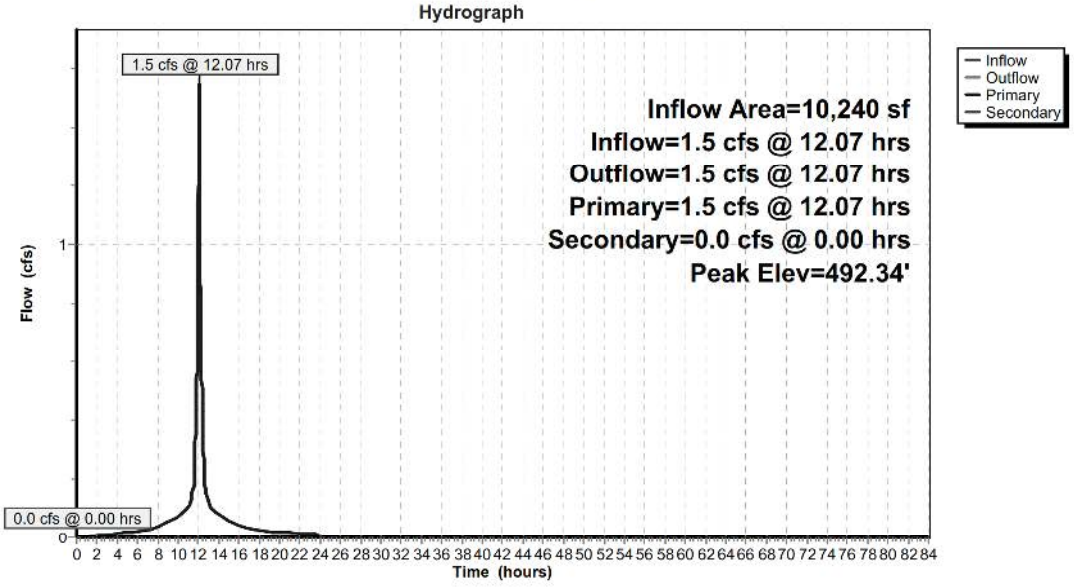
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.34' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.5 cfs @ 12.07 hrs HW=492.34' (Free Discharge)
↳**1=Culvert** (Barrel Controls 1.5 cfs @ 2.48 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 5.18" for 25 YR event
Inflow = 7.0 cfs @ 12.02 hrs, Volume= 19,231 cf
Outflow = 7.0 cfs @ 12.02 hrs, Volume= 19,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.02 hrs, Volume= 19,231 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

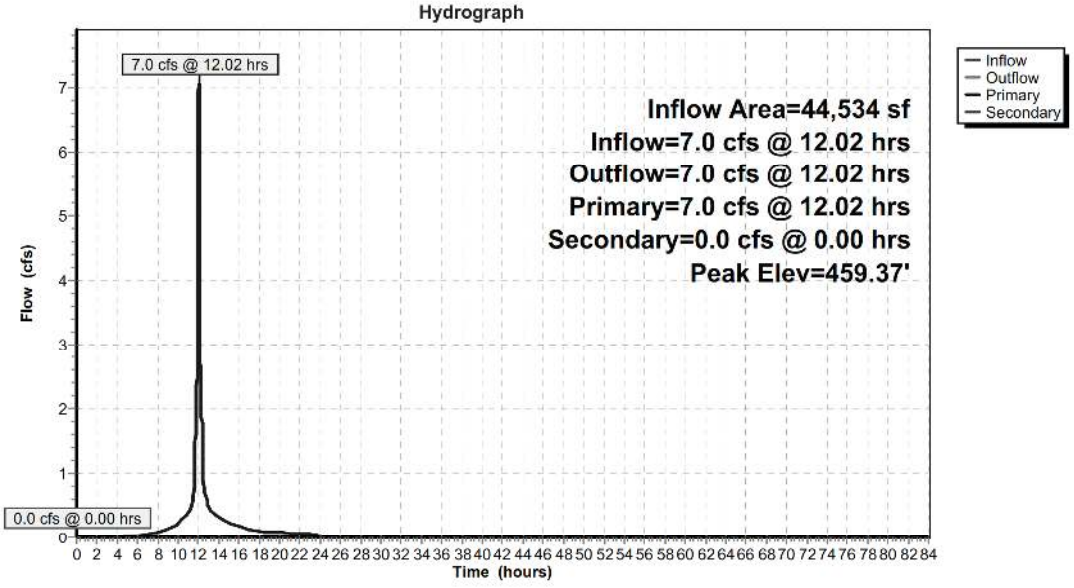
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.37' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=7.0 cfs @ 12.02 hrs HW=459.37' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.0 cfs @ 5.71 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

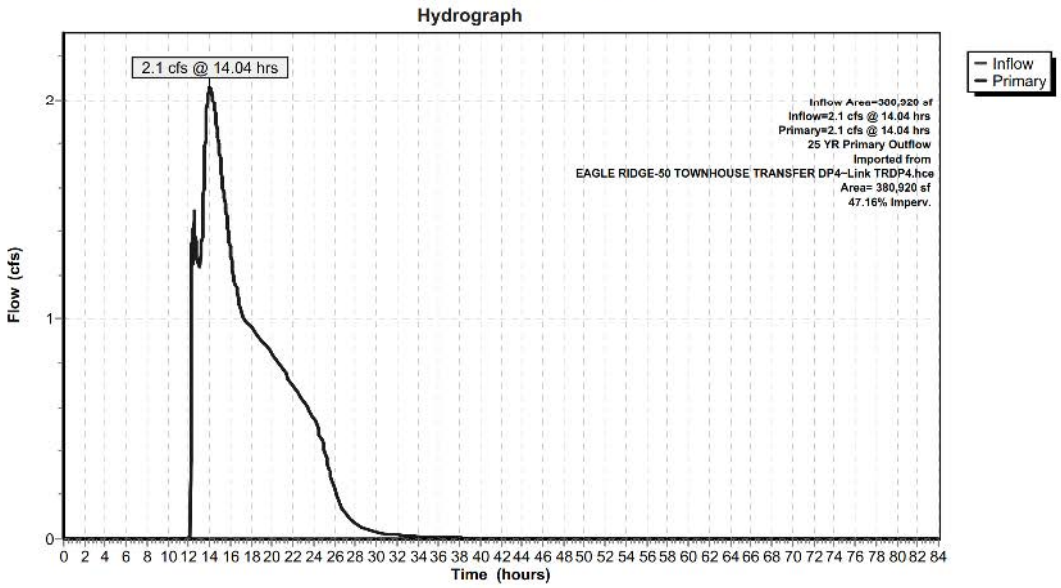
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 1.60" for 25 YR event
Inflow = 2.1 cfs @ 14.04 hrs, Volume= 50,753 cf
Primary = 2.1 cfs @ 14.04 hrs, Volume= 50,753 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

25 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=1.8 cfs 6,358 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=6.38"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=8.6 cfs 23,688 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=1.1 cfs 3,052 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=2.78"
Flow Length=430' Tc=6.4 min CN=57 Runoff=22.4 cfs 72,877 cf

Link DP4: DP4 Inflow=28.9 cfs 177,527 cf
Primary=28.9 cfs 177,527 cf

Pond DW4D: DW4D Peak Elev=465.42' Storage=6,536 cf Inflow=8.6 cfs 23,688 cf
Discarded=0.0 cfs 6,966 cf Primary=7.2 cfs 16,722 cf Outflow=7.2 cfs 23,688 cf

Pond IS4C: IS4C Peak Elev=494.08' Storage=2,072 cf Inflow=1.8 cfs 6,358 cf
Discarded=0.1 cfs 4,477 cf Primary=0.8 cfs 1,881 cf Outflow=0.9 cfs 6,358 cf

Pond POND 4E: POND 4E Peak Elev=458.61' Storage=4,041 cf Inflow=8.3 cfs 21,654 cf
Outflow=6.6 cfs 21,654 cf

Link PRDP1: PRDP1 Inflow=3.6 cfs 17,306 cf
Primary=3.6 cfs 17,306 cf

Link PRDP2: PRDP2 Inflow=0.9 cfs 3,654 cf
Primary=0.9 cfs 3,654 cf

Link PRDP3: PRDP3 Inflow=3.6 cfs 14,641 cf
Primary=3.6 cfs 14,641 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=332' Tc=20.0 min CN=55 Runoff=3.6 cfs 17,306 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=194' Tc=13.5 min CN=55 Runoff=0.9 cfs 3,654 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=2.68"
Flow Length=301' Tc=12.6 min CN=56 Runoff=3.6 cfs 14,641 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.42' Inflow=1.8 cfs 6,358 cf
Primary=1.8 cfs 6,358 cf Secondary=0.0 cfs 0 cf Outflow=1.8 cfs 6,358 cf

Pond SPLIT4D: SPLIT4D Peak Elev=459.91' Inflow=8.6 cfs 23,688 cf
Primary=8.6 cfs 23,688 cf Secondary=0.0 cfs 0 cf Outflow=8.6 cfs 23,688 cf

Link TRDP4: 50 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=7.0 cfs 82,995 cf
Area= 380,920 sf 47.16% Imperv. Primary=7.0 cfs 82,995 cf

Total Runoff Area = 543,626 sf Runoff Volume = 141,576 cf Average Runoff Depth = 3.13"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4C: PRWS4C

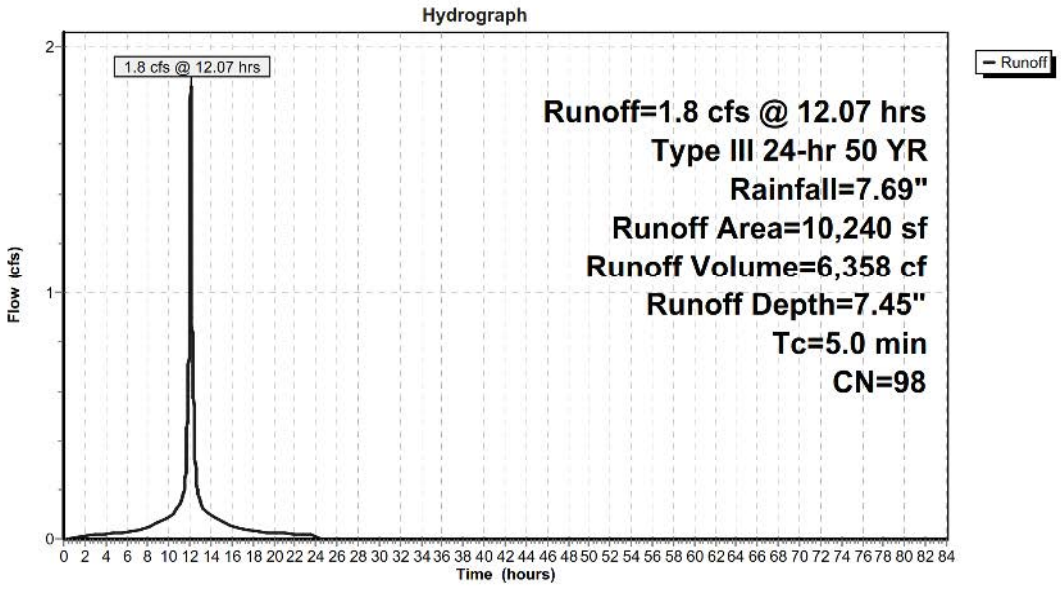
Runoff = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4D: PRWS4D

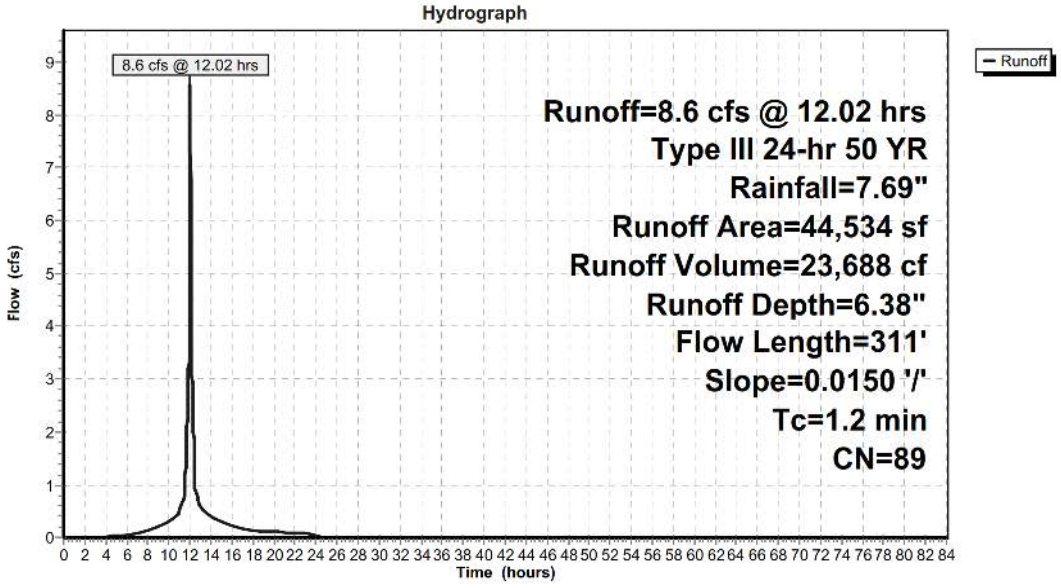
Runoff = 8.6 cfs @ 12.02 hrs, Volume= 23,688 cf, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



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Summary for Subcatchment 4E: PRWS4E

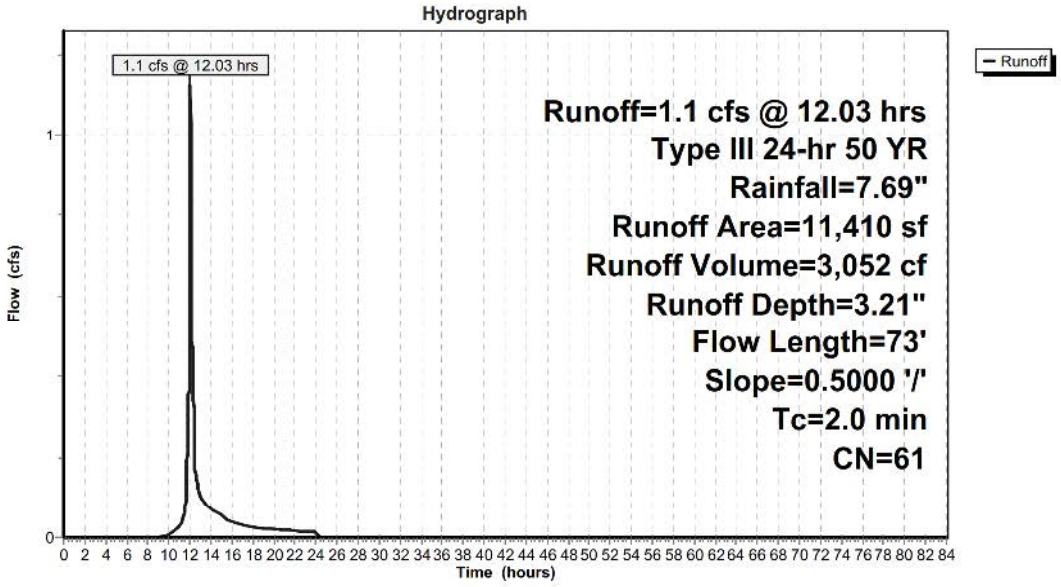
Runoff = 1.1 cfs @ 12.03 hrs, Volume= 3,052 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4N: PRWS4N

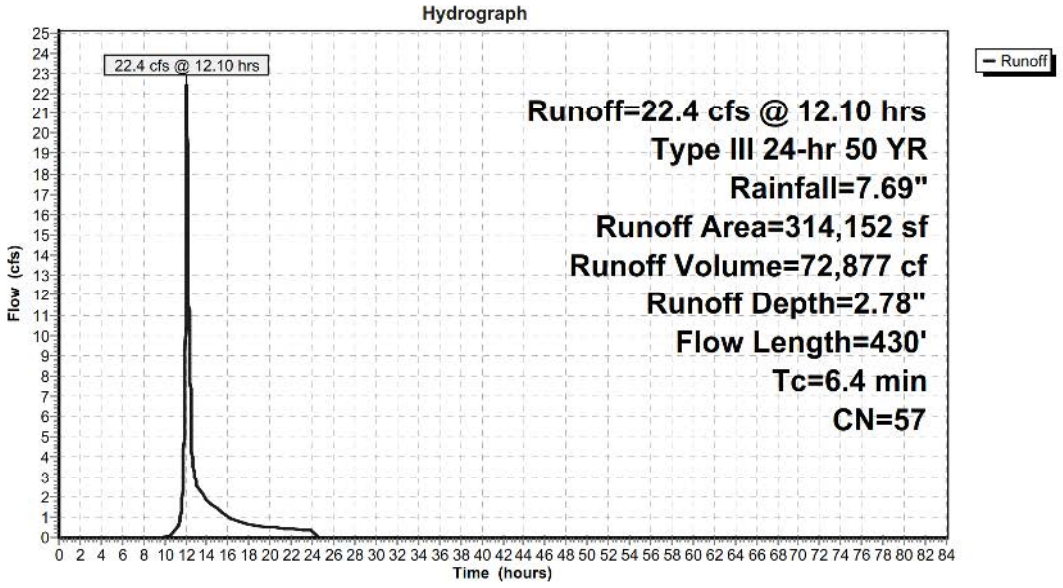
Runoff = 22.4 cfs @ 12.10 hrs, Volume= 72,877 cf, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
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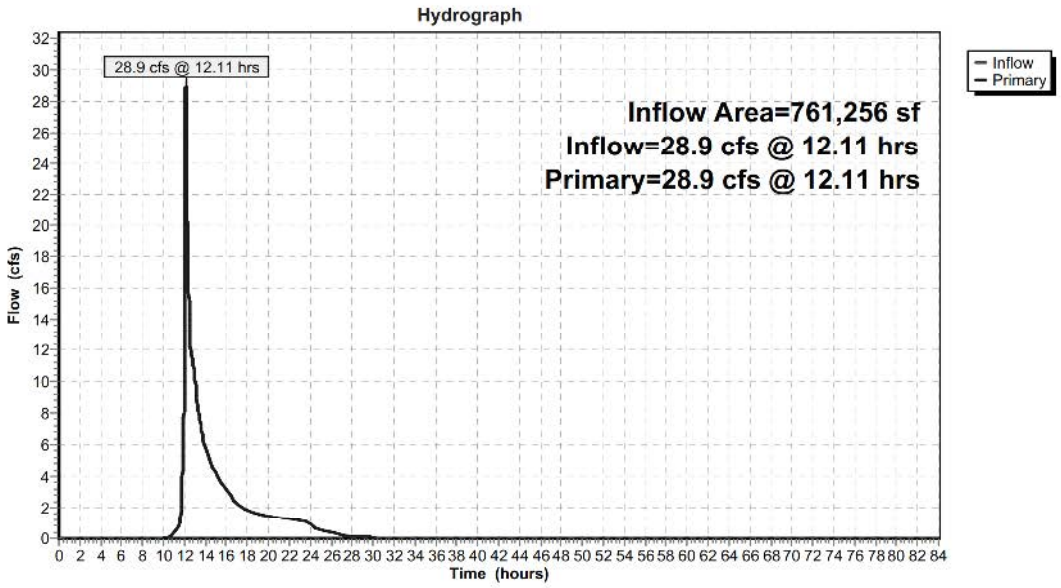
Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 2.80" for 50 YR event
Inflow = 28.9 cfs @ 12.11 hrs, Volume= 177,527 cf
Primary = 28.9 cfs @ 12.11 hrs, Volume= 177,527 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 6.38" for 50 YR event
Inflow = 8.6 cfs @ 12.02 hrs, Volume= 23,688 cf
Outflow = 7.2 cfs @ 12.05 hrs, Volume= 23,688 cf, Atten= 16%, Lag= 2.0 min
Discarded = 0.0 cfs @ 5.26 hrs, Volume= 6,966 cf
Primary = 7.2 cfs @ 12.05 hrs, Volume= 16,722 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 465.42' @ 12.05 hrs Surf.Area= 1,152 sf Storage= 6,536 cf

Plug-Flow detention time= 522.2 min calculated for 23,688 cf (100% of inflow)
Center-of-Mass det. time= 522.2 min (1,298.0 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 5.26 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=7.2 cfs @ 12.05 hrs HW=465.42' (Free Discharge)
↳**2=Culvert** (Barrel Controls 7.2 cfs @ 4.13 fps)

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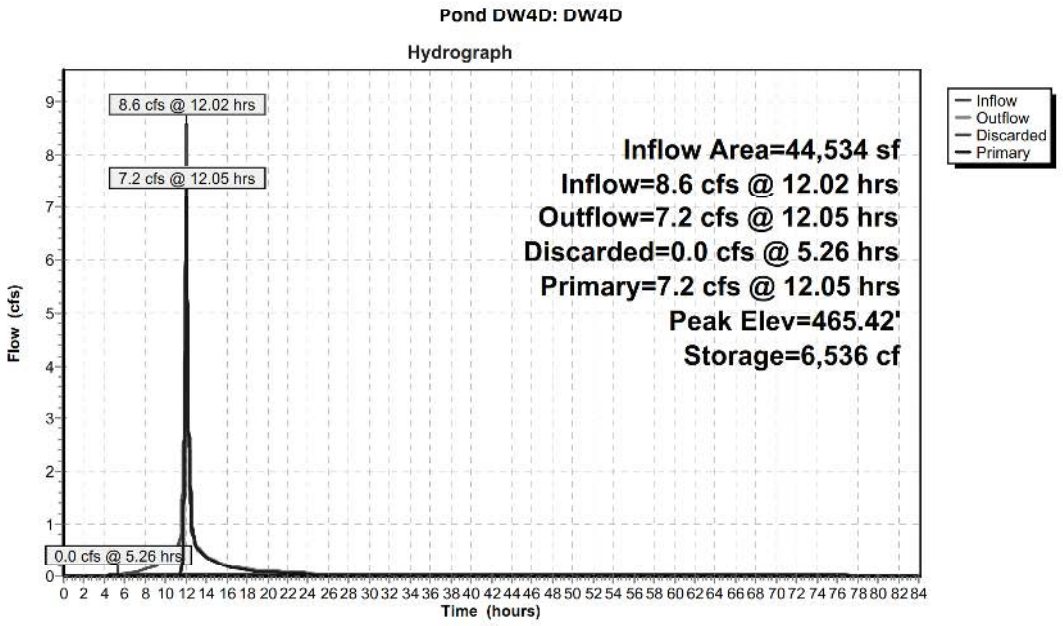

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Outflow = 0.9 cfs @ 12.20 hrs, Volume= 6,358 cf, Atten= 52%, Lag= 8.0 min
Discarded = 0.1 cfs @ 8.54 hrs, Volume= 4,477 cf
Primary = 0.8 cfs @ 12.20 hrs, Volume= 1,881 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 494.08' @ 12.20 hrs Surf.Area= 1,152 sf Storage= 2,072 cf

Plug-Flow detention time= 192.7 min calculated for 6,357 cf (100% of inflow)
Center-of-Mass det. time= 192.7 min (933.5 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 8.54 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.8 cfs @ 12.20 hrs HW=494.08' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.59 fps)

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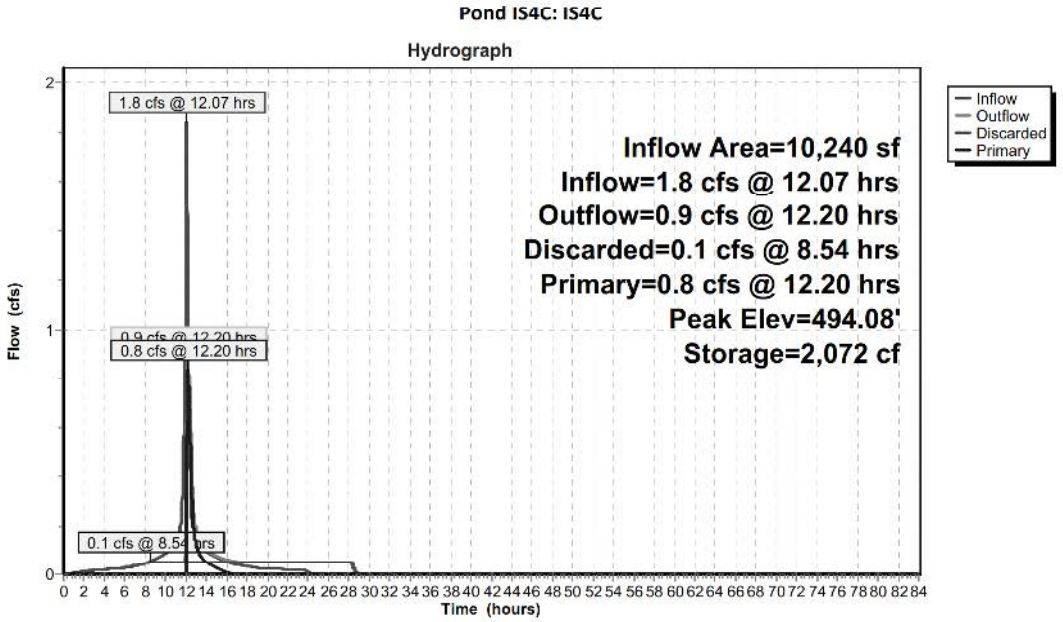

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 3.93" for 50 YR event
Inflow = 8.3 cfs @ 12.05 hrs, Volume= 21,654 cf
Outflow = 6.6 cfs @ 12.12 hrs, Volume= 21,654 cf, Atten= 20%, Lag= 4.5 min
Primary = 6.6 cfs @ 12.12 hrs, Volume= 21,654 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.61' @ 12.12 hrs Surf.Area= 2,669 sf Storage= 4,041 cf

Plug-Flow detention time= 32.1 min calculated for 21,652 cf (100% of inflow)
Center-of-Mass det. time= 32.2 min (852.9 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.6 cfs @ 12.12 hrs HW=458.61' (Free Discharge)
↑**1=Culvert** (Passes 6.6 cfs of 11.6 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.7 cfs @ 7.78 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 5.9 cfs @ 2.42 fps)

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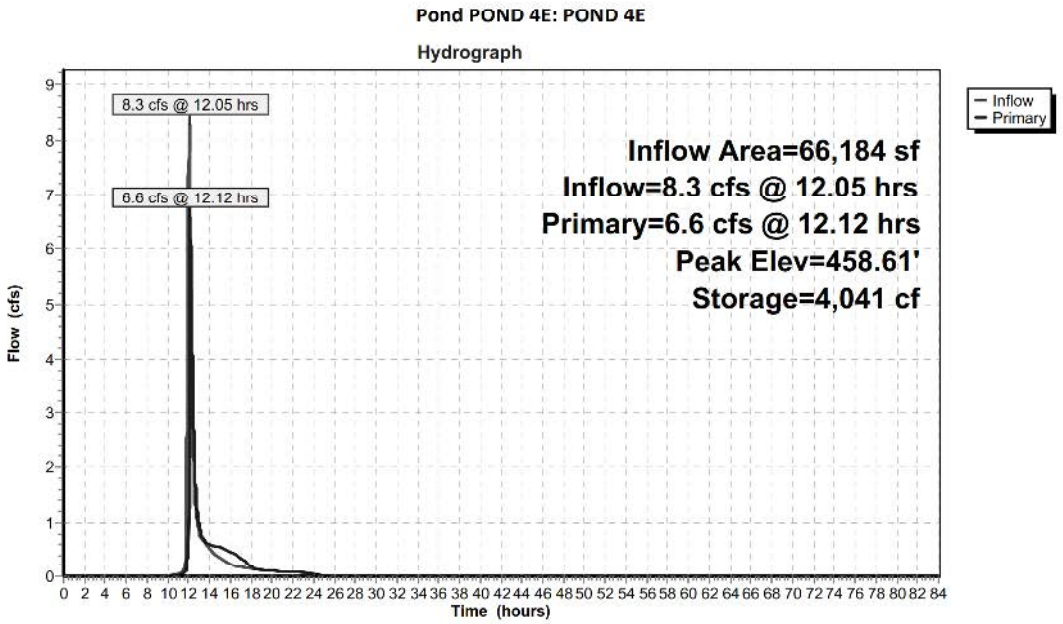

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
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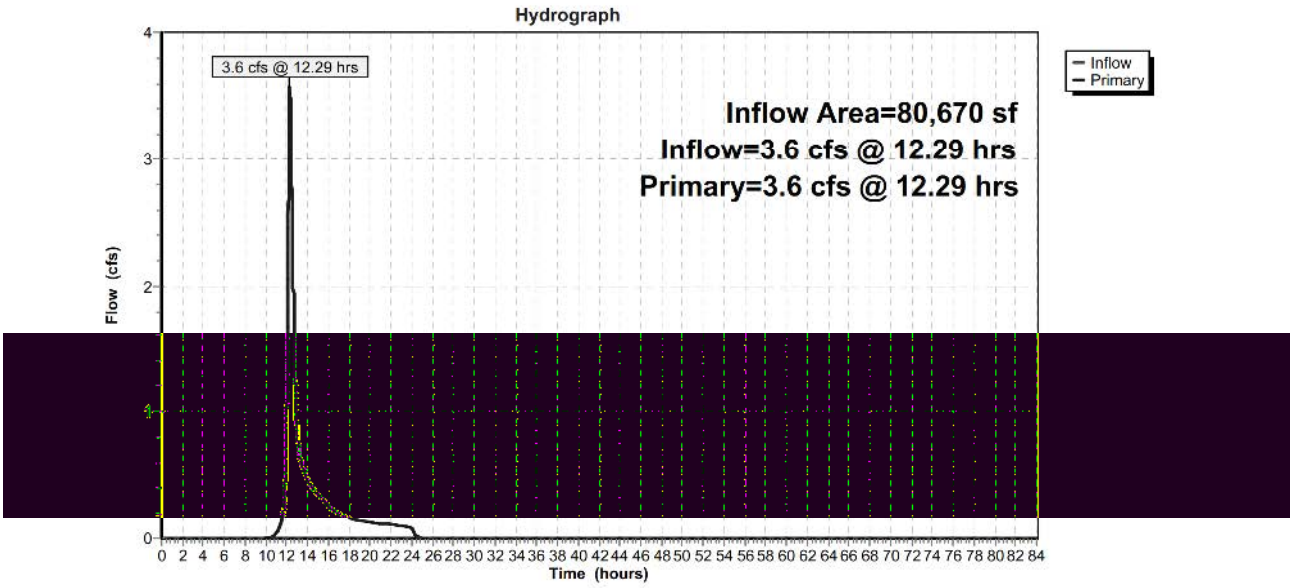
Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 2.57" for 50 YR event
Inflow = 3.6 cfs @ 12.29 hrs, Volume= 17,306 cf
Primary = 3.6 cfs @ 12.29 hrs, Volume= 17,306 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



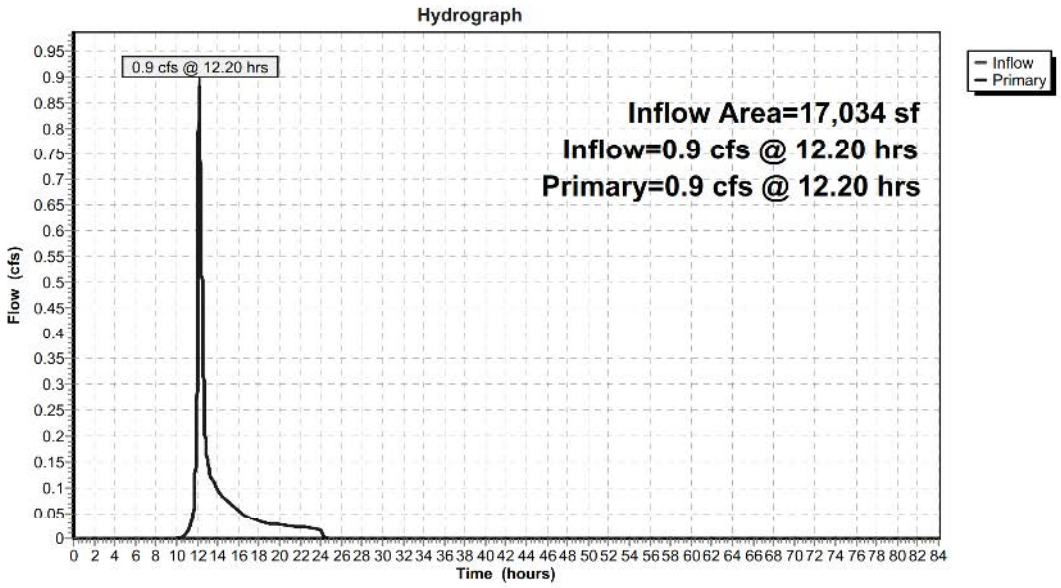
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 2.57" for 50 YR event
Inflow = 0.9 cfs @ 12.20 hrs, Volume= 3,654 cf
Primary = 0.9 cfs @ 12.20 hrs, Volume= 3,654 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



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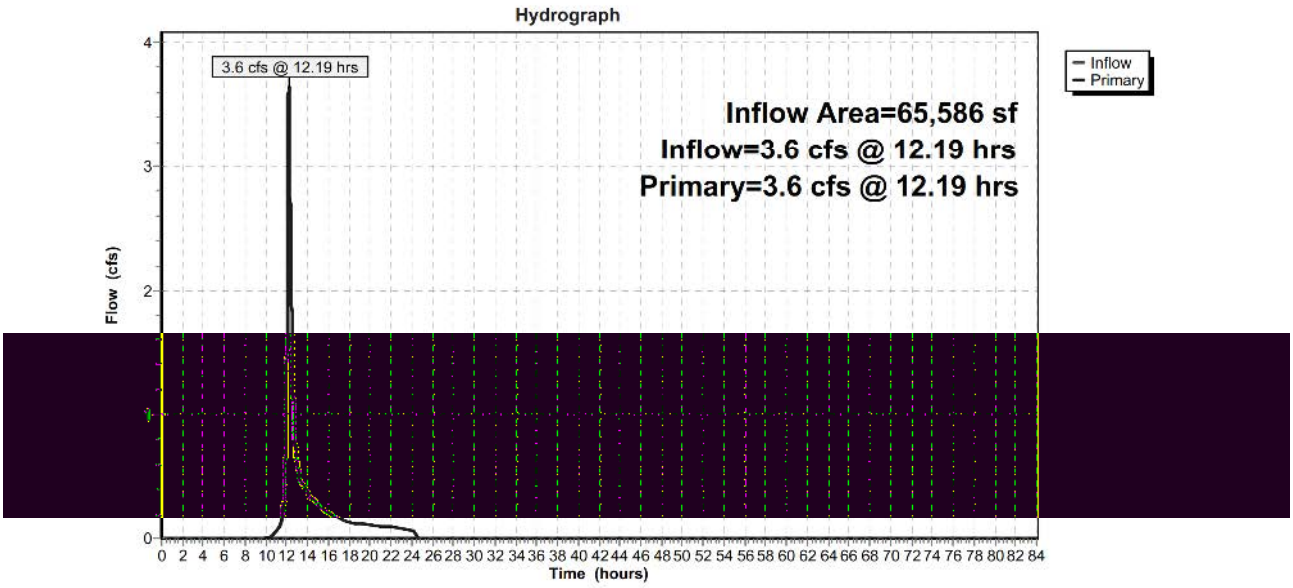
Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 2.68" for 50 YR event
Inflow = 3.6 cfs @ 12.19 hrs, Volume= 14,641 cf
Primary = 3.6 cfs @ 12.19 hrs, Volume= 14,641 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



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Summary for Subcatchment PRWS1: PRWS1

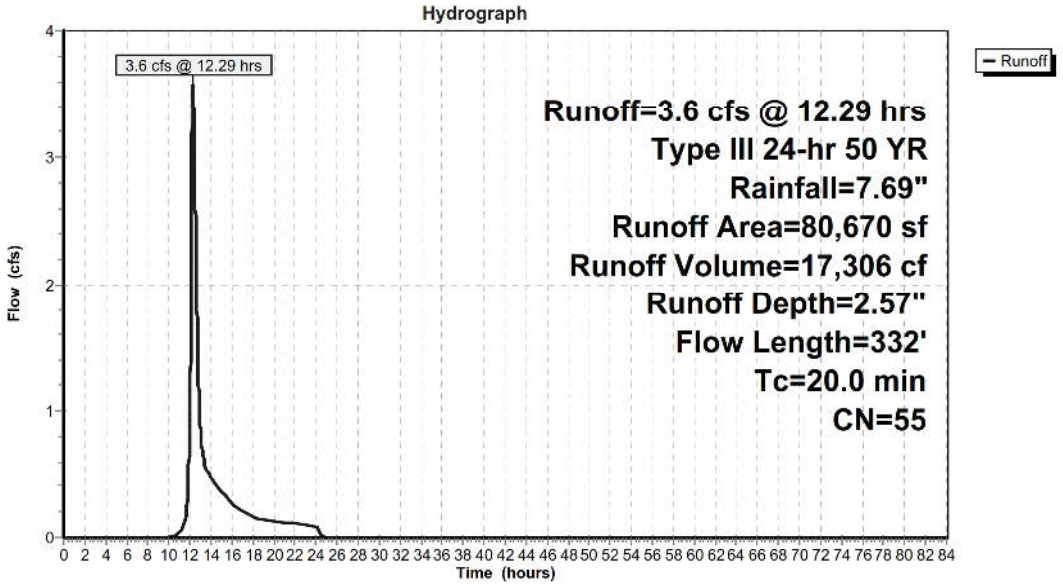
Runoff = 3.6 cfs @ 12.29 hrs, Volume= 17,306 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



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Summary for Subcatchment PRWS2: PRWS2

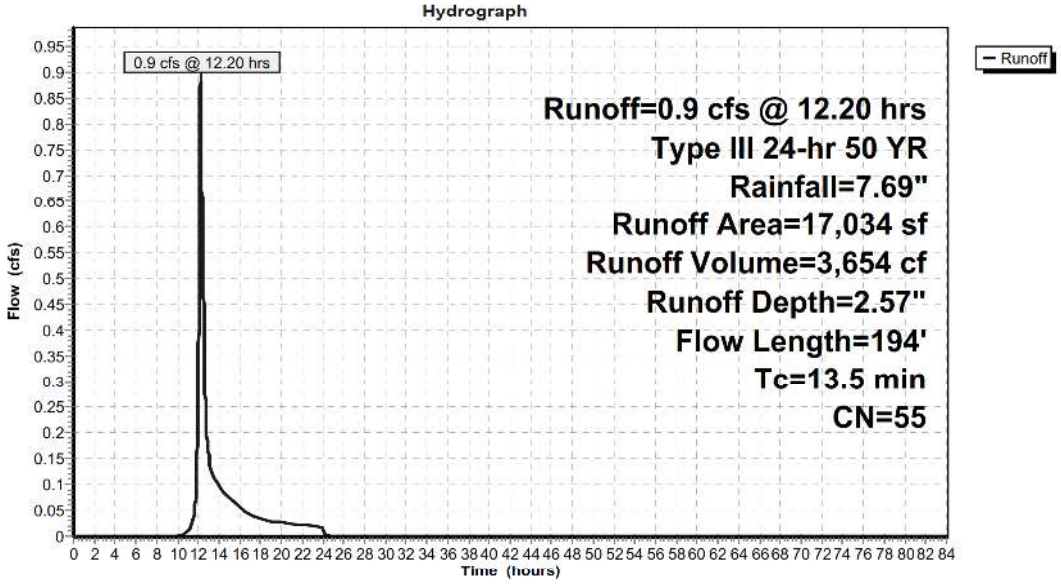
Runoff = 0.9 cfs @ 12.20 hrs, Volume= 3,654 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS3: PRWS3

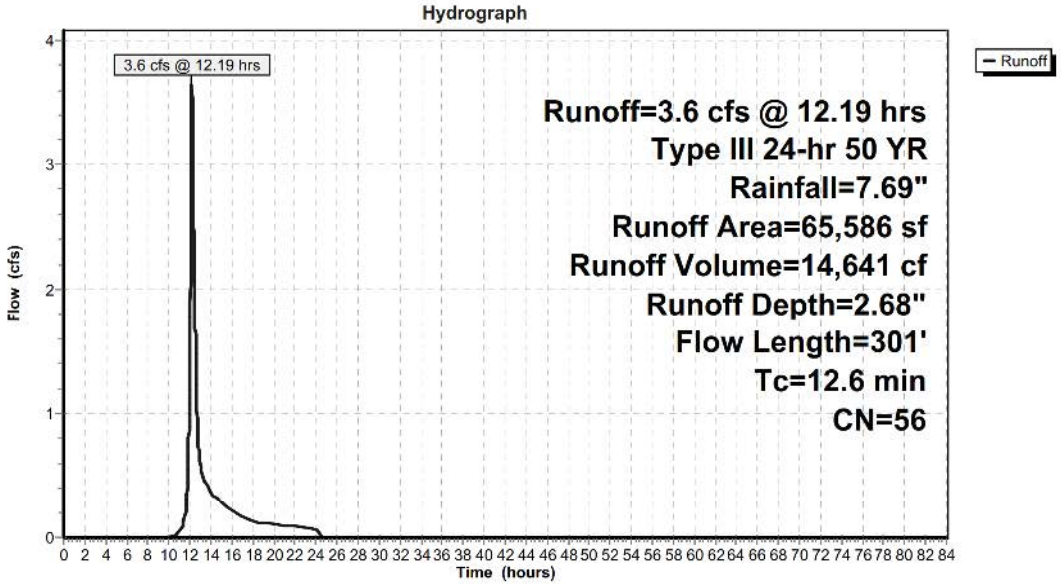
Runoff = 3.6 cfs @ 12.19 hrs, Volume= 14,641 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Outflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

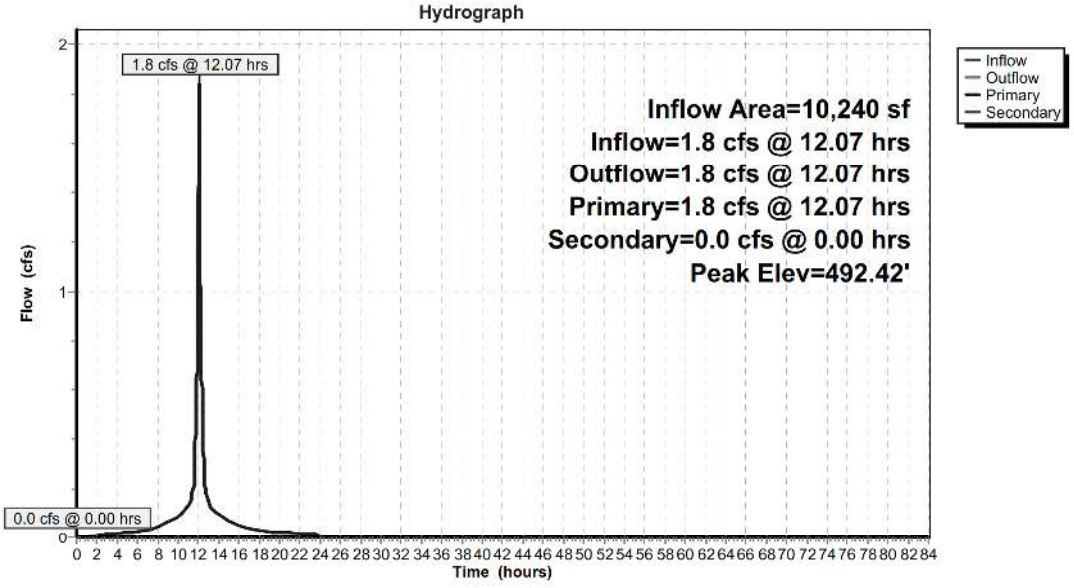
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.42' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.8 cfs @ 12.07 hrs HW=492.42' (Free Discharge)
↳**1=Culvert** (Barrel Controls 1.8 cfs @ 2.63 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 6.38" for 50 YR event
Inflow = 8.6 cfs @ 12.02 hrs, Volume= 23,688 cf
Outflow = 8.6 cfs @ 12.02 hrs, Volume= 23,688 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.02 hrs, Volume= 23,688 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

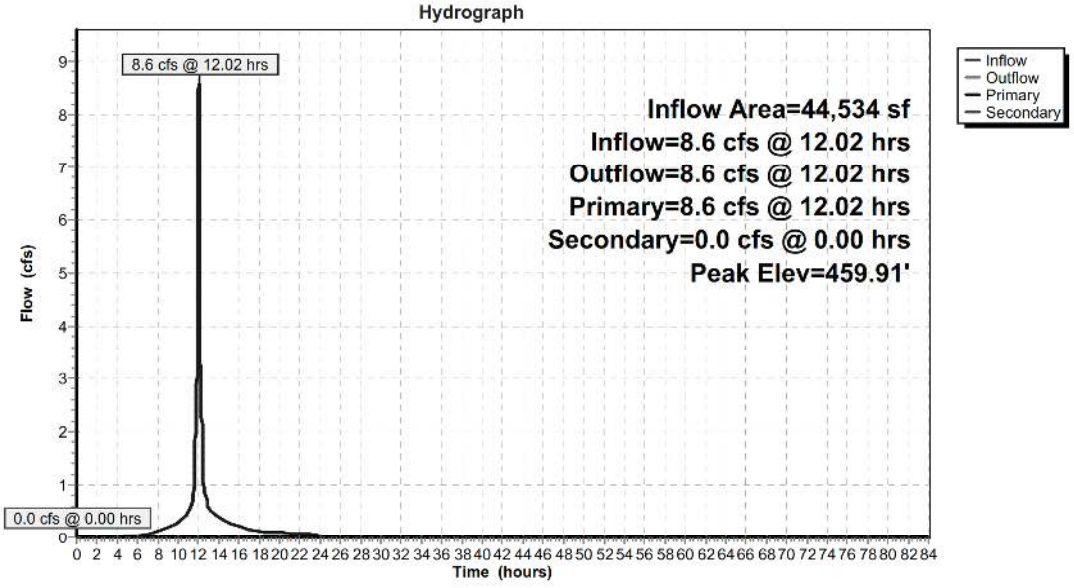
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.91' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.5 cfs @ 12.02 hrs HW=459.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.5 cfs @ 6.95 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

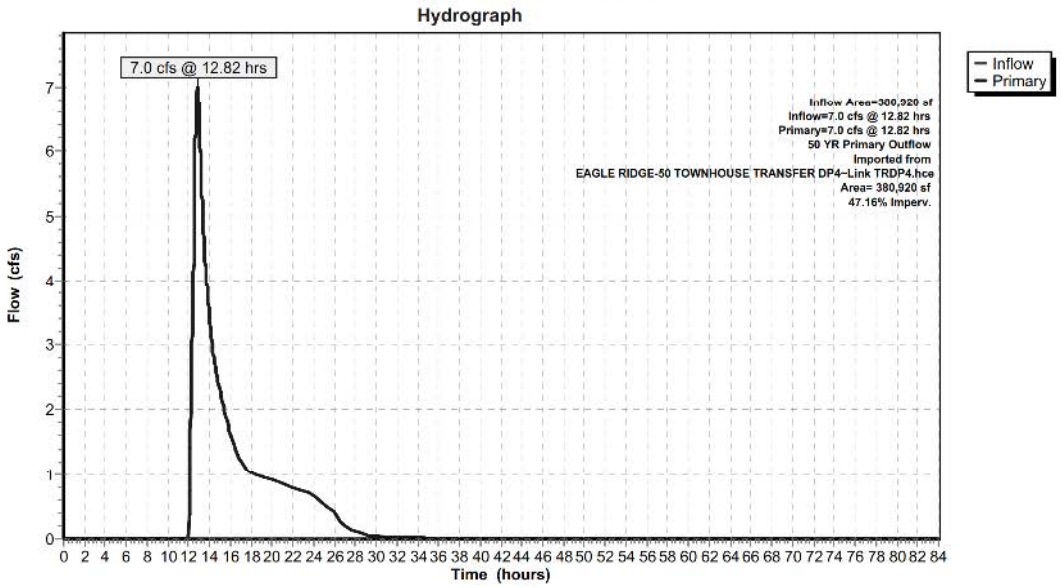
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 2.61" for 50 YR event
Inflow = 7.0 cfs @ 12.82 hrs, Volume= 82,995 cf
Primary = 7.0 cfs @ 12.82 hrs, Volume= 82,995 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

50 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4C: PRWS4C Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=2.2 cfs 7,620 cf

Subcatchment 4D: PRWS4D Runoff Area=44,534 sf 75.95% Impervious Runoff Depth=7.84"
Flow Length=311' Slope=0.0150 '/' Tc=1.2 min CN=89 Runoff=10.4 cfs 29,085 cf

Subcatchment 4E: PRWS4E Runoff Area=11,410 sf 0.00% Impervious Runoff Depth=4.36"
Flow Length=73' Slope=0.5000 '/' Tc=2.0 min CN=61 Runoff=1.5 cfs 4,145 cf

Subcatchment 4N: PRWS4N Runoff Area=314,152 sf 0.00% Impervious Runoff Depth=3.86"
Flow Length=430' Tc=6.4 min CN=57 Runoff=31.7 cfs 101,057 cf

Link DP4: DP4 Inflow=44.3 cfs 253,432 cf
Primary=44.3 cfs 253,432 cf

Pond DW4D: DW4D Peak Elev=465.83' Storage=6,726 cf Inflow=10.4 cfs 29,085 cf
Discarded=0.0 cfs 7,033 cf Primary=9.5 cfs 22,052 cf Outflow=9.5 cfs 29,085 cf

Pond IS4C: IS4C Peak Elev=494.44' Storage=2,292 cf Inflow=2.2 cfs 7,620 cf
Discarded=0.1 cfs 4,763 cf Primary=1.3 cfs 2,856 cf Outflow=1.4 cfs 7,620 cf

Pond POND 4E: POND 4E Peak Elev=458.79' Storage=4,532 cf Inflow=11.5 cfs 29,053 cf
Outflow=9.9 cfs 29,053 cf

Link PRDP1: PRDP1 Inflow=5.2 cfs 24,278 cf
Primary=5.2 cfs 24,278 cf

Link PRDP2: PRDP2 Inflow=1.3 cfs 5,126 cf
Primary=1.3 cfs 5,126 cf

Link PRDP3: PRDP3 Inflow=5.2 cfs 20,418 cf
Primary=5.2 cfs 20,418 cf

Subcatchment PRWS1: PRWS1 Runoff Area=80,670 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=332' Tc=20.0 min CN=55 Runoff=5.2 cfs 24,278 cf

Subcatchment PRWS2: PRWS2 Runoff Area=17,034 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=194' Tc=13.5 min CN=55 Runoff=1.3 cfs 5,126 cf

Subcatchment PRWS3: PRWS3 Runoff Area=65,586 sf 0.00% Impervious Runoff Depth=3.74"
Flow Length=301' Tc=12.6 min CN=56 Runoff=5.2 cfs 20,418 cf

Pond SPLIT4C: SPLIT4C Peak Elev=492.52' Inflow=2.2 cfs 7,620 cf
Primary=2.2 cfs 7,620 cf Secondary=0.0 cfs 0 cf Outflow=2.2 cfs 7,620 cf

Pond SPLIT4D: SPLIT4D Peak Elev=460.71' Inflow=10.4 cfs 29,085 cf
Primary=10.4 cfs 29,085 cf Secondary=0.0 cfs 0 cf Outflow=10.4 cfs 29,085 cf

Link TRDP4: 100 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce Inflow=12.6 cfs 123,321 cf
Area= 380,920 sf 47.16% Imperv. Primary=12.6 cfs 123,321 cf

Total Runoff Area = 543,626 sf Runoff Volume = 191,729 cf Average Runoff Depth = 4.23"
91.89% Pervious = 499,563 sf 8.11% Impervious = 44,063 sf

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4C: PRWS4C

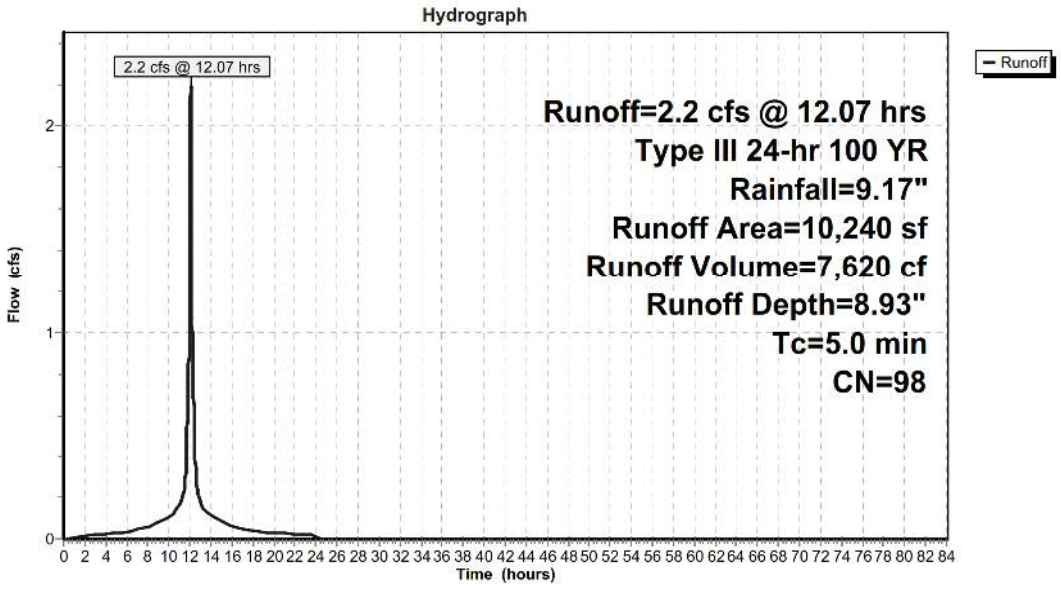
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4C: PRWS4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4D: PRWS4D

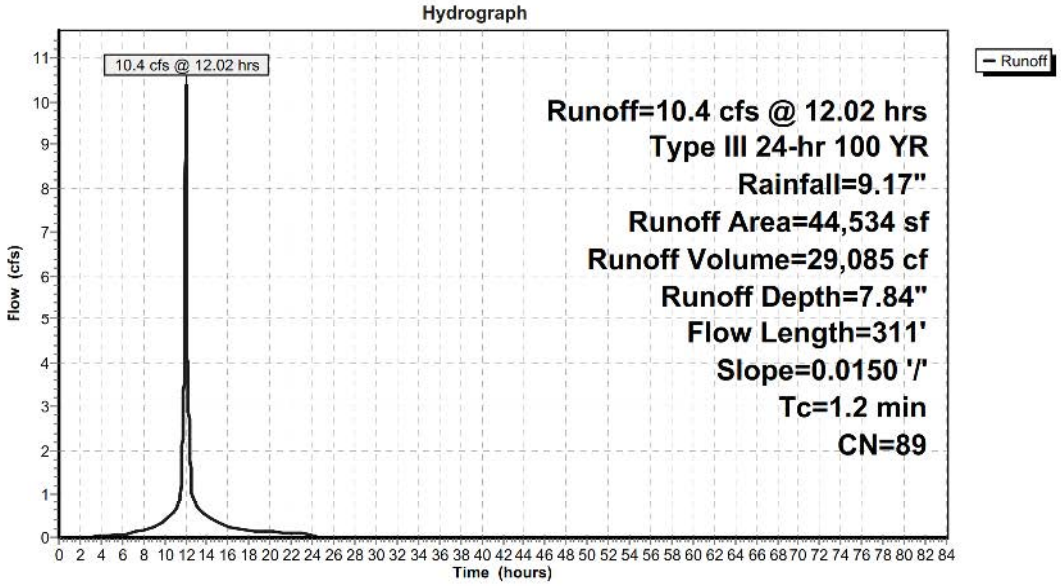
Runoff = 10.4 cfs @ 12.02 hrs, Volume= 29,085 cf, Depth= 7.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
33,823	98	Unconnected pavement, HSG B
10,711	61	>75% Grass cover, Good, HSG B
44,534	89	Weighted Average
10,711		24.05% Pervious Area
33,823		75.95% Impervious Area
33,823		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	69	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	242	0.0150	5.56	4.364	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	311	Total			

Subcatchment 4D: PRWS4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 4E: PRWS4E

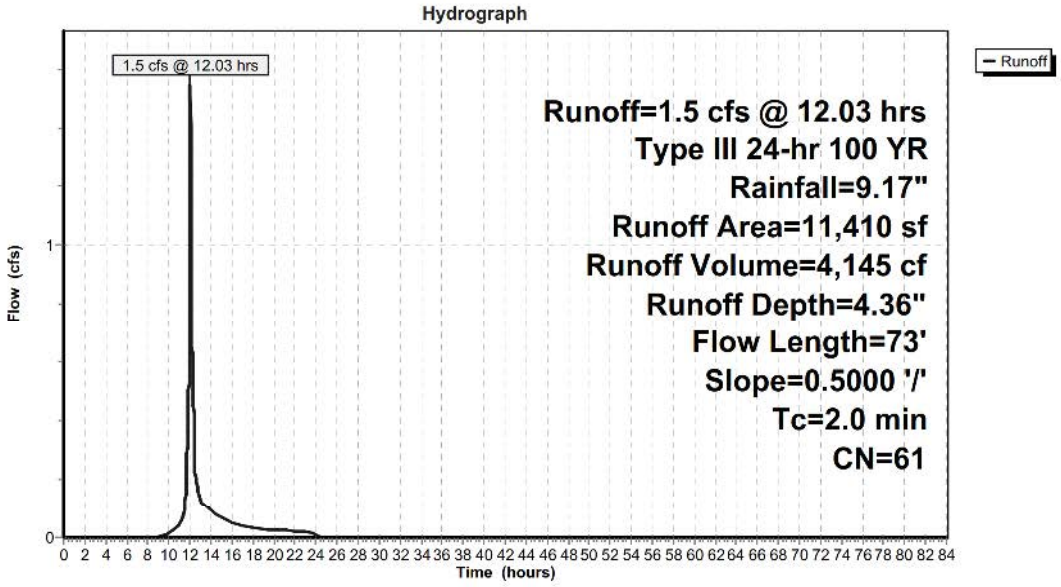
Runoff = 1.5 cfs @ 12.03 hrs, Volume= 4,145 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
11,410	61	>75% Grass cover, Good, HSG B
11,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	73	0.5000	0.60		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4E: PRWS4E



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 4N: PRWS4N

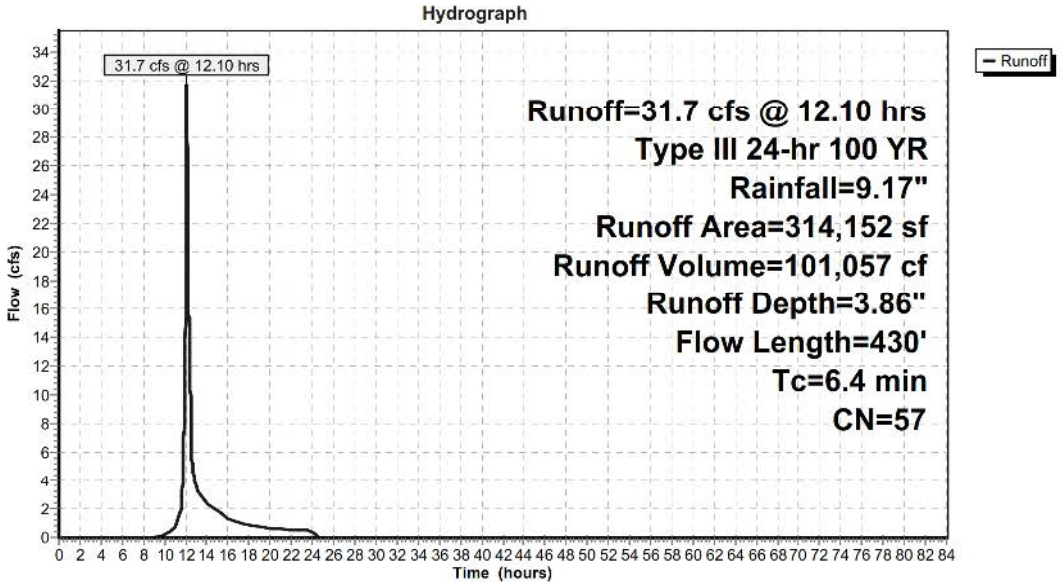
Runoff = 31.7 cfs @ 12.10 hrs, Volume= 101,057 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
188,698	55	Woods, Good, HSG B
95,303	61	>75% Grass cover, Good, HSG B
13,687	61	>75% Grass cover, Good, HSG B
16,464	61	>75% Grass cover, Good, HSG B
314,152	57	Weighted Average
314,152		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1670	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.1	183	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	147	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	430	Total			

Subcatchment 4N: PRWS4N



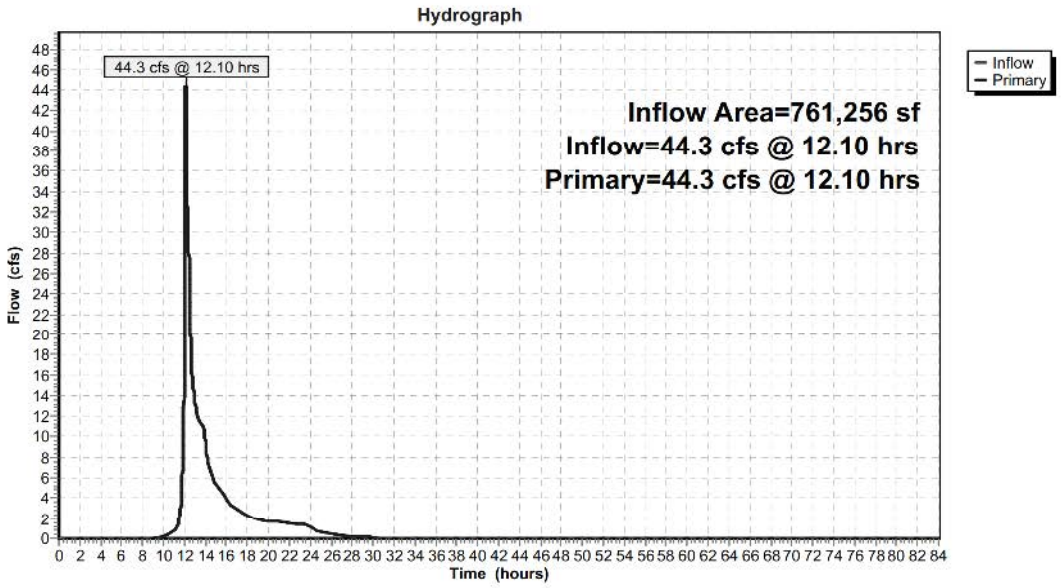
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP4: DP4

Inflow Area = 761,256 sf, 29.39% Impervious, Inflow Depth = 3.99" for 100 YR event
Inflow = 44.3 cfs @ 12.10 hrs, Volume= 253,432 cf
Primary = 44.3 cfs @ 12.10 hrs, Volume= 253,432 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP4: DP4



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4D: DW4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 7.84" for 100 YR event
Inflow = 10.4 cfs @ 12.02 hrs, Volume= 29,085 cf
Outflow = 9.5 cfs @ 12.04 hrs, Volume= 29,085 cf, Atten= 9%, Lag= 1.3 min
Discarded = 0.0 cfs @ 4.47 hrs, Volume= 7,033 cf
Primary = 9.5 cfs @ 12.04 hrs, Volume= 22,052 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 465.83' @ 12.04 hrs Surf.Area= 1,152 sf Storage= 6,726 cf

Plug-Flow detention time= 433.3 min calculated for 29,085 cf (100% of inflow)
Center-of-Mass det. time= 433.2 min (1,203.8 - 770.6)

Volume	Invert	Avail.Storage	Storage Description
#1	457.00'	1,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 8 10,368 cf Overall - 5,027 cf Embedded = 5,341 cf x 33.0% Voids
#2	457.50'	5,027 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1
		6,789 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.00	144	0	0
466.00	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	463.50'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.0 cfs @ 4.47 hrs HW=457.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=9.5 cfs @ 12.04 hrs HW=465.83' (Free Discharge)
↳**2=Culvert** (Barrel Controls 9.5 cfs @ 5.36 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4
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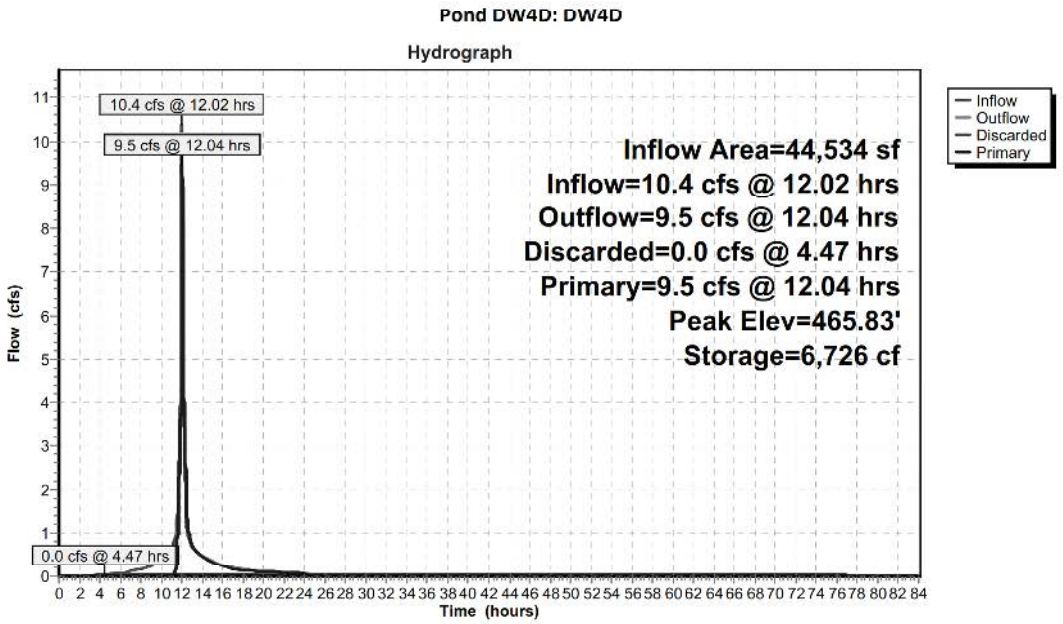
Type III 24-hr 100 YR Rainfall=9.17"



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4C: IS4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Outflow = 1.4 cfs @ 12.16 hrs, Volume= 7,620 cf, Atten= 38%, Lag= 5.4 min
Discarded = 0.1 cfs @ 8.03 hrs, Volume= 4,763 cf
Primary = 1.3 cfs @ 12.16 hrs, Volume= 2,856 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 494.44' @ 12.16 hrs Surf.Area= 1,152 sf Storage= 2,292 cf

Plug-Flow detention time= 176.2 min calculated for 7,619 cf (100% of inflow)
Center-of-Mass det. time= 176.2 min (914.9 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 8.03 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=1.3 cfs @ 12.16 hrs HW=494.44' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 1.3 cfs @ 3.74 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
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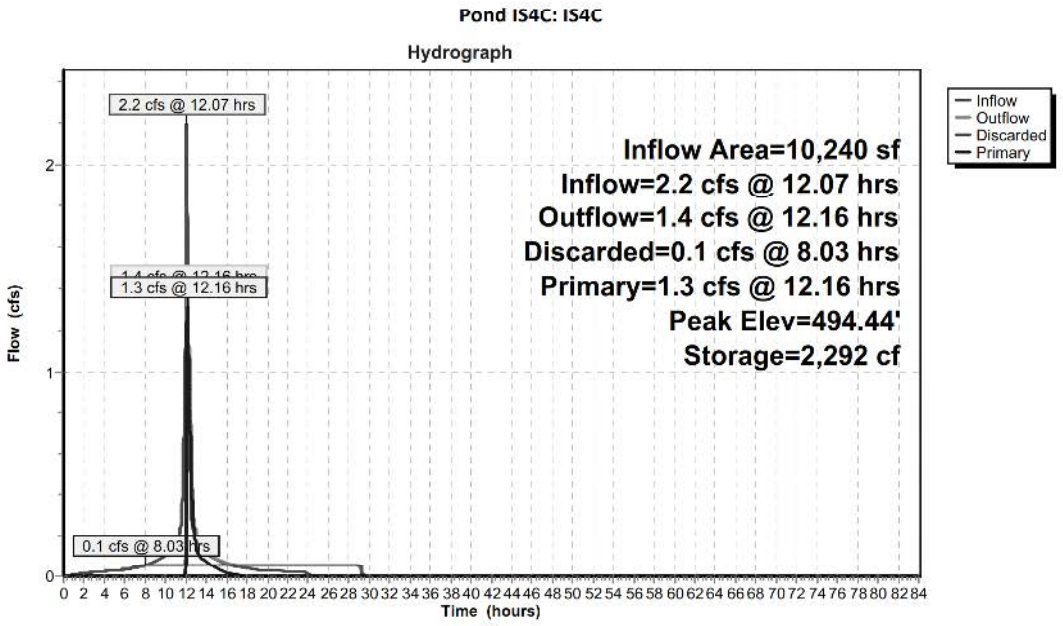

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Pond POND 4E: POND 4E

Inflow Area = 66,184 sf, 66.58% Impervious, Inflow Depth = 5.27" for 100 YR event
Inflow = 11.5 cfs @ 12.04 hrs, Volume= 29,053 cf
Outflow = 9.9 cfs @ 12.08 hrs, Volume= 29,053 cf, Atten= 14%, Lag= 2.4 min
Primary = 9.9 cfs @ 12.08 hrs, Volume= 29,053 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.79' @ 12.08 hrs Surf.Area= 2,835 sf Storage= 4,532 cf

Plug-Flow detention time= 28.9 min calculated for 29,050 cf (100% of inflow)
Center-of-Mass det. time= 29.0 min (842.1 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	456.00'	8,644 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
456.00	481	0	0
458.00	2,103	2,584	2,584
460.00	3,957	6,060	8,644

Device	Routing	Invert	Outlet Devices
#1	Primary	456.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 454.00' S= 0.1000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior
#2	Device 1	456.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	458.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=9.9 cfs @ 12.08 hrs HW=458.79' (Free Discharge)
↑**1=Culvert** (Passes 9.9 cfs of 12.1 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.7 cfs @ 8.04 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 9.2 cfs @ 2.92 fps)

EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
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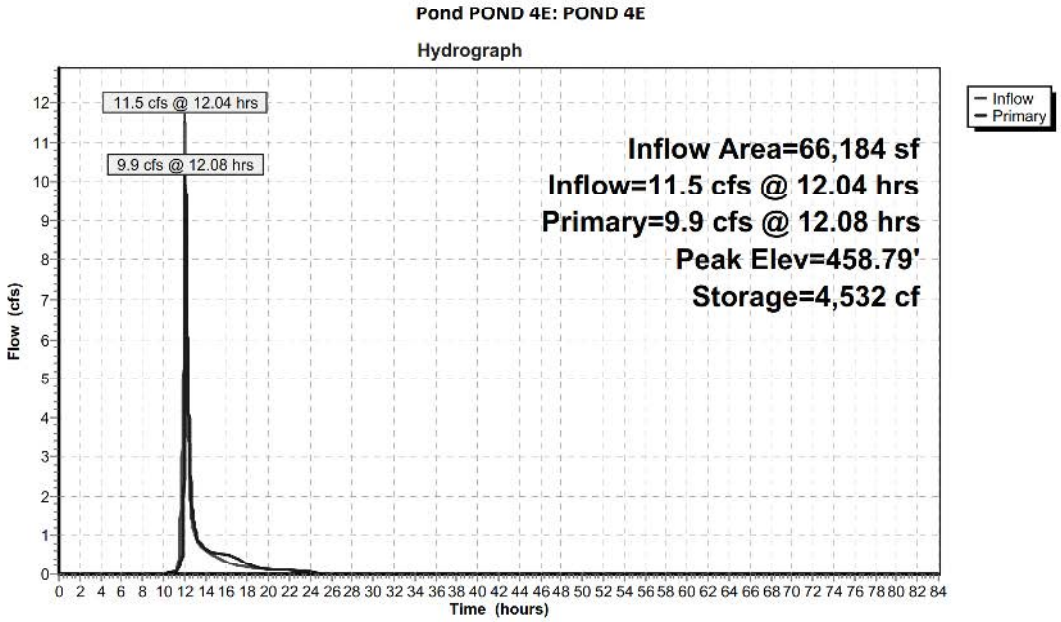


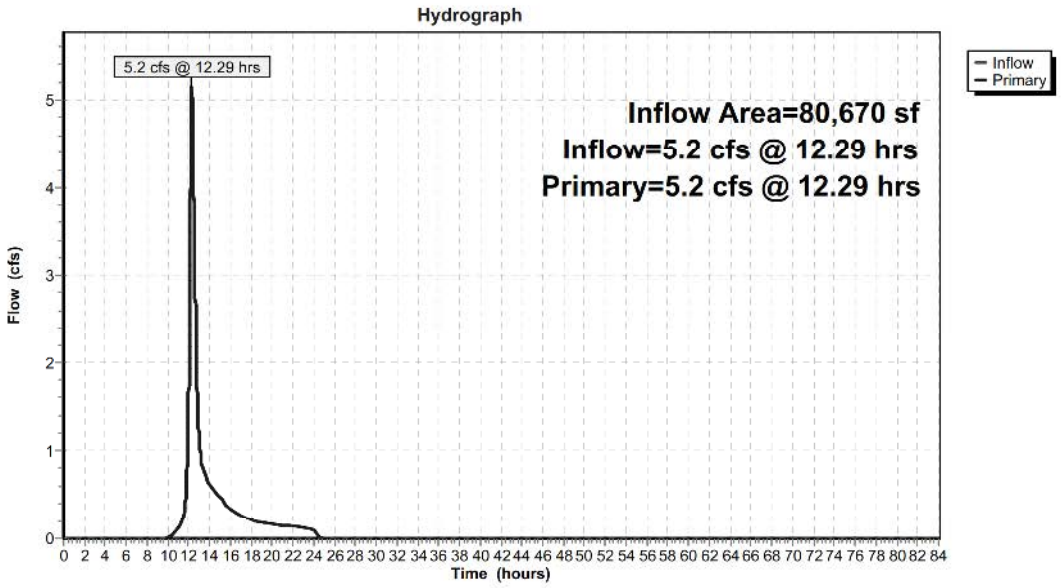
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP1: PRDP1

Inflow Area = 80,670 sf, 0.00% Impervious, Inflow Depth = 3.61" for 100 YR event
Inflow = 5.2 cfs @ 12.29 hrs, Volume= 24,278 cf
Primary = 5.2 cfs @ 12.29 hrs, Volume= 24,278 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP1: PRDP1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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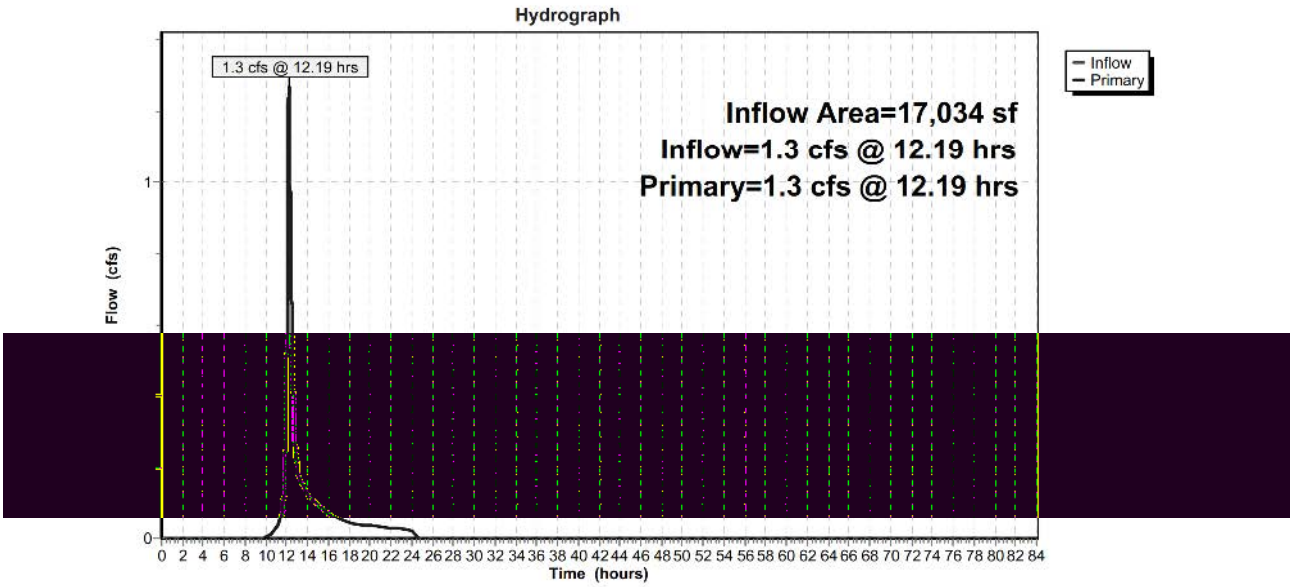
Summary for Link PRDP2: PRDP2

Inflow Area = 17,034 sf, 0.00% Impervious, Inflow Depth = 3.61" for 100 YR event
Inflow = 1.3 cfs @ 12.19 hrs, Volume= 5,126 cf
Primary = 1.3 cfs @ 12.19 hrs, Volume= 5,126 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP2: PRDP2



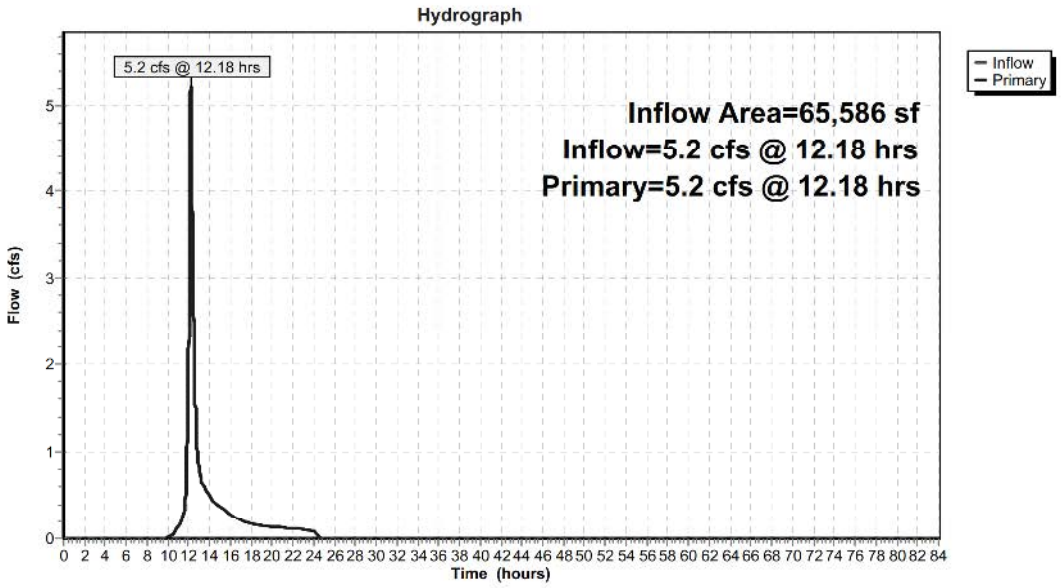
EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP3: PRDP3

Inflow Area = 65,586 sf, 0.00% Impervious, Inflow Depth = 3.74" for 100 YR event
Inflow = 5.2 cfs @ 12.18 hrs, Volume= 20,418 cf
Primary = 5.2 cfs @ 12.18 hrs, Volume= 20,418 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP3: PRDP3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment PRWS1: PRWS1

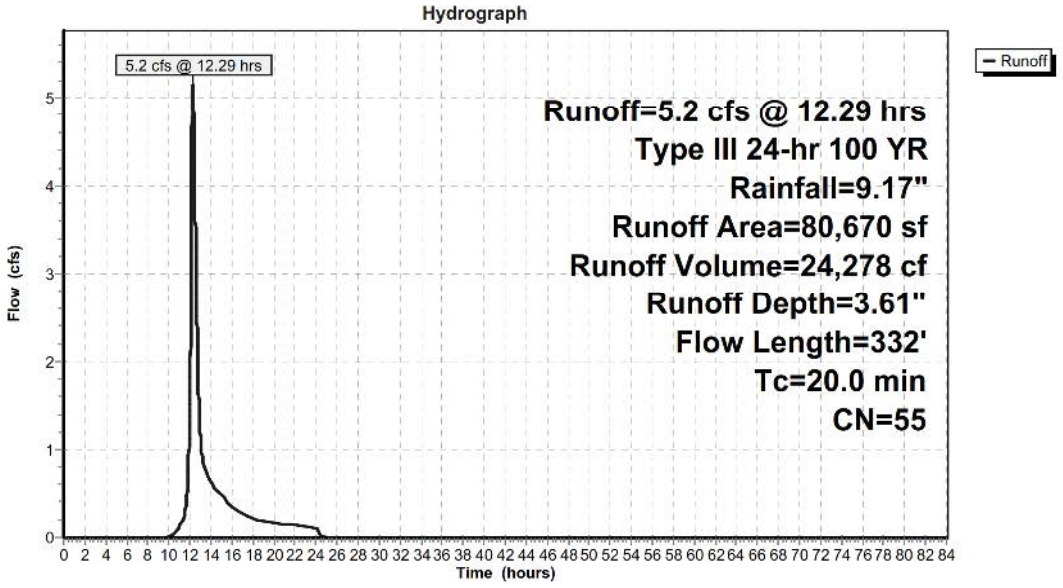
Runoff = 5.2 cfs @ 12.29 hrs, Volume= 24,278 cf, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
78,687	55	Woods, Good, HSG B
1,983	61	>75% Grass cover, Good, HSG B
80,670	55	Weighted Average
80,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0280	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	50	0.1650	2.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	58	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	124	0.2230	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	332	Total			

Subcatchment PRWS1: PRWS1



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS2: PRWS2

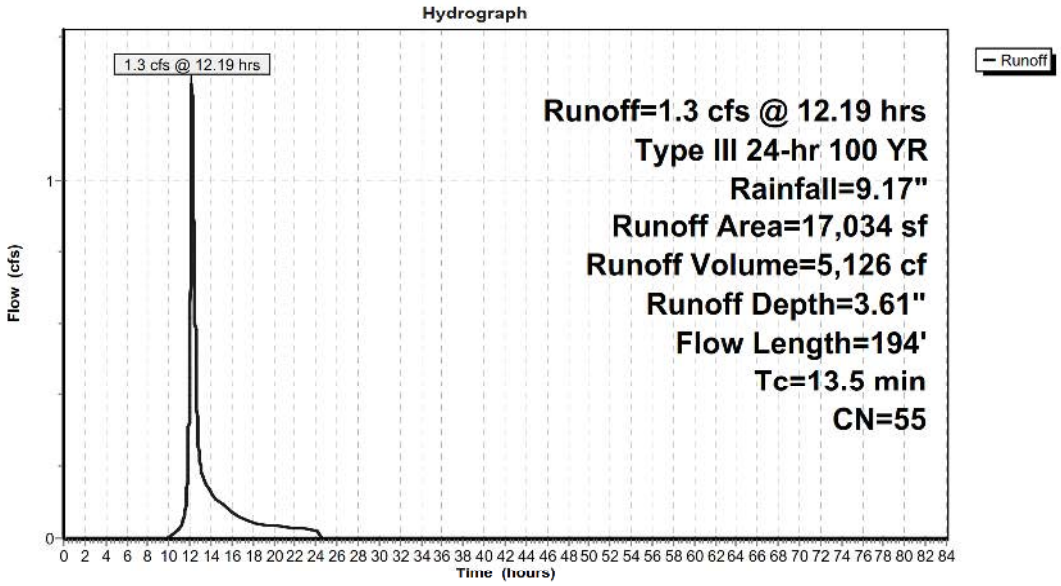
Runoff = 1.3 cfs @ 12.19 hrs, Volume= 5,126 cf, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
17,034	55	Woods, Good, HSG B
17,034		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	34	0.1470	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
9.3	116	0.1980	0.21		**Sheet Flow, SF2** Woods: Light underbrush n= 0.400 P2= 3.43"
0.3	44	0.1920	2.19		**Shallow Concentrated Flow, SC1** Woodland Kv= 5.0 fps
13.5	194	Total			

Subcatchment PRWS2: PRWS2



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS3: PRWS3

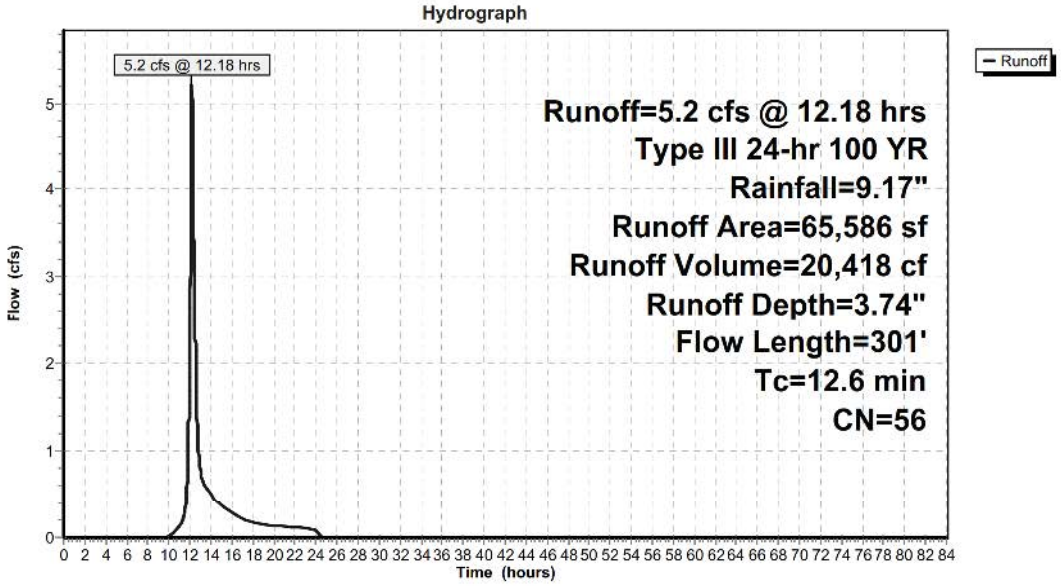
Runoff = 5.2 cfs @ 12.18 hrs, Volume= 20,418 cf, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
49,354	55	Woods, Good, HSG B
2,641	61	>75% Grass cover, Good, HSG B
13,591	61	>75% Grass cover, Good, HSG B
65,586	56	Weighted Average
65,586		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
2.0	88	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	113	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.6	301	Total			

Subcatchment PRWS3: PRWS3



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4C: SPLIT4C

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Outflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

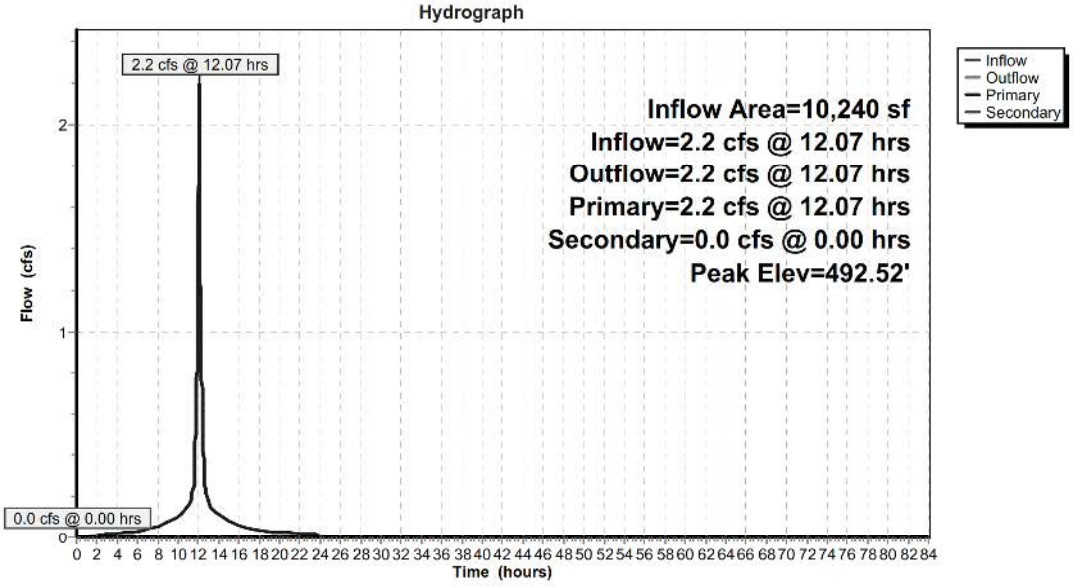
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.52' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.2 cfs @ 12.07 hrs HW=492.52' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.2 cfs @ 2.79 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4C: SPLIT4C



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4D: SPLIT4D

Inflow Area = 44,534 sf, 75.95% Impervious, Inflow Depth = 7.84" for 100 YR event
Inflow = 10.4 cfs @ 12.02 hrs, Volume= 29,085 cf
Outflow = 10.4 cfs @ 12.02 hrs, Volume= 29,085 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.4 cfs @ 12.02 hrs, Volume= 29,085 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

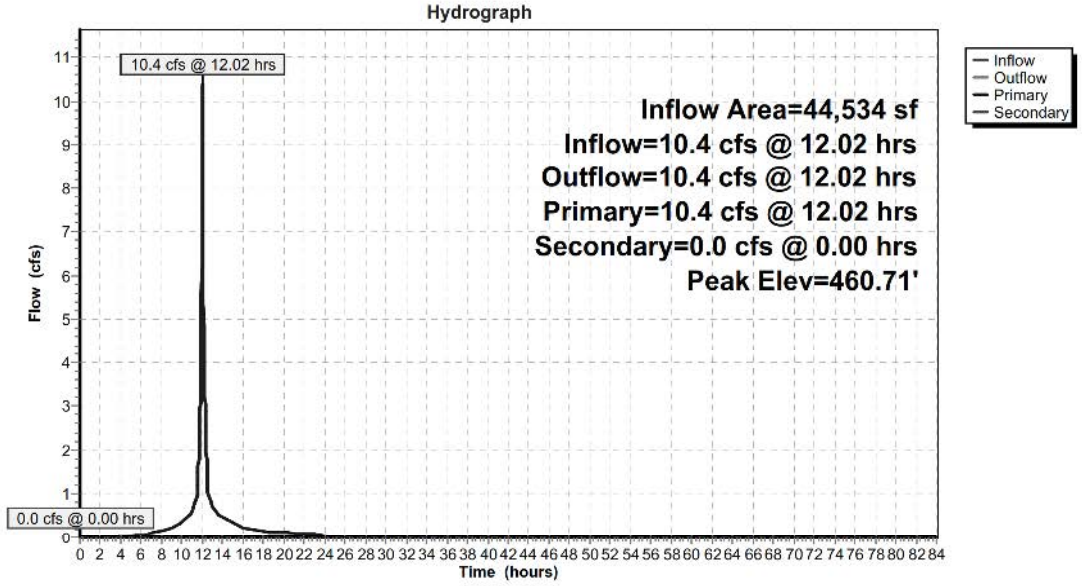
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 460.71' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	457.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	463.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 463.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=10.3 cfs @ 12.02 hrs HW=460.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.3 cfs @ 8.43 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4D: SPLIT4D



EAGLE RIDGE-50 TOWNHOUSE DP1-4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

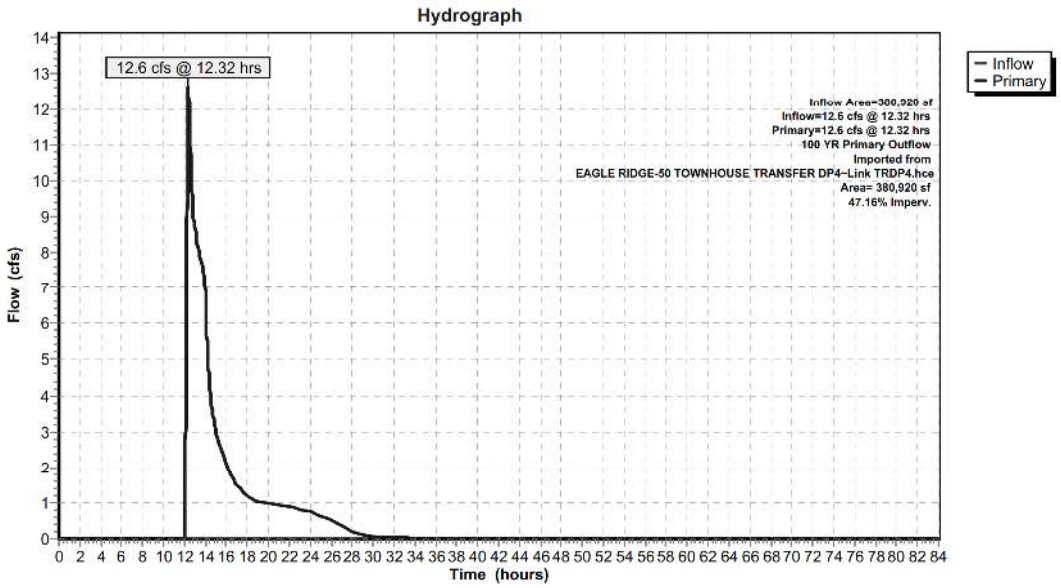
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 3.88" for 100 YR event
Inflow = 12.6 cfs @ 12.32 hrs, Volume= 123,321 cf
Primary = 12.6 cfs @ 12.32 hrs, Volume= 123,321 cf, Atten= 0%, Lag= 0.0 min

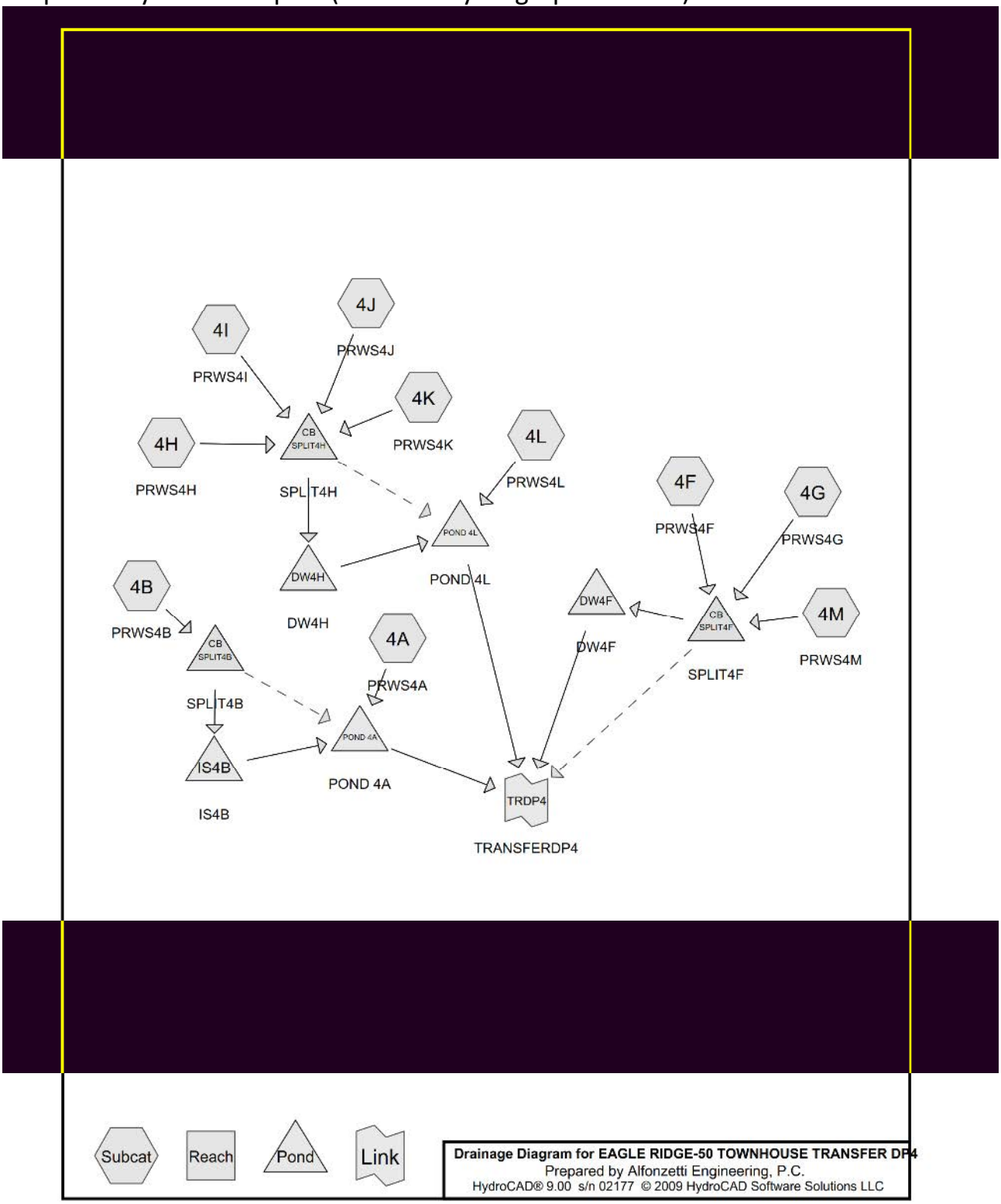
Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

100 YR Primary Outflow Imported from EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4~Link TRDP4.hce

Link TRDP4: TRANSFERDP4



Proposed HydroCad Report (Transfer Hydrograph For DP4):



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=275' Tc=12.7 min CN=61 Runoff=0.1 cfs 654 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=0.7 cfs 2,192 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=1.2 cfs 3,832 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=0.49"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=0.1 cfs 622 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=0.93"
Flow Length=849' Tc=10.9 min CN=77 Runoff=2.9 cfs 11,113 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=1.3 cfs 4,385 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=0.3 cfs 1,096 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=1.72"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=3.4 cfs 8,782 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=0.24"
Flow Length=264' Tc=13.0 min CN=59 Runoff=0.1 cfs 1,248 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=1.2 cfs 3,897 cf

Pond DW4F: DW4F Peak Elev=459.42' Storage=2,649 cf Inflow=2.4 cfs 8,351 cf
Discarded=0.3 cfs 8,351 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 8,351 cf

Pond DW4H: DW4H Peak Elev=457.06' Storage=16,961 cf Inflow=6.2 cfs 25,376 cf
Discarded=0.2 cfs 25,318 cf Primary=0.0 cfs 59 cf Outflow=0.2 cfs 25,376 cf

Pond IS4B: IS4B Peak Elev=492.60' Storage=803 cf Inflow=0.7 cfs 2,192 cf
Discarded=0.1 cfs 2,192 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 2,192 cf

Pond POND 4A: POND 4A Peak Elev=468.64' Storage=654 cf Inflow=0.1 cfs 654 cf
Outflow=0.0 cfs 0 cf

Pond POND 4L: POND 4L Peak Elev=424.12' Storage=1,306 cf Inflow=0.1 cfs 1,306 cf
Outflow=0.0 cfs 0 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.05' Inflow=0.7 cfs 2,192 cf
Primary=0.7 cfs 2,192 cf Secondary=0.0 cfs 0 cf Outflow=0.7 cfs 2,192 cf

Pond SPLIT4F: SPLIT4F Peak Elev=455.32' Inflow=2.4 cfs 8,351 cf
Primary=2.4 cfs 8,351 cf Secondary=0.0 cfs 0 cf Outflow=2.4 cfs 8,351 cf

Pond SPLIT4H: SPLIT4H Peak Elev=456.11' Inflow=6.2 cfs 25,376 cf
Primary=6.2 cfs 25,376 cf Secondary=0.0 cfs 0 cf Outflow=6.2 cfs 25,376 cf

Link TRDP4: TRANSFERDP4 Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 37,821 cf Average Runoff Depth = 1.19"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

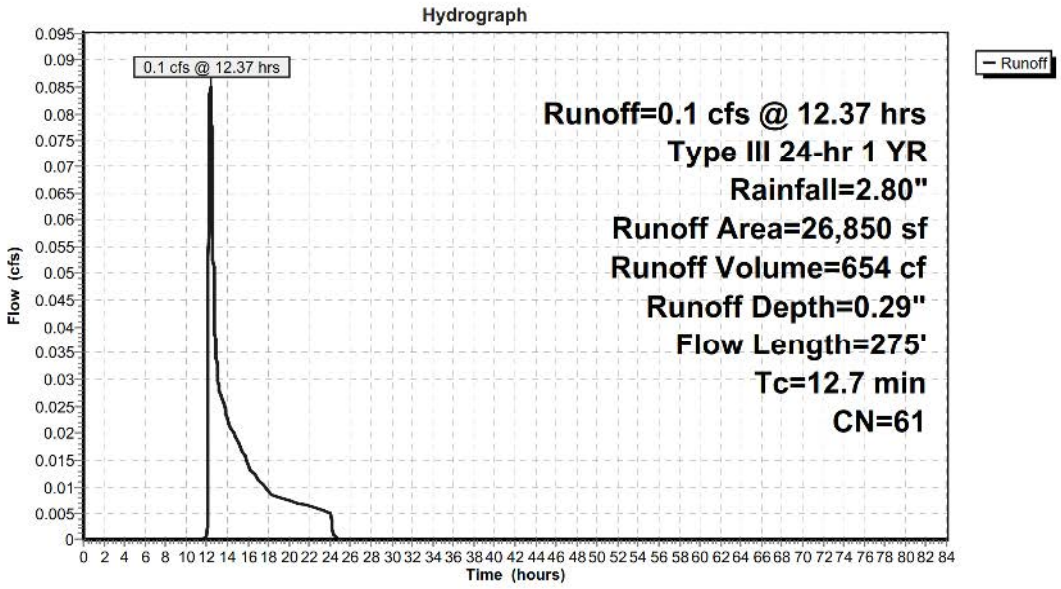
Runoff = 0.1 cfs @ 12.37 hrs, Volume= 654 cf, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4B: PRWS4B

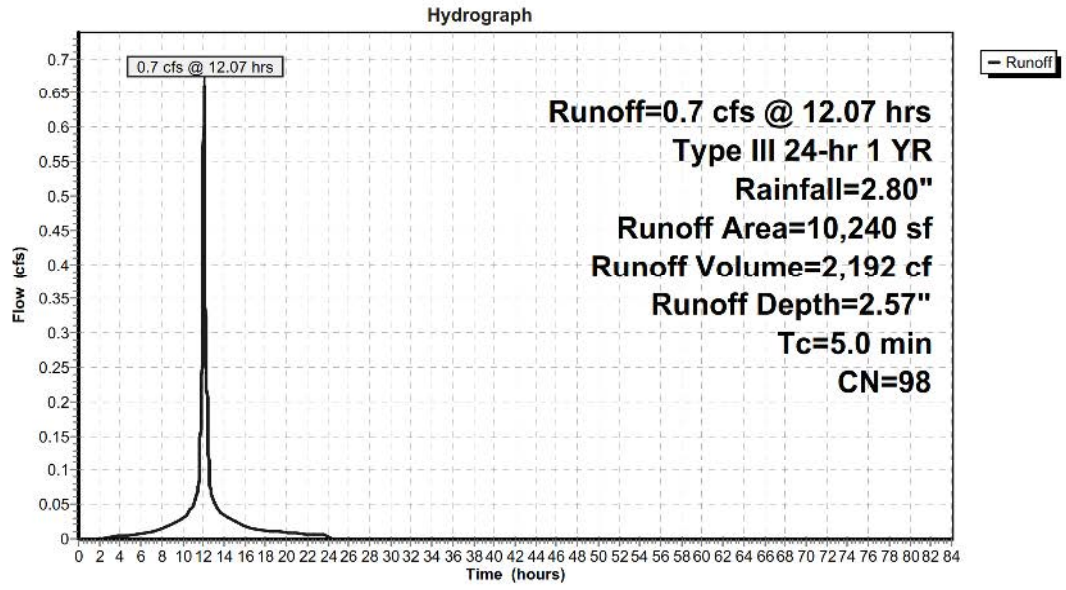
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4F: PRWS4F

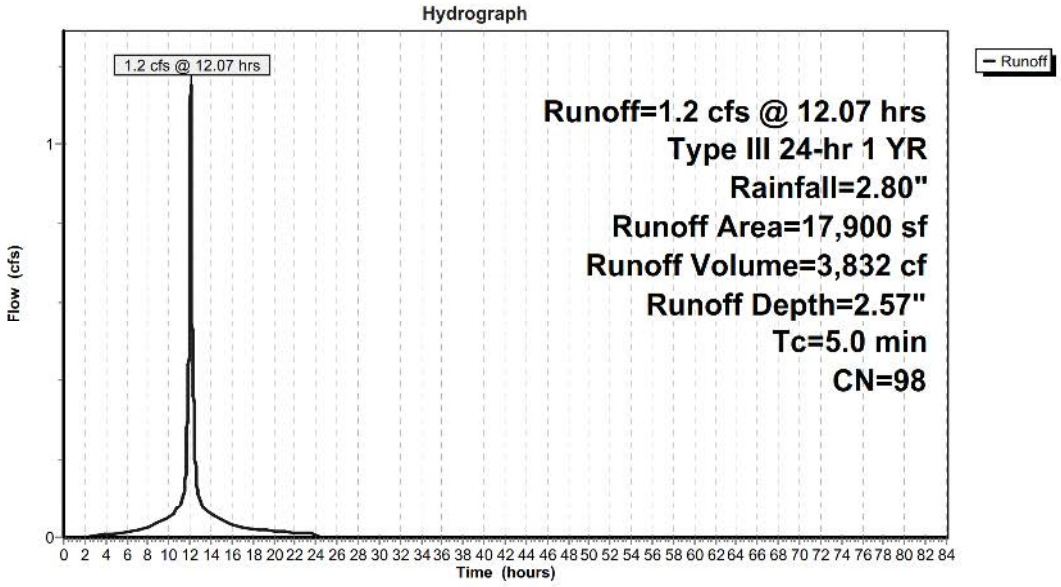
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 3,832 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4G: PRWS4G

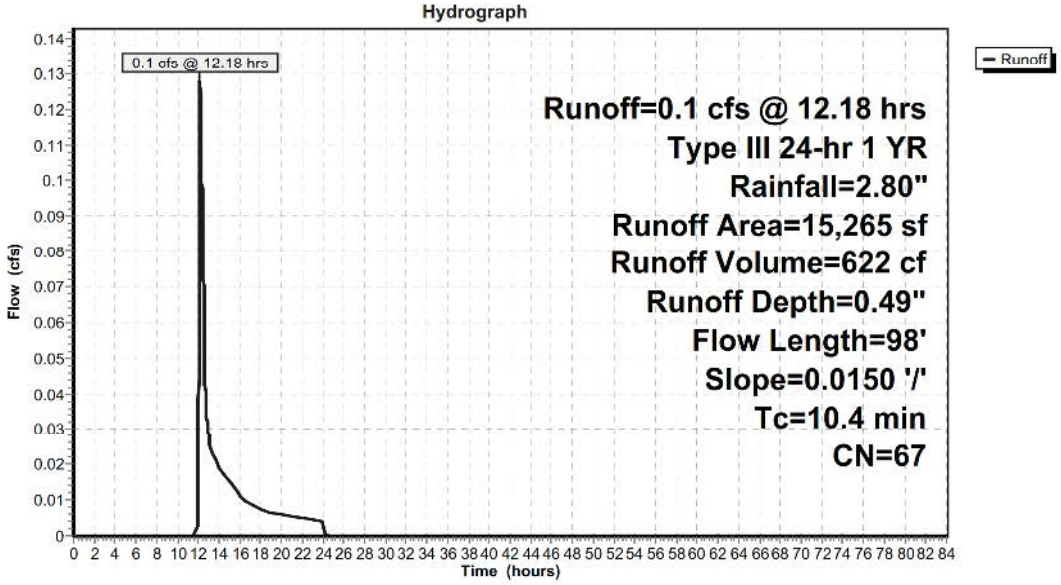
Runoff = 0.1 cfs @ 12.18 hrs, Volume= 622 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4H: PRWS4H

Runoff = 2.9 cfs @ 12.16 hrs, Volume= 11,113 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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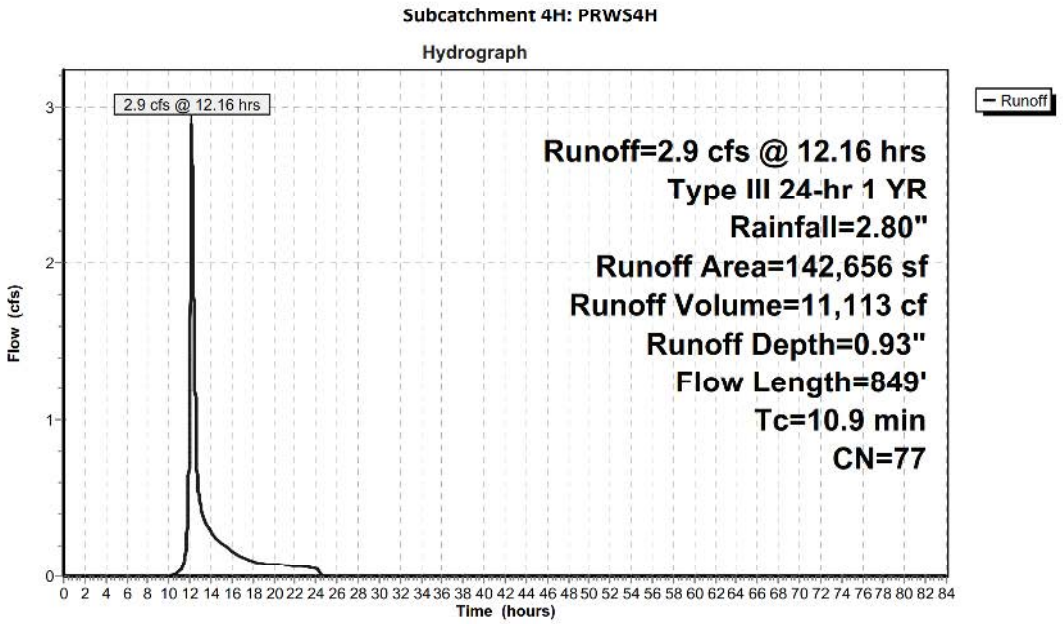

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4I: PRWS4I

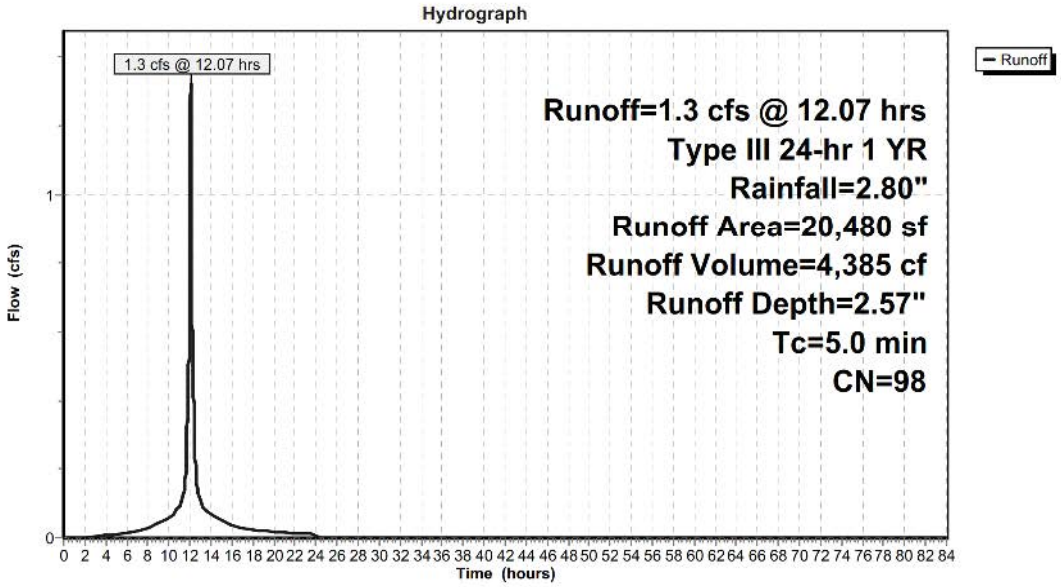
Runoff = 1.3 cfs @ 12.07 hrs, Volume= 4,385 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4J: PRWS4J

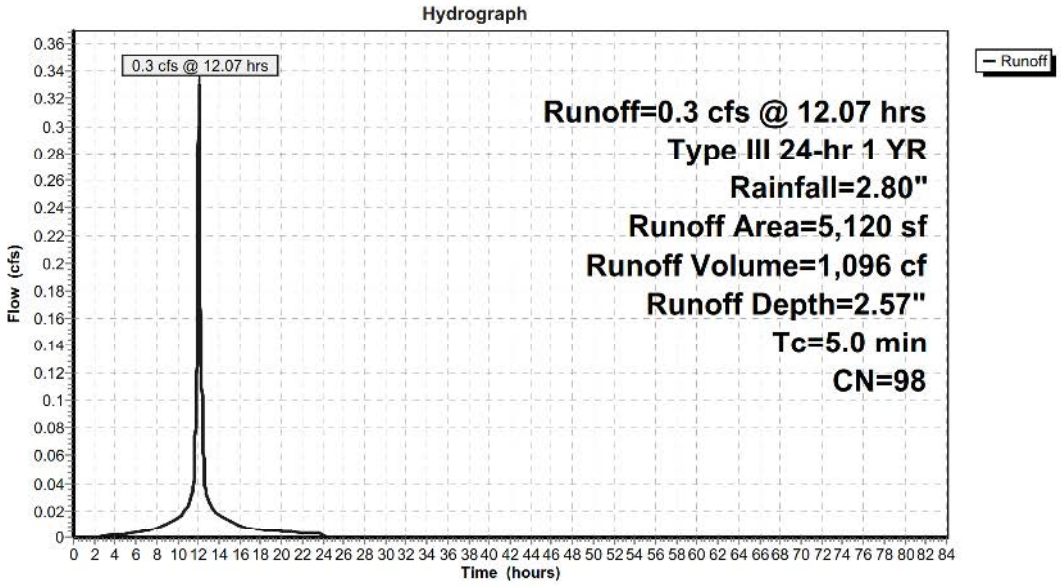
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 1,096 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4K: PRWS4K

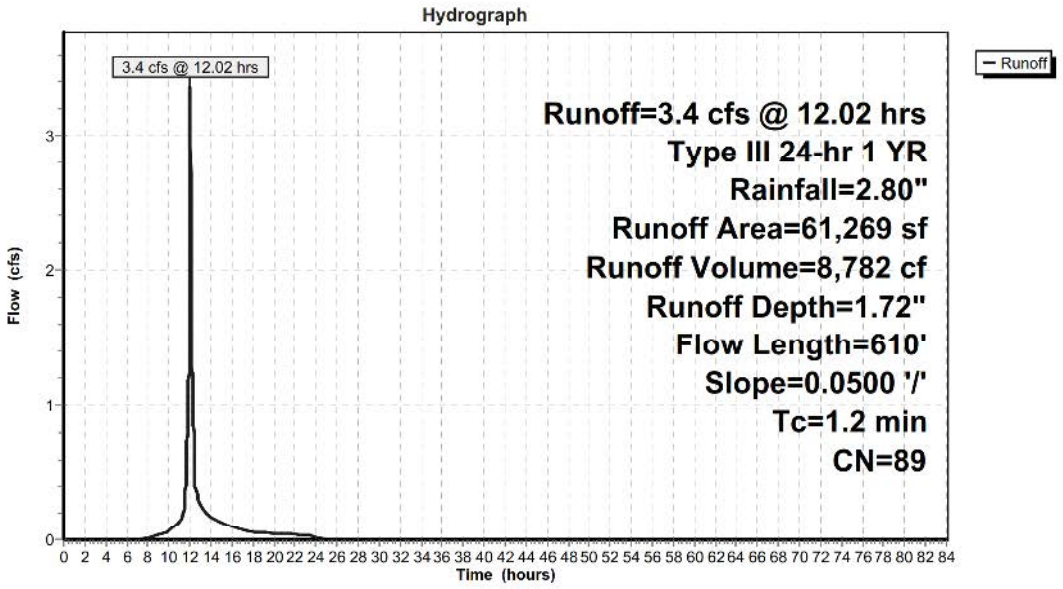
Runoff = 3.4 cfs @ 12.02 hrs, Volume= 8,782 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



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Summary for Subcatchment 4L: PRWS4L

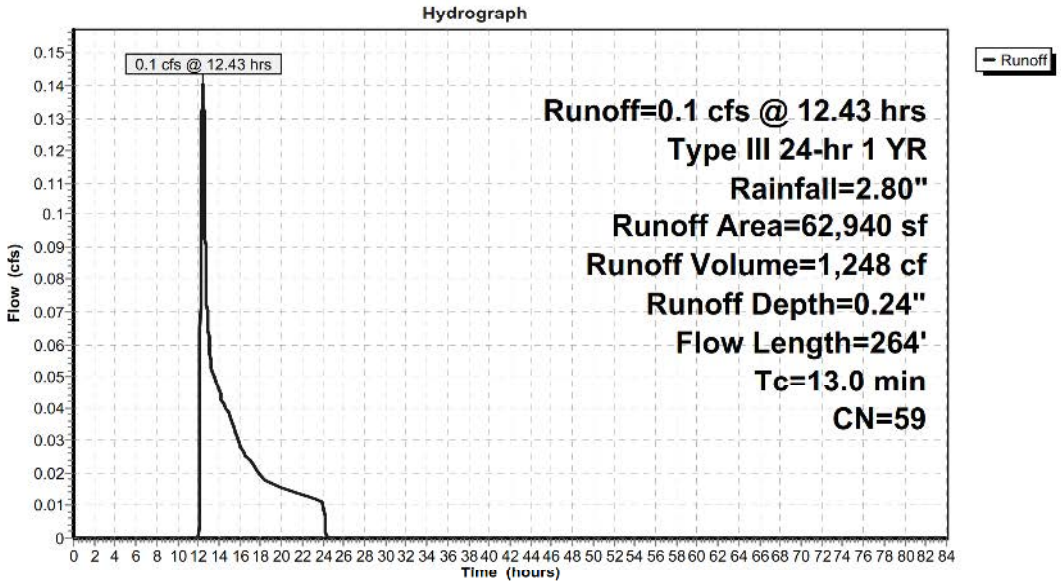
Runoff = 0.1 cfs @ 12.43 hrs, Volume= 1,248 cf, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 4M: PRWS4M

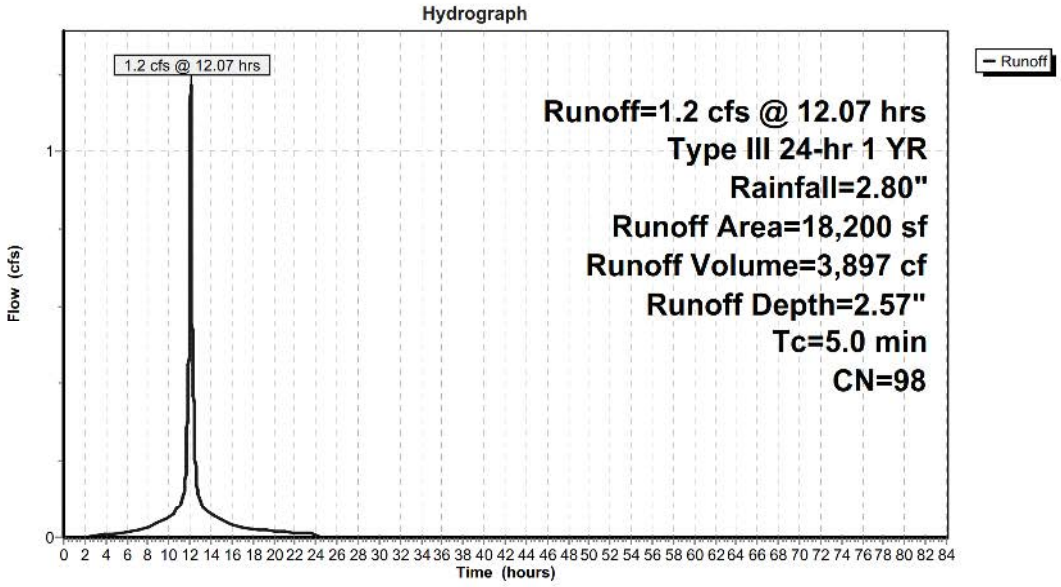
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 3,897 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



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Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 1.95" for 1 YR event
Inflow = 2.4 cfs @ 12.07 hrs, Volume= 8,351 cf
Outflow = 0.3 cfs @ 11.60 hrs, Volume= 8,351 cf, Atten= 89%, Lag= 0.0 min
Discarded = 0.3 cfs @ 11.60 hrs, Volume= 8,351 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.42' @ 12.78 hrs Surf.Area= 2,304 sf Storage= 2,649 cf

Plug-Flow detention time= 67.4 min calculated for 8,350 cf (100% of inflow)
Center-of-Mass det. time= 67.4 min (836.6 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 11.60 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

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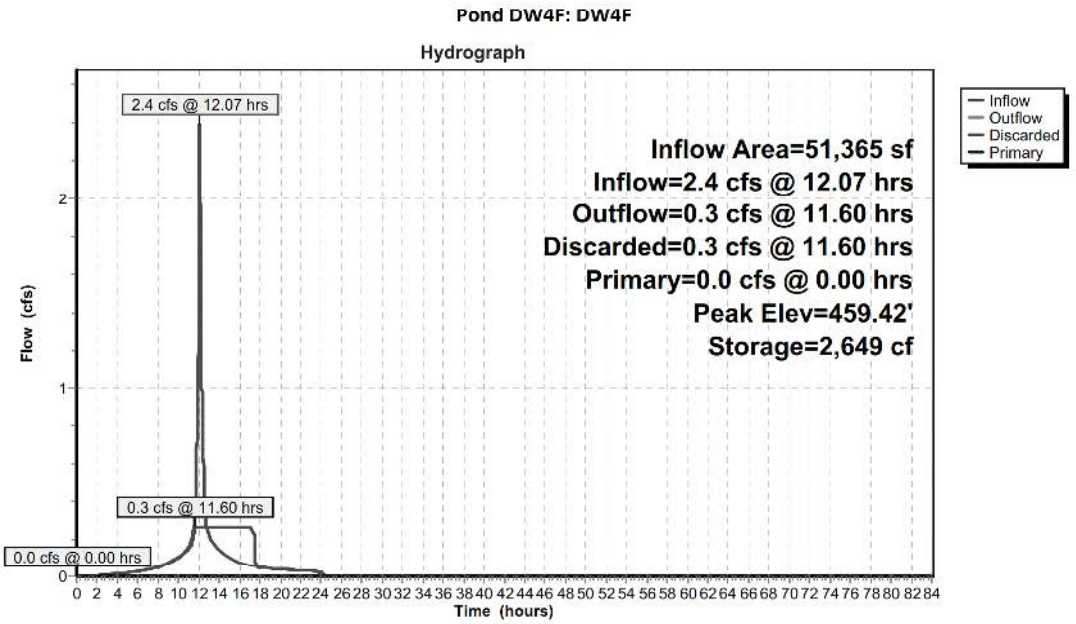

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 1.33" for 1 YR event
Inflow = 6.2 cfs @ 12.05 hrs, Volume= 25,376 cf
Outflow = 0.2 cfs @ 18.88 hrs, Volume= 25,376 cf, Atten= 97%, Lag= 409.3 min
Discarded = 0.2 cfs @ 10.47 hrs, Volume= 25,318 cf
Primary = 0.0 cfs @ 18.88 hrs, Volume= 59 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 457.06' @ 18.88 hrs Surf.Area= 4,608 sf Storage= 16,961 cf

Plug-Flow detention time= 1,003.5 min calculated for 25,373 cf (100% of inflow)
Center-of-Mass det. time= 1,003.6 min (1,827.1 - 823.6)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 10.47 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.0 cfs @ 18.88 hrs HW=457.06' (Free Discharge)
↳**2=Culvert** (Barrel Controls 0.0 cfs @ 0.21 fps)

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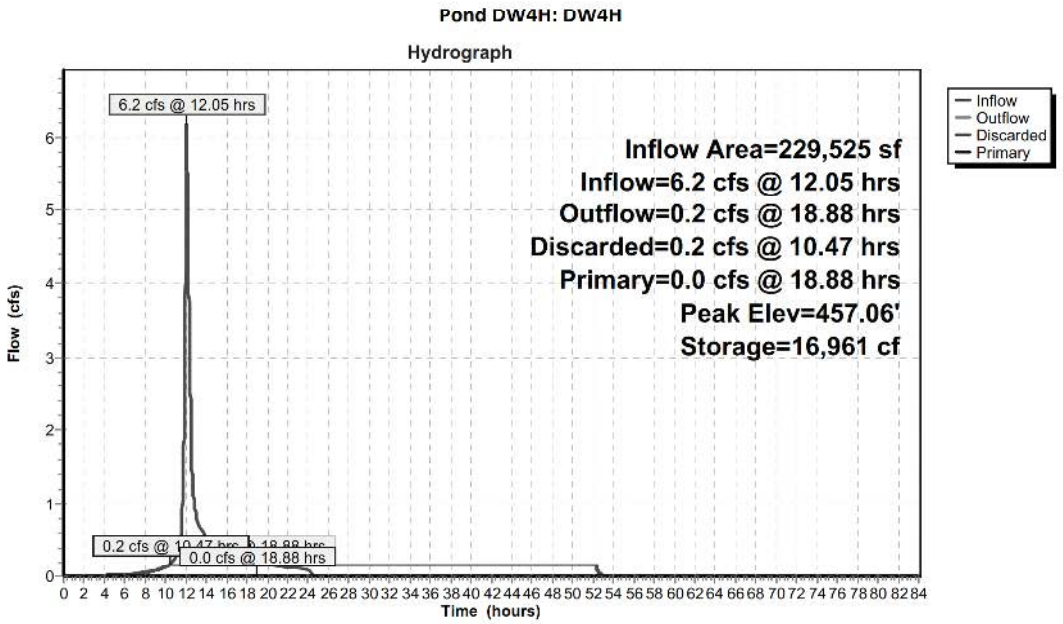

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Outflow = 0.1 cfs @ 11.29 hrs, Volume= 2,192 cf, Atten= 92%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.29 hrs, Volume= 2,192 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.60' @ 12.99 hrs Surf.Area= 1,152 sf Storage= 803 cf

Plug-Flow detention time= 109.8 min calculated for 2,192 cf (100% of inflow)
Center-of-Mass det. time= 109.8 min (868.2 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 11.29 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

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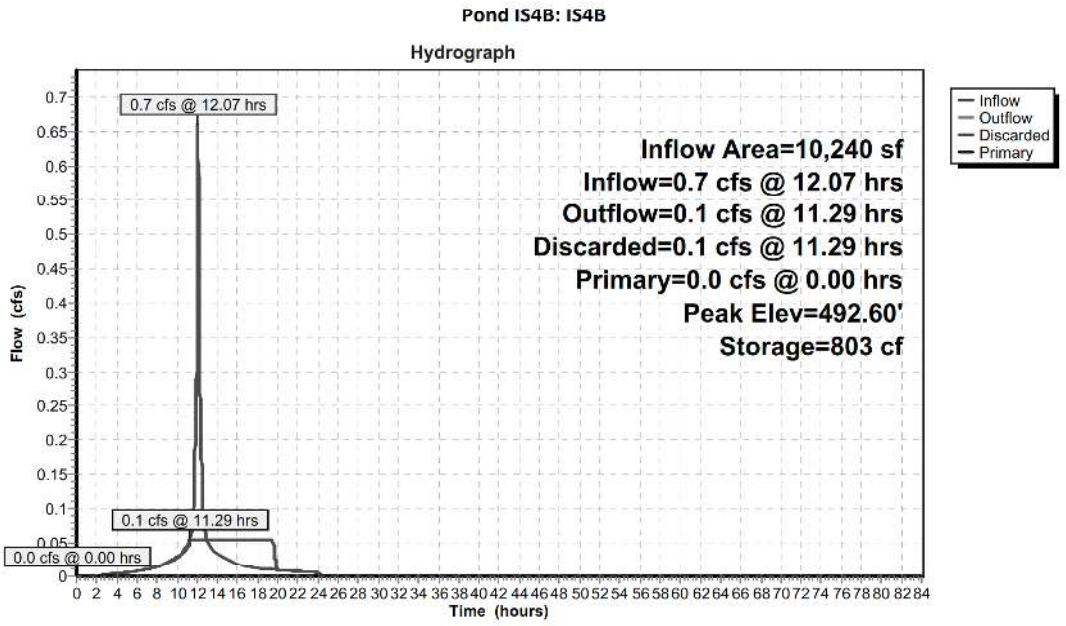

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 0.21" for 1 YR event
Inflow = 0.1 cfs @ 12.37 hrs, Volume= 654 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 468.64' @ 24.73 hrs Surf.Area= 1,292 sf Storage= 654 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

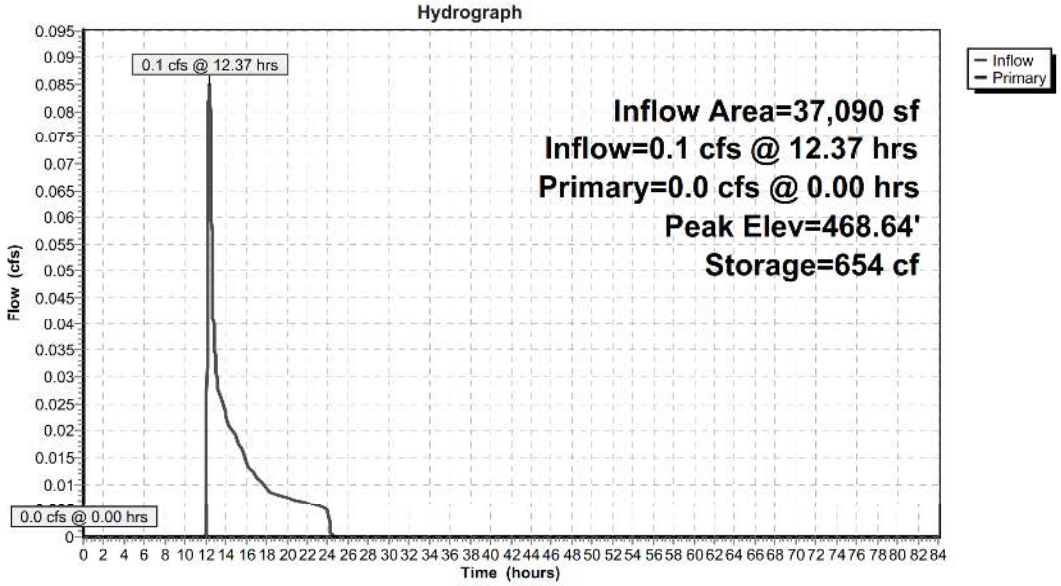
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=468.00' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond POND 4A: POND 4A



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Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 0.05" for 1 YR event
Inflow = 0.1 cfs @ 12.43 hrs, Volume= 1,306 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 424.12' @ 24.74 hrs Surf.Area= 10,588 sf Storage= 1,306 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=424.00' (Free Discharge)
↑**1=Culvert** (Controls 0.0 cfs)
↑**2=Orifice/Grate** (Controls 0.0 cfs)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

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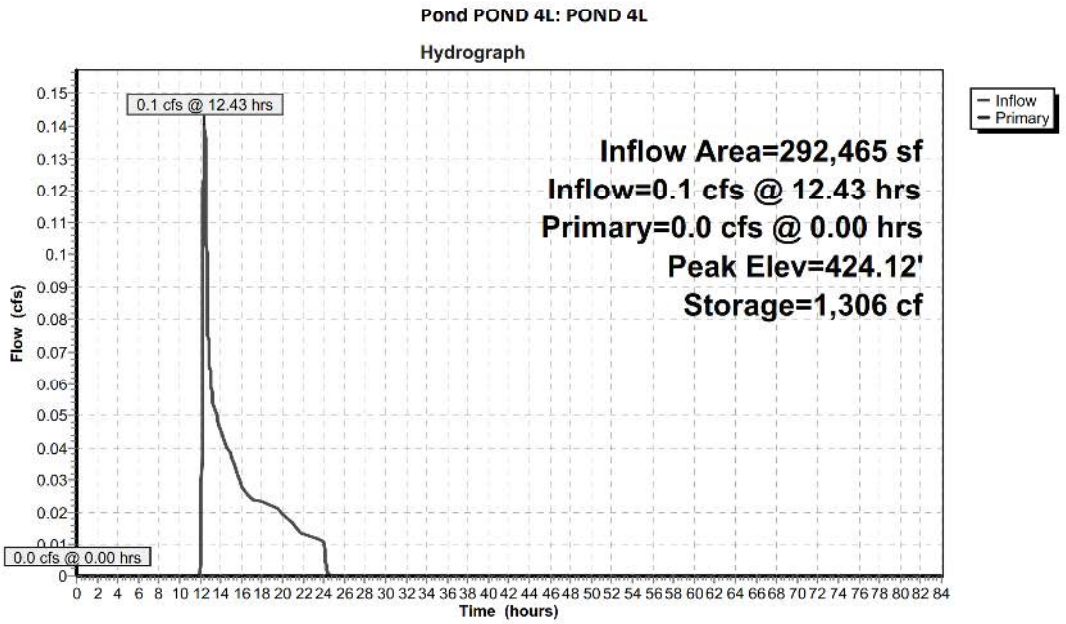

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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Outflow = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.07 hrs, Volume= 2,192 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

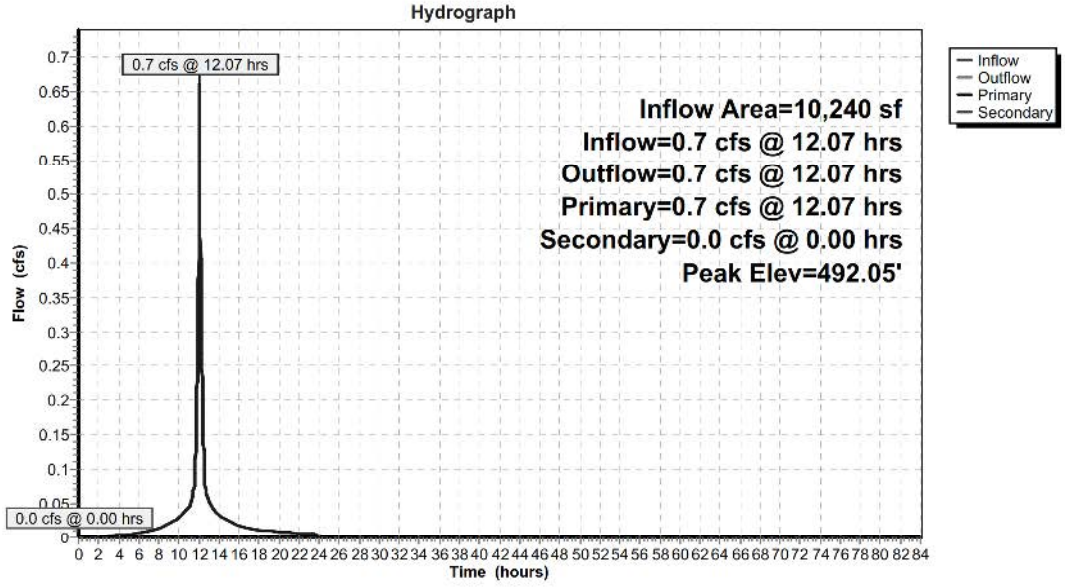
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.05' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.7 cfs @ 12.07 hrs HW=492.05' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.7 cfs @ 1.86 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 1.95" for 1 YR event
Inflow = 2.4 cfs @ 12.07 hrs, Volume= 8,351 cf
Outflow = 2.4 cfs @ 12.07 hrs, Volume= 8,351 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.07 hrs, Volume= 8,351 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

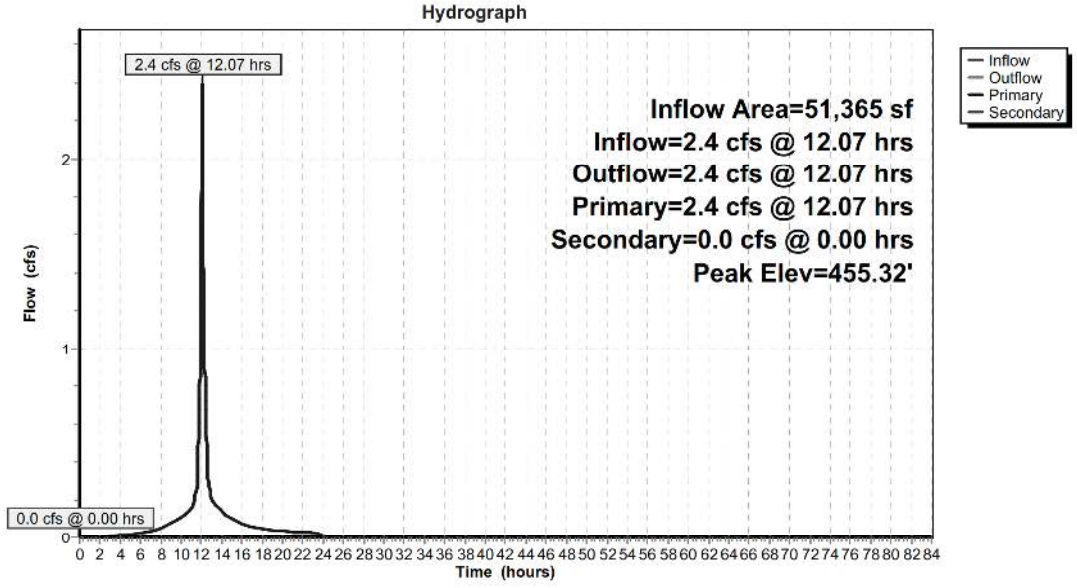
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 455.32' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.4 cfs @ 12.07 hrs HW=455.32' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.4 cfs @ 3.00 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 1.33" for 1 YR event
Inflow = 6.2 cfs @ 12.05 hrs, Volume= 25,376 cf
Outflow = 6.2 cfs @ 12.05 hrs, Volume= 25,376 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.2 cfs @ 12.05 hrs, Volume= 25,376 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

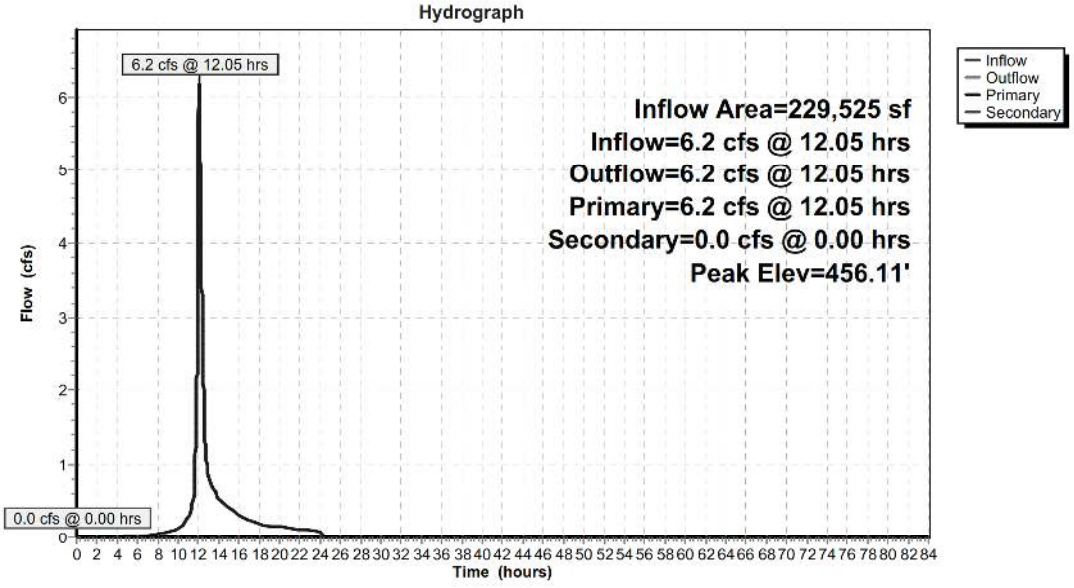
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 456.11' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=6.2 cfs @ 12.05 hrs HW=456.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.2 cfs @ 5.02 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4H: SPLIT4H



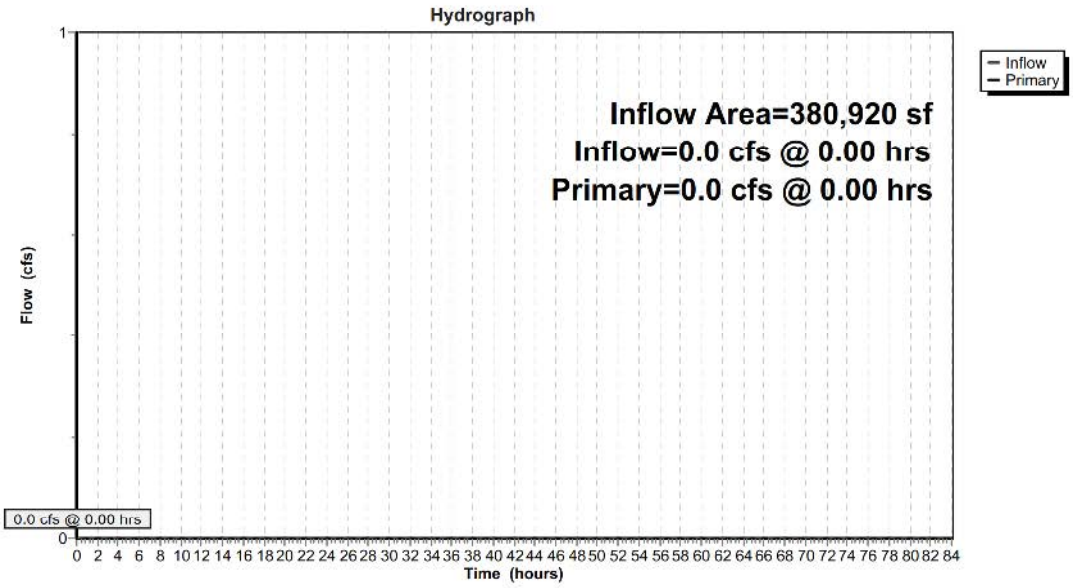
EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.00" for 1 YR event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=275' Tc=12.7 min CN=61 Runoff=0.2 cfs 1,212 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=0.8 cfs 2,728 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=1.4 cfs 4,768 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=0.81"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=0.2 cfs 1,032 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=1.38"
Flow Length=849' Tc=10.9 min CN=77 Runoff=4.4 cfs 16,390 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=1.6 cfs 5,456 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=0.4 cfs 1,364 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=2.29"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=4.4 cfs 11,705 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=264' Tc=13.0 min CN=59 Runoff=0.4 cfs 2,429 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=1.4 cfs 4,848 cf

Pond DW4F: DW4F Peak Elev=460.09' Storage=3,735 cf Inflow=3.0 cfs 10,648 cf
Discarded=0.3 cfs 10,648 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 10,648 cf

Pond DW4H: DW4H Peak Elev=457.54' Storage=18,525 cf Inflow=8.5 cfs 34,915 cf
Discarded=0.2 cfs 26,354 cf Primary=0.7 cfs 8,561 cf Outflow=0.9 cfs 34,915 cf

Pond IS4B: IS4B Peak Elev=492.90' Storage=1,078 cf Inflow=0.8 cfs 2,728 cf
Discarded=0.1 cfs 2,728 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 2,728 cf

Pond POND 4A: POND 4A Peak Elev=469.00' Storage=1,181 cf Inflow=0.2 cfs 1,212 cf
Outflow=0.0 cfs 35 cf

Pond POND 4L: POND 4L Peak Elev=424.99' Storage=10,989 cf Inflow=0.8 cfs 10,990 cf
Outflow=0.0 cfs 0 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.11' Inflow=0.8 cfs 2,728 cf
Primary=0.8 cfs 2,728 cf Secondary=0.0 cfs 0 cf Outflow=0.8 cfs 2,728 cf

Pond SPLIT4F: SPLIT4F Peak Elev=455.56' Inflow=3.0 cfs 10,648 cf
Primary=3.0 cfs 10,648 cf Secondary=0.0 cfs 0 cf Outflow=3.0 cfs 10,648 cf

Pond SPLIT4H: SPLIT4H Peak Elev=456.87' Inflow=8.5 cfs 34,915 cf
Primary=8.5 cfs 34,915 cf Secondary=0.0 cfs 0 cf Outflow=8.5 cfs 34,915 cf

Link TRDP4: TRANSFERDP4 Inflow=0.0 cfs 35 cf
Primary=0.0 cfs 35 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 51,932 cf Average Runoff Depth = 1.64"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

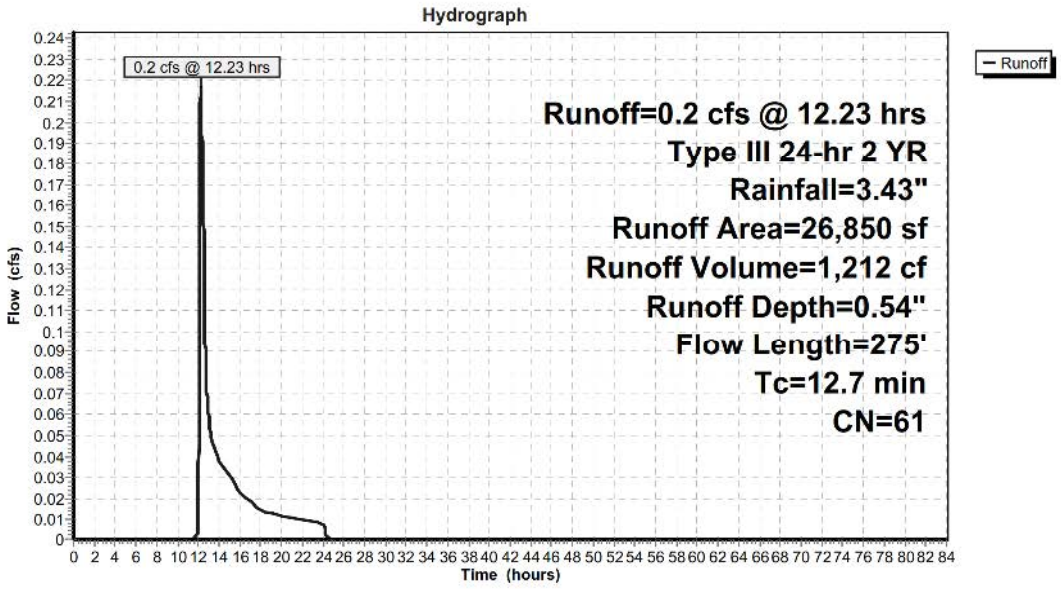
Runoff = 0.2 cfs @ 12.23 hrs, Volume= 1,212 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4B: PRWS4B

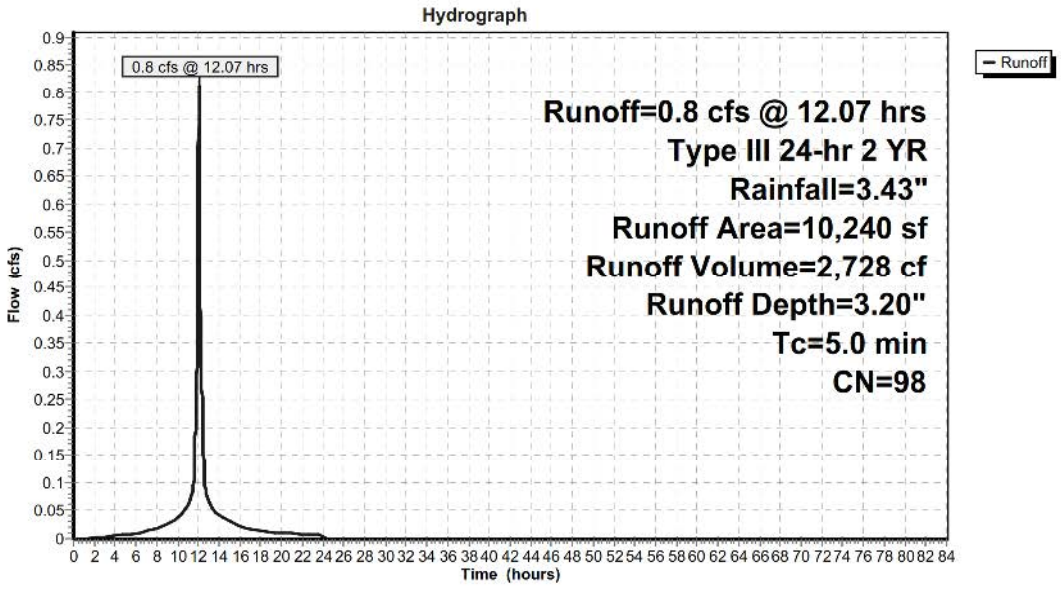
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4F: PRWS4F

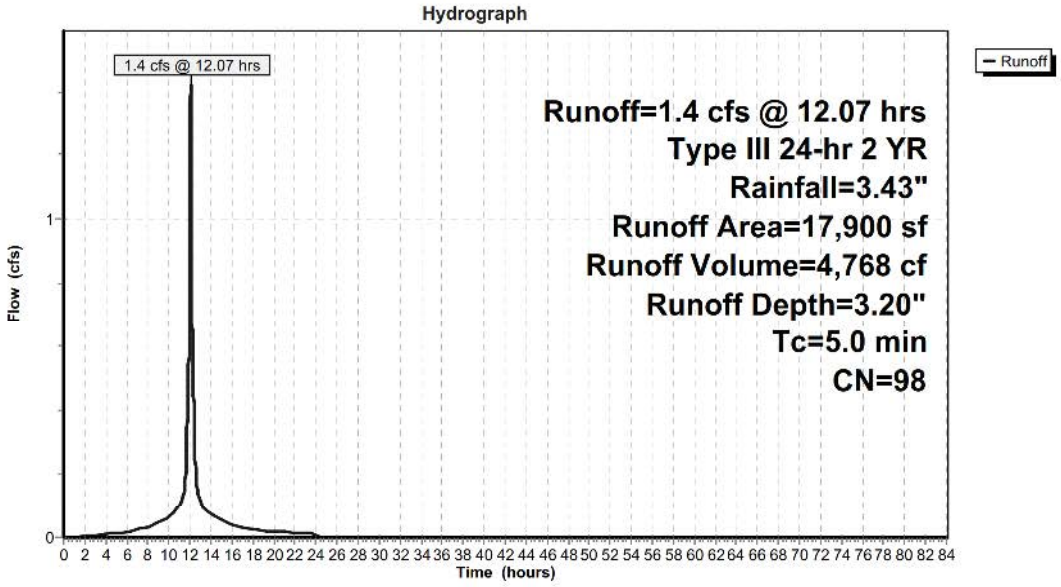
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 4,768 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4G: PRWS4G

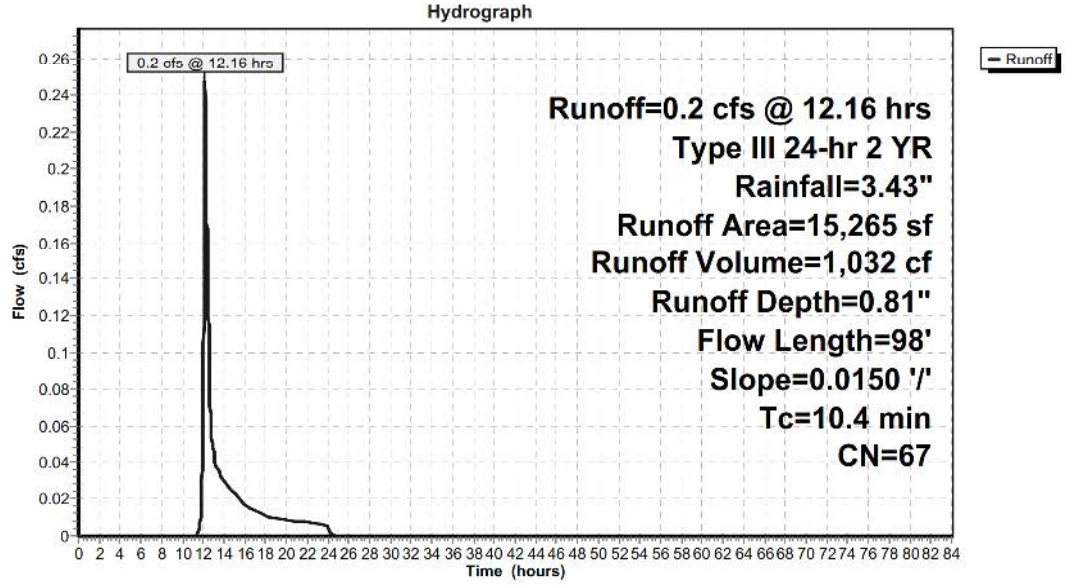
Runoff = 0.2 cfs @ 12.16 hrs, Volume= 1,032 cf, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

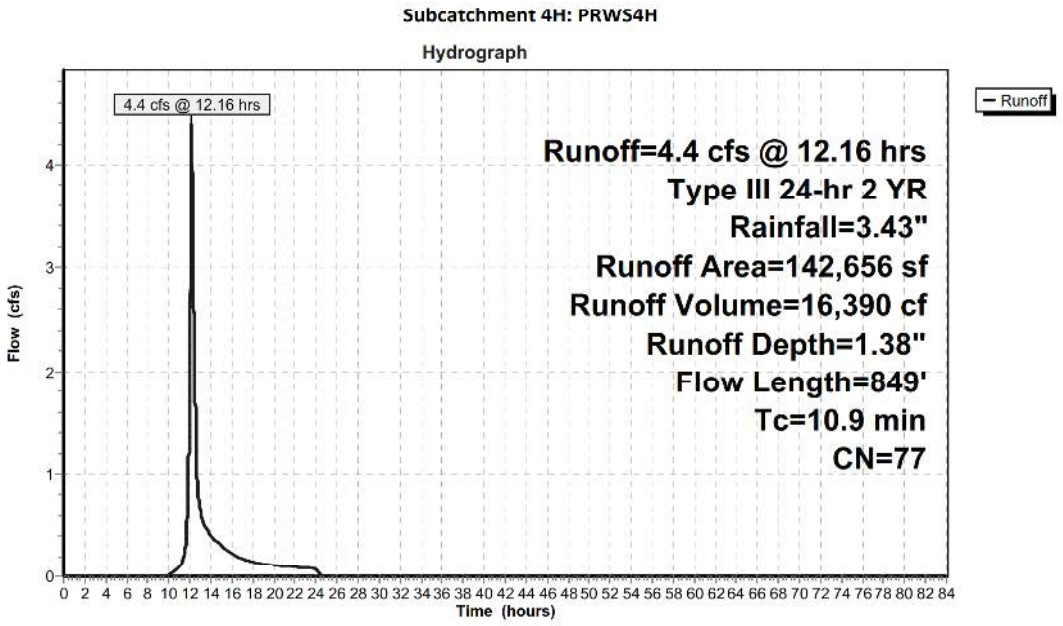
Summary for Subcatchment 4H: PRWS4H

Runoff = 4.4 cfs @ 12.16 hrs, Volume= 16,390 cf, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			


Subcatchment 4H: PRWS4H
Hydrograph
4.4 cfs @ 12.16 hrs
Runoff
Runoff=4.4 cfs @ 12.16 hrs
Type III 24-hr 2 YR
Rainfall=3.43"
Runoff Area=142,656 sf
Runoff Volume=16,390 cf
Runoff Depth=1.38"
Flow Length=849'
Tc=10.9 min
CN=77
Flow (cfs)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84
Time (hours)

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Summary for Subcatchment 4I: PRWS4I

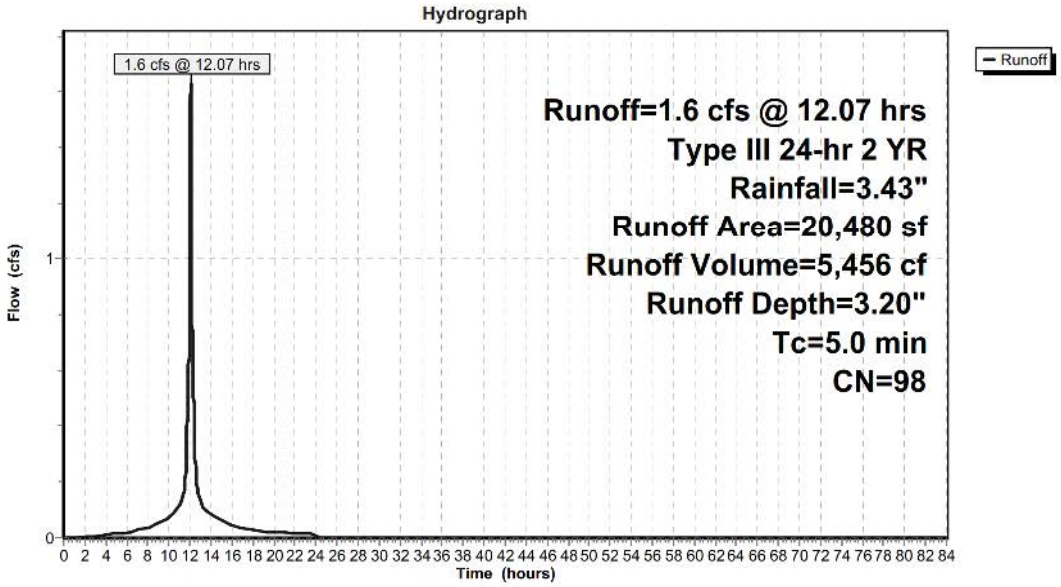
Runoff = 1.6 cfs @ 12.07 hrs, Volume= 5,456 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4J: PRWS4J

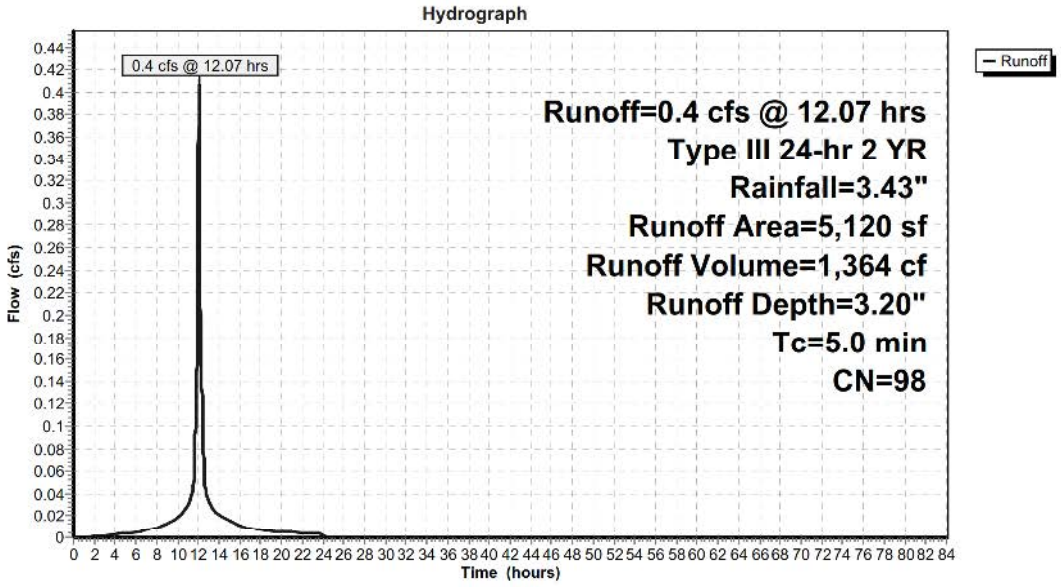
Runoff = 0.4 cfs @ 12.07 hrs, Volume= 1,364 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4K: PRWS4K

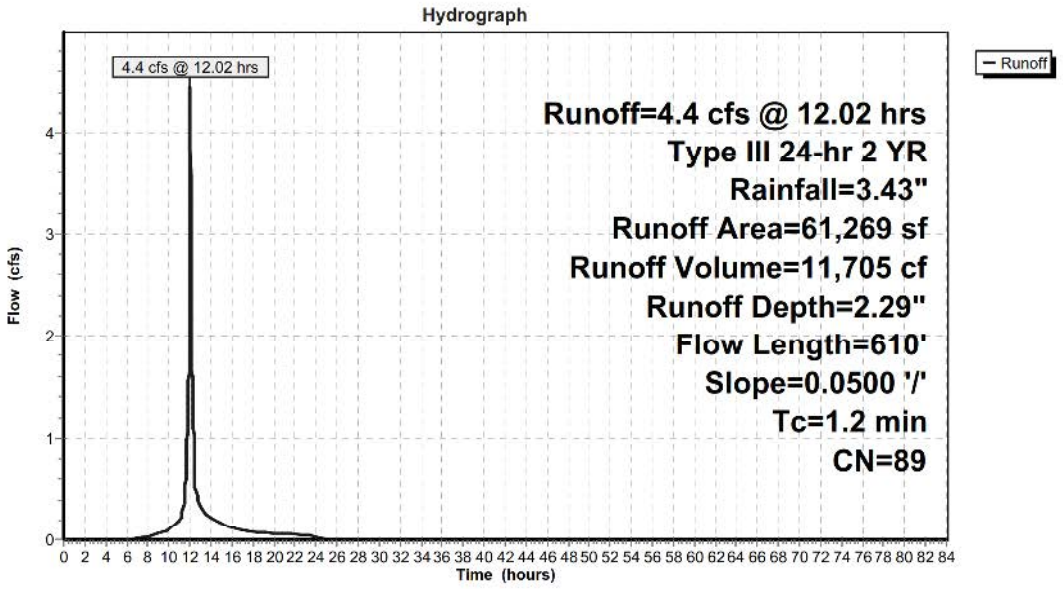
Runoff = 4.4 cfs @ 12.02 hrs, Volume= 11,705 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4L: PRWS4L

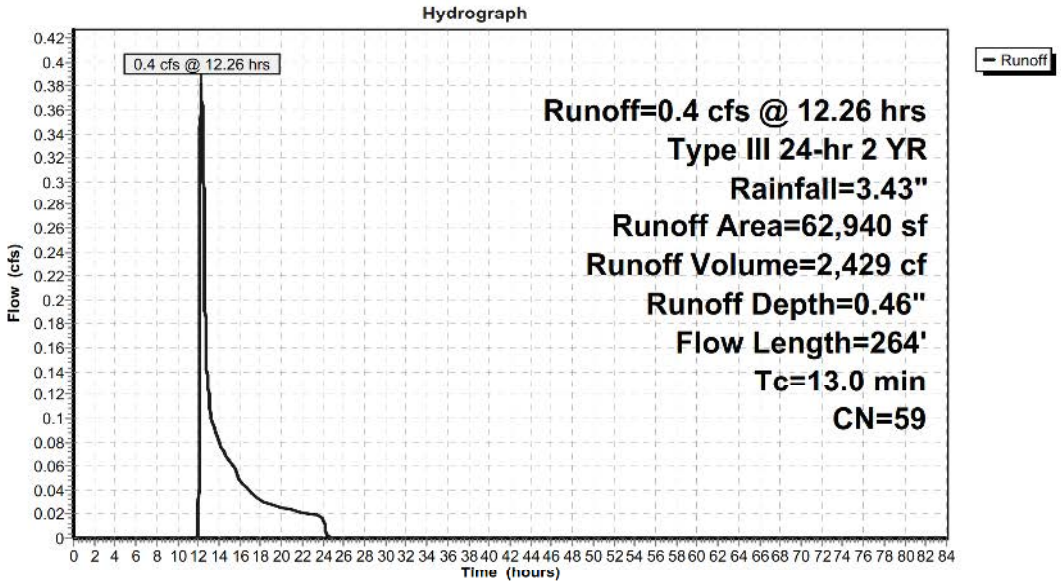
Runoff = 0.4 cfs @ 12.26 hrs, Volume= 2,429 cf, Depth= 0.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 4M: PRWS4M

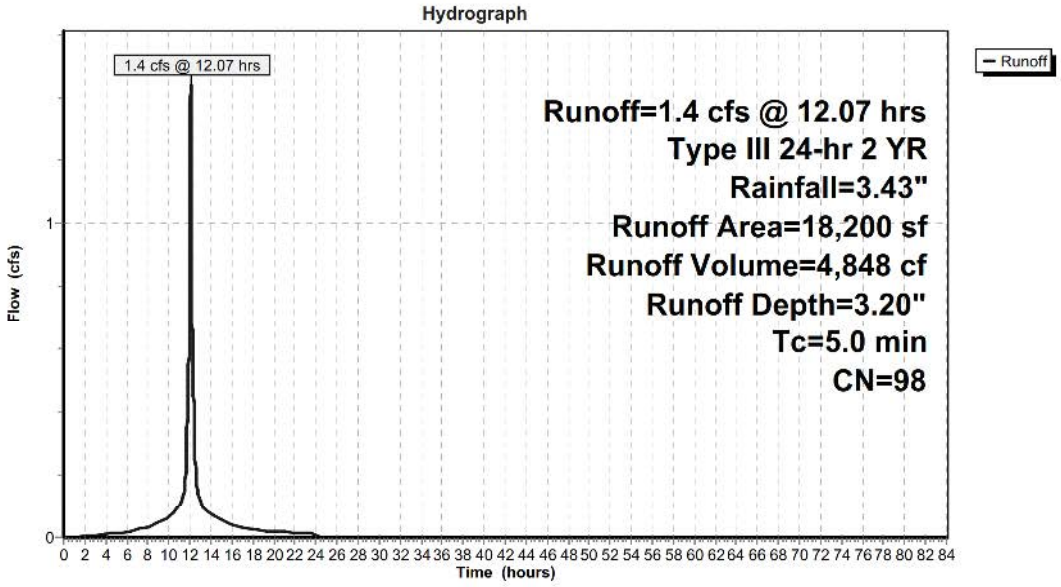
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 4,848 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 3.0 cfs @ 12.07 hrs, Volume= 10,648 cf
Outflow = 0.3 cfs @ 11.40 hrs, Volume= 10,648 cf, Atten= 91%, Lag= 0.0 min
Discarded = 0.3 cfs @ 11.40 hrs, Volume= 10,648 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 460.09' @ 13.02 hrs Surf.Area= 2,304 sf Storage= 3,735 cf

Plug-Flow detention time= 102.7 min calculated for 10,647 cf (100% of inflow)
Center-of-Mass det. time= 102.7 min (869.4 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 11.40 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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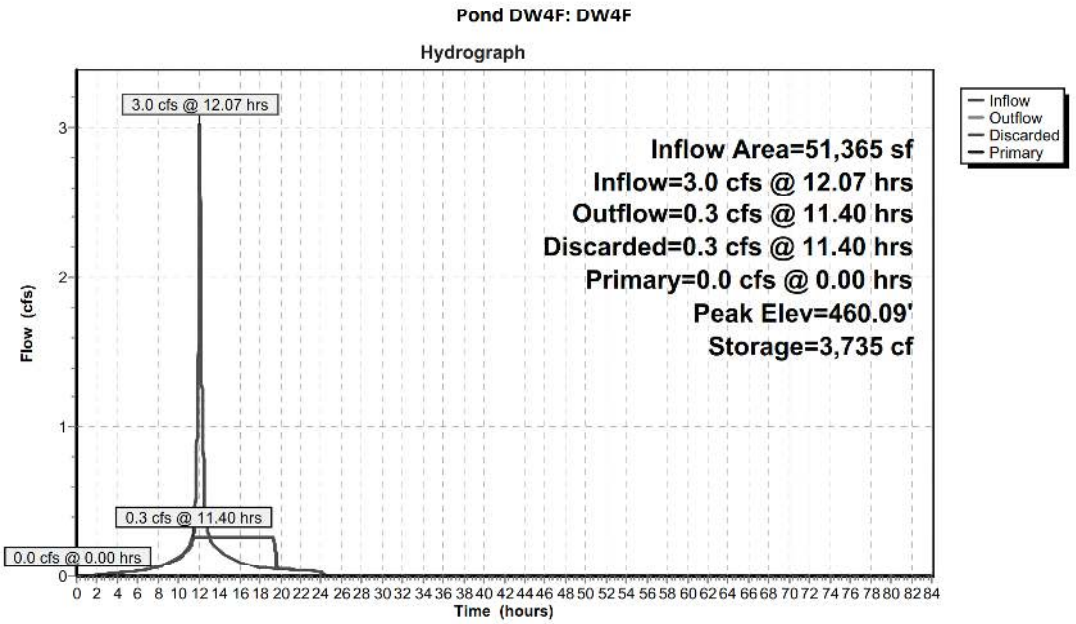

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 1.83" for 2 YR event
Inflow = 8.5 cfs @ 12.06 hrs, Volume= 34,915 cf
Outflow = 0.9 cfs @ 13.44 hrs, Volume= 34,915 cf, Atten= 90%, Lag= 83.2 min
Discarded = 0.2 cfs @ 9.79 hrs, Volume= 26,354 cf
Primary = 0.7 cfs @ 13.44 hrs, Volume= 8,561 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 457.54' @ 13.44 hrs Surf.Area= 4,608 sf Storage= 18,525 cf

Plug-Flow detention time= 794.3 min calculated for 34,911 cf (100% of inflow)
Center-of-Mass det. time= 794.4 min (1,611.6 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 9.79 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.7 cfs @ 13.44 hrs HW=457.54' (Free Discharge)
↳**2=Culvert** (Barrel Controls 0.7 cfs @ 1.86 fps)

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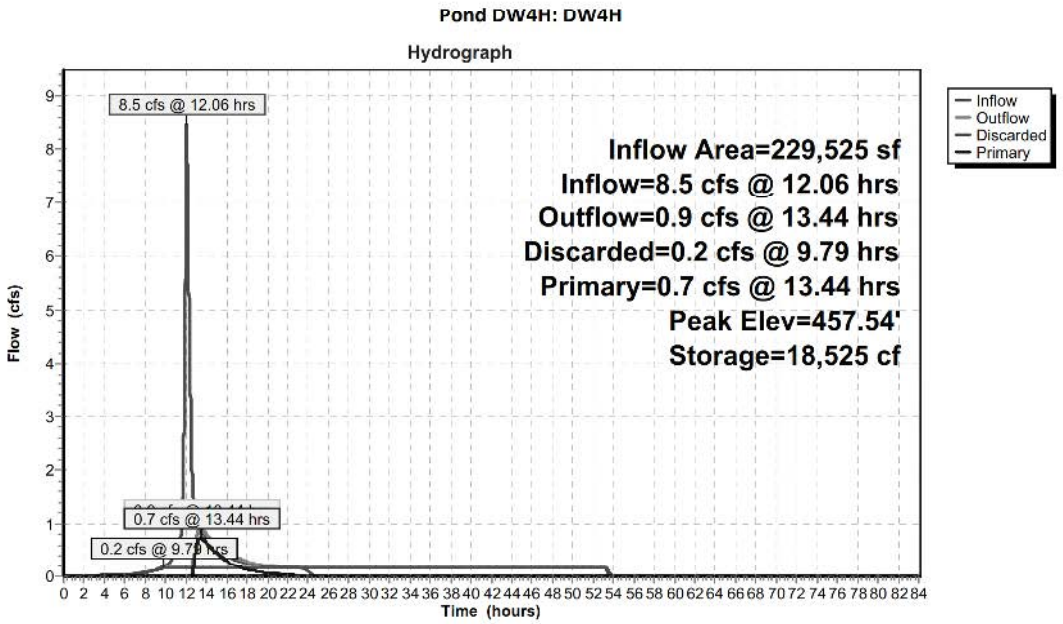

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Outflow = 0.1 cfs @ 10.98 hrs, Volume= 2,728 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.98 hrs, Volume= 2,728 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.90' @ 13.37 hrs Surf.Area= 1,152 sf Storage= 1,078 cf

Plug-Flow detention time= 155.2 min calculated for 2,728 cf (100% of inflow)
Center-of-Mass det. time= 155.2 min (909.2 - 754.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 10.98 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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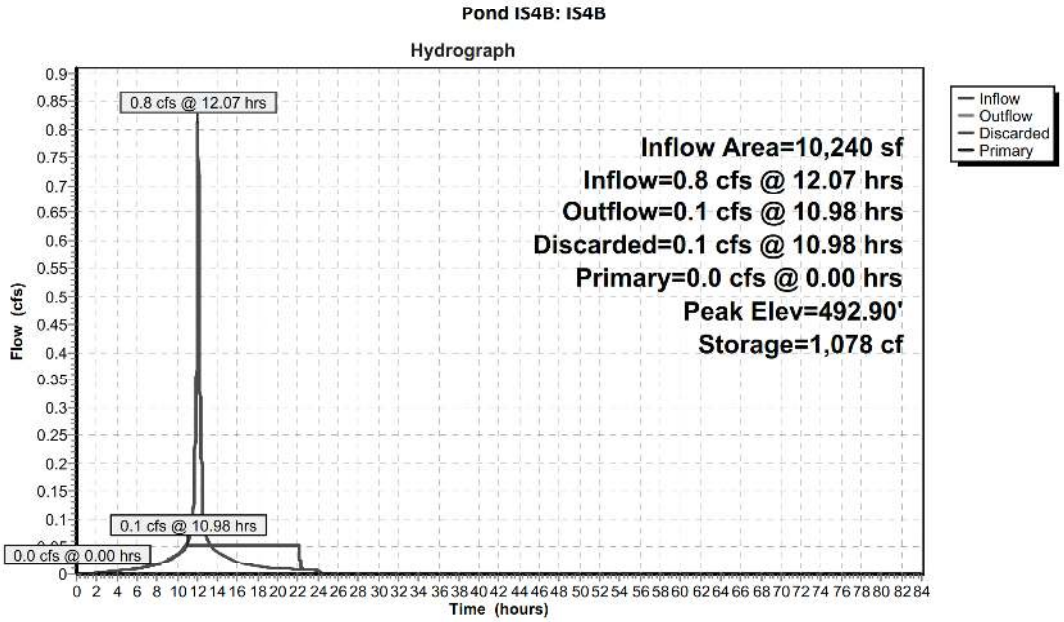

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 0.39" for 2 YR event
Inflow = 0.2 cfs @ 12.23 hrs, Volume= 1,212 cf
Outflow = 0.0 cfs @ 23.64 hrs, Volume= 35 cf, Atten= 96%, Lag= 685.0 min
Primary = 0.0 cfs @ 23.64 hrs, Volume= 35 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.00' @ 23.64 hrs Surf.Area= 1,597 sf Storage= 1,181 cf

Plug-Flow detention time= 701.2 min calculated for 35 cf (3% of inflow)
Center-of-Mass det. time= 512.9 min (1,425.4 - 912.5)

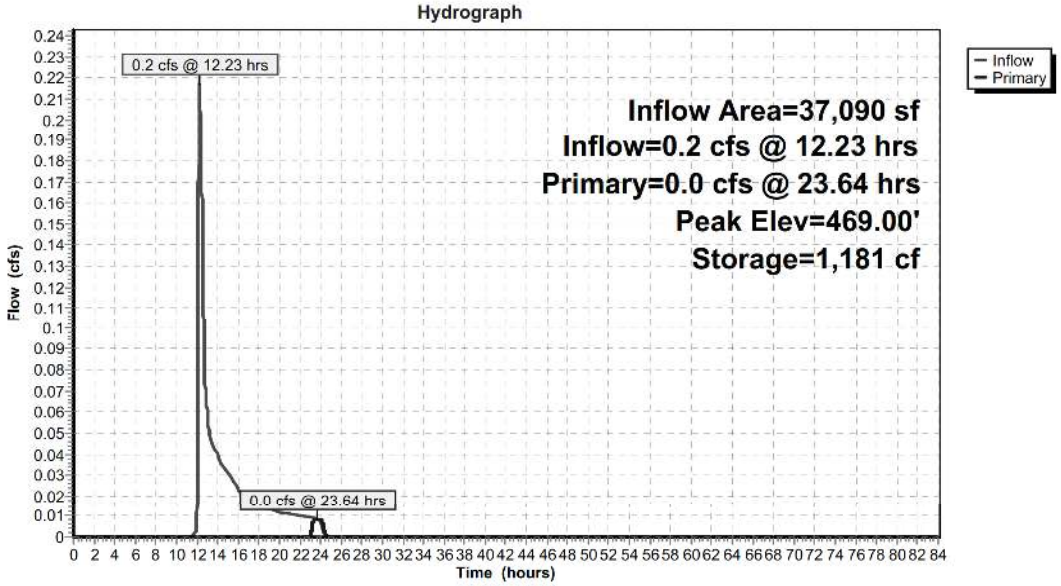
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 23.64 hrs HW=469.00' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 3.6 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.15 fps)

Pond POND 4A: POND 4A



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Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 0.45" for 2 YR event
Inflow = 0.8 cfs @ 13.42 hrs, Volume= 10,990 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 424.99' @ 24.74 hrs Surf.Area= 11,852 sf Storage= 10,989 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=424.00' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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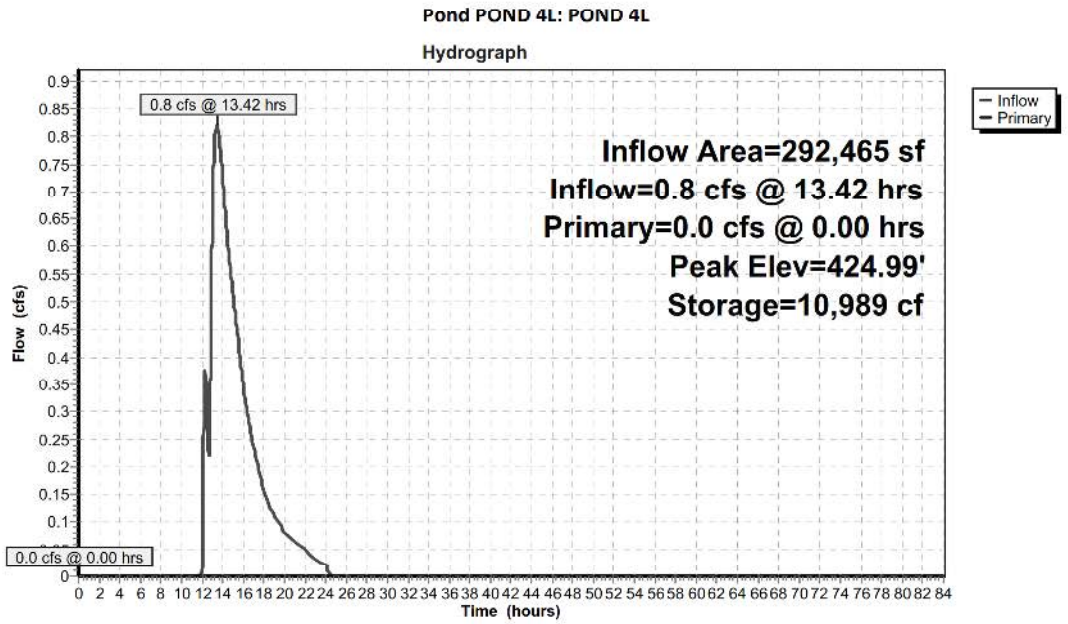

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Outflow = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.07 hrs, Volume= 2,728 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

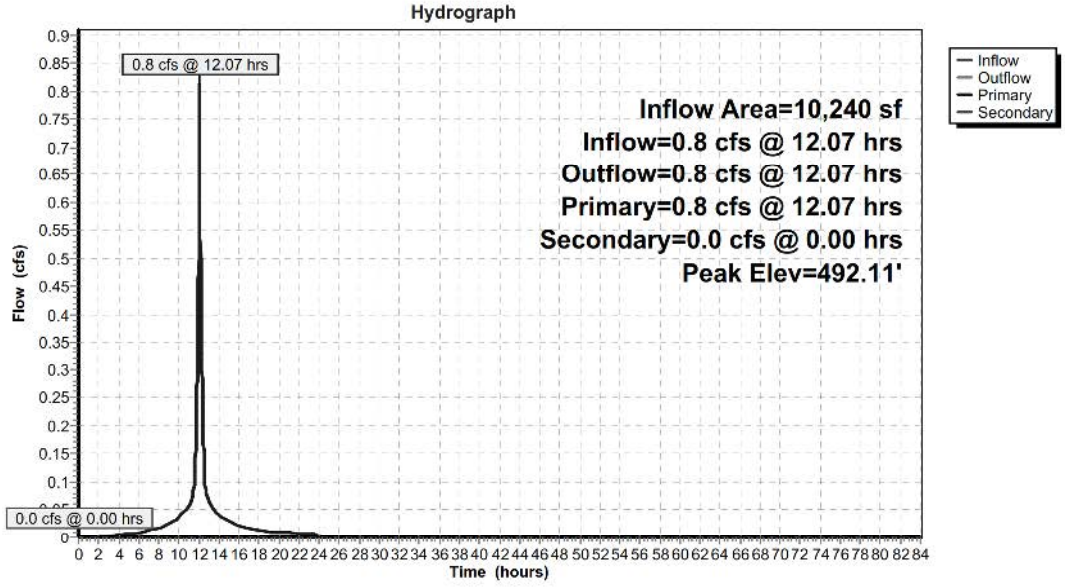
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.11' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.8 cfs @ 12.07 hrs HW=492.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.8 cfs @ 2.00 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 3.0 cfs @ 12.07 hrs, Volume= 10,648 cf
Outflow = 3.0 cfs @ 12.07 hrs, Volume= 10,648 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.0 cfs @ 12.07 hrs, Volume= 10,648 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

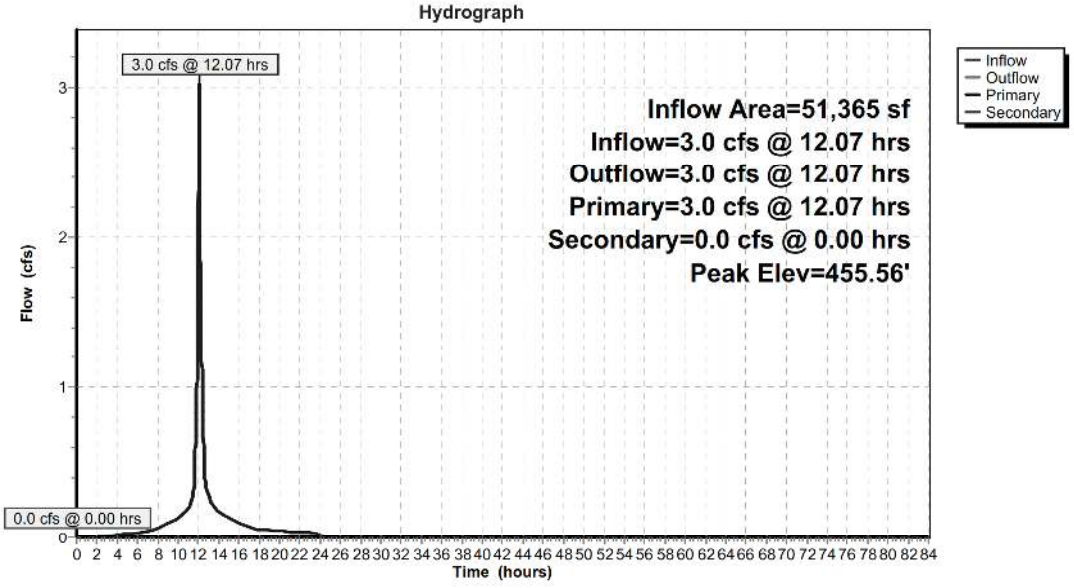
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 455.56' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.0 cfs @ 12.07 hrs HW=455.56' (Free Discharge)
↳**1=Culvert** (Barrel Controls 3.0 cfs @ 3.85 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 1.83" for 2 YR event
Inflow = 8.5 cfs @ 12.06 hrs, Volume= 34,915 cf
Outflow = 8.5 cfs @ 12.06 hrs, Volume= 34,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.5 cfs @ 12.06 hrs, Volume= 34,915 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

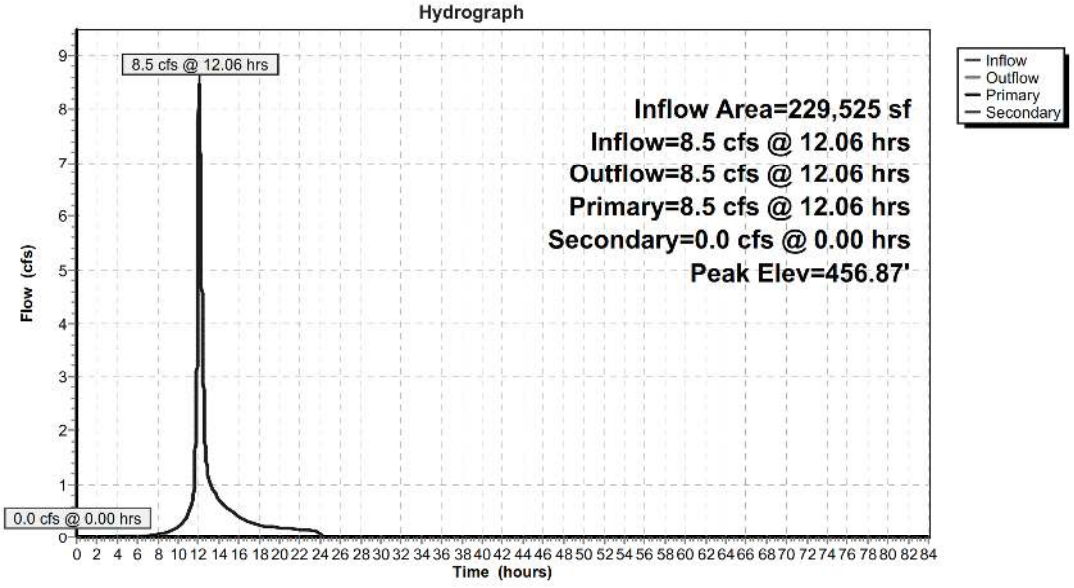
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 456.87' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.5 cfs @ 12.06 hrs HW=456.87' (Free Discharge)
↳**1=Culvert** (Barrel Controls 8.5 cfs @ 6.89 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4H: SPLIT4H



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 2 YR Rainfall=3.43"*

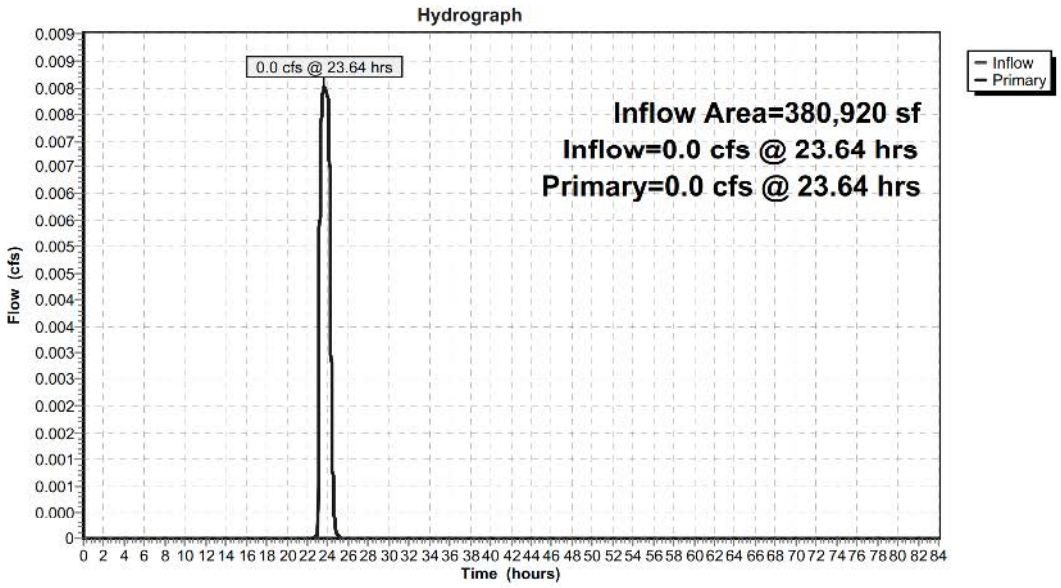
Prepared by Alfonzetti Engineering, P.C.

Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.0 cfs @ 23.64 hrs, Volume= 35 cf
Primary = 0.0 cfs @ 23.64 hrs, Volume= 35 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*

Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=275' Tc=12.7 min CN=61 Runoff=0.5 cfs 2,181 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=1.0 cfs 3,477 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=1.8 cfs 6,078 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=1.34"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=0.4 cfs 1,705 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=2.06"
Flow Length=849' Tc=10.9 min CN=77 Runoff=6.7 cfs 24,458 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=2.0 cfs 6,954 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=0.5 cfs 1,738 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=3.12"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=6.0 cfs 15,905 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=0.86"
Flow Length=264' Tc=13.0 min CN=59 Runoff=0.9 cfs 4,532 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=1.8 cfs 6,180 cf

Pond DW4F: DW4F Peak Elev=461.19' Storage=5,492 cf Inflow=3.9 cfs 13,962 cf
Discarded=0.3 cfs 13,962 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 13,962 cf

Pond DW4H: DW4H Peak Elev=458.27' Storage=20,864 cf Inflow=10.4 cfs 48,343 cf
Discarded=0.2 cfs 27,131 cf Primary=3.8 cfs 21,212 cf Outflow=4.0 cfs 48,343 cf

Pond IS4B: IS4B Peak Elev=493.38' Storage=1,512 cf Inflow=1.0 cfs 3,477 cf
Discarded=0.1 cfs 3,477 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 3,477 cf

Pond POND 4A: POND 4A Peak Elev=469.02' Storage=1,207 cf Inflow=0.5 cfs 2,181 cf
Outflow=0.1 cfs 1,005 cf

Pond POND 4L: POND 4L Peak Elev=426.08' Storage=24,766 cf Inflow=4.4 cfs 26,456 cf
Outflow=0.1 cfs 2,715 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.18' Inflow=1.0 cfs 3,477 cf
Primary=1.0 cfs 3,477 cf Secondary=0.0 cfs 0 cf Outflow=1.0 cfs 3,477 cf

Pond SPLIT4F: SPLIT4F Peak Elev=455.95' Inflow=3.9 cfs 13,962 cf
Primary=3.9 cfs 13,962 cf Secondary=0.0 cfs 0 cf Outflow=3.9 cfs 13,962 cf

Pond SPLIT4H: SPLIT4H Peak Elev=457.71' Inflow=11.8 cfs 49,055 cf
Primary=10.4 cfs 48,343 cf Secondary=1.4 cfs 712 cf Outflow=11.8 cfs 49,055 cf

Link TRDP4: TRANSFERDP4 Inflow=0.1 cfs 3,720 cf
Primary=0.1 cfs 3,720 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 73,207 cf Average Runoff Depth = 2.31"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

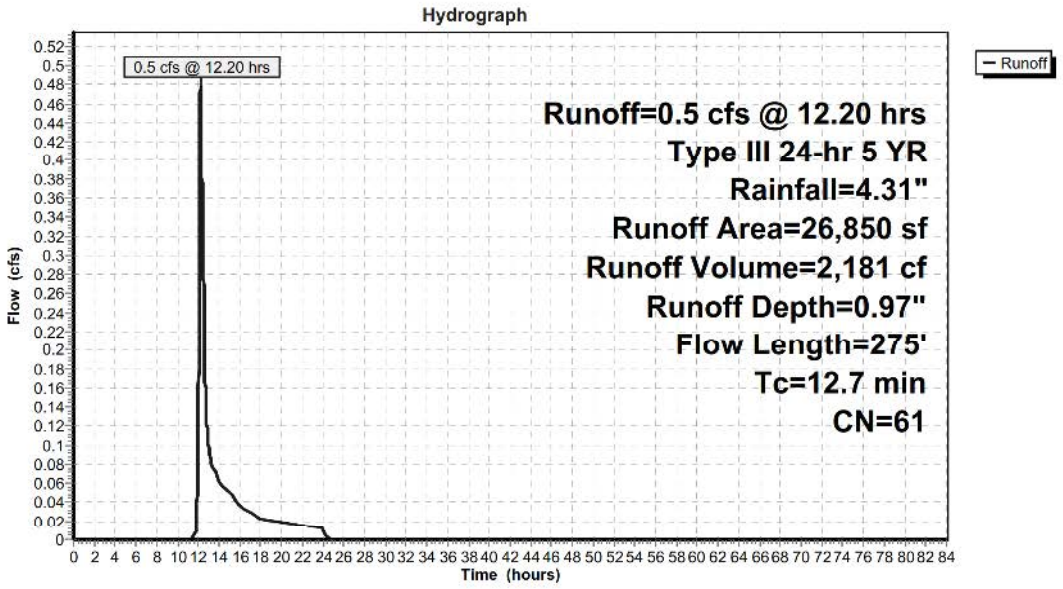
Runoff = 0.5 cfs @ 12.20 hrs, Volume= 2,181 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 4B: PRWS4B

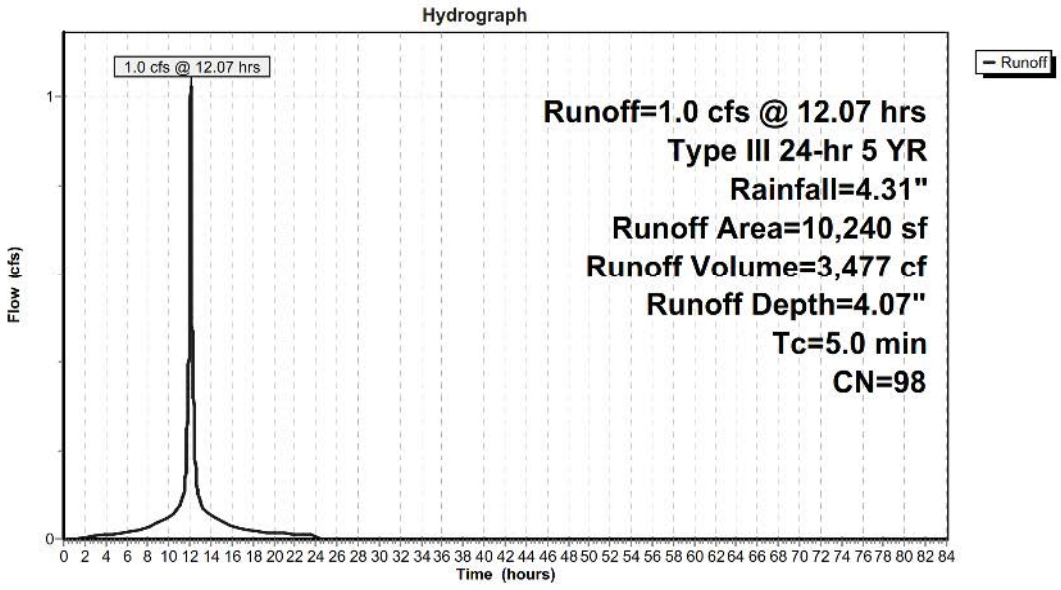
Runoff = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 4F: PRWS4F

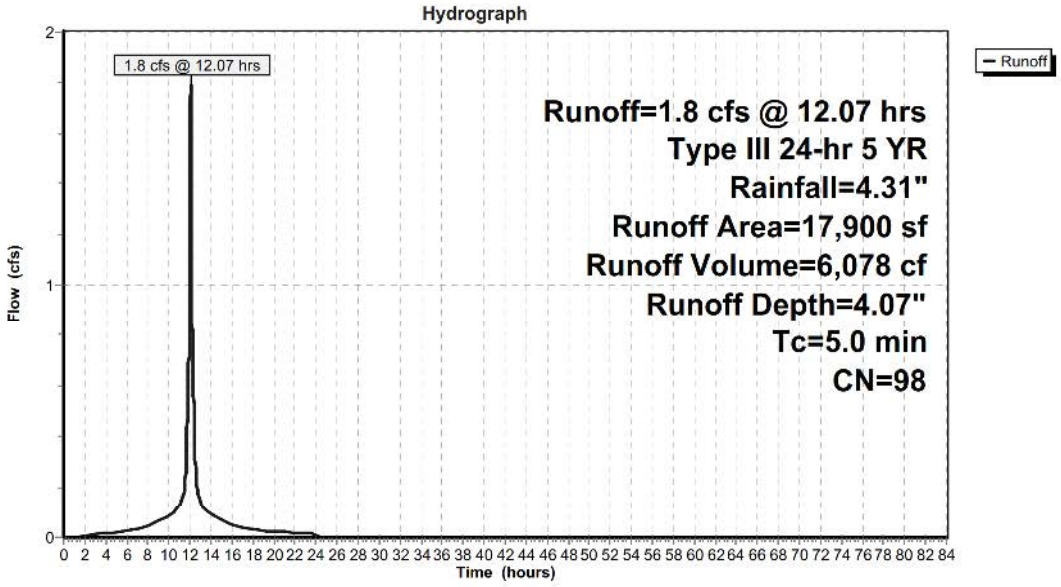
Runoff = 1.8 cfs @ 12.07 hrs, Volume= 6,078 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4G: PRWS4G

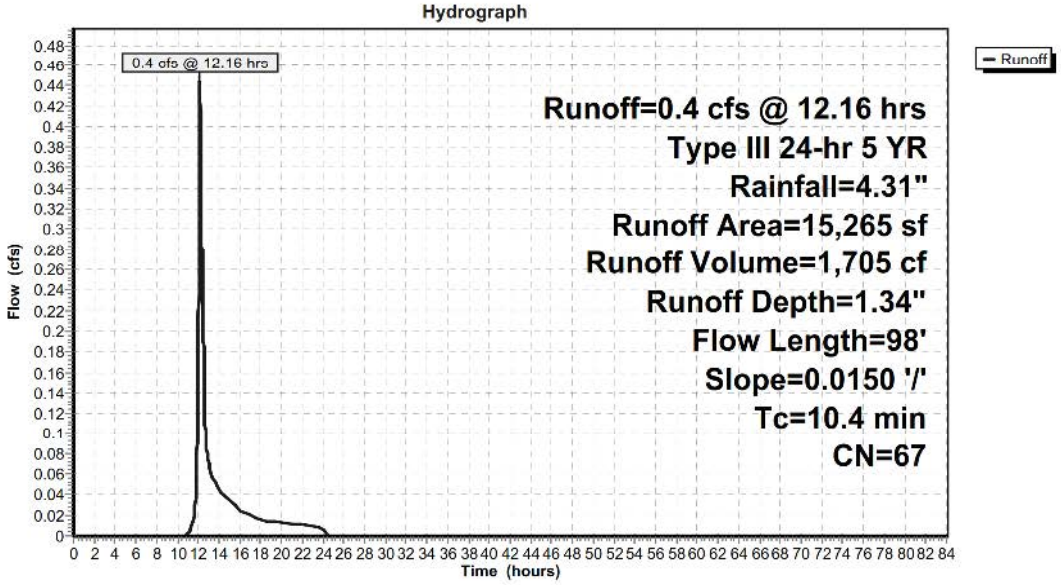
Runoff = 0.4 cfs @ 12.16 hrs, Volume= 1,705 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

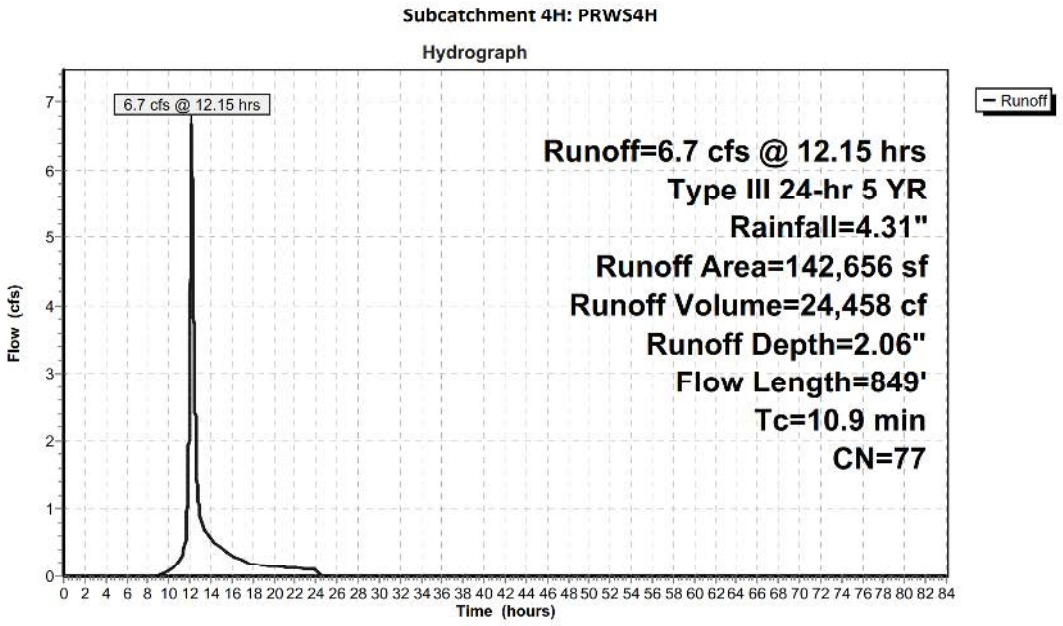
Summary for Subcatchment 4H: PRWS4H

Runoff = 6.7 cfs @ 12.15 hrs, Volume= 24,458 cf, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			


Subcatchment 4H: PRWS4H
Hydrograph
6.7 cfs @ 12.15 hrs
Runoff
Runoff=6.7 cfs @ 12.15 hrs
Type III 24-hr 5 YR
Rainfall=4.31"
Runoff Area=142,656 sf
Runoff Volume=24,458 cf
Runoff Depth=2.06"
Flow Length=849'
Tc=10.9 min
CN=77
Flow (cfs)
Time (hours)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4I: PRWS4I

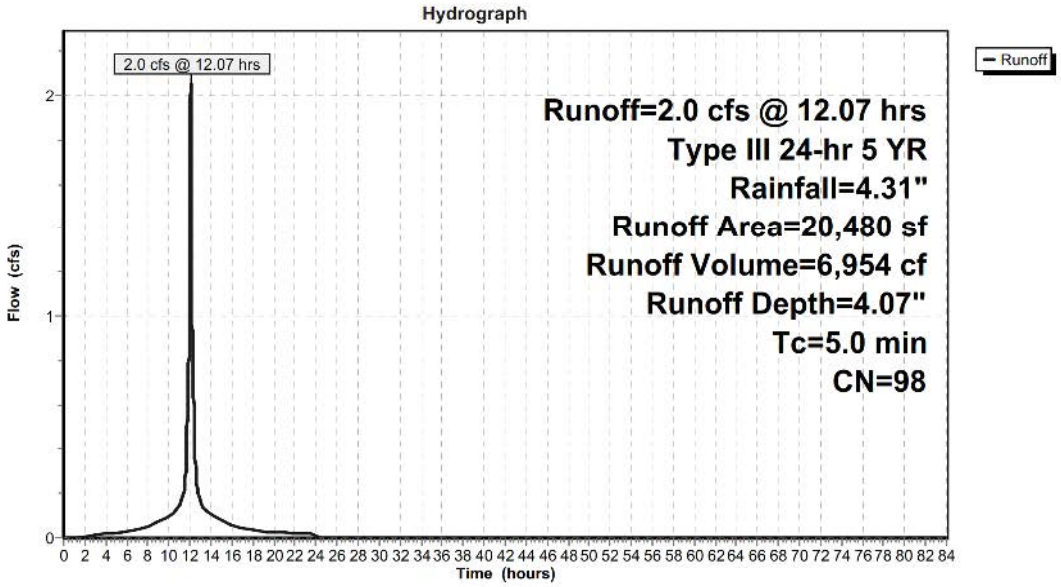
Runoff = 2.0 cfs @ 12.07 hrs, Volume= 6,954 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



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Summary for Subcatchment 4J: PRWS4J

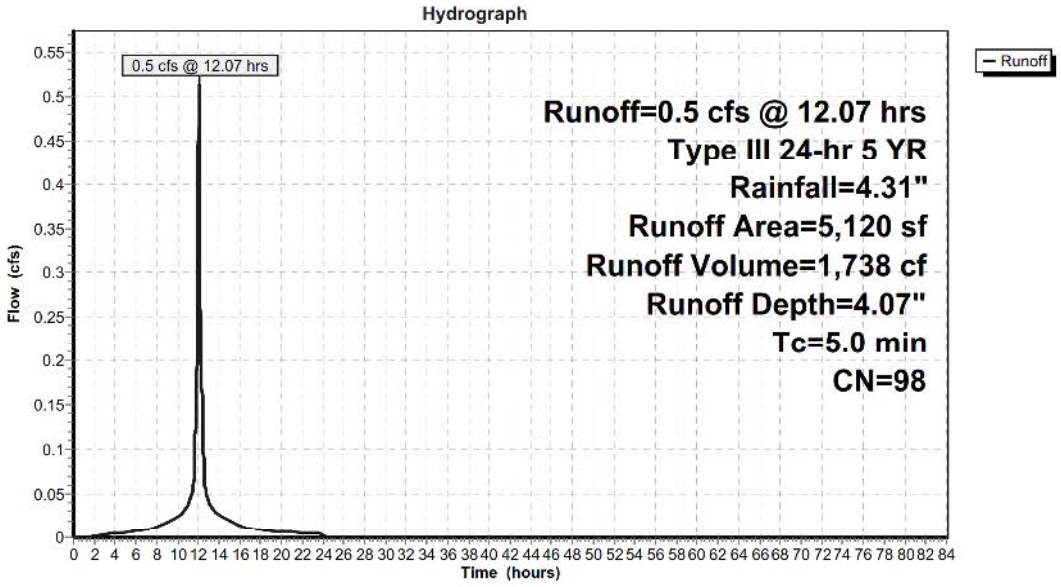
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 1,738 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4J: PRWS4J



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Summary for Subcatchment 4K: PRWS4K

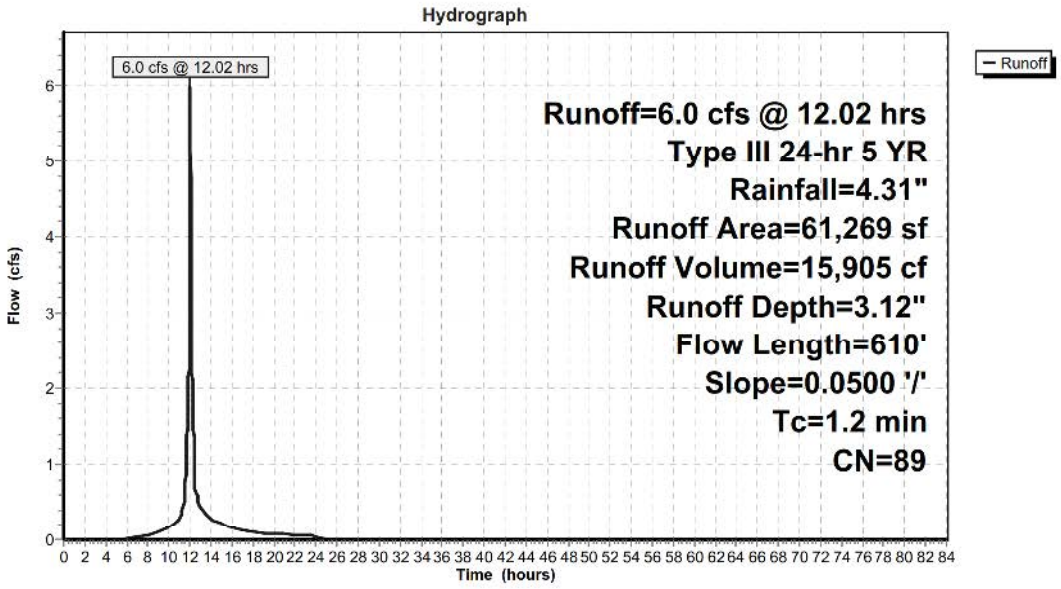
Runoff = 6.0 cfs @ 12.02 hrs, Volume= 15,905 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4L: PRWS4L

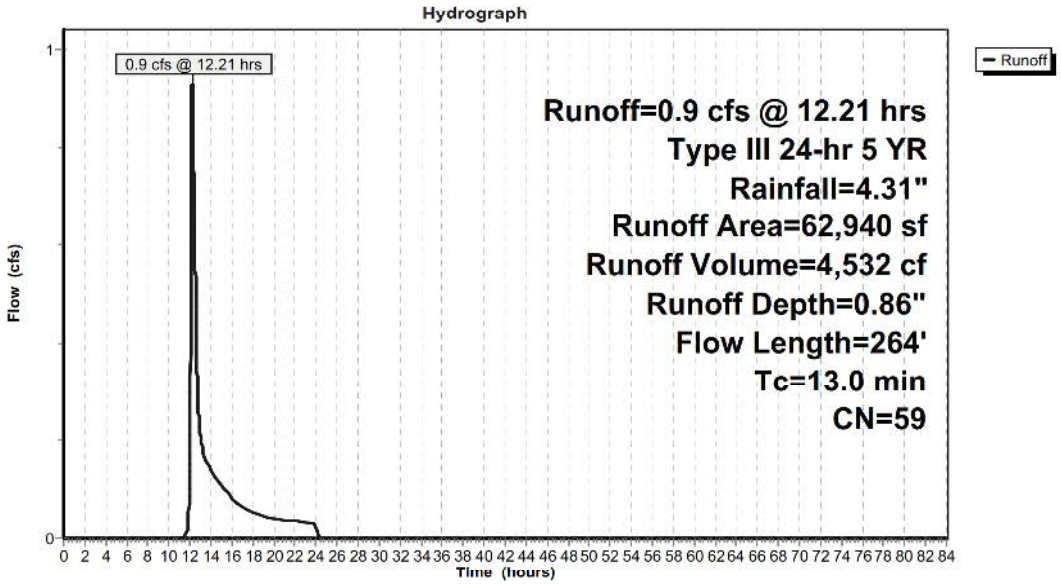
Runoff = 0.9 cfs @ 12.21 hrs, Volume= 4,532 cf, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 4M: PRWS4M

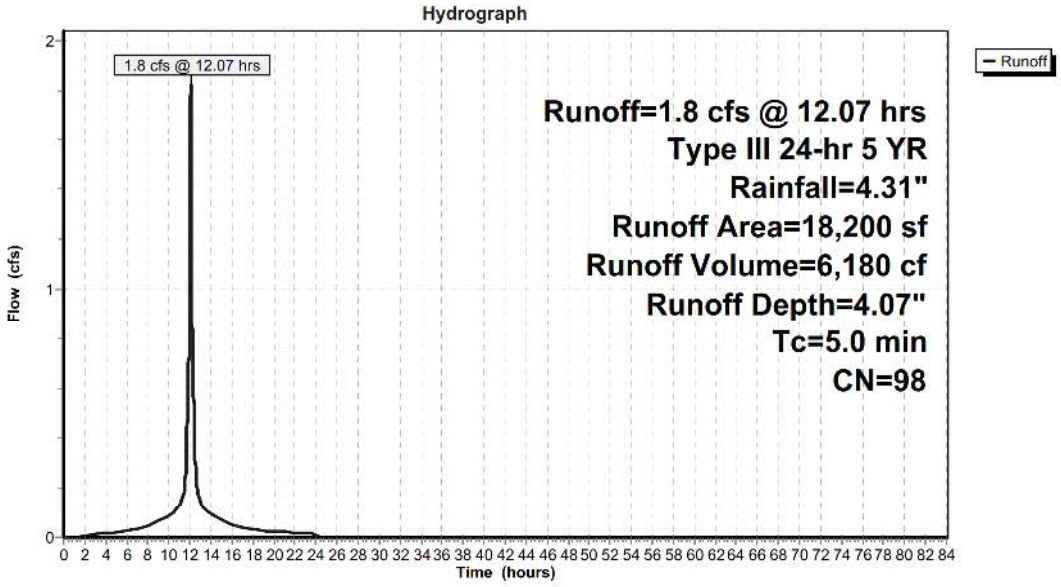
Runoff = 1.8 cfs @ 12.07 hrs, Volume= 6,180 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 3.26" for 5 YR event
Inflow = 3.9 cfs @ 12.07 hrs, Volume= 13,962 cf
Outflow = 0.3 cfs @ 11.15 hrs, Volume= 13,962 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.3 cfs @ 11.15 hrs, Volume= 13,962 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 461.19' @ 13.62 hrs Surf.Area= 2,304 sf Storage= 5,492 cf

Plug-Flow detention time= 163.3 min calculated for 13,962 cf (100% of inflow)
Center-of-Mass det. time= 163.3 min (927.5 - 764.2)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 11.15 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

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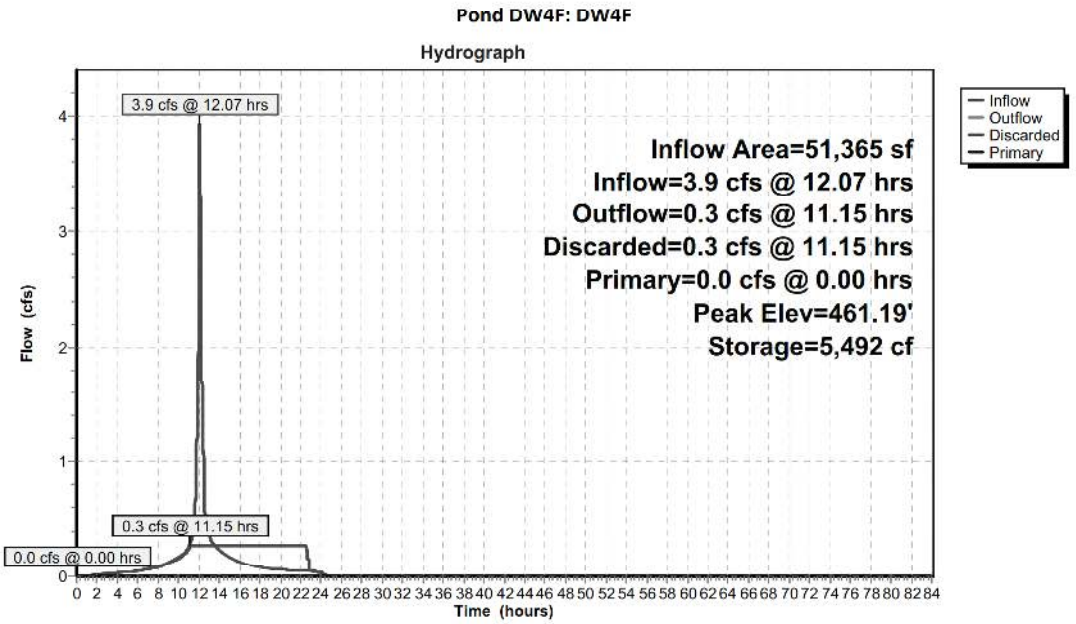

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Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 2.53" for 5 YR event
Inflow = 10.4 cfs @ 12.06 hrs, Volume= 48,343 cf
Outflow = 4.0 cfs @ 12.49 hrs, Volume= 48,343 cf, Atten= 61%, Lag= 25.5 min
Discarded = 0.2 cfs @ 8.98 hrs, Volume= 27,131 cf
Primary = 3.8 cfs @ 12.49 hrs, Volume= 21,212 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.27' @ 12.49 hrs Surf.Area= 4,608 sf Storage= 20,864 cf

Plug-Flow detention time= 595.3 min calculated for 48,337 cf (100% of inflow)
Center-of-Mass det. time= 595.4 min (1,406.8 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 8.98 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=3.8 cfs @ 12.49 hrs HW=458.27' (Free Discharge)
↳**2=Culvert** (Barrel Controls 3.8 cfs @ 3.23 fps)

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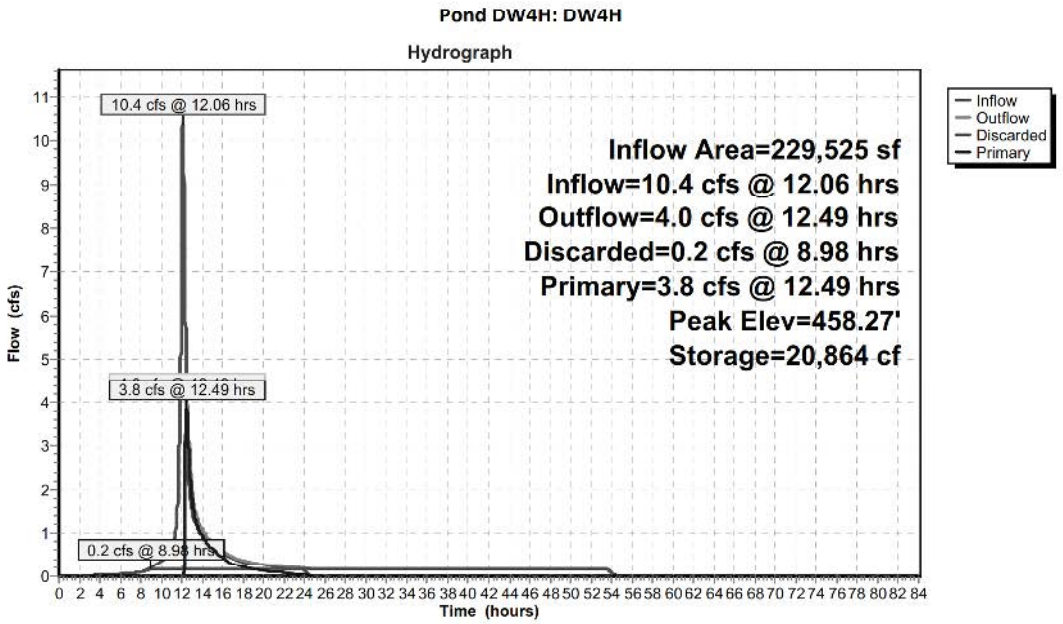
Type III 24-hr 5 YR Rainfall=4.31"



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Outflow = 0.1 cfs @ 10.39 hrs, Volume= 3,477 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.39 hrs, Volume= 3,477 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.38' @ 13.94 hrs Surf.Area= 1,152 sf Storage= 1,512 cf

Plug-Flow detention time= 229.1 min calculated for 3,476 cf (100% of inflow)
Center-of-Mass det. time= 229.1 min (978.8 - 749.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 10.39 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4
Type III 24-hr 5 YR Rainfall=4.31"
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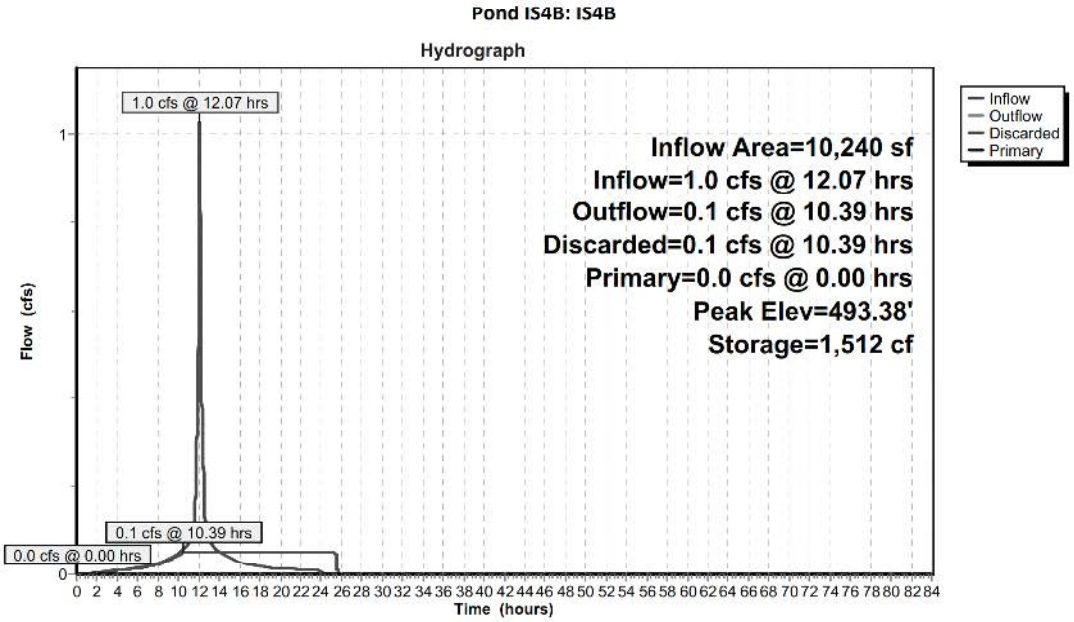


EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 0.71" for 5 YR event
Inflow = 0.5 cfs @ 12.20 hrs, Volume= 2,181 cf
Outflow = 0.1 cfs @ 14.21 hrs, Volume= 1,005 cf, Atten= 88%, Lag= 120.8 min
Primary = 0.1 cfs @ 14.21 hrs, Volume= 1,005 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.02' @ 14.21 hrs Surf.Area= 1,610 sf Storage= 1,207 cf

Plug-Flow detention time= 314.6 min calculated for 1,005 cf (46% of inflow)
Center-of-Mass det. time= 168.7 min (1,058.8 - 890.1)

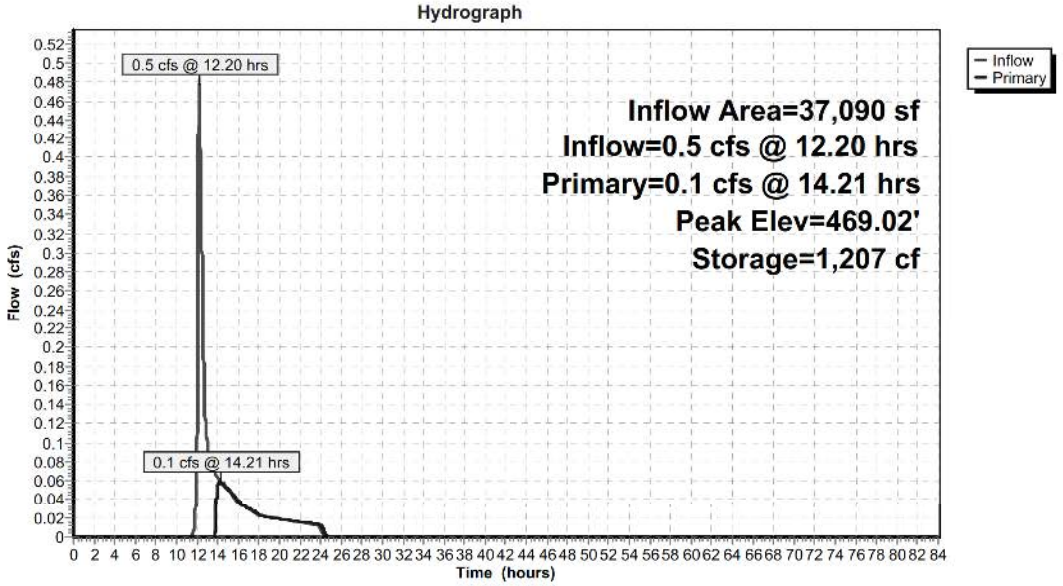
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.1 cfs @ 14.21 hrs HW=469.02' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 3.7 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.1 cfs @ 0.38 fps)

Pond POND 4A: POND 4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 1.09" for 5 YR event
Inflow = 4.4 cfs @ 12.47 hrs, Volume= 26,456 cf
Outflow = 0.1 cfs @ 21.72 hrs, Volume= 2,715 cf, Atten= 97%, Lag= 554.5 min
Primary = 0.1 cfs @ 21.72 hrs, Volume= 2,715 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 426.08' @ 21.72 hrs Surf.Area= 13,456 sf Storage= 24,766 cf

Plug-Flow detention time= 683.3 min calculated for 2,715 cf (10% of inflow)
Center-of-Mass det. time= 542.8 min (1,416.6 - 873.8)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.1 cfs @ 21.72 hrs HW=426.08' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 4.7 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.1 cfs @ 0.90 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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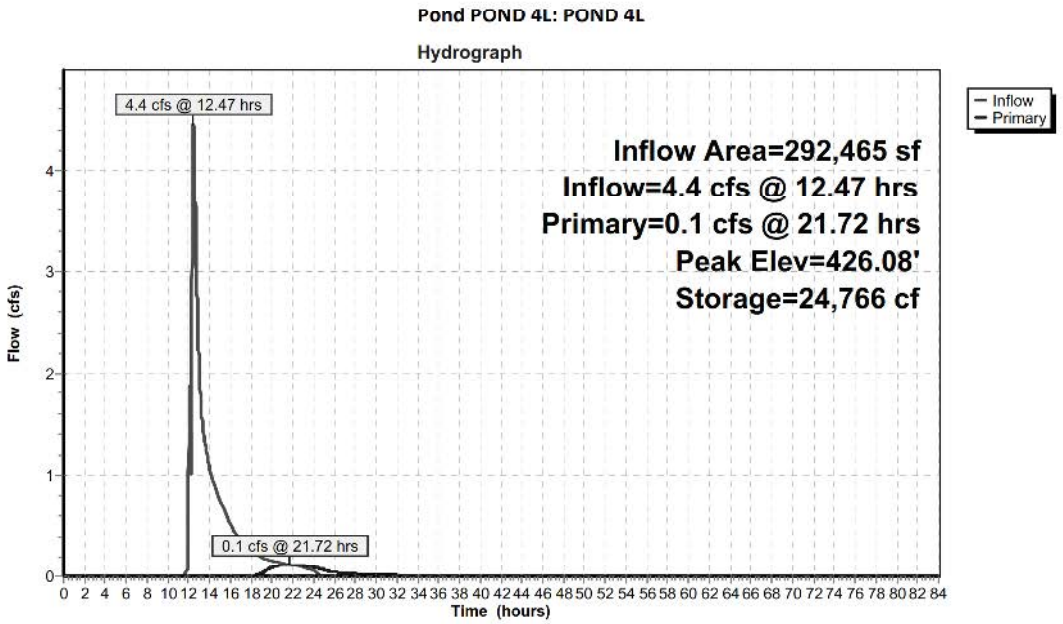

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Outflow = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.07 hrs, Volume= 3,477 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

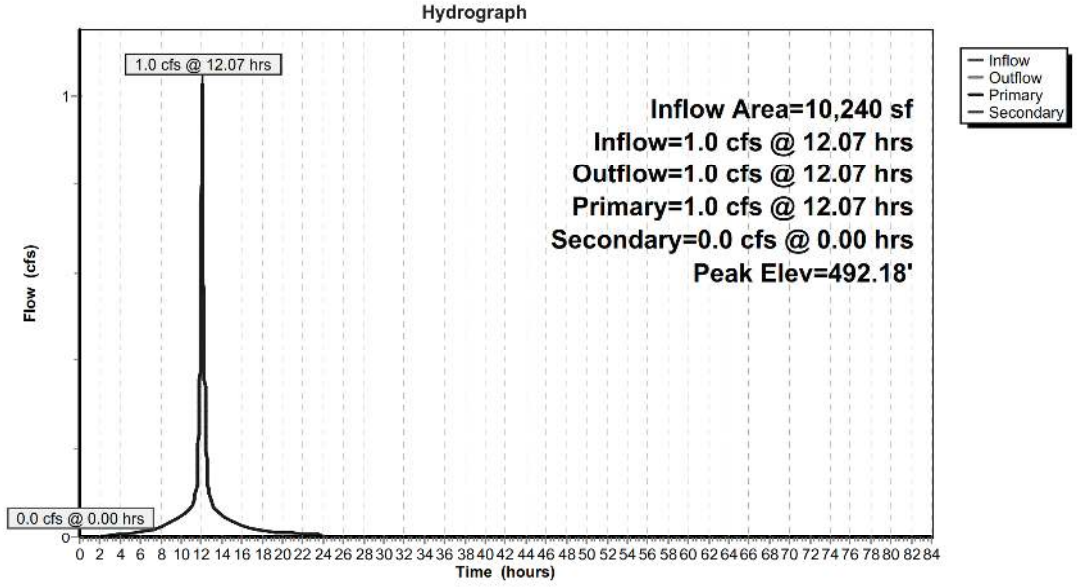
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.18' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.0 cfs @ 12.07 hrs HW=492.18' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.0 cfs @ 2.17 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 3.26" for 5 YR event
Inflow = 3.9 cfs @ 12.07 hrs, Volume= 13,962 cf
Outflow = 3.9 cfs @ 12.07 hrs, Volume= 13,962 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.9 cfs @ 12.07 hrs, Volume= 13,962 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

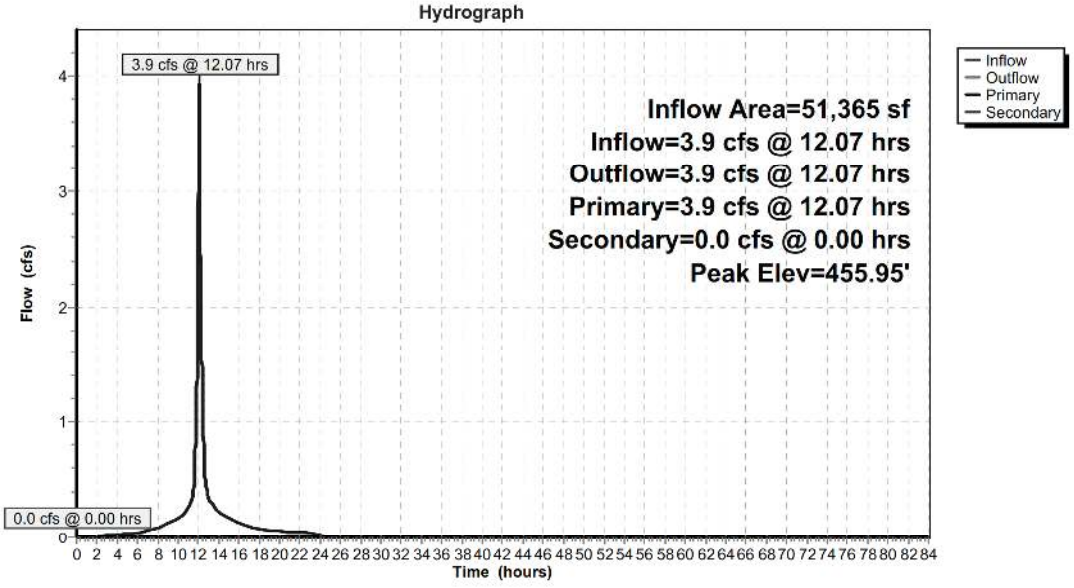
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 455.95' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.9 cfs @ 12.07 hrs HW=455.94' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.9 cfs @ 4.99 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 2.56" for 5 YR event
Inflow = 11.8 cfs @ 12.06 hrs, Volume= 49,055 cf
Outflow = 11.8 cfs @ 12.06 hrs, Volume= 49,055 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.4 cfs @ 12.06 hrs, Volume= 48,343 cf
Secondary = 1.4 cfs @ 12.06 hrs, Volume= 712 cf

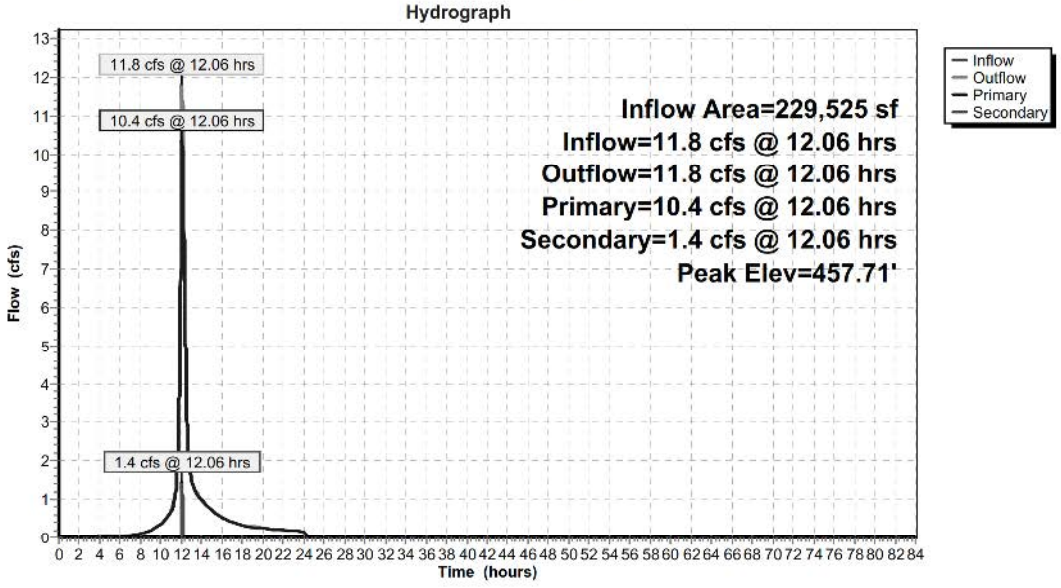
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 457.71' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=10.4 cfs @ 12.06 hrs HW=457.71' (Free Discharge)
↳**1=Culvert** (Inlet Controls 10.4 cfs @ 8.45 fps)

Secondary OutFlow Max=1.4 cfs @ 12.06 hrs HW=457.71' (Free Discharge)
↳**2=Culvert** (Barrel Controls 1.4 cfs @ 2.15 fps)

Pond SPLIT4H: SPLIT4H



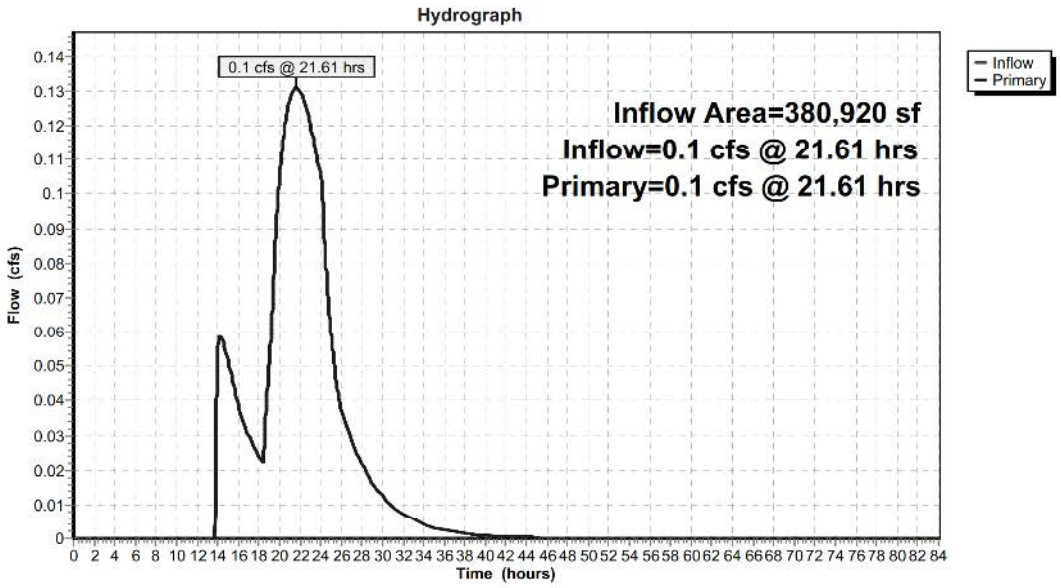
EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.12" for 5 YR event
Inflow = 0.1 cfs @ 21.61 hrs, Volume= 3,720 cf
Primary = 0.1 cfs @ 21.61 hrs, Volume= 3,720 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=275' Tc=12.7 min CN=61 Runoff=0.8 cfs 3,240 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=1.2 cfs 4,175 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=2.1 cfs 7,299 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=1.89"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=0.6 cfs 2,410 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=2.73"
Flow Length=849' Tc=10.9 min CN=77 Runoff=8.9 cfs 32,479 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=2.4 cfs 8,351 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=0.6 cfs 2,088 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=3.90"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=7.4 cfs 19,895 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=1.31"
Flow Length=264' Tc=13.0 min CN=59 Runoff=1.6 cfs 6,864 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=2.2 cfs 7,421 cf

Pond DW4F: DW4F Peak Elev=462.36' Storage=7,373 cf Inflow=4.8 cfs 17,129 cf
Discarded=0.3 cfs 17,129 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 17,129 cf

Pond DW4H: DW4H Peak Elev=458.85' Storage=22,720 cf Inflow=11.1 cfs 60,047 cf
Discarded=0.2 cfs 27,664 cf Primary=6.7 cfs 32,383 cf Outflow=6.8 cfs 60,047 cf

Pond IS4B: IS4B Peak Elev=493.65' Storage=1,740 cf Inflow=1.2 cfs 4,175 cf
Discarded=0.1 cfs 3,863 cf Primary=0.1 cfs 312 cf Outflow=0.1 cfs 4,175 cf

Pond POND 4A: POND 4A Peak Elev=469.06' Storage=1,271 cf Inflow=0.8 cfs 3,551 cf
Outflow=0.3 cfs 2,375 cf

Pond POND 4L: POND 4L Peak Elev=426.42' Storage=29,514 cf Inflow=7.8 cfs 42,012 cf
Outflow=0.6 cfs 18,271 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.25' Inflow=1.2 cfs 4,175 cf
Primary=1.2 cfs 4,175 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 4,175 cf

Pond SPLIT4F: SPLIT4F Peak Elev=456.41' Inflow=4.8 cfs 17,129 cf
Primary=4.8 cfs 17,129 cf Secondary=0.0 cfs 0 cf Outflow=4.8 cfs 17,129 cf

Pond SPLIT4H: SPLIT4H Peak Elev=458.16' Inflow=15.0 cfs 62,812 cf
Primary=11.1 cfs 60,047 cf Secondary=3.9 cfs 2,765 cf Outflow=15.0 cfs 62,812 cf

Link TRDP4: TRANSFERDP4 Inflow=0.7 cfs 20,646 cf
Primary=0.7 cfs 20,646 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 94,220 cf Average Runoff Depth = 2.97"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

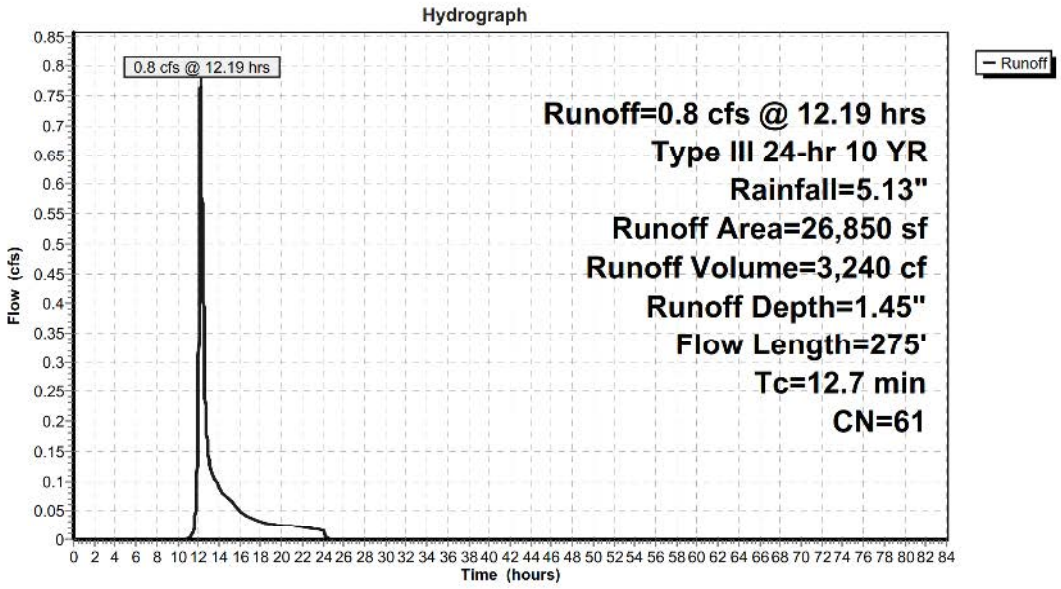
Runoff = 0.8 cfs @ 12.19 hrs, Volume= 3,240 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4B: PRWS4B

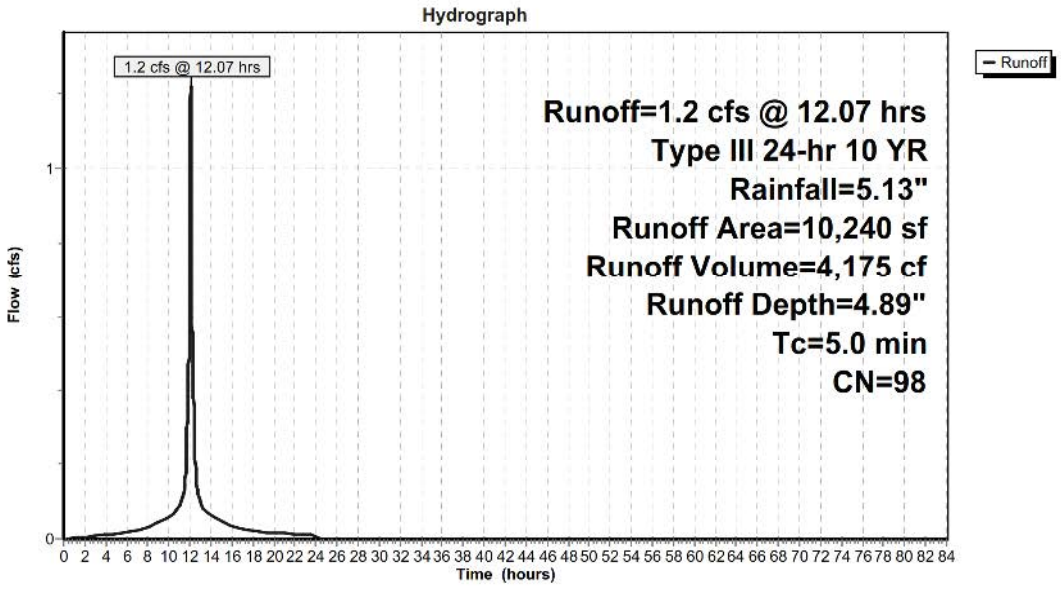
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4F: PRWS4F

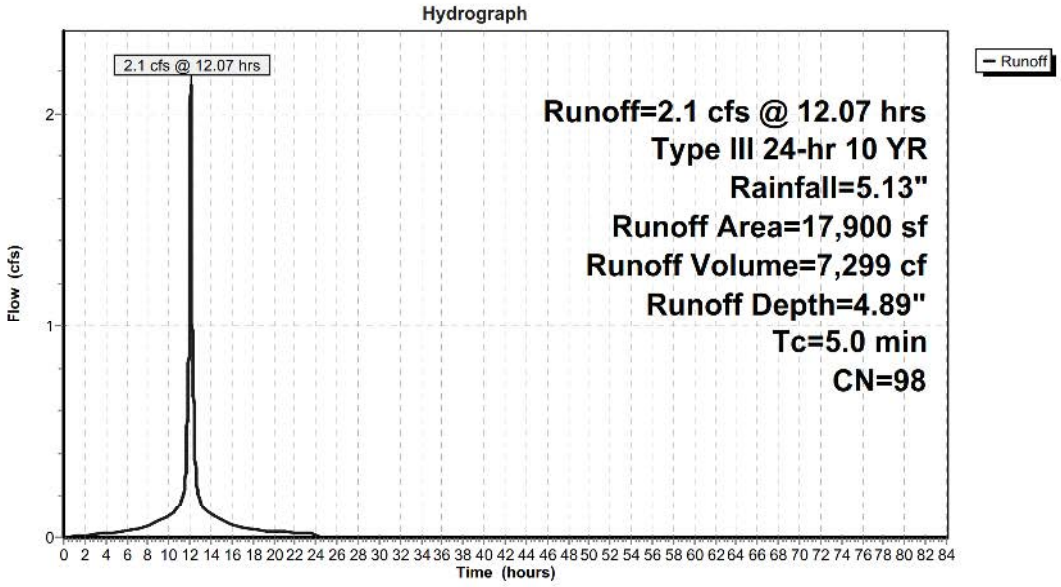
Runoff = 2.1 cfs @ 12.07 hrs, Volume= 7,299 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4G: PRWS4G

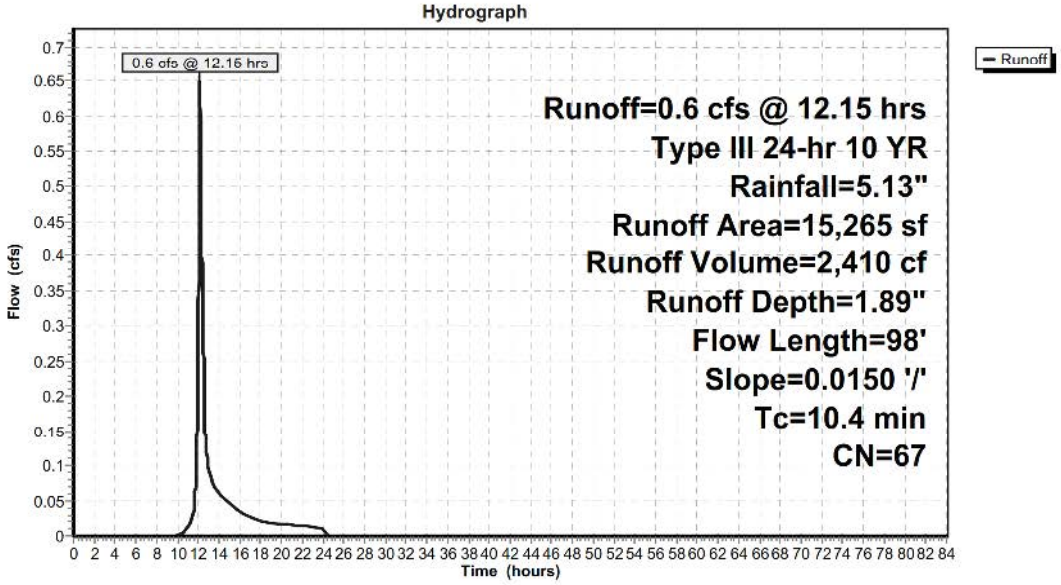
Runoff = 0.6 cfs @ 12.15 hrs, Volume= 2,410 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4H: PRWS4H

Runoff = 8.9 cfs @ 12.15 hrs, Volume= 32,479 cf, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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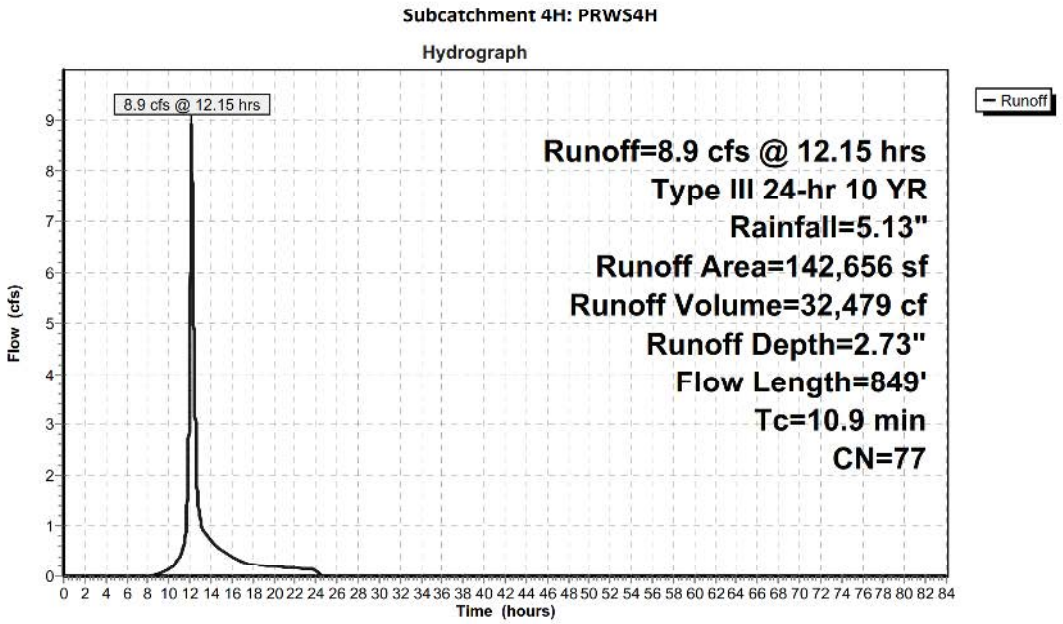

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4I: PRWS4I

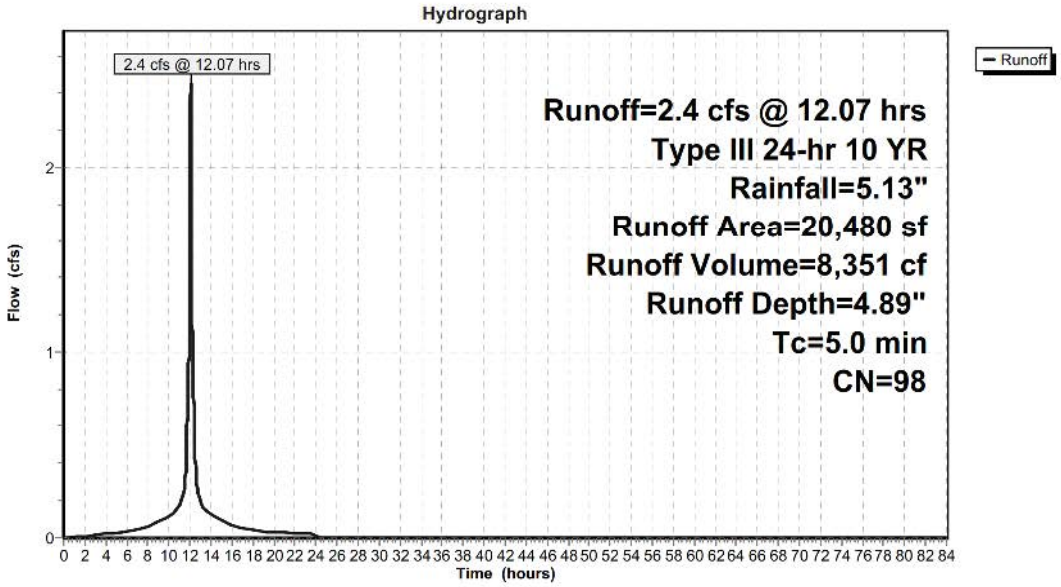
Runoff = 2.4 cfs @ 12.07 hrs, Volume= 8,351 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4J: PRWS4J

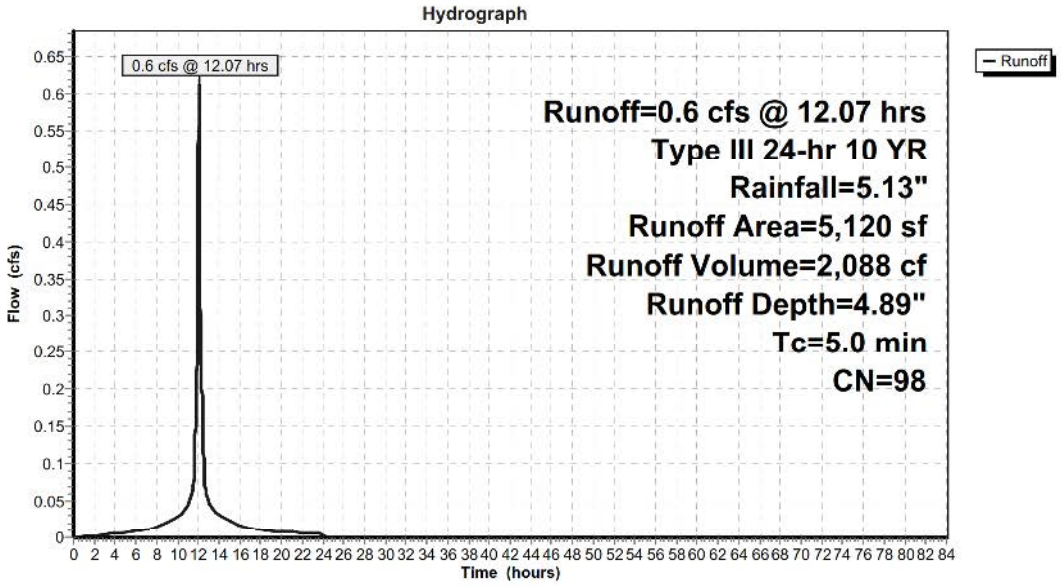
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 2,088 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 4K: PRWS4K

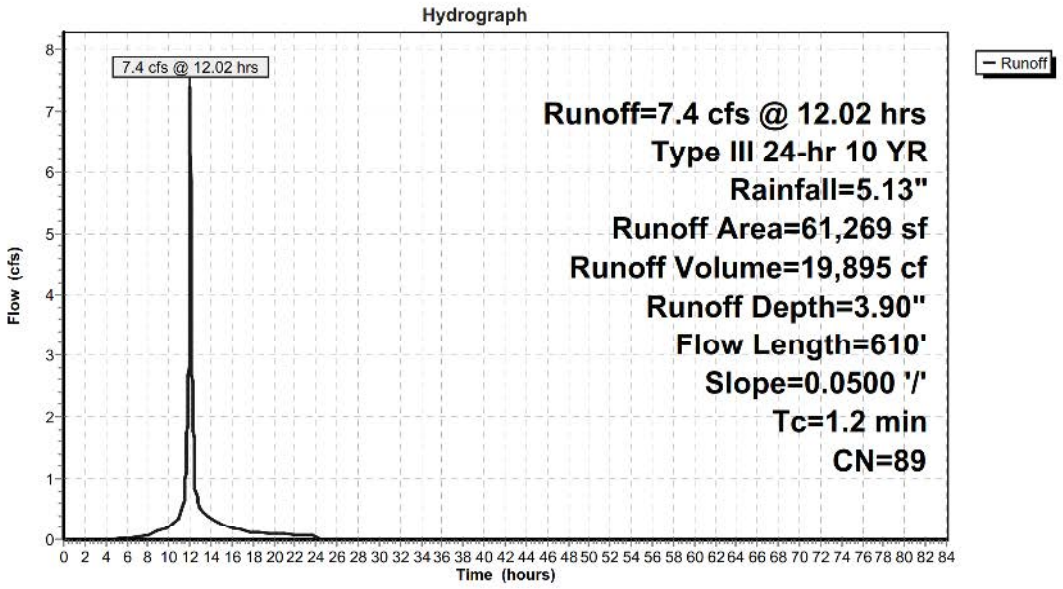
Runoff = 7.4 cfs @ 12.02 hrs, Volume= 19,895 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4L: PRWS4L

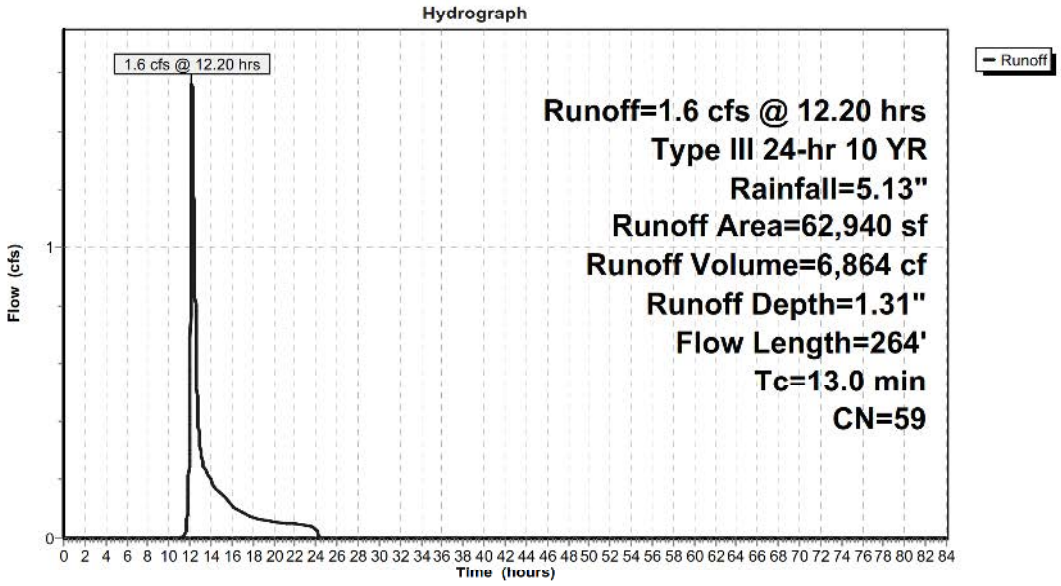
Runoff = 1.6 cfs @ 12.20 hrs, Volume= 6,864 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



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Summary for Subcatchment 4M: PRWS4M

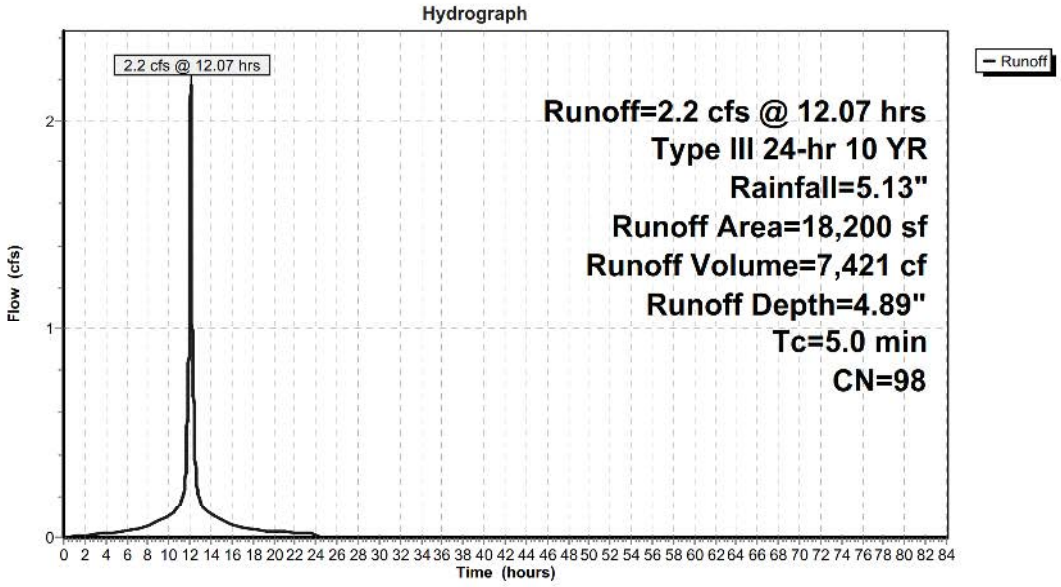
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 7,421 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 4.00" for 10 YR event
Inflow = 4.8 cfs @ 12.07 hrs, Volume= 17,129 cf
Outflow = 0.3 cfs @ 10.71 hrs, Volume= 17,129 cf, Atten= 94%, Lag= 0.0 min
Discarded = 0.3 cfs @ 10.71 hrs, Volume= 17,129 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 462.36' @ 14.10 hrs Surf.Area= 2,304 sf Storage= 7,373 cf

Plug-Flow detention time= 229.7 min calculated for 17,127 cf (100% of inflow)
Center-of-Mass det. time= 229.7 min (992.0 - 762.3)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 10.71 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=457.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

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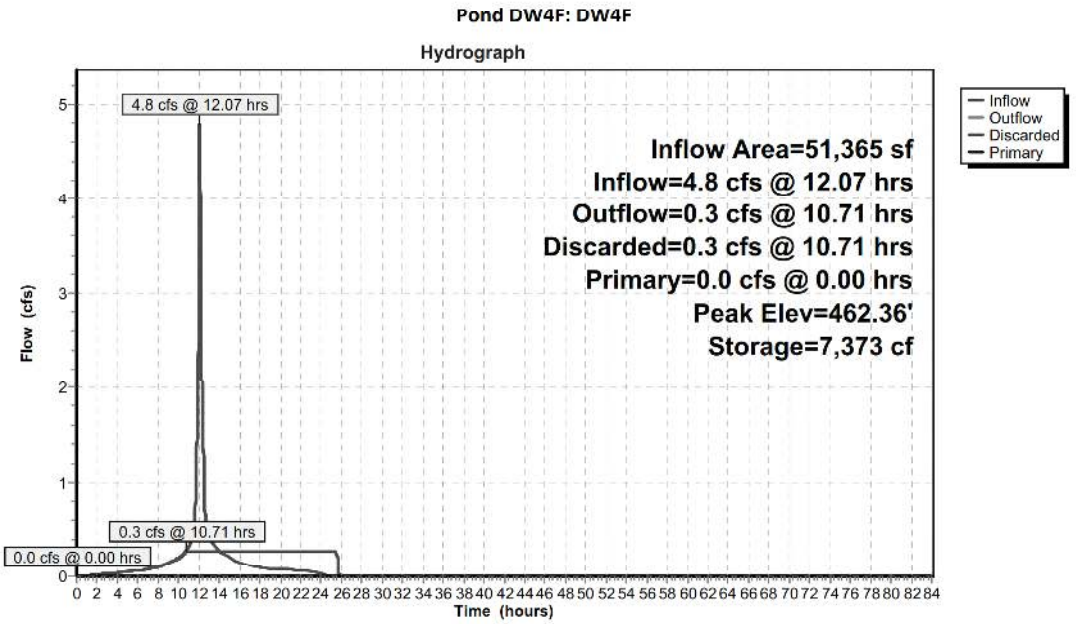

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 3.14" for 10 YR event
Inflow = 11.1 cfs @ 12.07 hrs, Volume= 60,047 cf
Outflow = 6.8 cfs @ 12.40 hrs, Volume= 60,047 cf, Atten= 38%, Lag= 19.9 min
Discarded = 0.2 cfs @ 8.40 hrs, Volume= 27,664 cf
Primary = 6.7 cfs @ 12.40 hrs, Volume= 32,383 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.85' @ 12.40 hrs Surf.Area= 4,608 sf Storage= 22,720 cf

Plug-Flow detention time= 490.4 min calculated for 60,040 cf (100% of inflow)
Center-of-Mass det. time= 490.5 min (1,298.9 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 8.40 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=6.7 cfs @ 12.40 hrs HW=458.85' (Free Discharge)
↳**2=Culvert** (Barrel Controls 6.7 cfs @ 3.92 fps)

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Type III 24-hr 10 YR Rainfall=5.13"
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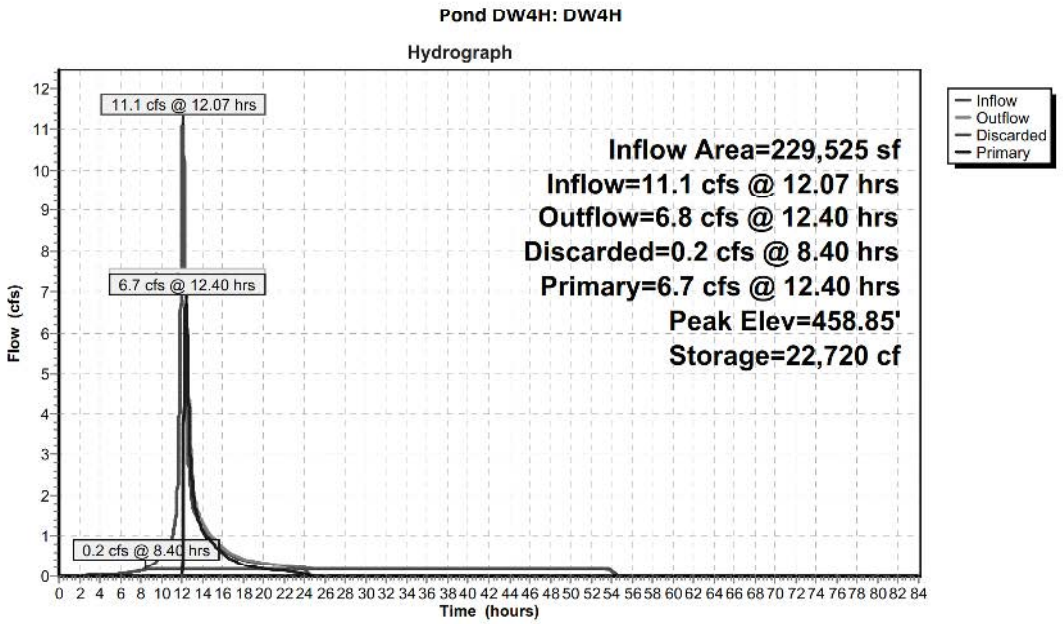

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Outflow = 0.1 cfs @ 12.71 hrs, Volume= 4,175 cf, Atten= 89%, Lag= 38.1 min
Discarded = 0.1 cfs @ 9.87 hrs, Volume= 3,863 cf
Primary = 0.1 cfs @ 12.71 hrs, Volume= 312 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.65' @ 12.71 hrs Surf.Area= 1,152 sf Storage= 1,740 cf

Plug-Flow detention time= 238.5 min calculated for 4,175 cf (100% of inflow)
Center-of-Mass det. time= 238.5 min (985.2 - 746.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 9.87 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.1 cfs @ 12.71 hrs HW=493.65' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 1.31 fps)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
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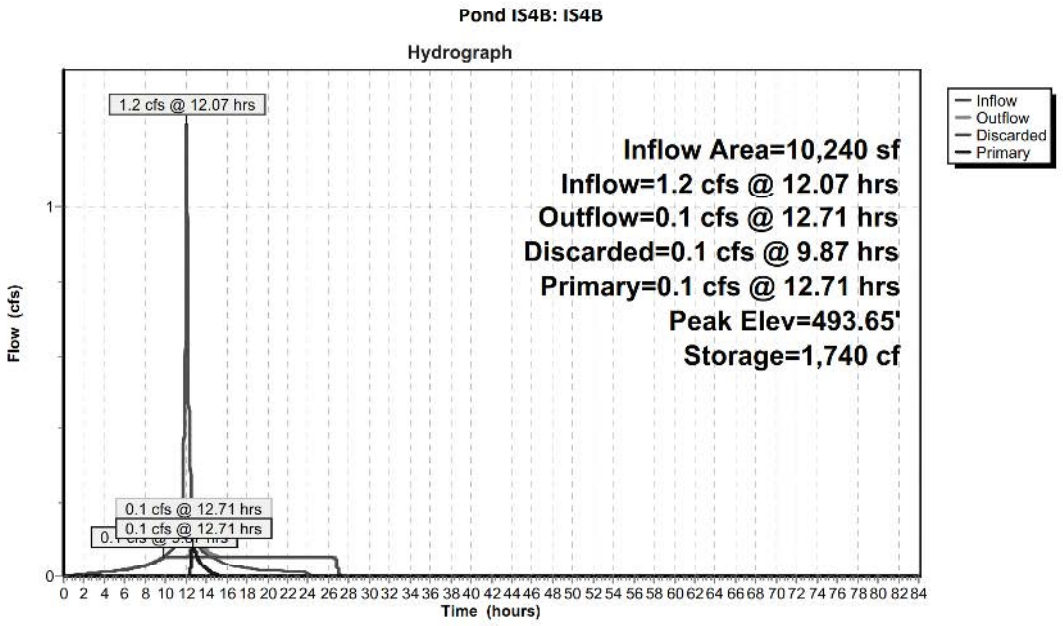

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 1.15" for 10 YR event
Inflow = 0.8 cfs @ 12.19 hrs, Volume= 3,551 cf
Outflow = 0.3 cfs @ 12.66 hrs, Volume= 2,375 cf, Atten= 59%, Lag= 28.0 min
Primary = 0.3 cfs @ 12.66 hrs, Volume= 2,375 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.06' @ 12.66 hrs Surf.Area= 1,643 sf Storage= 1,271 cf

Plug-Flow detention time= 181.2 min calculated for 2,375 cf (67% of inflow)
Center-of-Mass det. time= 75.2 min (944.8 - 869.5)

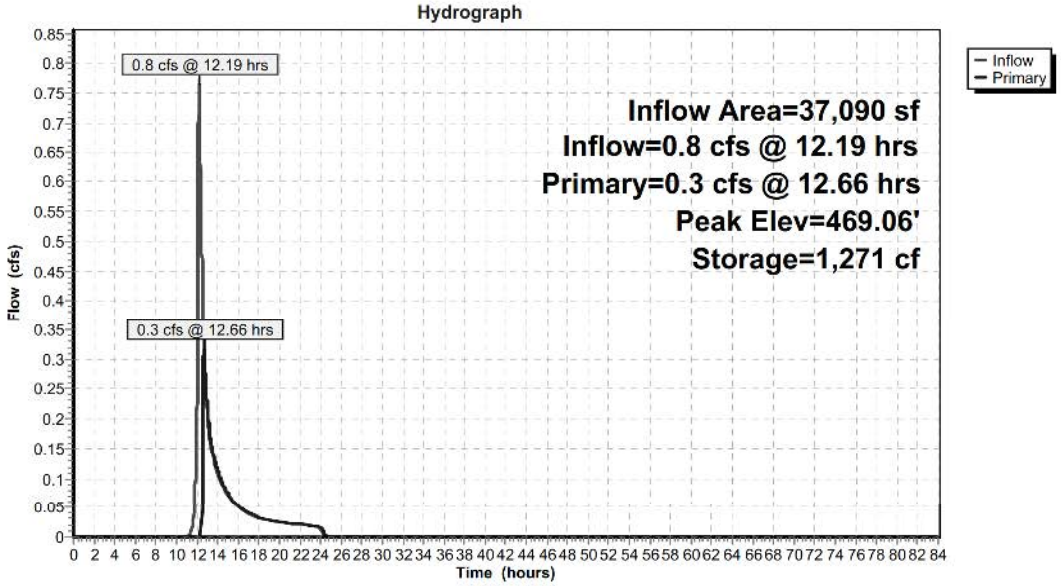
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.3 cfs @ 12.66 hrs HW=469.06' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 3.9 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.68 fps)

Pond POND 4A: POND 4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 1.72" for 10 YR event
Inflow = 7.8 cfs @ 12.38 hrs, Volume= 42,012 cf
Outflow = 0.6 cfs @ 16.27 hrs, Volume= 18,271 cf, Atten= 92%, Lag= 233.8 min
Primary = 0.6 cfs @ 16.27 hrs, Volume= 18,271 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 426.42' @ 16.27 hrs Surf.Area= 14,001 sf Storage= 29,514 cf

Plug-Flow detention time= 387.6 min calculated for 18,269 cf (43% of inflow)
Center-of-Mass det. time= 273.9 min (1,131.5 - 857.7)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.6 cfs @ 16.27 hrs HW=426.42' (Free Discharge)
└**1=Culvert** (Passes 0.6 cfs of 5.2 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.6 cfs @ 3.13 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

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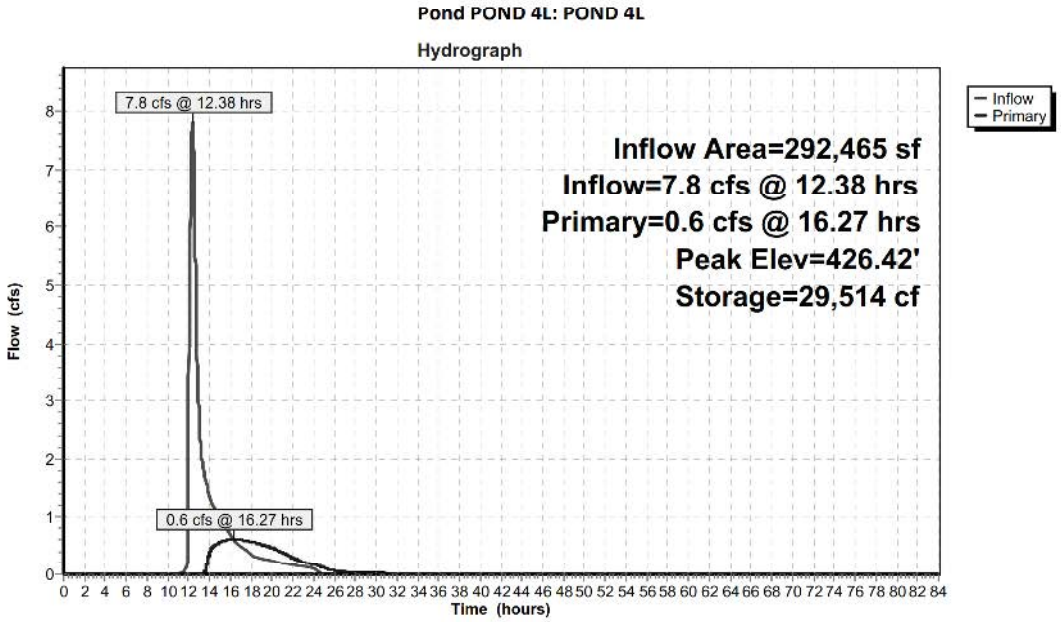

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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Outflow = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.07 hrs, Volume= 4,175 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

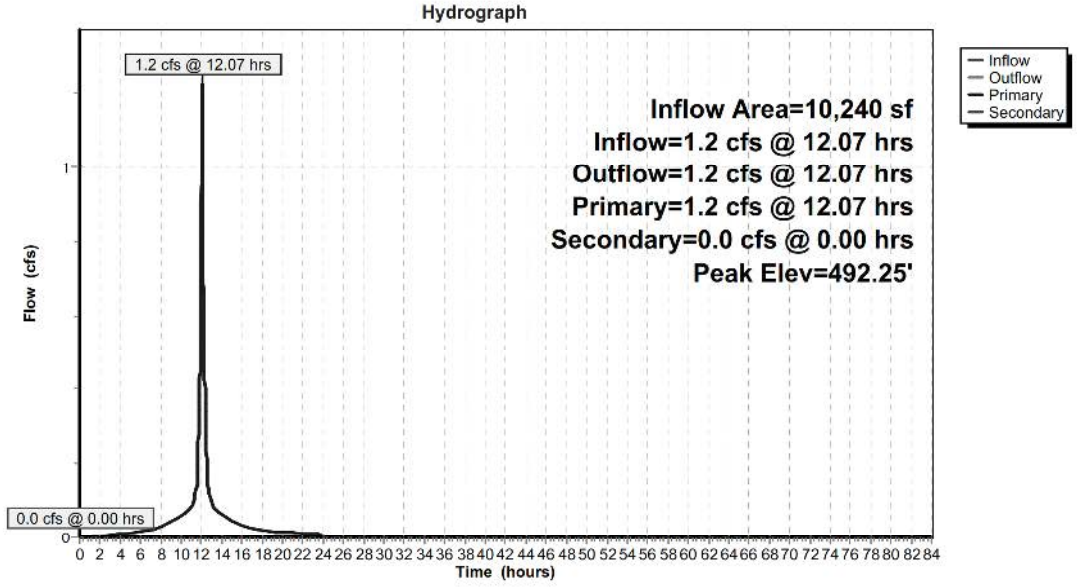
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.25' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.2 cfs @ 12.07 hrs HW=492.25' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.2 cfs @ 2.30 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 4.00" for 10 YR event
Inflow = 4.8 cfs @ 12.07 hrs, Volume= 17,129 cf
Outflow = 4.8 cfs @ 12.07 hrs, Volume= 17,129 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.8 cfs @ 12.07 hrs, Volume= 17,129 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

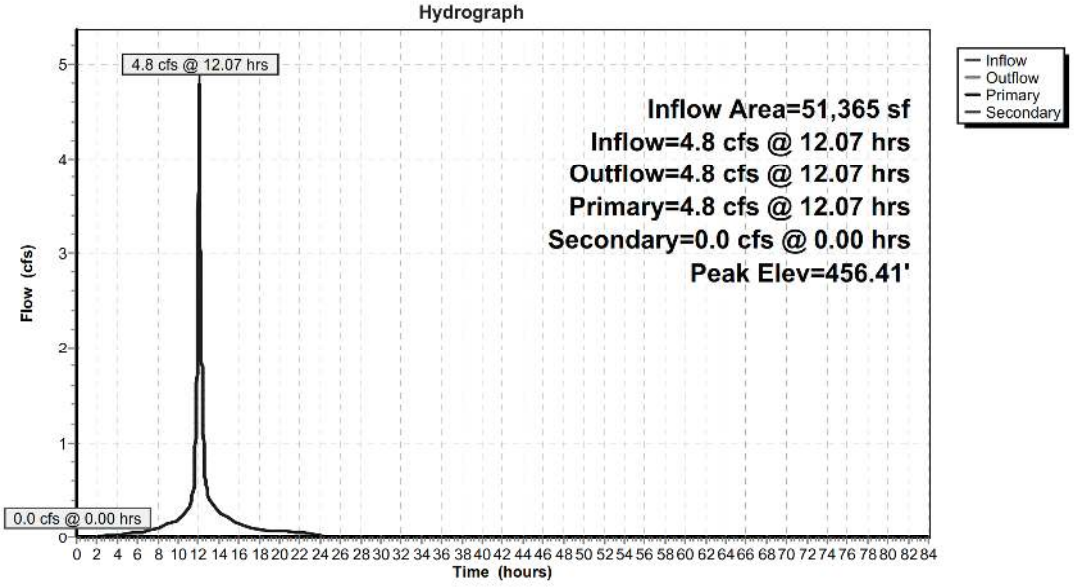
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 456.41' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.8 cfs @ 12.07 hrs HW=456.40' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.8 cfs @ 6.08 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 3.28" for 10 YR event
Inflow = 15.0 cfs @ 12.07 hrs, Volume= 62,812 cf
Outflow = 15.0 cfs @ 12.07 hrs, Volume= 62,812 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.1 cfs @ 12.07 hrs, Volume= 60,047 cf
Secondary = 3.9 cfs @ 12.07 hrs, Volume= 2,765 cf

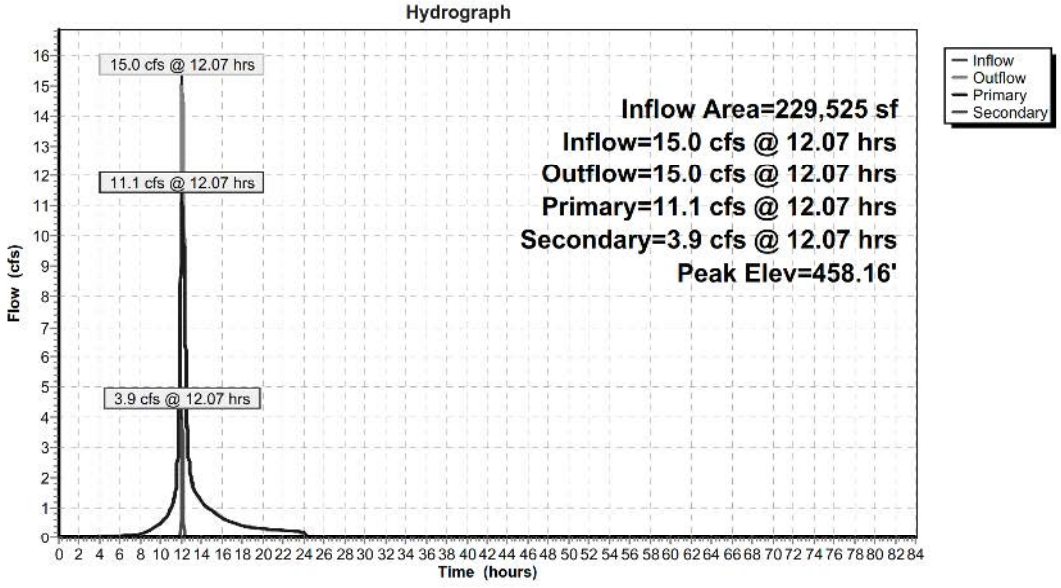
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.16' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=11.1 cfs @ 12.07 hrs HW=458.16' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.1 cfs @ 9.05 fps)

Secondary OutFlow Max=3.9 cfs @ 12.07 hrs HW=458.16' (Free Discharge)
└**2=Culvert** (Barrel Controls 3.9 cfs @ 3.00 fps)

Pond SPLIT4H: SPLIT4H



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 10 YR Rainfall=5.13"*

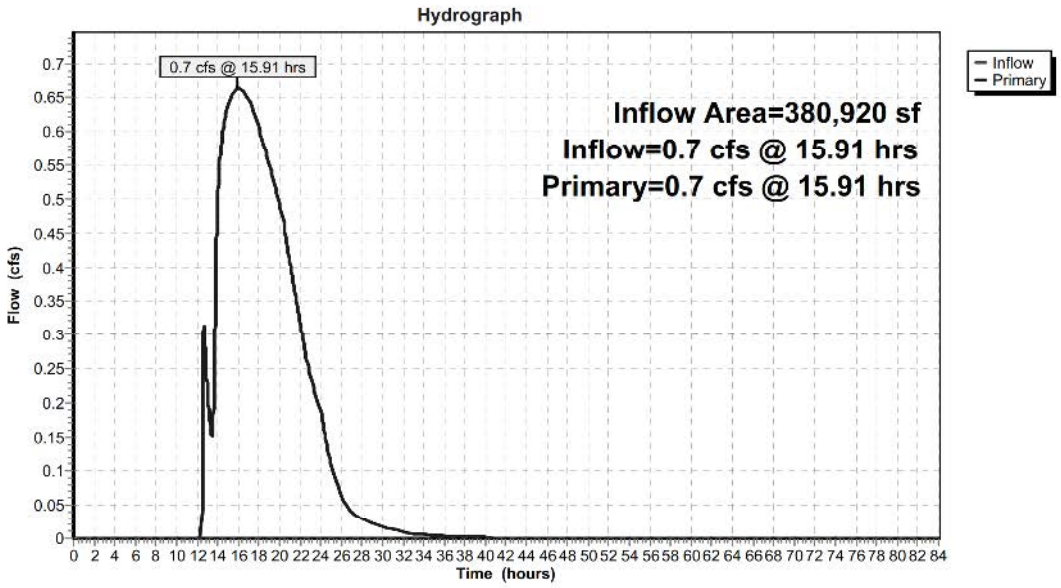
Prepared by Alfonzetti Engineering, P.C.

Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 0.65" for 10 YR event
Inflow = 0.7 cfs @ 15.91 hrs, Volume= 20,646 cf
Primary = 0.7 cfs @ 15.91 hrs, Volume= 20,646 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=275' Tc=12.7 min CN=61 Runoff=1.3 cfs 5,190 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=1.5 cfs 5,309 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=2.7 cfs 9,280 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=2.88"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=1.0 cfs 3,666 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=3.88"
Flow Length=849' Tc=10.9 min CN=77 Runoff=12.7 cfs 46,171 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=3.1 cfs 10,618 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=0.8 cfs 2,654 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=5.18"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=9.7 cfs 26,458 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=2.14"
Flow Length=264' Tc=13.0 min CN=59 Runoff=2.7 cfs 11,218 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=2.7 cfs 9,436 cf

Pond DW4F: DW4F Peak Elev=464.29' Storage=10,451 cf Inflow=6.2 cfs 22,382 cf
Discarded=0.3 cfs 21,759 cf Primary=0.1 cfs 624 cf Outflow=0.4 cfs 22,382 cf

Pond DW4H: DW4H Peak Elev=459.45' Storage=24,622 cf Inflow=12.0 cfs 78,185 cf
Discarded=0.2 cfs 28,363 cf Primary=9.6 cfs 49,822 cf Outflow=9.8 cfs 78,185 cf

Pond IS4B: IS4B Peak Elev=493.88' Storage=1,927 cf Inflow=1.5 cfs 5,309 cf
Discarded=0.1 cfs 4,207 cf Primary=0.4 cfs 1,102 cf Outflow=0.5 cfs 5,309 cf

Pond POND 4A: POND 4A Peak Elev=469.15' Storage=1,433 cf Inflow=1.5 cfs 6,292 cf
Outflow=1.4 cfs 5,115 cf

Pond POND 4L: POND 4L Peak Elev=427.17' Storage=40,359 cf Inflow=17.1 cfs 68,755 cf
Outflow=1.8 cfs 45,014 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.34' Inflow=1.5 cfs 5,309 cf
Primary=1.5 cfs 5,309 cf Secondary=0.0 cfs 0 cf Outflow=1.5 cfs 5,309 cf

Pond SPLIT4F: SPLIT4F Peak Elev=457.36' Inflow=6.2 cfs 22,382 cf
Primary=6.2 cfs 22,382 cf Secondary=0.0 cfs 0 cf Outflow=6.2 cfs 22,382 cf

Pond SPLIT4H: SPLIT4H Peak Elev=458.75' Inflow=20.4 cfs 85,900 cf
Primary=12.0 cfs 78,185 cf Secondary=8.4 cfs 7,715 cf Outflow=20.4 cfs 85,900 cf

Link TRDP4: TRANSFERDP4 Inflow=2.1 cfs 50,753 cf
Primary=2.1 cfs 50,753 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 129,999 cf Average Runoff Depth = 4.10"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

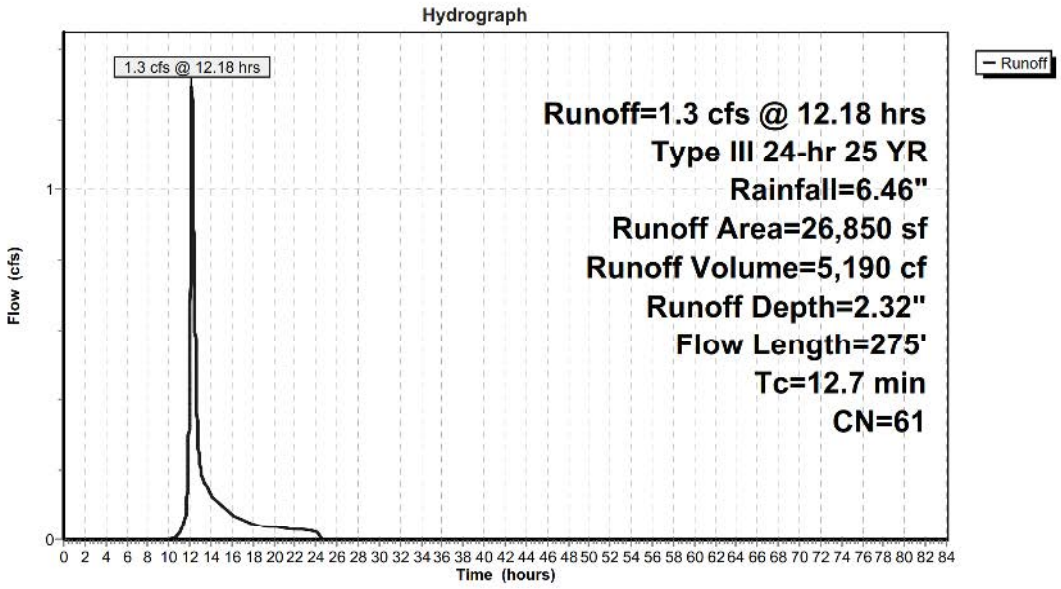
Runoff = 1.3 cfs @ 12.18 hrs, Volume= 5,190 cf, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4B: PRWS4B

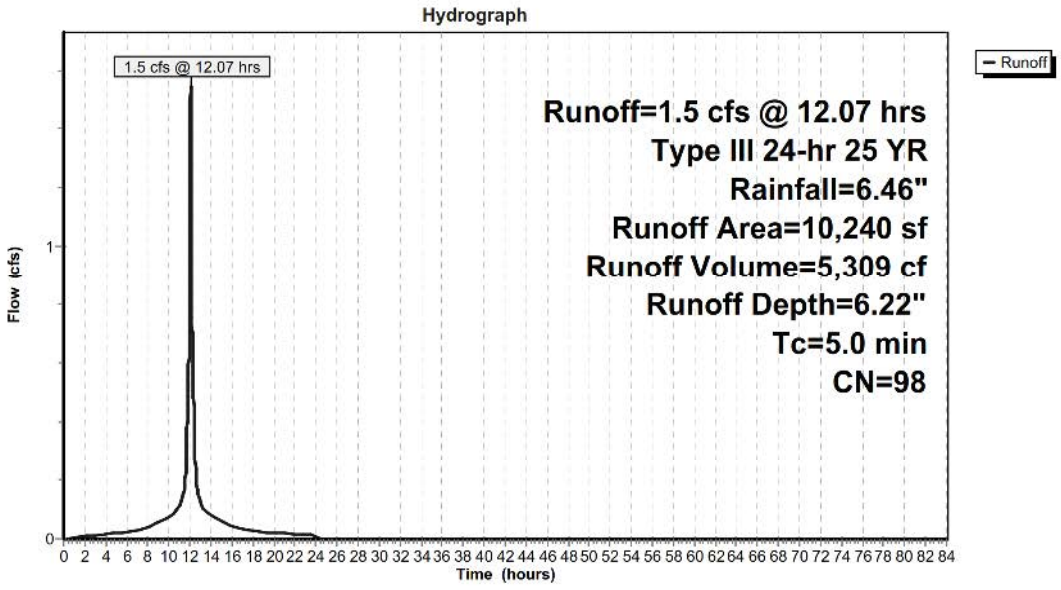
Runoff = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4F: PRWS4F

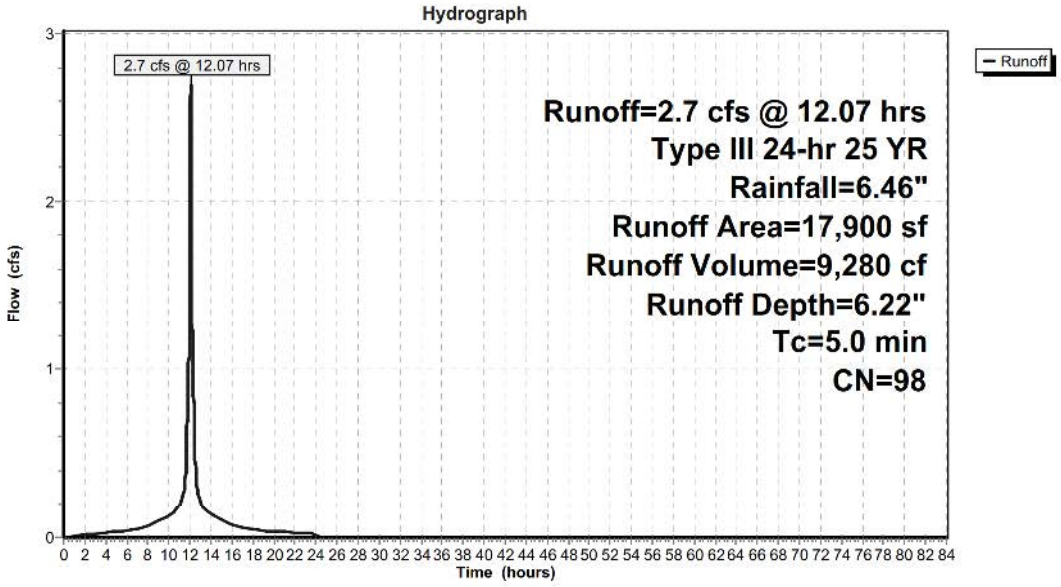
Runoff = 2.7 cfs @ 12.07 hrs, Volume= 9,280 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4G: PRWS4G

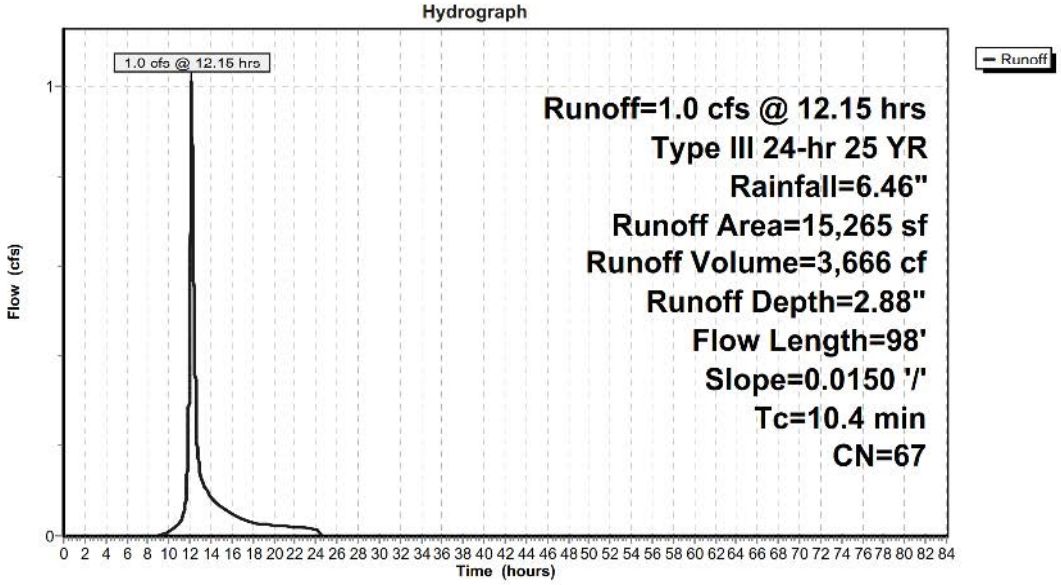
Runoff = 1.0 cfs @ 12.15 hrs, Volume= 3,666 cf, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4H: PRWS4H

Runoff = 12.7 cfs @ 12.15 hrs, Volume= 46,171 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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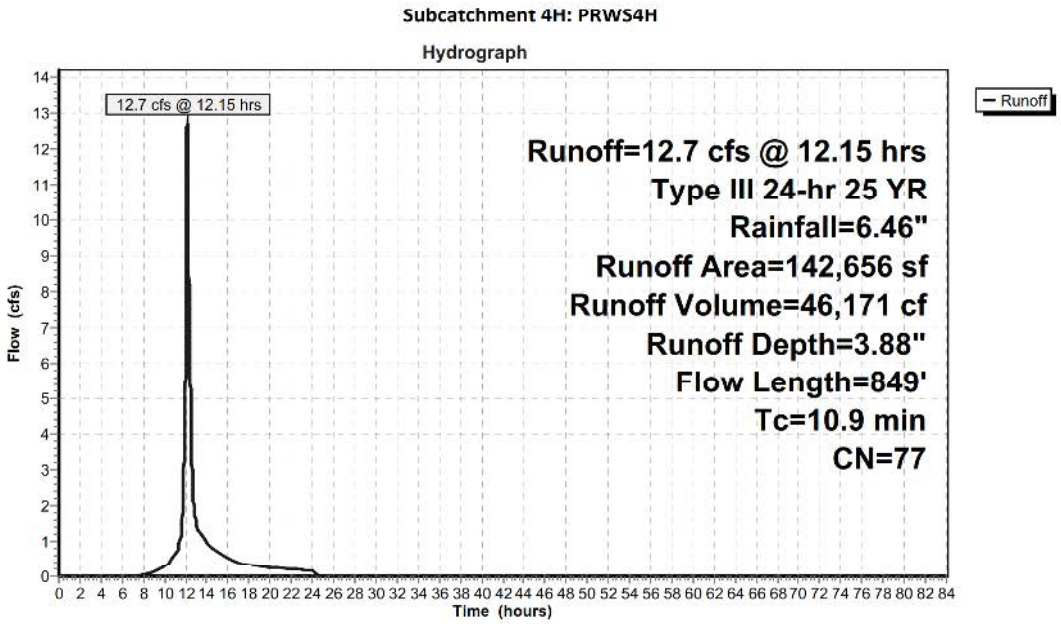


EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4I: PRWS4I

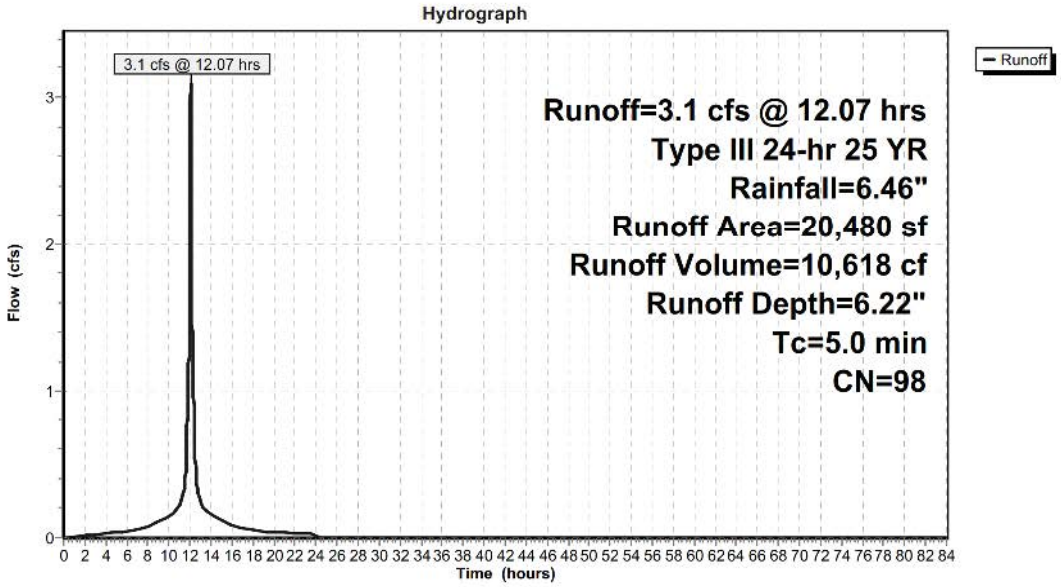
Runoff = 3.1 cfs @ 12.07 hrs, Volume= 10,618 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 4J: PRWS4J

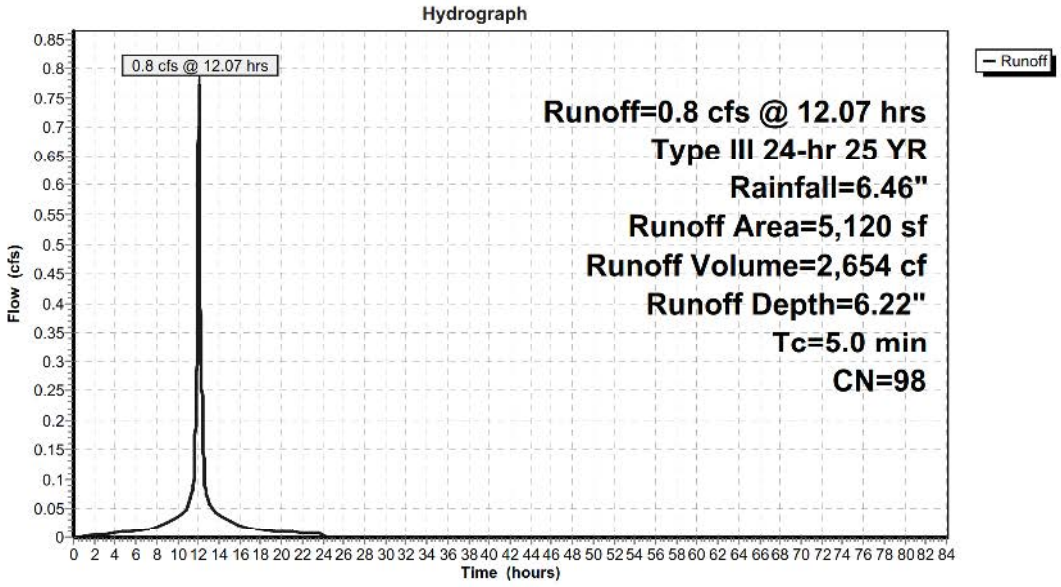
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 2,654 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4K: PRWS4K

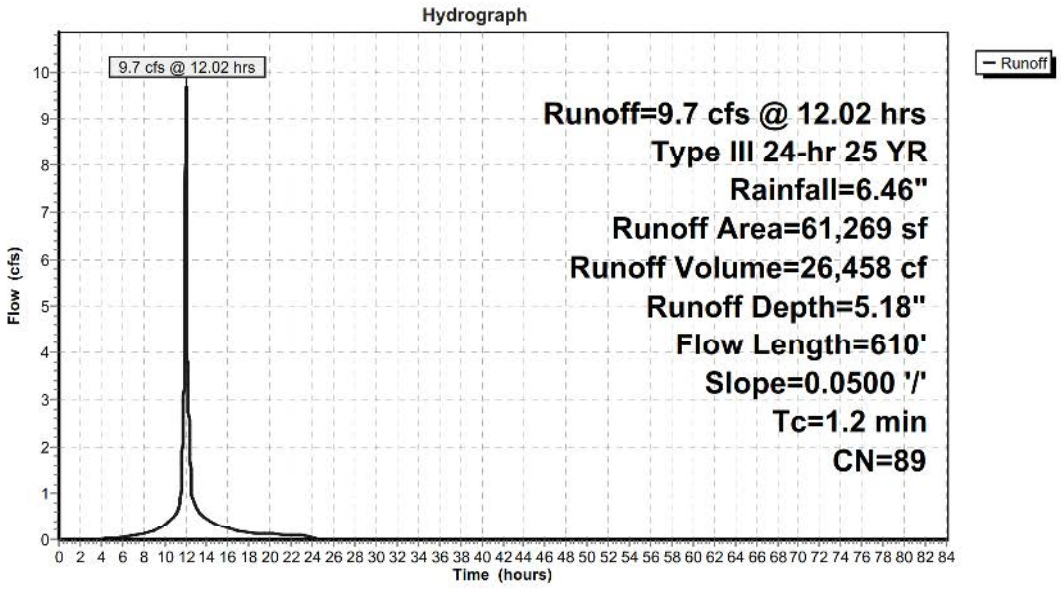
Runoff = 9.7 cfs @ 12.02 hrs, Volume= 26,458 cf, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4L: PRWS4L

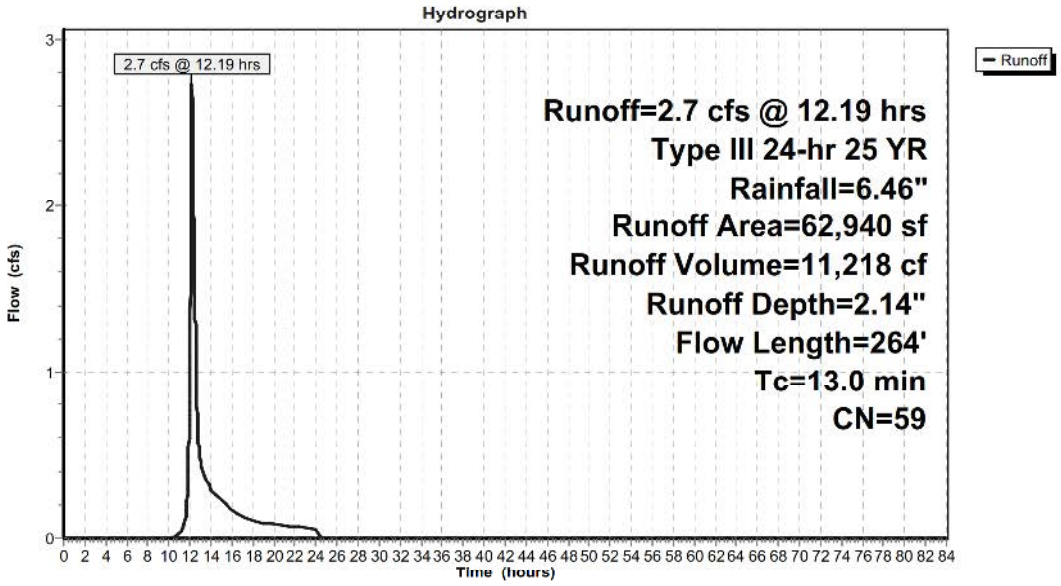
Runoff = 2.7 cfs @ 12.19 hrs, Volume= 11,218 cf, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4M: PRWS4M

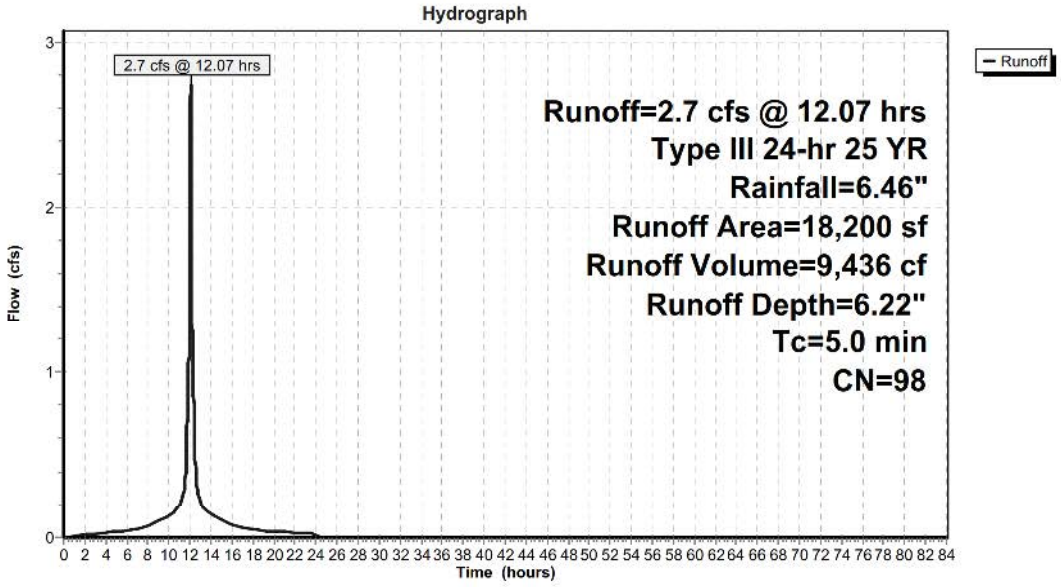
Runoff = 2.7 cfs @ 12.07 hrs, Volume= 9,436 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 5.23" for 25 YR event
Inflow = 6.2 cfs @ 12.08 hrs, Volume= 22,382 cf
Outflow = 0.4 cfs @ 13.90 hrs, Volume= 22,382 cf, Atten= 94%, Lag= 109.6 min
Discarded = 0.3 cfs @ 10.12 hrs, Volume= 21,759 cf
Primary = 0.1 cfs @ 13.90 hrs, Volume= 624 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 464.29' @ 13.90 hrs Surf.Area= 2,304 sf Storage= 10,451 cf

Plug-Flow detention time= 321.9 min calculated for 22,380 cf (100% of inflow)
Center-of-Mass det. time= 321.9 min (1,081.8 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 10.12 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.1 cfs @ 13.90 hrs HW=464.29' (Free Discharge)
↳**2=Culvert** (Barrel Controls 0.1 cfs @ 0.76 fps)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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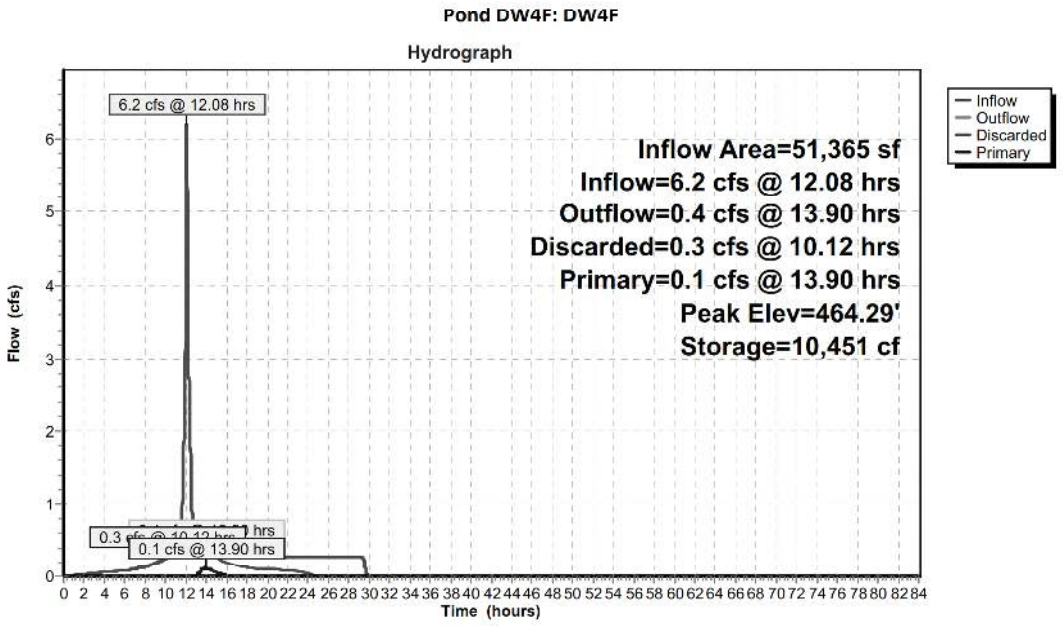

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 4.09" for 25 YR event
Inflow = 12.0 cfs @ 12.07 hrs, Volume= 78,185 cf
Outflow = 9.8 cfs @ 12.36 hrs, Volume= 78,185 cf, Atten= 18%, Lag= 17.4 min
Discarded = 0.2 cfs @ 7.44 hrs, Volume= 28,363 cf
Primary = 9.6 cfs @ 12.36 hrs, Volume= 49,822 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.45' @ 12.36 hrs Surf.Area= 4,608 sf Storage= 24,622 cf

Plug-Flow detention time= 389.0 min calculated for 78,176 cf (100% of inflow)
Center-of-Mass det. time= 389.2 min (1,194.0 - 804.8)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 7.44 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=9.6 cfs @ 12.36 hrs HW=459.45' (Free Discharge)
↳**2=Culvert** (Barrel Controls 9.6 cfs @ 5.45 fps)

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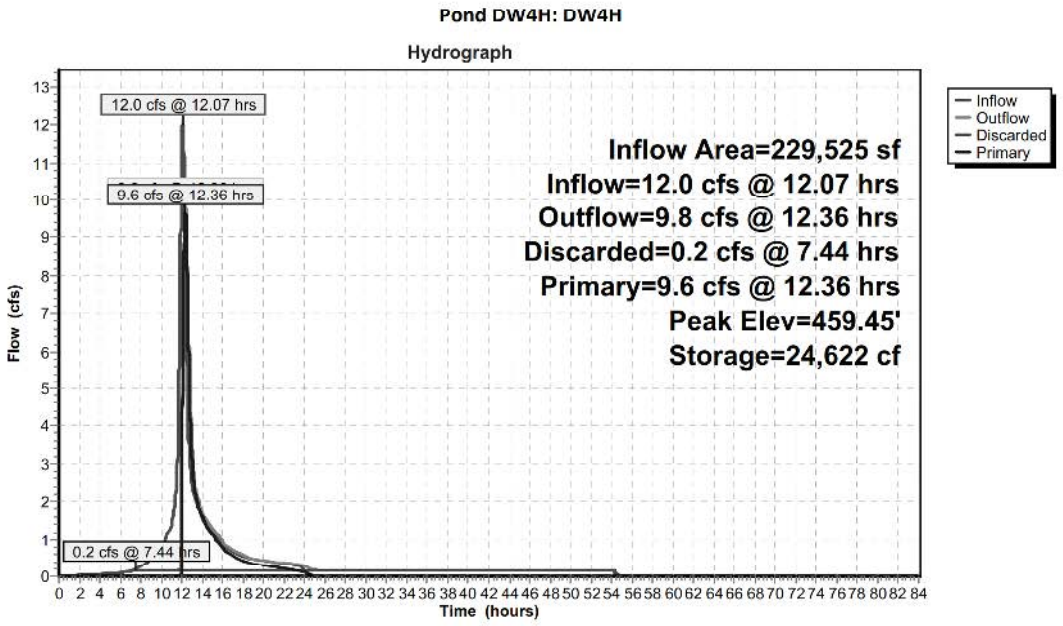
Type III 24-hr 25 YR Rainfall=6.46"



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Outflow = 0.5 cfs @ 12.35 hrs, Volume= 5,309 cf, Atten= 68%, Lag= 16.7 min
Discarded = 0.1 cfs @ 9.05 hrs, Volume= 4,207 cf
Primary = 0.4 cfs @ 12.35 hrs, Volume= 1,102 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 493.88' @ 12.35 hrs Surf.Area= 1,152 sf Storage= 1,927 cf

Plug-Flow detention time= 211.1 min calculated for 5,308 cf (100% of inflow)
Center-of-Mass det. time= 211.1 min (954.3 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 9.05 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.4 cfs @ 12.35 hrs HW=493.88' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 2.11 fps)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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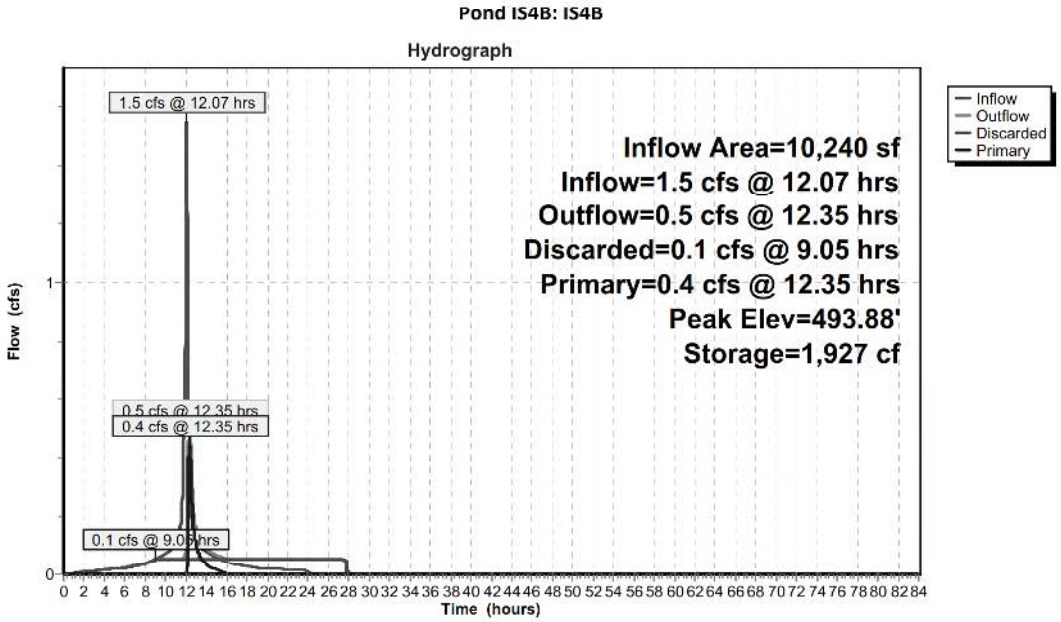

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 2.04" for 25 YR event
Inflow = 1.5 cfs @ 12.23 hrs, Volume= 6,292 cf
Outflow = 1.4 cfs @ 12.34 hrs, Volume= 5,115 cf, Atten= 11%, Lag= 6.8 min
Primary = 1.4 cfs @ 12.34 hrs, Volume= 5,115 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.15' @ 12.34 hrs Surf.Area= 1,724 sf Storage= 1,433 cf

Plug-Flow detention time= 107.3 min calculated for 5,114 cf (81% of inflow)
Center-of-Mass det. time= 35.0 min (881.5 - 846.5)

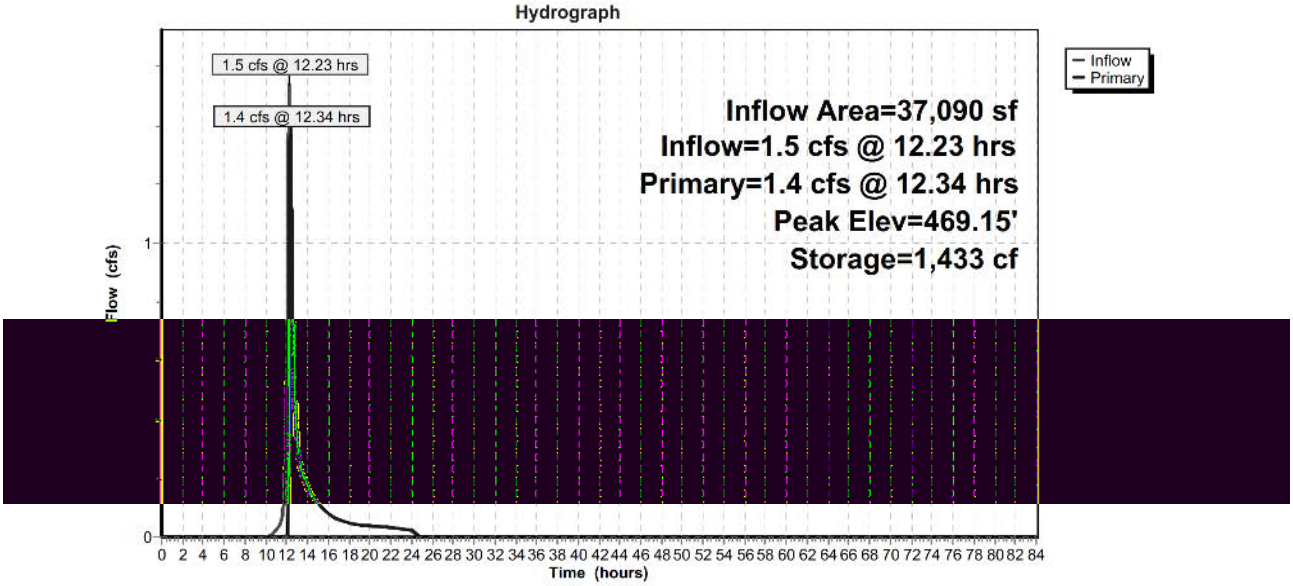
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.4 cfs @ 12.34 hrs HW=469.15' (Free Discharge)
└**1=Culvert** (Passes 1.4 cfs of 4.3 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.4 cfs @ 1.10 fps)

Pond POND 4A: POND 4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 2.82" for 25 YR event
Inflow = 17.1 cfs @ 12.17 hrs, Volume= 68,755 cf
Outflow = 1.8 cfs @ 14.12 hrs, Volume= 45,014 cf, Atten= 90%, Lag= 117.2 min
Primary = 1.8 cfs @ 14.12 hrs, Volume= 45,014 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 427.17' @ 14.12 hrs Surf.Area= 15,174 sf Storage= 40,359 cf

Plug-Flow detention time= 341.5 min calculated for 45,009 cf (65% of inflow)
Center-of-Mass det. time= 248.7 min (1,093.0 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.8 cfs @ 14.12 hrs HW=427.17' (Free Discharge)
└**1=Culvert** (Passes 1.8 cfs of 6.2 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 1.0 cfs @ 5.20 fps)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 0.8 cfs @ 1.14 fps)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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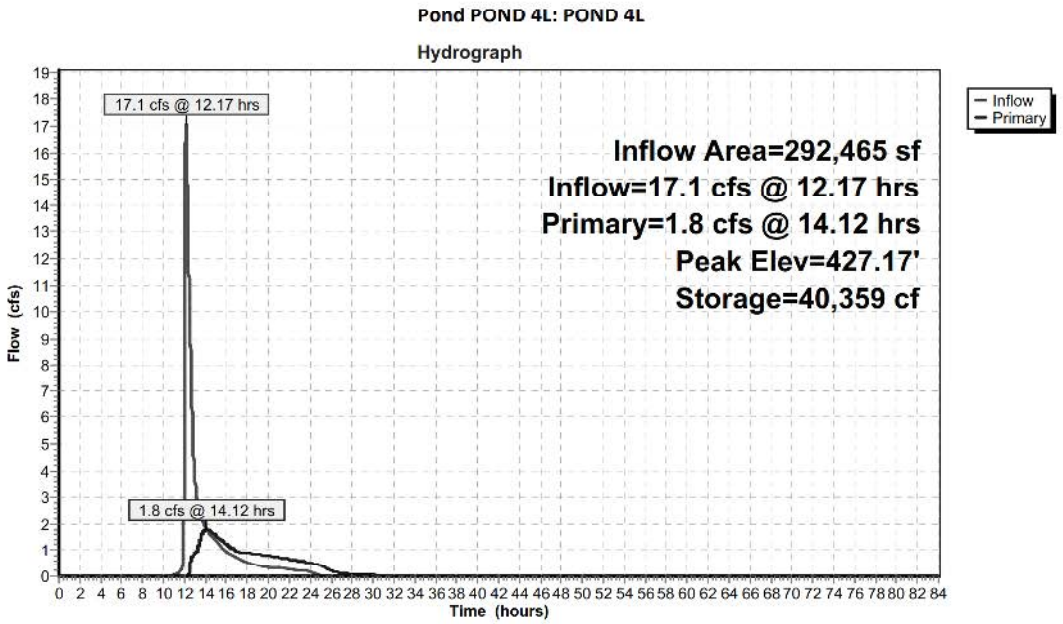

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Outflow = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.07 hrs, Volume= 5,309 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

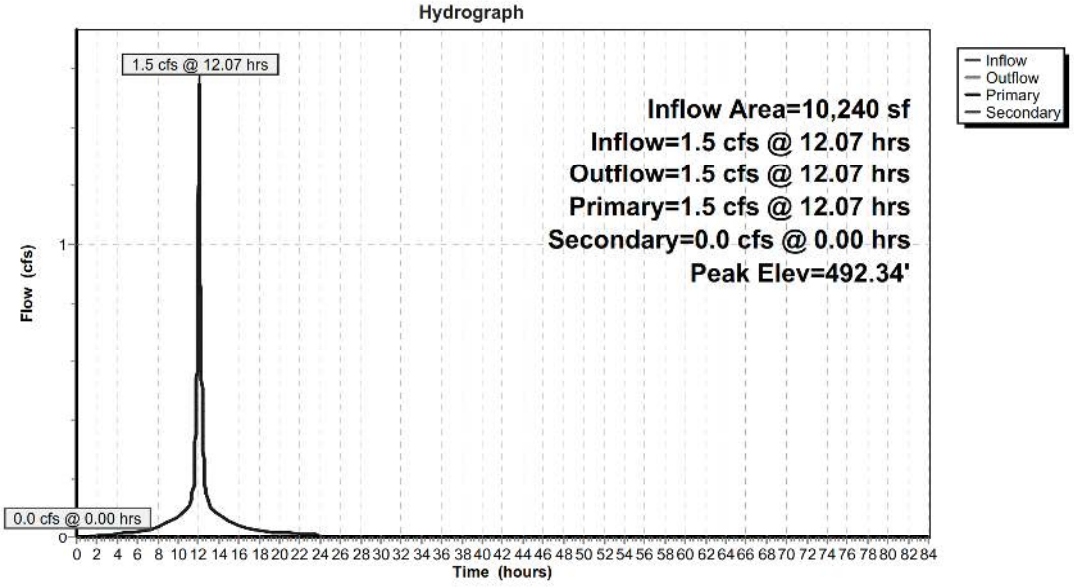
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.34' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.5 cfs @ 12.07 hrs HW=492.34' (Free Discharge)
↳**1=Culvert** (Barrel Controls 1.5 cfs @ 2.48 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 5.23" for 25 YR event
Inflow = 6.2 cfs @ 12.08 hrs, Volume= 22,382 cf
Outflow = 6.2 cfs @ 12.08 hrs, Volume= 22,382 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.2 cfs @ 12.08 hrs, Volume= 22,382 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

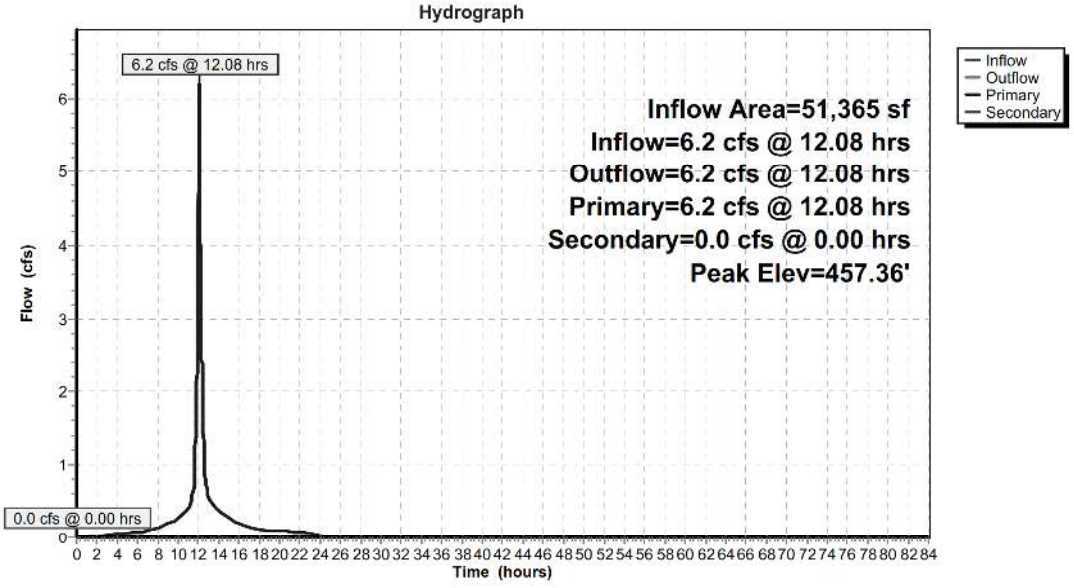
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 457.36' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=6.2 cfs @ 12.08 hrs HW=457.36' (Free Discharge)
↳**1=Culvert** (Barrel Controls 6.2 cfs @ 7.88 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 4.49" for 25 YR event
Inflow = 20.4 cfs @ 12.07 hrs, Volume= 85,900 cf
Outflow = 20.4 cfs @ 12.07 hrs, Volume= 85,900 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.0 cfs @ 12.07 hrs, Volume= 78,185 cf
Secondary = 8.4 cfs @ 12.07 hrs, Volume= 7,715 cf

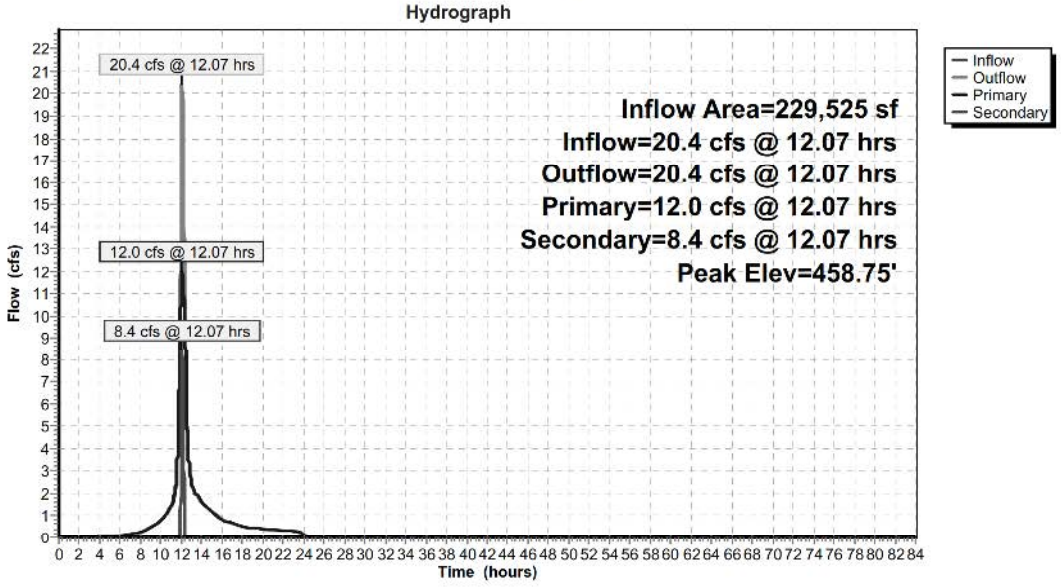
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.75' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=12.0 cfs @ 12.07 hrs HW=458.75' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.0 cfs @ 9.78 fps)

Secondary OutFlow Max=8.4 cfs @ 12.07 hrs HW=458.75' (Free Discharge)
└**2=Culvert** (Barrel Controls 8.4 cfs @ 3.84 fps)

Pond SPLIT4H: SPLIT4H



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 25 YR Rainfall=6.46"*
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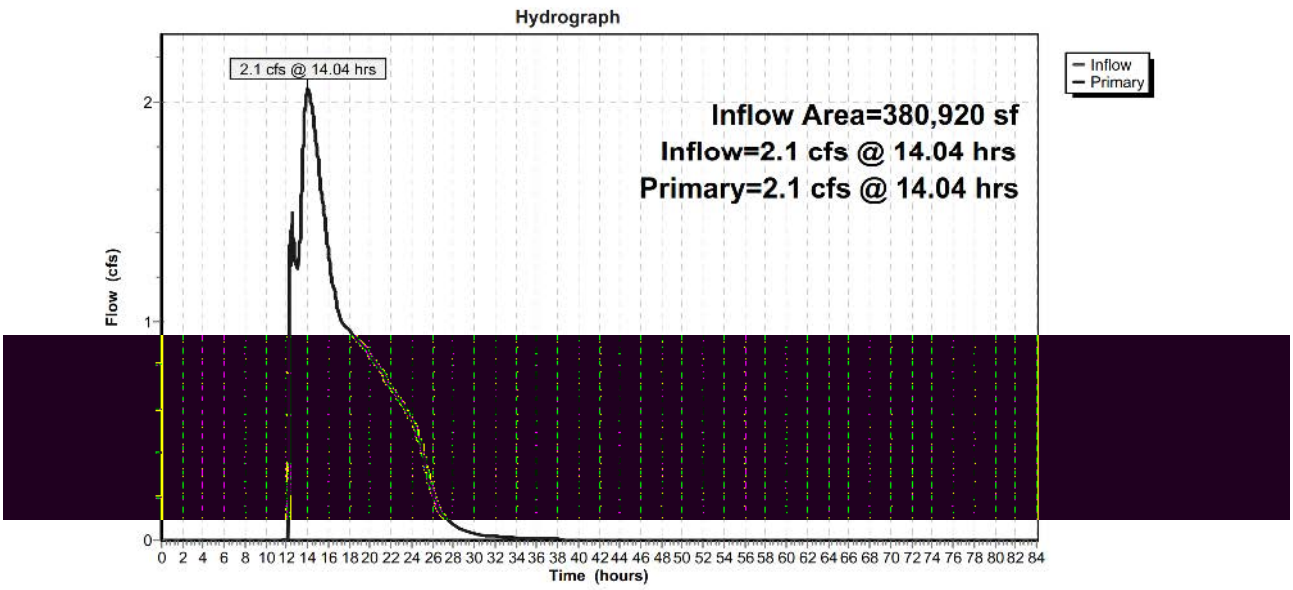
Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 1.60" for 25 YR event
Inflow = 2.1 cfs @ 14.04 hrs, Volume= 50,753 cf
Primary = 2.1 cfs @ 14.04 hrs, Volume= 50,753 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=275' Tc=12.7 min CN=61 Runoff=1.8 cfs 7,183 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=1.8 cfs 6,358 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=3.2 cfs 11,114 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=3.87"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=1.4 cfs 4,917 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=4.99"
Flow Length=849' Tc=10.9 min CN=77 Runoff=16.2 cfs 59,330 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=3.7 cfs 12,715 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=0.9 cfs 3,179 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=6.38"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=11.8 cfs 32,589 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=3.00"
Flow Length=264' Tc=13.0 min CN=59 Runoff=3.9 cfs 15,713 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=3.3 cfs 11,300 cf

Pond DW4F: DW4F Peak Elev=464.82' Storage=11,309 cf Inflow=7.5 cfs 27,330 cf
Discarded=0.3 cfs 23,142 cf Primary=1.2 cfs 4,189 cf Outflow=1.4 cfs 27,330 cf

Pond DW4H: DW4H Peak Elev=459.72' Storage=25,514 cf Inflow=12.8 cfs 94,263 cf
Discarded=0.2 cfs 28,866 cf Primary=11.0 cfs 65,397 cf Outflow=11.1 cfs 94,263 cf

Pond IS4B: IS4B Peak Elev=494.08' Storage=2,072 cf Inflow=1.8 cfs 6,358 cf
Discarded=0.1 cfs 4,477 cf Primary=0.8 cfs 1,881 cf Outflow=0.9 cfs 6,358 cf

Pond POND 4A: POND 4A Peak Elev=469.23' Storage=1,569 cf Inflow=2.7 cfs 9,063 cf
Outflow=2.5 cfs 7,886 cf

Pond POND 4L: POND 4L Peak Elev=427.52' Storage=45,844 cf Inflow=25.3 cfs 94,661 cf
Outflow=5.7 cfs 70,920 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.42' Inflow=1.8 cfs 6,358 cf
Primary=1.8 cfs 6,358 cf Secondary=0.0 cfs 0 cf Outflow=1.8 cfs 6,358 cf

Pond SPLIT4F: SPLIT4F Peak Elev=458.49' Inflow=7.5 cfs 27,330 cf
Primary=7.5 cfs 27,330 cf Secondary=0.0 cfs 0 cf Outflow=7.5 cfs 27,330 cf

Pond SPLIT4H: SPLIT4H Peak Elev=459.29' Inflow=25.4 cfs 107,814 cf
Primary=12.8 cfs 94,263 cf Secondary=12.7 cfs 13,551 cf Outflow=25.4 cfs 107,814 cf

Link TRDP4: TRANSFERDP4 Inflow=7.0 cfs 82,995 cf
Primary=7.0 cfs 82,995 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 164,397 cf Average Runoff Depth = 5.18"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4A: PRWS4A

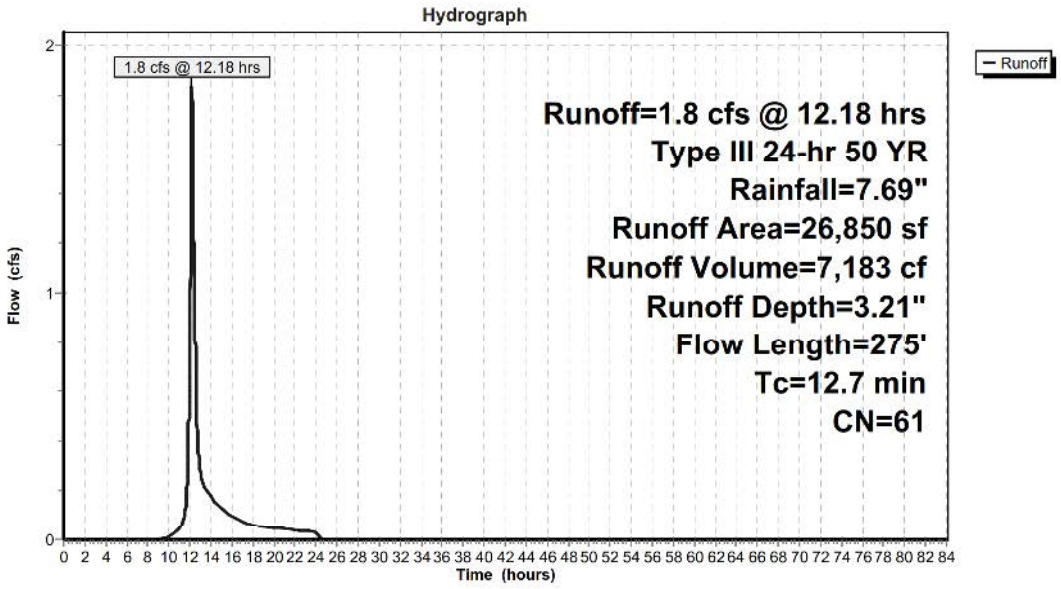
Runoff = 1.8 cfs @ 12.18 hrs, Volume= 7,183 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4B: PRWS4B

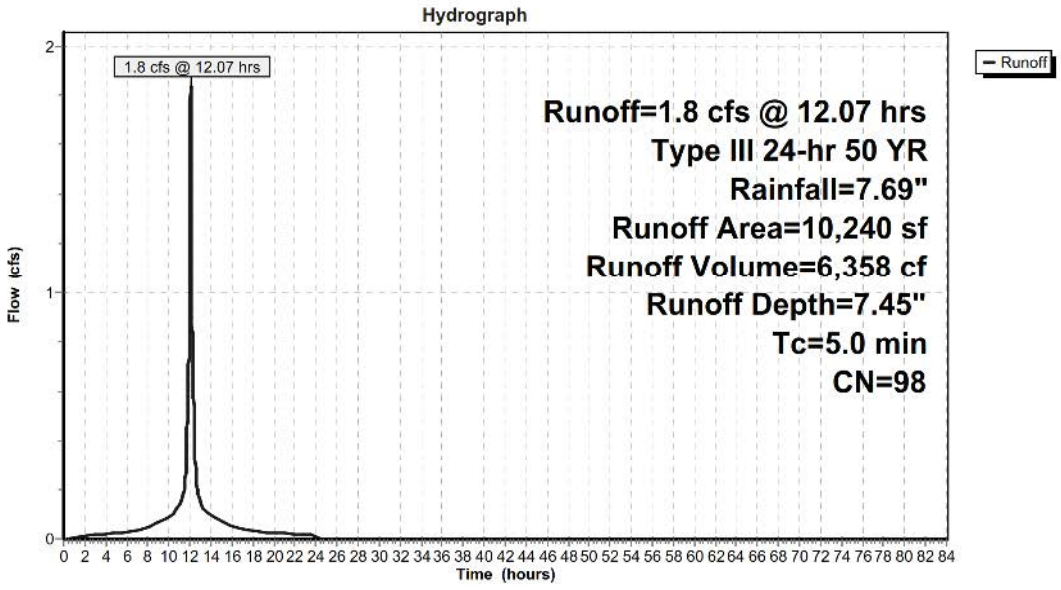
Runoff = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4F: PRWS4F

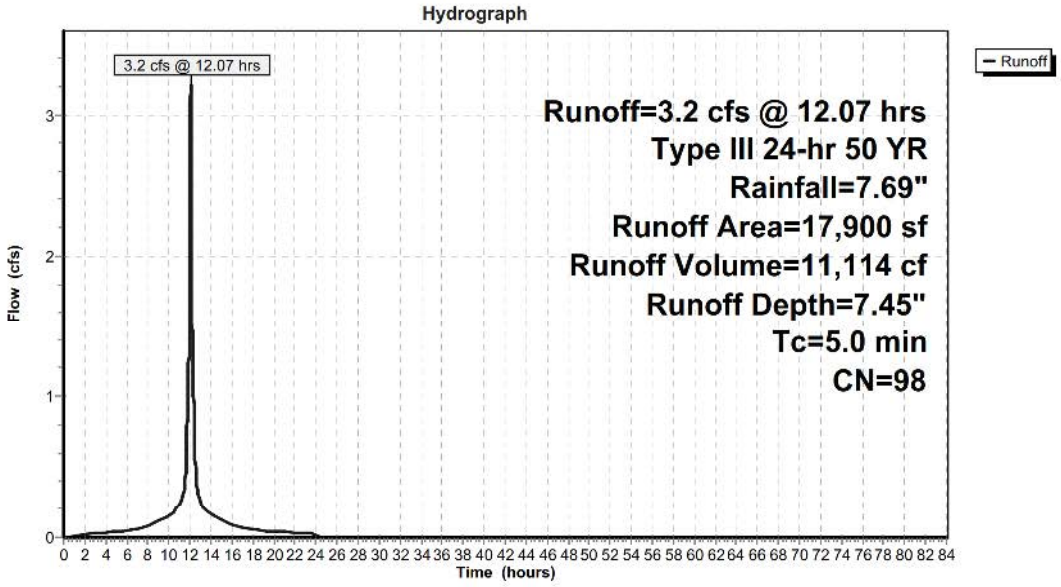
Runoff = 3.2 cfs @ 12.07 hrs, Volume= 11,114 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4G: PRWS4G

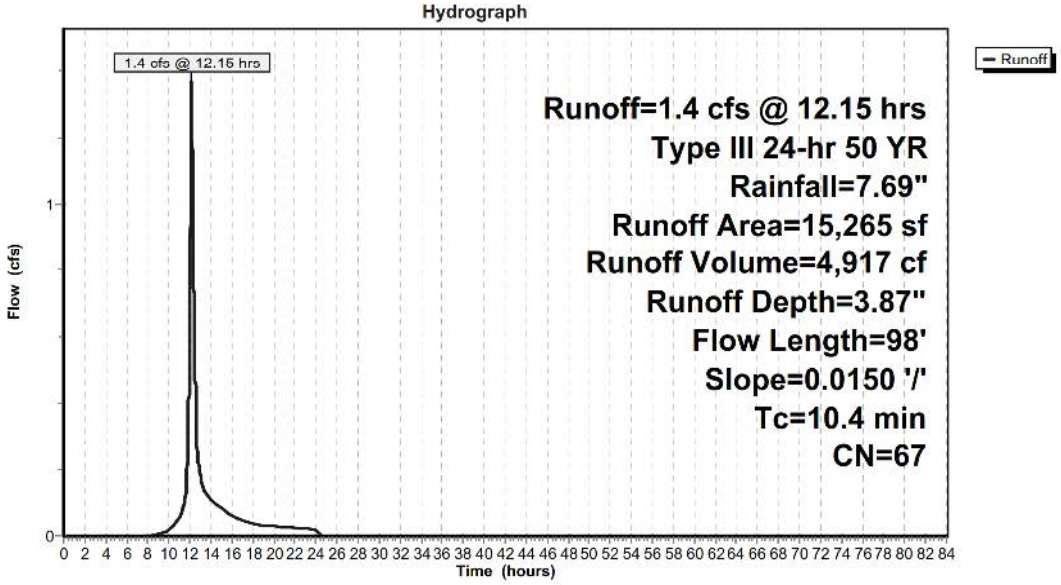
Runoff = 1.4 cfs @ 12.15 hrs, Volume= 4,917 cf, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

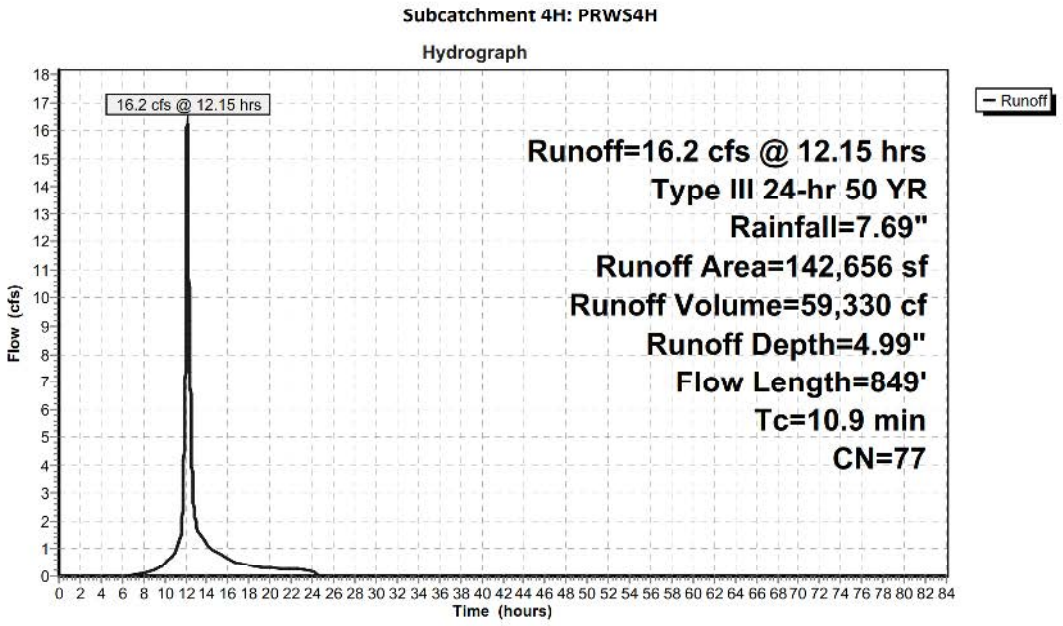
Summary for Subcatchment 4H: PRWS4H

Runoff = 16.2 cfs @ 12.15 hrs, Volume= 59,330 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			


Subcatchment 4H: PRWS4H
Hydrograph
16.2 cfs @ 12.15 hrs
Runoff=16.2 cfs @ 12.15 hrs
Type III 24-hr 50 YR
Rainfall=7.69"
Runoff Area=142,656 sf
Runoff Volume=59,330 cf
Runoff Depth=4.99"
Flow Length=849'
Tc=10.9 min
CN=77
Runoff
Flow (cfs)
Time (hours)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4I: PRWS4I

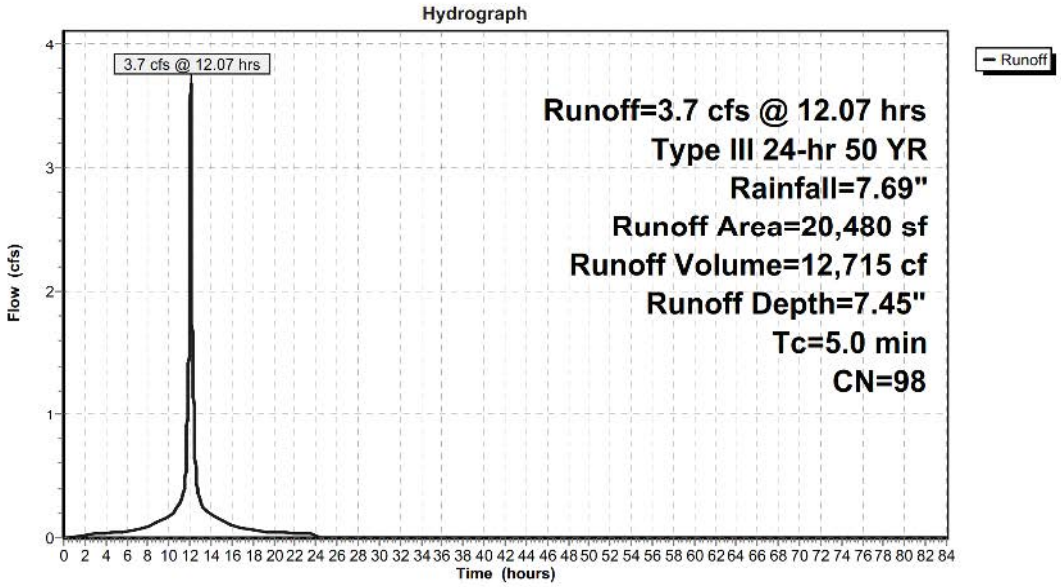
Runoff = 3.7 cfs @ 12.07 hrs, Volume= 12,715 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



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Summary for Subcatchment 4J: PRWS4J

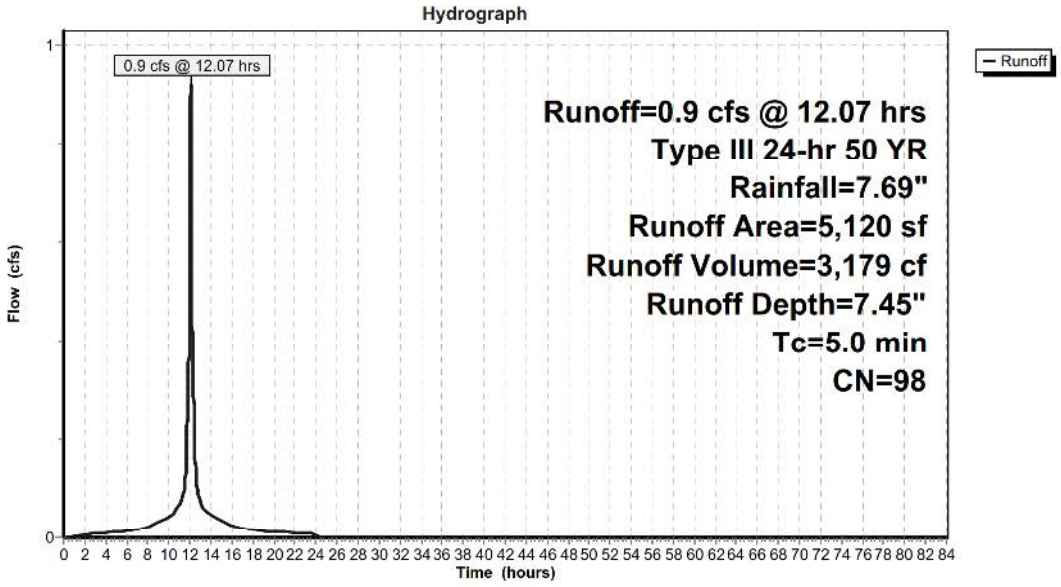
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 3,179 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



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Summary for Subcatchment 4K: PRWS4K

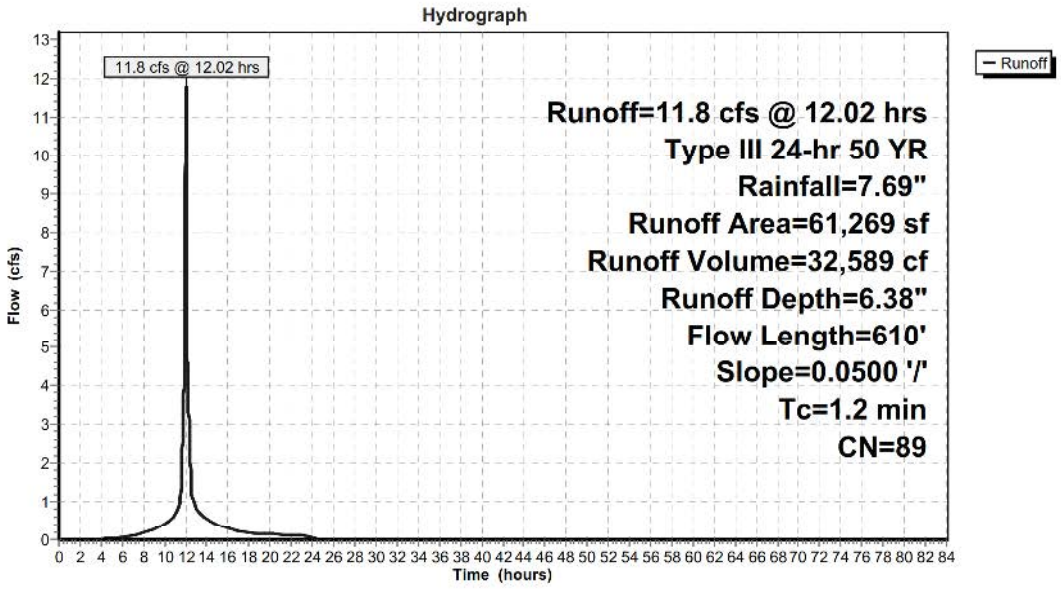
Runoff = 11.8 cfs @ 12.02 hrs, Volume= 32,589 cf, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4L: PRWS4L

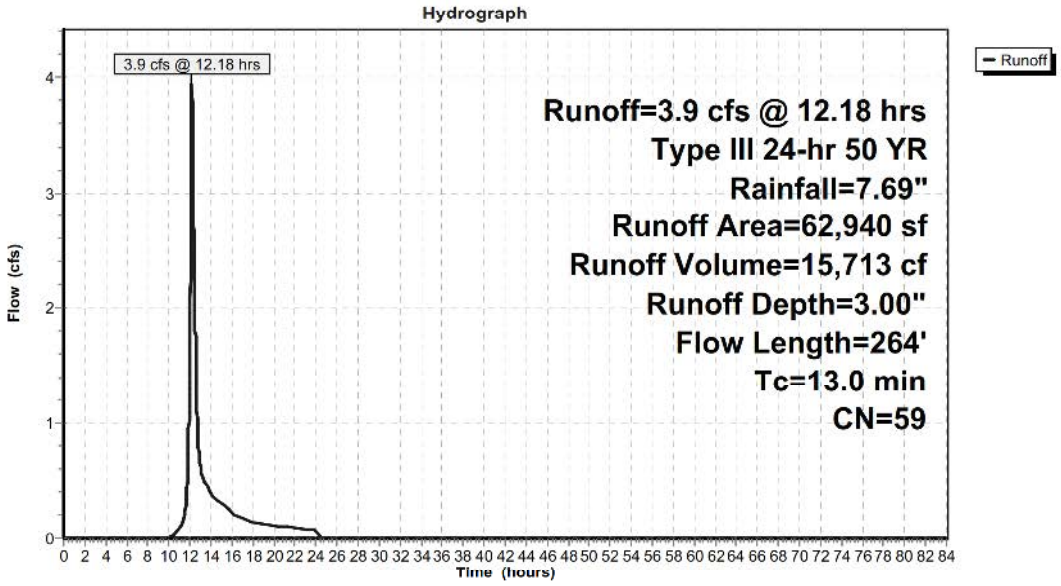
Runoff = 3.9 cfs @ 12.18 hrs, Volume= 15,713 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 4M: PRWS4M

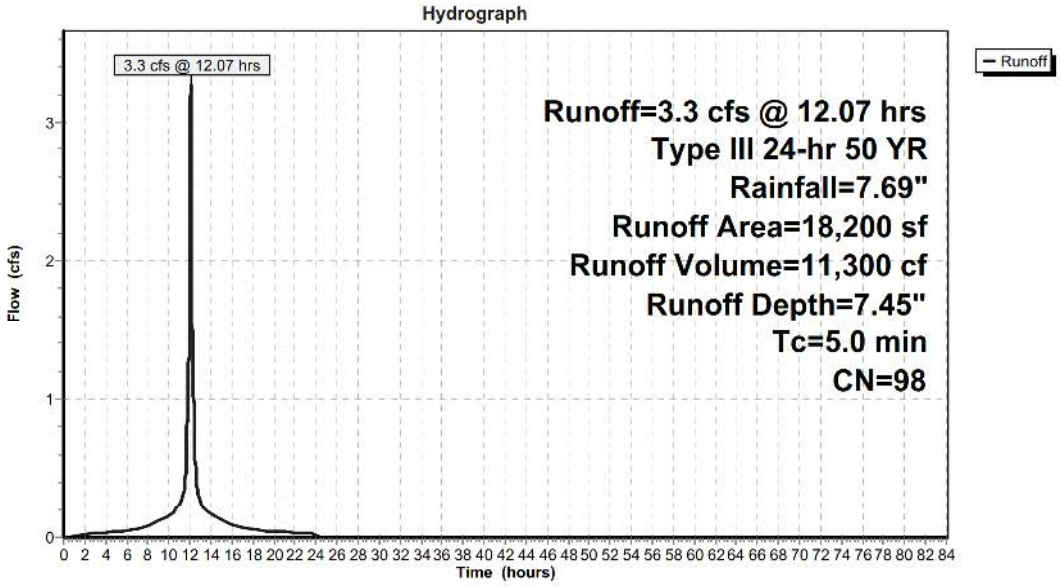
Runoff = 3.3 cfs @ 12.07 hrs, Volume= 11,300 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 6.38" for 50 YR event
Inflow = 7.5 cfs @ 12.08 hrs, Volume= 27,330 cf
Outflow = 1.4 cfs @ 12.54 hrs, Volume= 27,330 cf, Atten= 81%, Lag= 27.7 min
Discarded = 0.3 cfs @ 9.46 hrs, Volume= 23,142 cf
Primary = 1.2 cfs @ 12.54 hrs, Volume= 4,189 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 464.82' @ 12.54 hrs Surf.Area= 2,304 sf Storage= 11,309 cf

Plug-Flow detention time= 289.1 min calculated for 27,330 cf (100% of inflow)
Center-of-Mass det. time= 289.1 min (1,047.2 - 758.1)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 9.46 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=1.2 cfs @ 12.54 hrs HW=464.82' (Free Discharge)
↳**2=Culvert** (Barrel Controls 1.2 cfs @ 1.93 fps)

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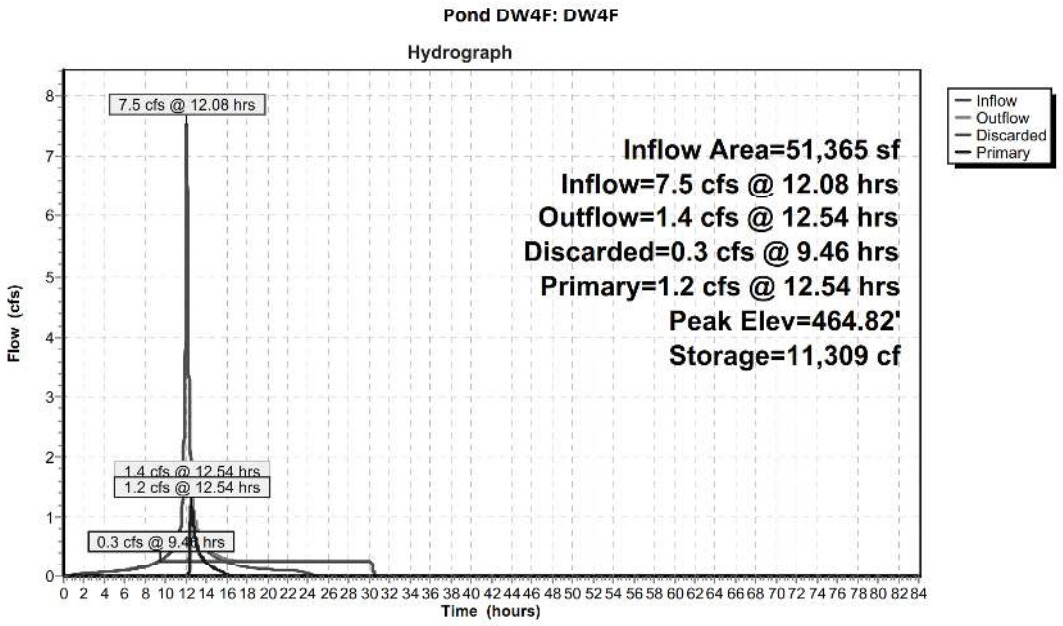

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Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 4.93" for 50 YR event
Inflow = 12.8 cfs @ 12.07 hrs, Volume= 94,263 cf
Outflow = 11.1 cfs @ 12.30 hrs, Volume= 94,263 cf, Atten= 13%, Lag= 13.8 min
Discarded = 0.2 cfs @ 6.71 hrs, Volume= 28,866 cf
Primary = 11.0 cfs @ 12.30 hrs, Volume= 65,397 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.72' @ 12.30 hrs Surf.Area= 4,608 sf Storage= 25,514 cf

Plug-Flow detention time= 331.8 min calculated for 94,263 cf (100% of inflow)
Center-of-Mass det. time= 331.7 min (1,133.8 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 6.71 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=11.0 cfs @ 12.30 hrs HW=459.72' (Free Discharge)
↳**2=Culvert** (Barrel Controls 11.0 cfs @ 6.20 fps)

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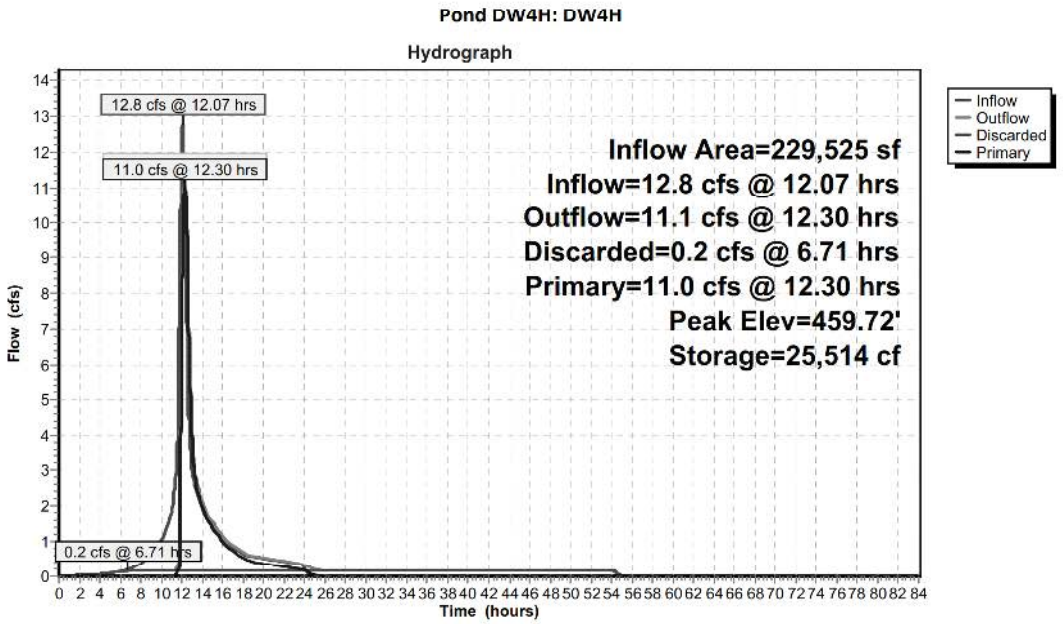

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Outflow = 0.9 cfs @ 12.20 hrs, Volume= 6,358 cf, Atten= 52%, Lag= 8.0 min
Discarded = 0.1 cfs @ 8.54 hrs, Volume= 4,477 cf
Primary = 0.8 cfs @ 12.20 hrs, Volume= 1,881 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 494.08' @ 12.20 hrs Surf.Area= 1,152 sf Storage= 2,072 cf

Plug-Flow detention time= 192.7 min calculated for 6,357 cf (100% of inflow)
Center-of-Mass det. time= 192.7 min (933.5 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 8.54 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.8 cfs @ 12.20 hrs HW=494.08' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.59 fps)

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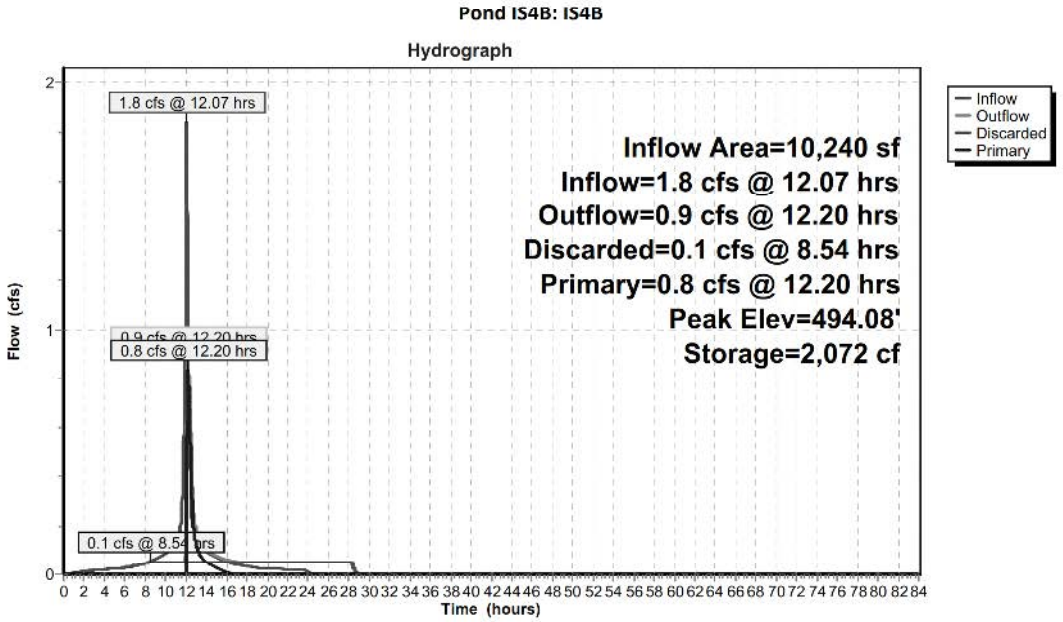

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 2.93" for 50 YR event
Inflow = 2.7 cfs @ 12.19 hrs, Volume= 9,063 cf
Outflow = 2.5 cfs @ 12.24 hrs, Volume= 7,886 cf, Atten= 5%, Lag= 3.0 min
Primary = 2.5 cfs @ 12.24 hrs, Volume= 7,886 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.23' @ 12.24 hrs Surf.Area= 1,788 sf Storage= 1,569 cf

Plug-Flow detention time= 80.2 min calculated for 7,886 cf (87% of inflow)
Center-of-Mass det. time= 24.1 min (859.0 - 834.8)

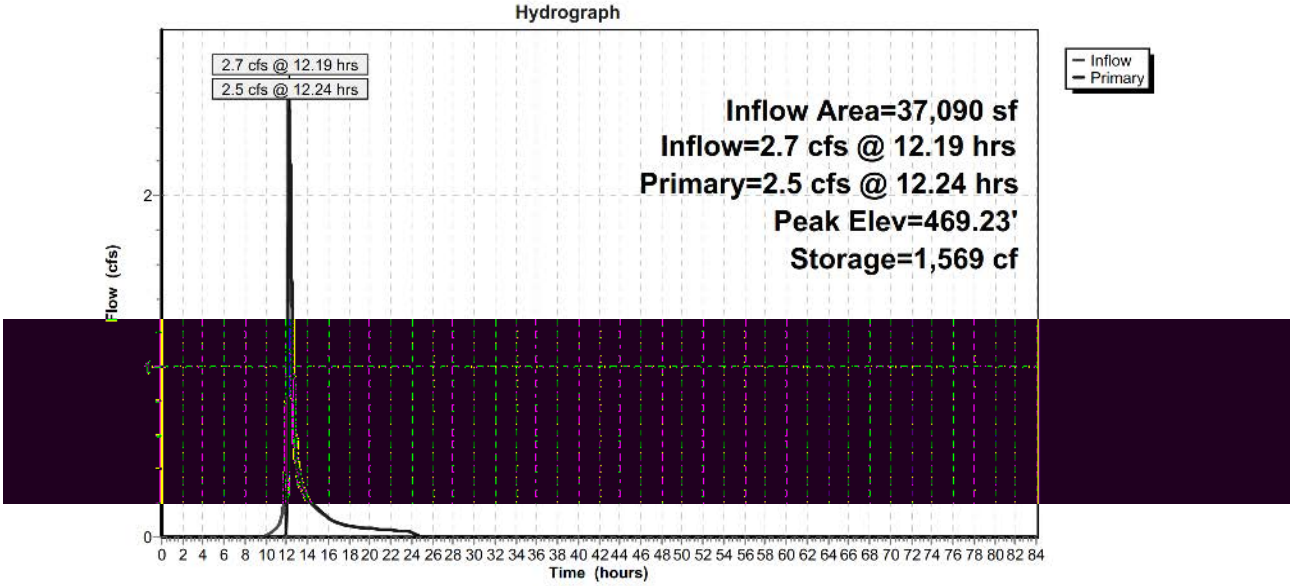
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.5 cfs @ 12.24 hrs HW=469.23' (Free Discharge)
└**1=Culvert** (Passes 2.5 cfs of 4.6 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.5 cfs @ 1.36 fps)

Pond POND 4A: POND 4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 3.88" for 50 YR event
Inflow = 25.3 cfs @ 12.15 hrs, Volume= 94,661 cf
Outflow = 5.7 cfs @ 12.88 hrs, Volume= 70,920 cf, Atten= 77%, Lag= 43.8 min
Primary = 5.7 cfs @ 12.88 hrs, Volume= 70,920 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 427.52' @ 12.88 hrs Surf.Area= 15,734 sf Storage= 45,844 cf

Plug-Flow detention time= 264.9 min calculated for 70,920 cf (75% of inflow)
Center-of-Mass det. time= 185.0 min (1,021.7 - 836.7)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500
			Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.7 cfs @ 12.88 hrs HW=427.52' (Free Discharge)
└**1=Culvert** (Passes 5.7 cfs of 6.6 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.2 cfs @ 5.94 fps)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 4.5 cfs @ 2.18 fps)

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4
Type III 24-hr 50 YR Rainfall=7.69"
Prepared by Alfonzetti Engineering, P.C.
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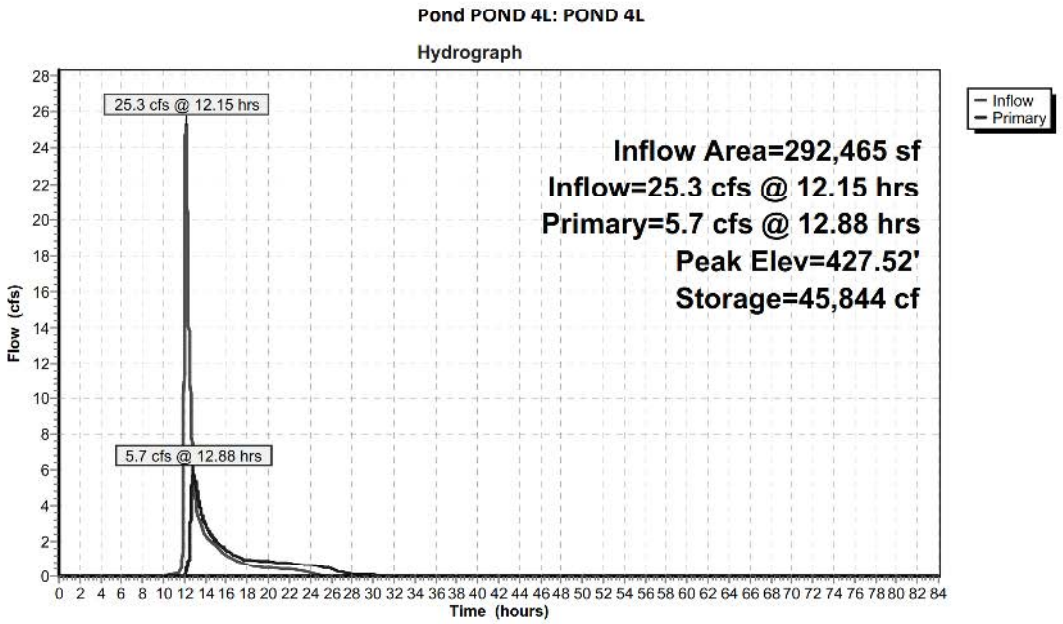

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Outflow = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.07 hrs, Volume= 6,358 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

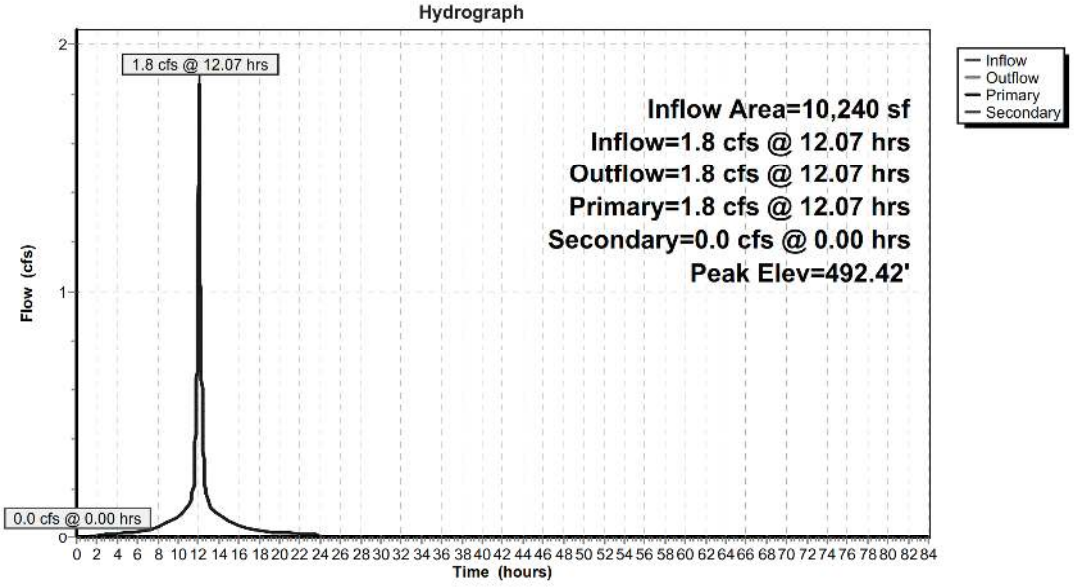
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.42' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.8 cfs @ 12.07 hrs HW=492.42' (Free Discharge)
↳**1=Culvert** (Barrel Controls 1.8 cfs @ 2.63 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 6.38" for 50 YR event
Inflow = 7.5 cfs @ 12.08 hrs, Volume= 27,330 cf
Outflow = 7.5 cfs @ 12.08 hrs, Volume= 27,330 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.5 cfs @ 12.08 hrs, Volume= 27,330 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

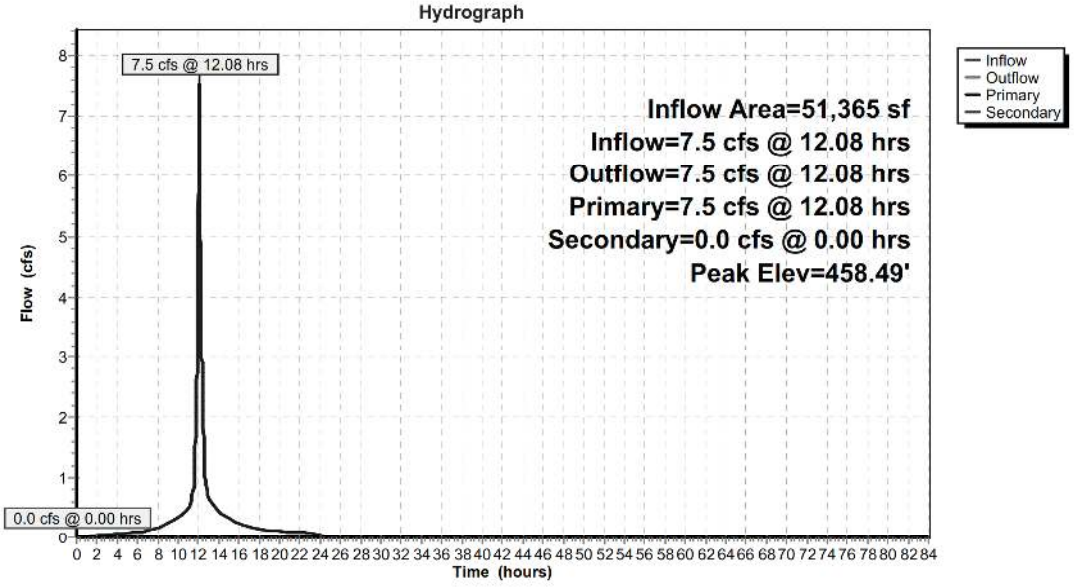
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 458.49' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=7.5 cfs @ 12.08 hrs HW=458.48' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.5 cfs @ 9.57 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 5.64" for 50 YR event
Inflow = 25.4 cfs @ 12.07 hrs, Volume= 107,814 cf
Outflow = 25.4 cfs @ 12.07 hrs, Volume= 107,814 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.07 hrs, Volume= 94,263 cf
Secondary = 12.7 cfs @ 12.07 hrs, Volume= 13,551 cf

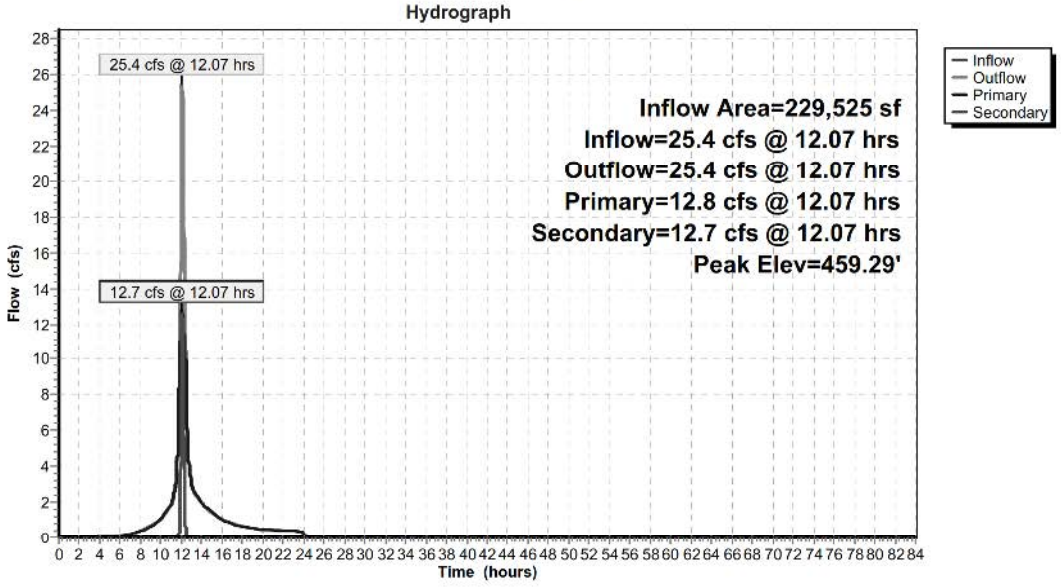
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.29' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=12.8 cfs @ 12.07 hrs HW=459.29' (Free Discharge)
↳**1=Culvert** (Inlet Controls 12.8 cfs @ 10.40 fps)

Secondary OutFlow Max=12.7 cfs @ 12.07 hrs HW=459.29' (Free Discharge)
↳**2=Culvert** (Barrel Controls 12.7 cfs @ 4.42 fps)

Pond SPLIT4H: SPLIT4H



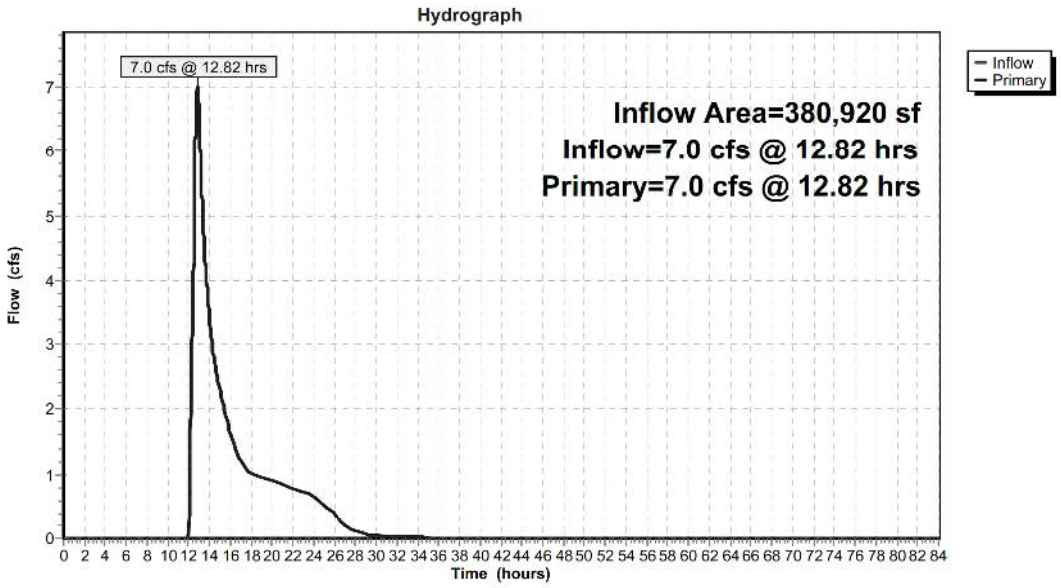
EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link TRDP4: TRANSFERDP4

Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 2.61" for 50 YR event
Inflow = 7.0 cfs @ 12.82 hrs, Volume= 82,995 cf
Primary = 7.0 cfs @ 12.82 hrs, Volume= 82,995 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*

Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 4A: PRWS4A Runoff Area=26,850 sf 0.00% Impervious Runoff Depth=4.36"
Flow Length=275' Tc=12.7 min CN=61 Runoff=2.5 cfs 9,754 cf

Subcatchment 4B: PRWS4B Runoff Area=10,240 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=2.2 cfs 7,620 cf

Subcatchment 4F: PRWS4F Runoff Area=17,900 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=3.8 cfs 13,320 cf

Subcatchment 4G: PRWS4G Runoff Area=15,265 sf 15.72% Impervious Runoff Depth=5.11"
Flow Length=98' Slope=0.0150 '/' Tc=10.4 min CN=67 Runoff=1.8 cfs 6,500 cf

Subcatchment 4H: PRWS4H Runoff Area=142,656 sf 41.68% Impervious Runoff Depth=6.36"
Flow Length=849' Tc=10.9 min CN=77 Runoff=20.5 cfs 75,577 cf

Subcatchment 4I: PRWS4I Runoff Area=20,480 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=4.4 cfs 15,240 cf

Subcatchment 4J: PRWS4J Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=1.1 cfs 3,810 cf

Subcatchment 4K: PRWS4K Runoff Area=61,269 sf 74.84% Impervious Runoff Depth=7.84"
Flow Length=610' Slope=0.0500 '/' Tc=1.2 min CN=89 Runoff=14.3 cfs 40,015 cf

Subcatchment 4L: PRWS4L Runoff Area=62,940 sf 0.00% Impervious Runoff Depth=4.11"
Flow Length=264' Tc=13.0 min CN=59 Runoff=5.5 cfs 21,555 cf

Subcatchment 4M: PRWS4M Runoff Area=18,200 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=3.9 cfs 13,543 cf

Pond DW4F: DW4F Peak Elev=465.40' Storage=12,243 cf Inflow=9.1 cfs 33,363 cf
Discarded=0.3 cfs 24,559 cf Primary=3.0 cfs 8,805 cf Outflow=3.3 cfs 33,363 cf

Pond DW4H: DW4H Peak Elev=459.98' Storage=26,333 cf Inflow=13.7 cfs 113,040 cf
Discarded=0.2 cfs 29,373 cf Primary=12.1 cfs 83,667 cf Outflow=12.2 cfs 113,040 cf

Pond IS4B: IS4B Peak Elev=494.44' Storage=2,292 cf Inflow=2.2 cfs 7,620 cf
Discarded=0.1 cfs 4,763 cf Primary=1.3 cfs 2,856 cf Outflow=1.4 cfs 7,620 cf

Pond POND 4A: POND 4A Peak Elev=469.30' Storage=1,690 cf Inflow=3.8 cfs 12,611 cf
Outflow=3.7 cfs 11,434 cf

Pond POND 4L: POND 4L Peak Elev=428.26' Storage=57,970 cf Inflow=33.2 cfs 126,824 cf
Outflow=7.3 cfs 103,083 cf

Pond SPLIT4B: SPLIT4B Peak Elev=492.52' Inflow=2.2 cfs 7,620 cf
Primary=2.2 cfs 7,620 cf Secondary=0.0 cfs 0 cf Outflow=2.2 cfs 7,620 cf

Pond SPLIT4F: SPLIT4F Peak Elev=460.35' Inflow=9.1 cfs 33,363 cf
Primary=9.1 cfs 33,363 cf Secondary=0.0 cfs 0 cf Outflow=9.1 cfs 33,363 cf

Pond SPLIT4H: SPLIT4H Peak Elev=460.00' Inflow=31.5 cfs 134,642 cf
Primary=13.7 cfs 113,040 cf Secondary=17.8 cfs 21,602 cf Outflow=31.5 cfs 134,642 cf

Link TRDP4: TRANSFERDP4 Inflow=12.6 cfs 123,321 cf
Primary=12.6 cfs 123,321 cf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Total Runoff Area = 380,920 sf Runoff Volume = 206,934 cf Average Runoff Depth = 6.52"
52.84% Pervious = 201,266 sf 47.16% Impervious = 179,654 sf

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4A: PRWS4A

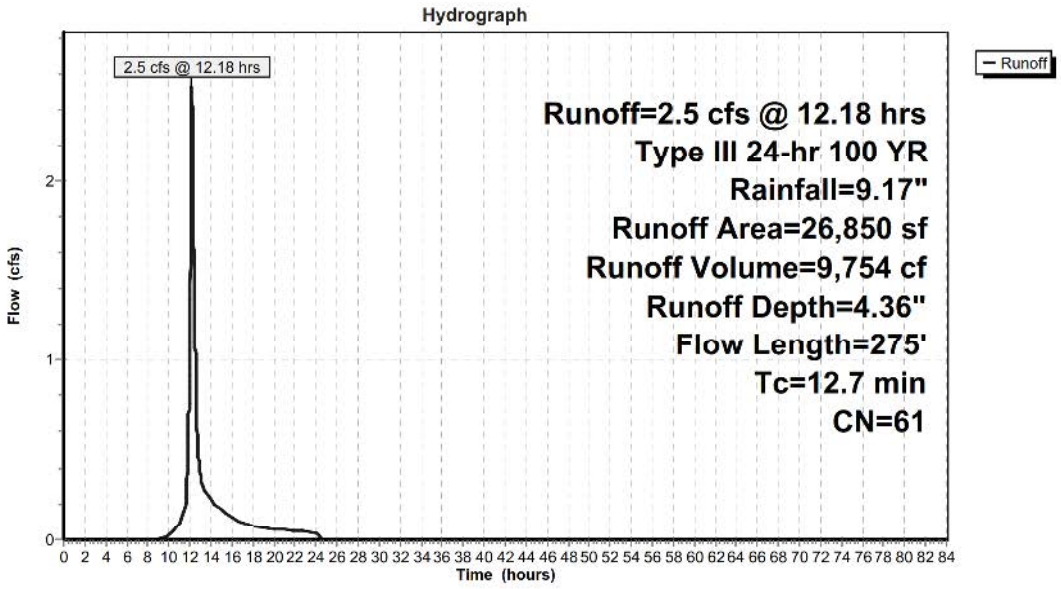
Runoff = 2.5 cfs @ 12.18 hrs, Volume= 9,754 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
26,850	61	>75% Grass cover, Good, HSG B
26,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
1.3	65	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	63	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	47	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.7	275	Total			

Subcatchment 4A: PRWS4A



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 4B: PRWS4B

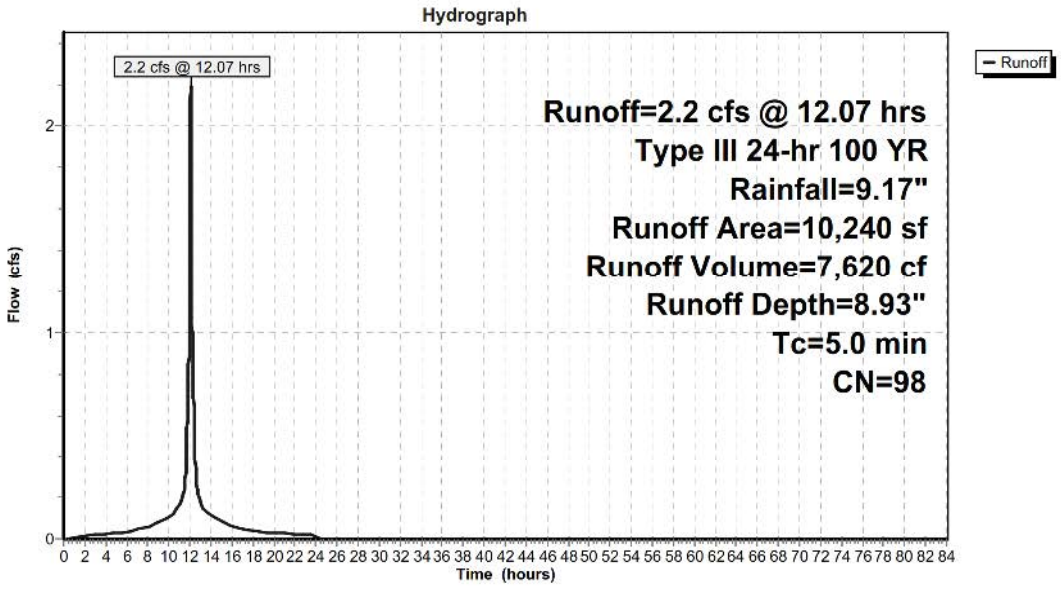
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
10,240	98	Weighted Average
10,240		100.00% Impervious Area
10,240		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4B: PRWS4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4F: PRWS4F

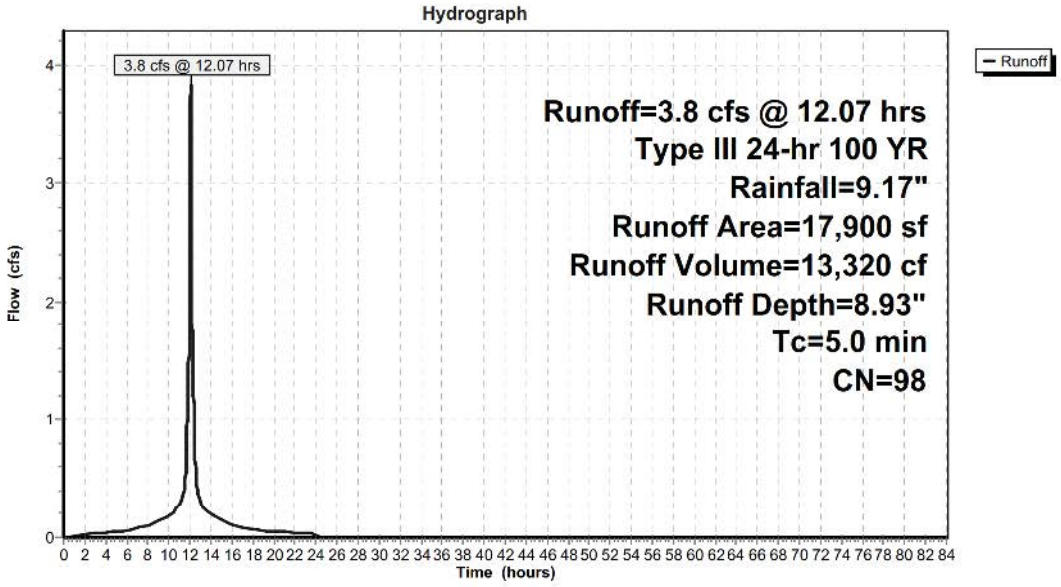
Runoff = 3.8 cfs @ 12.07 hrs, Volume= 13,320 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
17,900	98	Unconnected roofs, HSG B
17,900		100.00% Impervious Area
17,900		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4F: PRWS4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 4G: PRWS4G

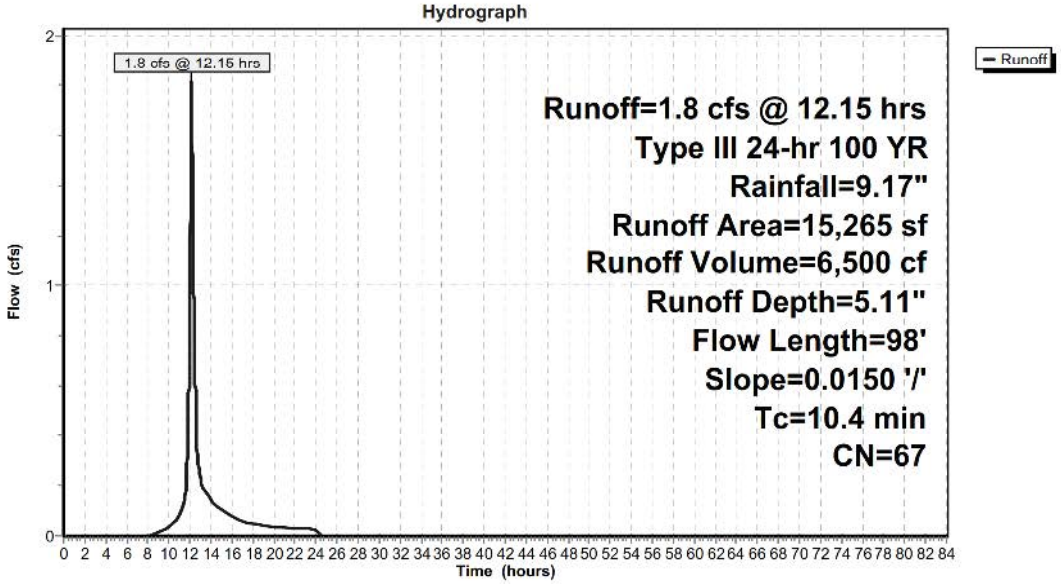
Runoff = 1.8 cfs @ 12.15 hrs, Volume= 6,500 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
2,400	98	Paved parking, HSG B
12,865	61	>75% Grass cover, Good, HSG B
15,265	67	Weighted Average
12,865		84.28% Pervious Area
2,400		15.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	98	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"

Subcatchment 4G: PRWS4G



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4H: PRWS4H

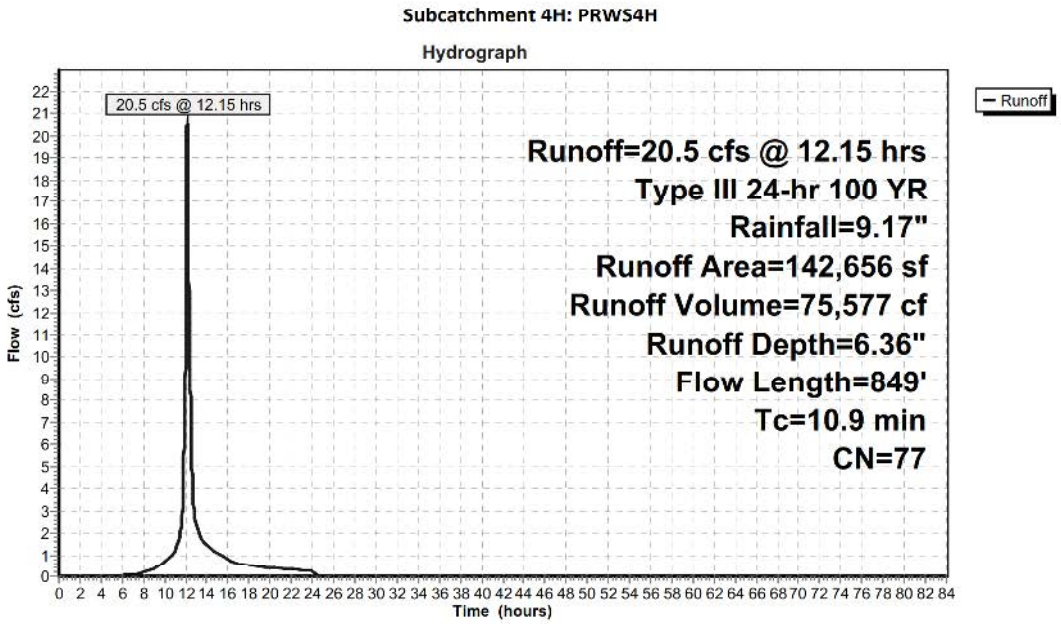
Runoff = 20.5 cfs @ 12.15 hrs, Volume= 75,577 cf, Depth= 6.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
59,462	98	Paved parking, HSG B
5,280	85	Gravel roads, HSG B
73,123	61	>75% Grass cover, Good, HSG B
4,791	61	>75% Grass cover, Good, HSG B
142,656	77	Weighted Average
83,194		58.32% Pervious Area
59,462		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.0	11	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	62	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	115	0.1200	7.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	345	0.0800	12.83	10.077	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.9	849	Total			

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Subcatchment 4I: PRWS4I

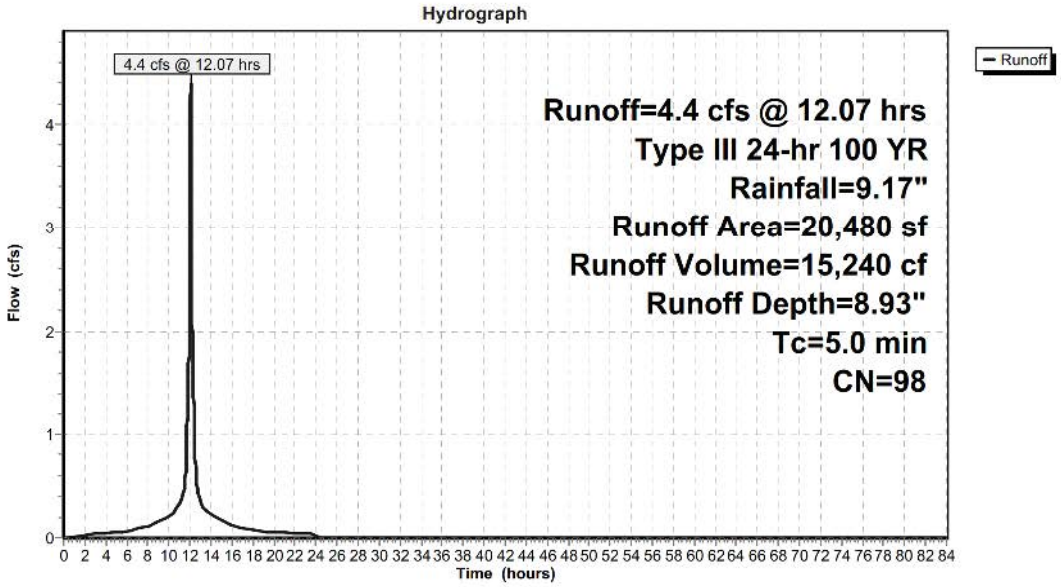
Runoff = 4.4 cfs @ 12.07 hrs, Volume= 15,240 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
5,120	98	Unconnected roofs, HSG B
20,480	98	Weighted Average
20,480		100.00% Impervious Area
20,480		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4I: PRWS4I



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Summary for Subcatchment 4J: PRWS4J

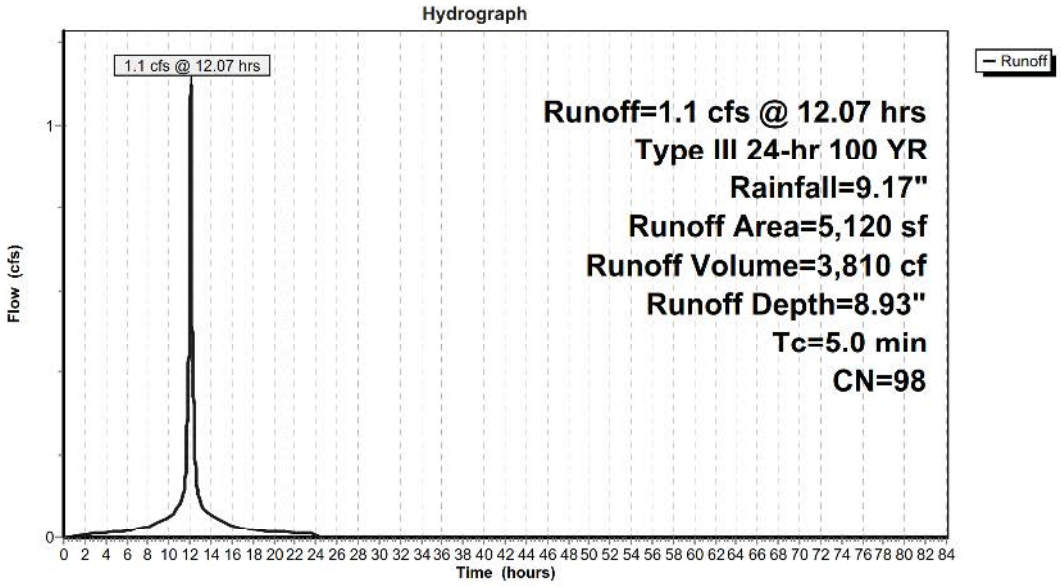
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 3,810 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4J: PRWS4J



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4K: PRWS4K

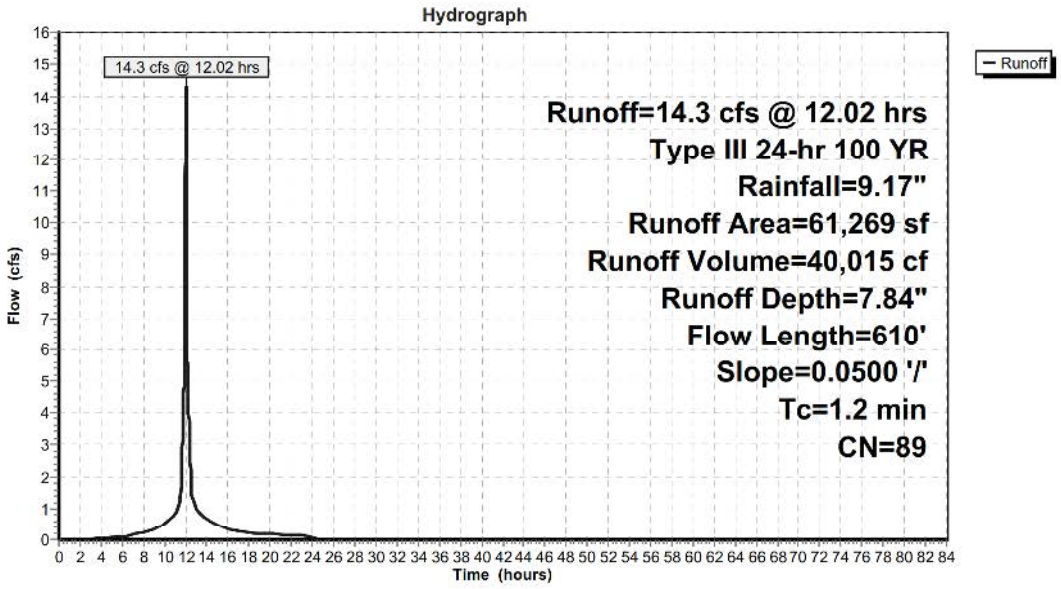
Runoff = 14.3 cfs @ 12.02 hrs, Volume= 40,015 cf, Depth= 7.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
45,852	98	Paved parking, HSG B
15,417	61	>75% Grass cover, Good, HSG B
61,269	89	Weighted Average
15,417		25.16% Pervious Area
45,852		74.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	21	0.0500	1.50		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.43"
1.0	589	0.0500	10.14	7.967	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
1.2	610	Total			

Subcatchment 4K: PRWS4K



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Summary for Subcatchment 4L: PRWS4L

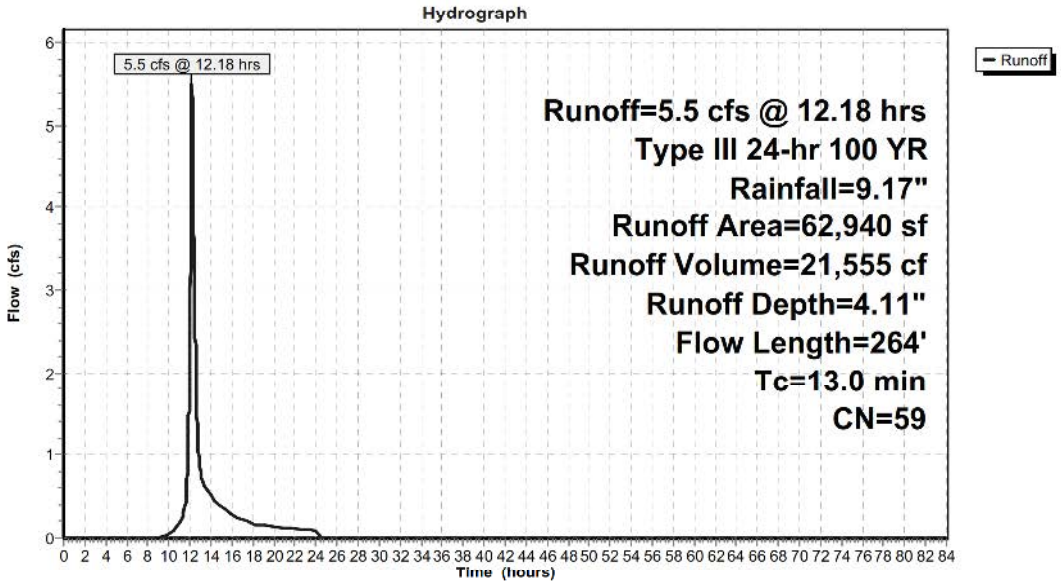
Runoff = 5.5 cfs @ 12.18 hrs, Volume= 21,555 cf, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
46,174	61	>75% Grass cover, Good, HSG B
16,766	55	Woods, Good, HSG B
62,940	59	Weighted Average
62,940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
0.4	32	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	38	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.1100	2.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	264	Total			

Subcatchment 4L: PRWS4L



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 4M: PRWS4M

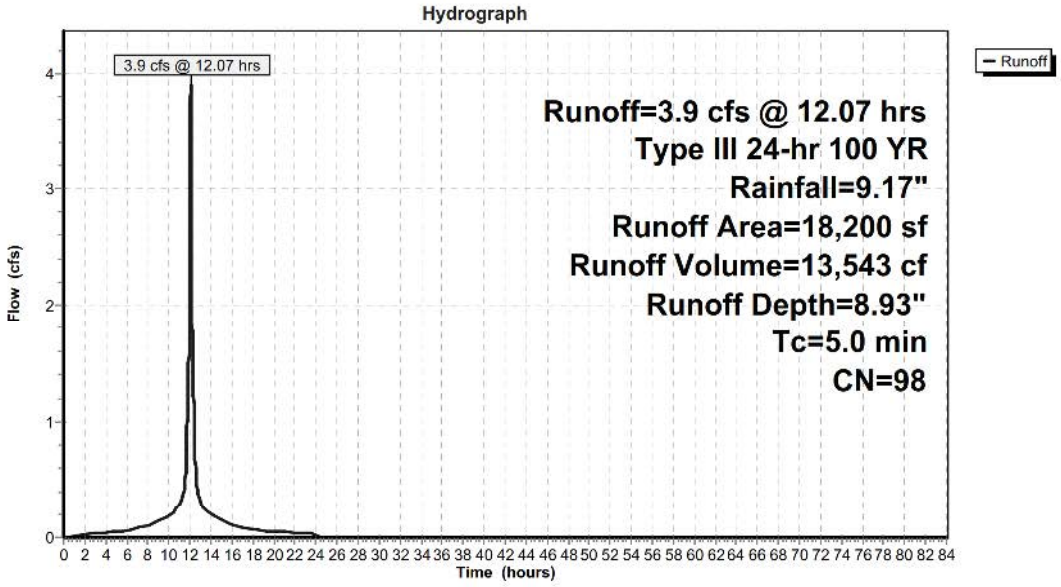
Runoff = 3.9 cfs @ 12.07 hrs, Volume= 13,543 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
18,200	98	Unconnected roofs, HSG B
18,200		100.00% Impervious Area
18,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4M: PRWS4M



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4F: DW4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 7.79" for 100 YR event
Inflow = 9.1 cfs @ 12.08 hrs, Volume= 33,363 cf
Outflow = 3.3 cfs @ 12.37 hrs, Volume= 33,363 cf, Atten= 64%, Lag= 17.5 min
Discarded = 0.3 cfs @ 8.87 hrs, Volume= 24,559 cf
Primary = 3.0 cfs @ 12.37 hrs, Volume= 8,805 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 465.40' @ 12.37 hrs Surf.Area= 2,304 sf Storage= 12,243 cf

Plug-Flow detention time= 257.7 min calculated for 33,359 cf (100% of inflow)
Center-of-Mass det. time= 257.7 min (1,014.0 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1	457.50'	3,145 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 16 19,584 cf Overall - 10,053 cf Embedded = 9,531 cf x 33.0% Voids
#2	458.00'	10,053 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 16 Inside #1
		13,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
457.50	144	0	0
466.00	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	457.50'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	464.00'	**15.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.3 cfs @ 8.87 hrs HW=457.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=3.0 cfs @ 12.37 hrs HW=465.40' (Free Discharge)
↳**2=Culvert** (Barrel Controls 3.0 cfs @ 2.72 fps)

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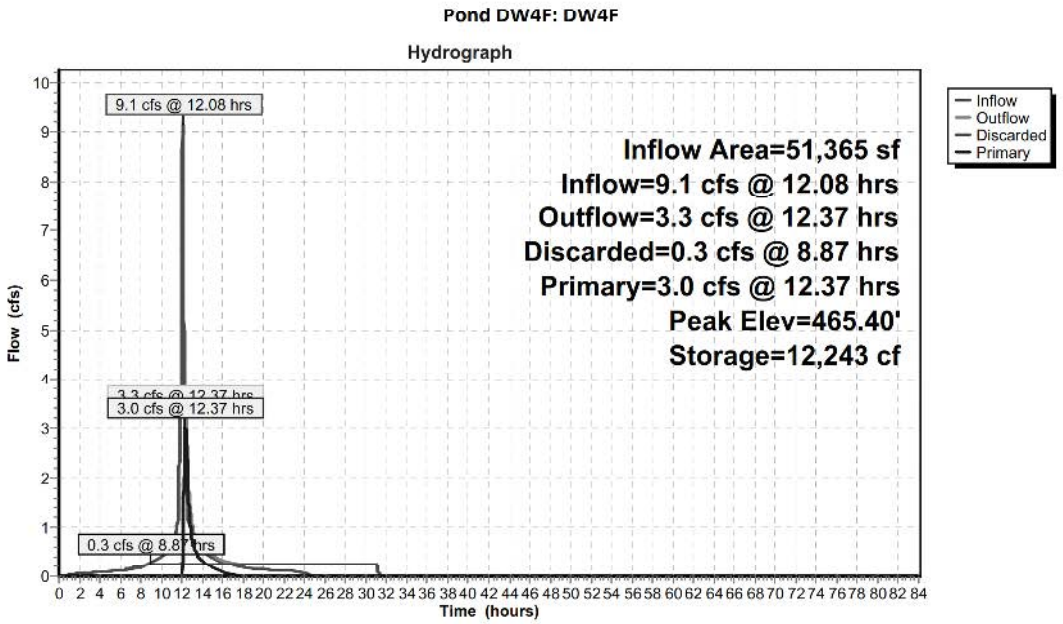

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW4H: DW4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 5.91" for 100 YR event
Inflow = 13.7 cfs @ 12.08 hrs, Volume= 113,040 cf
Outflow = 12.2 cfs @ 12.26 hrs, Volume= 113,040 cf, Atten= 11%, Lag= 10.7 min
Discarded = 0.2 cfs @ 5.89 hrs, Volume= 29,373 cf
Primary = 12.1 cfs @ 12.26 hrs, Volume= 83,667 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 459.98' @ 12.26 hrs Surf.Area= 4,608 sf Storage= 26,333 cf

Plug-Flow detention time= 285.4 min calculated for 113,040 cf (100% of inflow)
Center-of-Mass det. time= 285.4 min (1,084.5 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	451.50'	7,051 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 32 41,472 cf Overall - 20,106 cf Embedded = 21,366 cf x 33.0% Voids
#2	452.00'	20,106 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 32 Inside #1
		27,157 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.50	144	0	0
460.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	451.50'	**1.500 in/hr Exfiltration over Surface area**
#2	Primary	457.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.2 cfs @ 5.89 hrs HW=451.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=12.1 cfs @ 12.26 hrs HW=459.98' (Free Discharge)
↳**2=Culvert** (Barrel Controls 12.1 cfs @ 6.82 fps)

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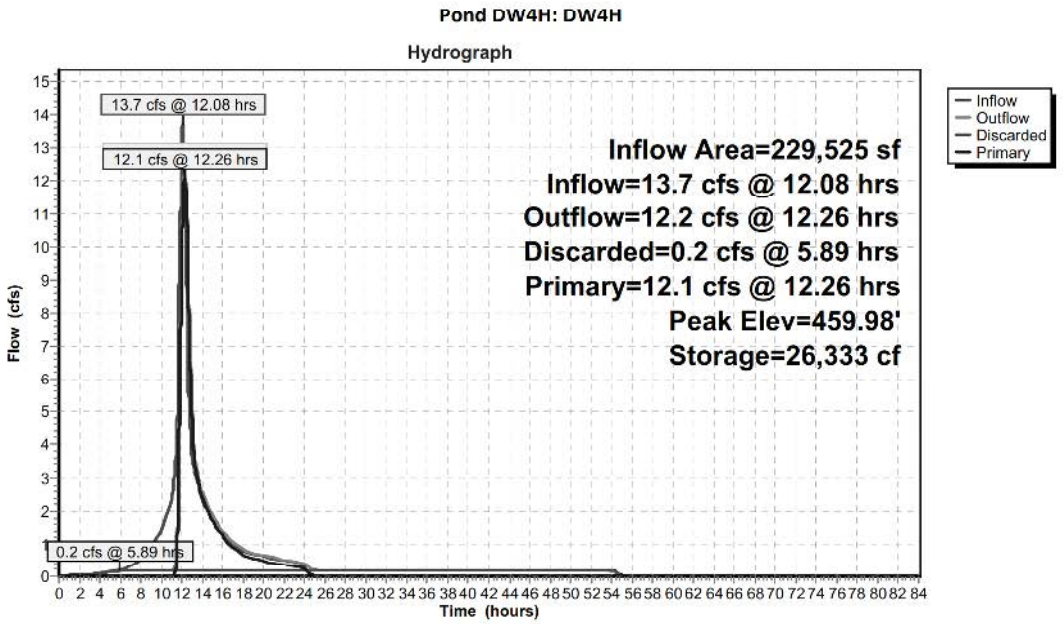

EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS4B: IS4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Outflow = 1.4 cfs @ 12.16 hrs, Volume= 7,620 cf, Atten= 38%, Lag= 5.4 min
Discarded = 0.1 cfs @ 8.03 hrs, Volume= 4,763 cf
Primary = 1.3 cfs @ 12.16 hrs, Volume= 2,856 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 494.44' @ 12.16 hrs Surf.Area= 1,152 sf Storage= 2,292 cf

Plug-Flow detention time= 176.2 min calculated for 7,619 cf (100% of inflow)
Center-of-Mass det. time= 176.2 min (914.9 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	491.50'	1,006 cf	**16.00'W x 72.00'L x 3.54'H Field A** 4,080 cf Overall - 1,565 cf Embedded = 2,515 cf x 40.0% Voids
#2A	492.00'	1,565 cf	**Cultec R-330XL** x 30 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		2,571 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	491.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	493.50'	**8.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.1 cfs @ 8.03 hrs HW=491.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=1.3 cfs @ 12.16 hrs HW=494.44' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 1.3 cfs @ 3.74 fps)

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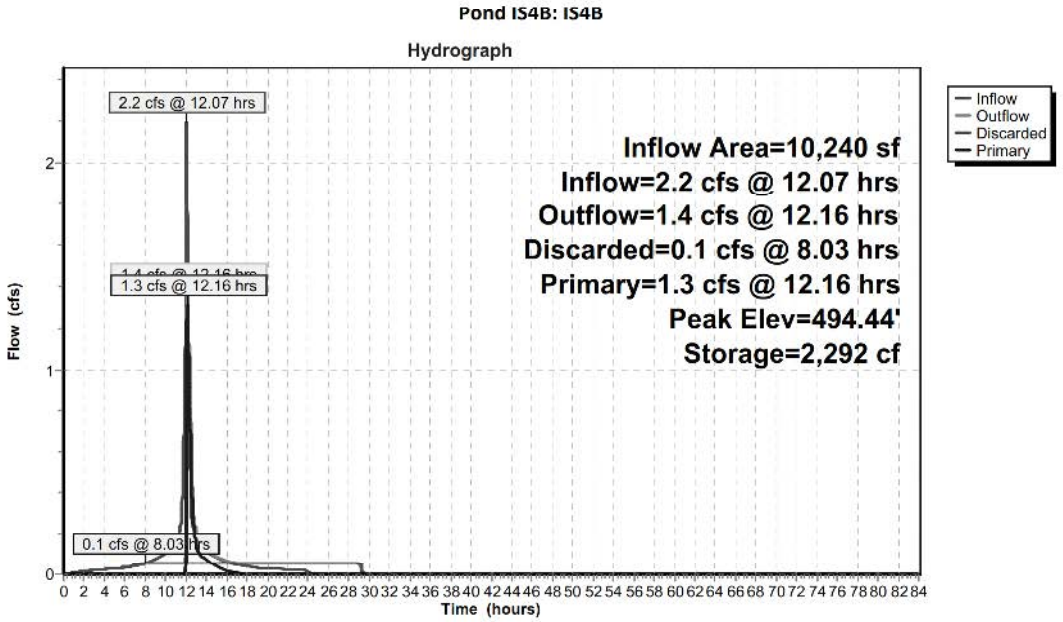

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Summary for Pond POND 4A: POND 4A

Inflow Area = 37,090 sf, 27.61% Impervious, Inflow Depth = 4.08" for 100 YR event
Inflow = 3.8 cfs @ 12.17 hrs, Volume= 12,611 cf
Outflow = 3.7 cfs @ 12.20 hrs, Volume= 11,434 cf, Atten= 2%, Lag= 1.7 min
Primary = 3.7 cfs @ 12.20 hrs, Volume= 11,434 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 469.30' @ 12.20 hrs Surf.Area= 1,844 sf Storage= 1,690 cf

Plug-Flow detention time= 62.7 min calculated for 11,434 cf (91% of inflow)
Center-of-Mass det. time= 18.7 min (844.6 - 825.9)

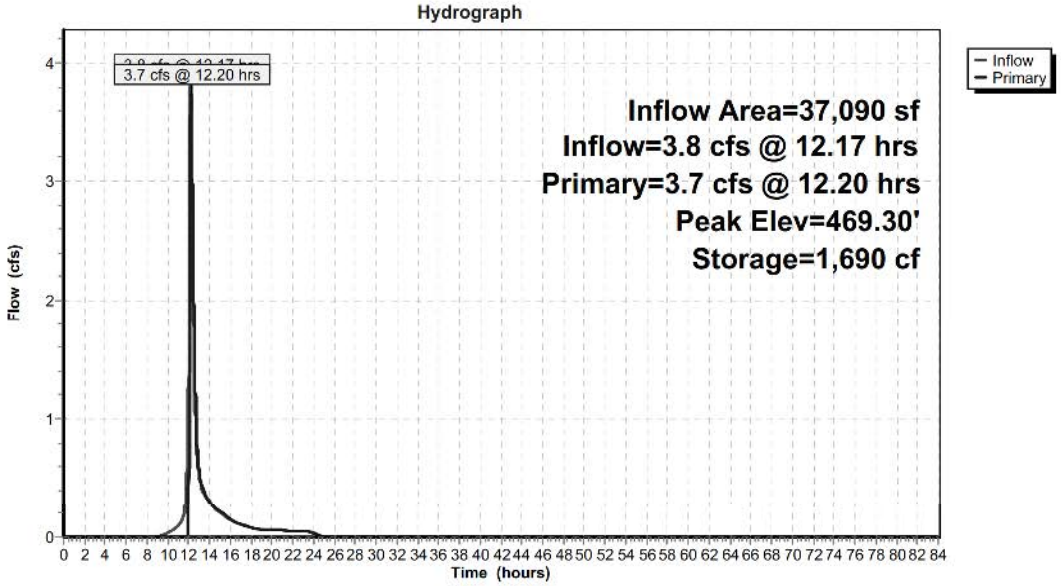
Volume	Invert	Avail.Storage	Storage Description
#1	468.00'	3,189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
468.00	759	0	0
470.00	2,430	3,189	3,189

Device	Routing	Invert	Outlet Devices
#1	Primary	468.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 467.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	469.00'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.7 cfs @ 12.20 hrs HW=469.30' (Free Discharge)
└**1=Culvert** (Passes 3.7 cfs of 4.8 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 3.7 cfs @ 1.56 fps)

Pond POND 4A: POND 4A



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Summary for Pond POND 4L: POND 4L

Inflow Area = 292,465 sf, 44.76% Impervious, Inflow Depth = 5.20" for 100 YR event
Inflow = 33.2 cfs @ 12.14 hrs, Volume= 126,824 cf
Outflow = 7.3 cfs @ 12.85 hrs, Volume= 103,083 cf, Atten= 78%, Lag= 42.4 min
Primary = 7.3 cfs @ 12.85 hrs, Volume= 103,083 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 428.26' @ 12.85 hrs Surf.Area= 16,935 sf Storage= 57,970 cf

Plug-Flow detention time= 219.2 min calculated for 103,070 cf (81% of inflow)
Center-of-Mass det. time= 151.1 min (981.0 - 829.9)

Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	89,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	10,406	0	0
426.00	13,335	23,741	23,741
428.00	16,490	29,825	53,566
430.00	19,871	36,361	89,927

Device	Routing	Invert	Outlet Devices
#1	Primary	424.00'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 422.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	426.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.3 cfs @ 12.85 hrs HW=428.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.3 cfs @ 9.34 fps)
└**2=Orifice/Grate** (Passes < 1.4 cfs potential flow)
└**3=Broad-Crested Rectangular Weir** (Passes < 18.9 cfs potential flow)

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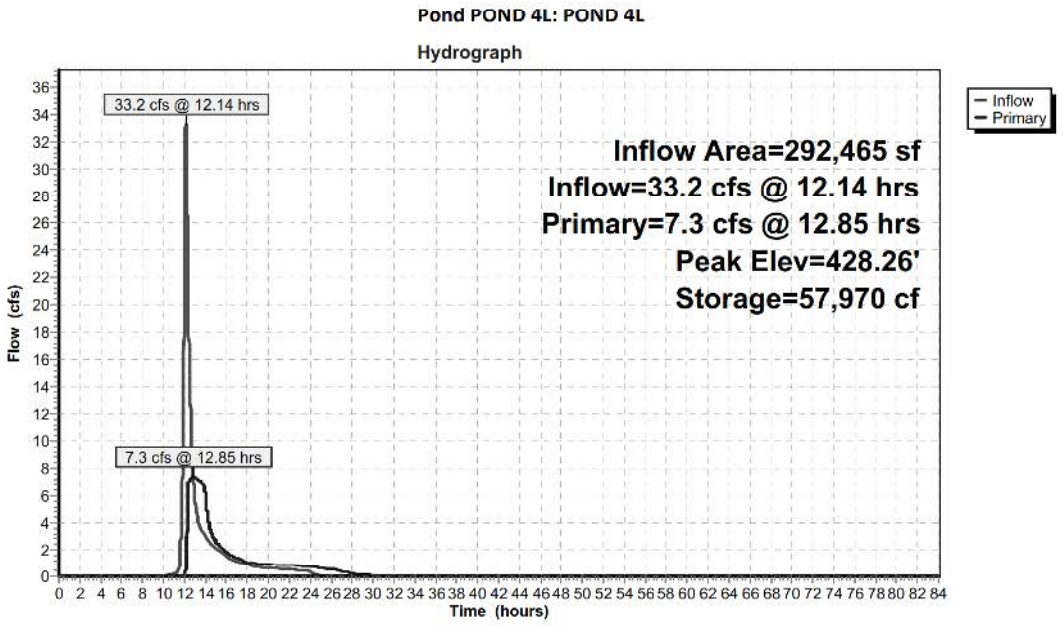

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Summary for Pond SPLIT4B: SPLIT4B

Inflow Area = 10,240 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Outflow = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.07 hrs, Volume= 7,620 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

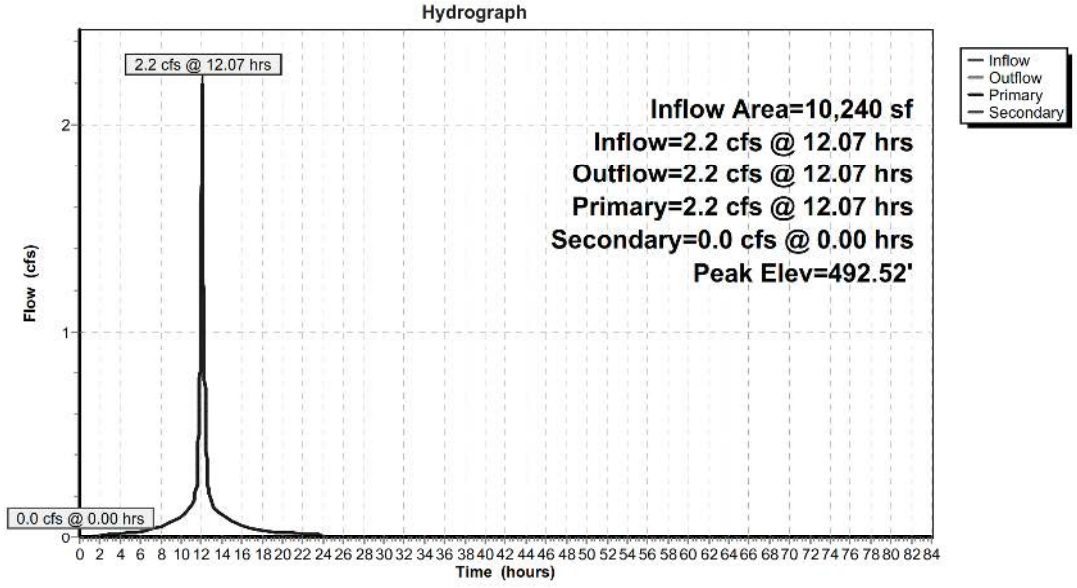
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 492.52' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	491.50'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 491.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	493.25'	**15.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 493.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.2 cfs @ 12.07 hrs HW=492.52' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.2 cfs @ 2.79 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=491.50' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4B: SPLIT4B



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT4F: SPLIT4F

Inflow Area = 51,365 sf, 74.95% Impervious, Inflow Depth = 7.79" for 100 YR event
Inflow = 9.1 cfs @ 12.08 hrs, Volume= 33,363 cf
Outflow = 9.1 cfs @ 12.08 hrs, Volume= 33,363 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.1 cfs @ 12.08 hrs, Volume= 33,363 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

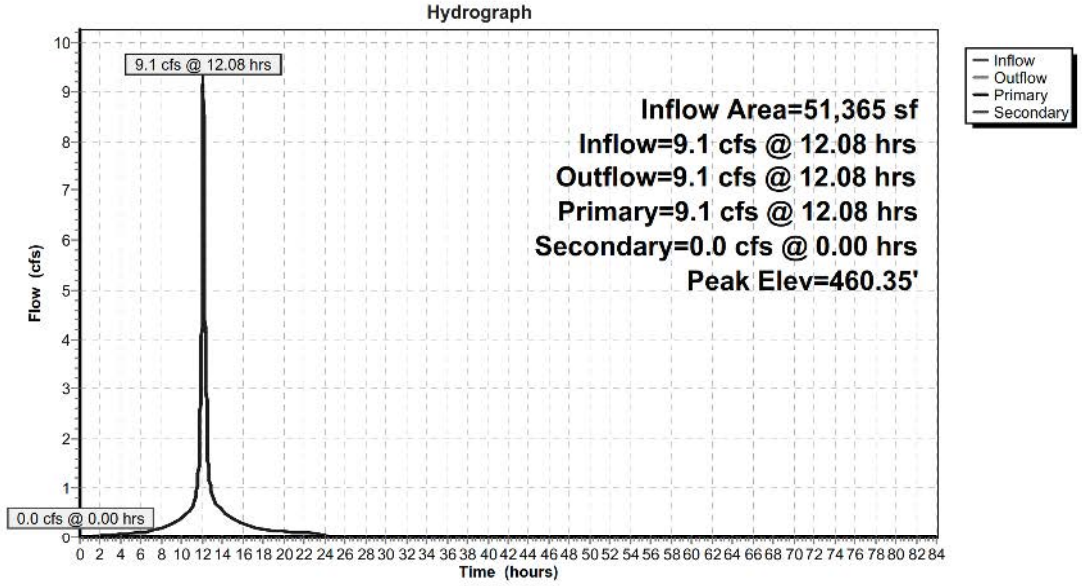
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 460.35' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	464.00'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 464.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=9.1 cfs @ 12.08 hrs HW=460.33' (Free Discharge)
↳**1=Culvert** (Inlet Controls 9.1 cfs @ 11.63 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=454.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT4F: SPLIT4F



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.
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Summary for Pond SPLIT4H: SPLIT4H

Inflow Area = 229,525 sf, 57.04% Impervious, Inflow Depth = 7.04" for 100 YR event
Inflow = 31.5 cfs @ 12.08 hrs, Volume= 134,642 cf
Outflow = 31.5 cfs @ 12.08 hrs, Volume= 134,642 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.7 cfs @ 12.08 hrs, Volume= 113,040 cf
Secondary = 17.8 cfs @ 12.08 hrs, Volume= 21,602 cf

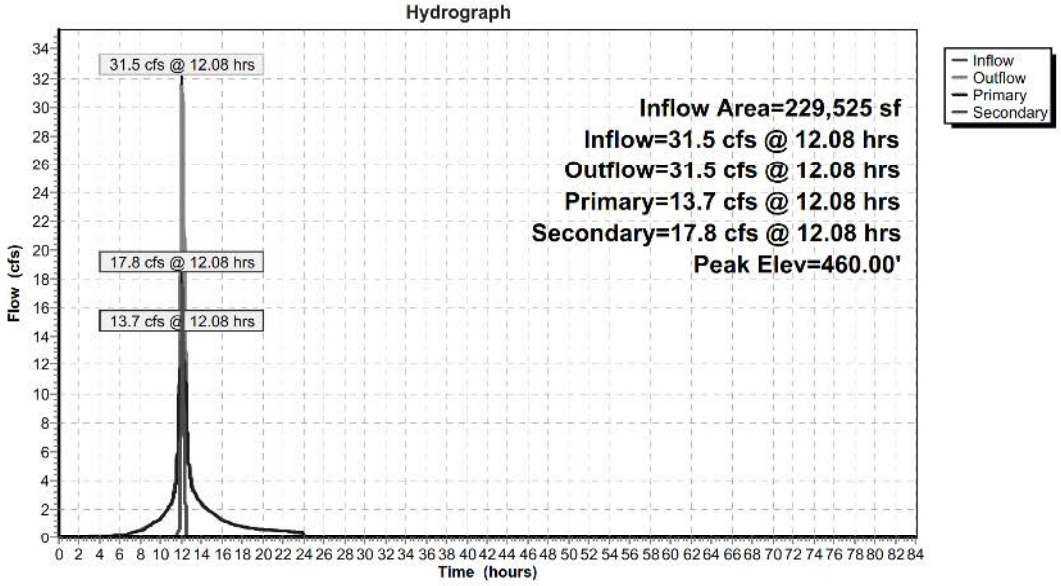
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 460.00' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	454.00'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 454.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	457.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 457.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=13.7 cfs @ 12.08 hrs HW=460.00' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.7 cfs @ 11.16 fps)

Secondary OutFlow Max=17.8 cfs @ 12.08 hrs HW=460.00' (Free Discharge)
└**2=Culvert** (Barrel Controls 17.8 cfs @ 5.68 fps)

Pond SPLIT4H: SPLIT4H



EAGLE RIDGE-50 TOWNHOUSE TRANSFER DP4 *Type III 24-hr 100 YR Rainfall=9.17"*
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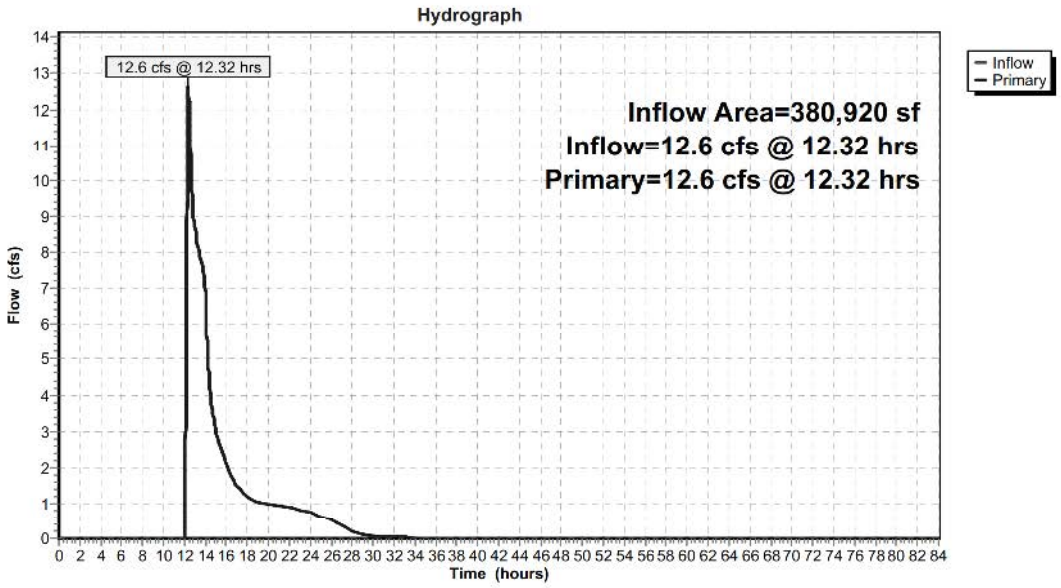
Summary for Link TRDP4: TRANSFERDP4

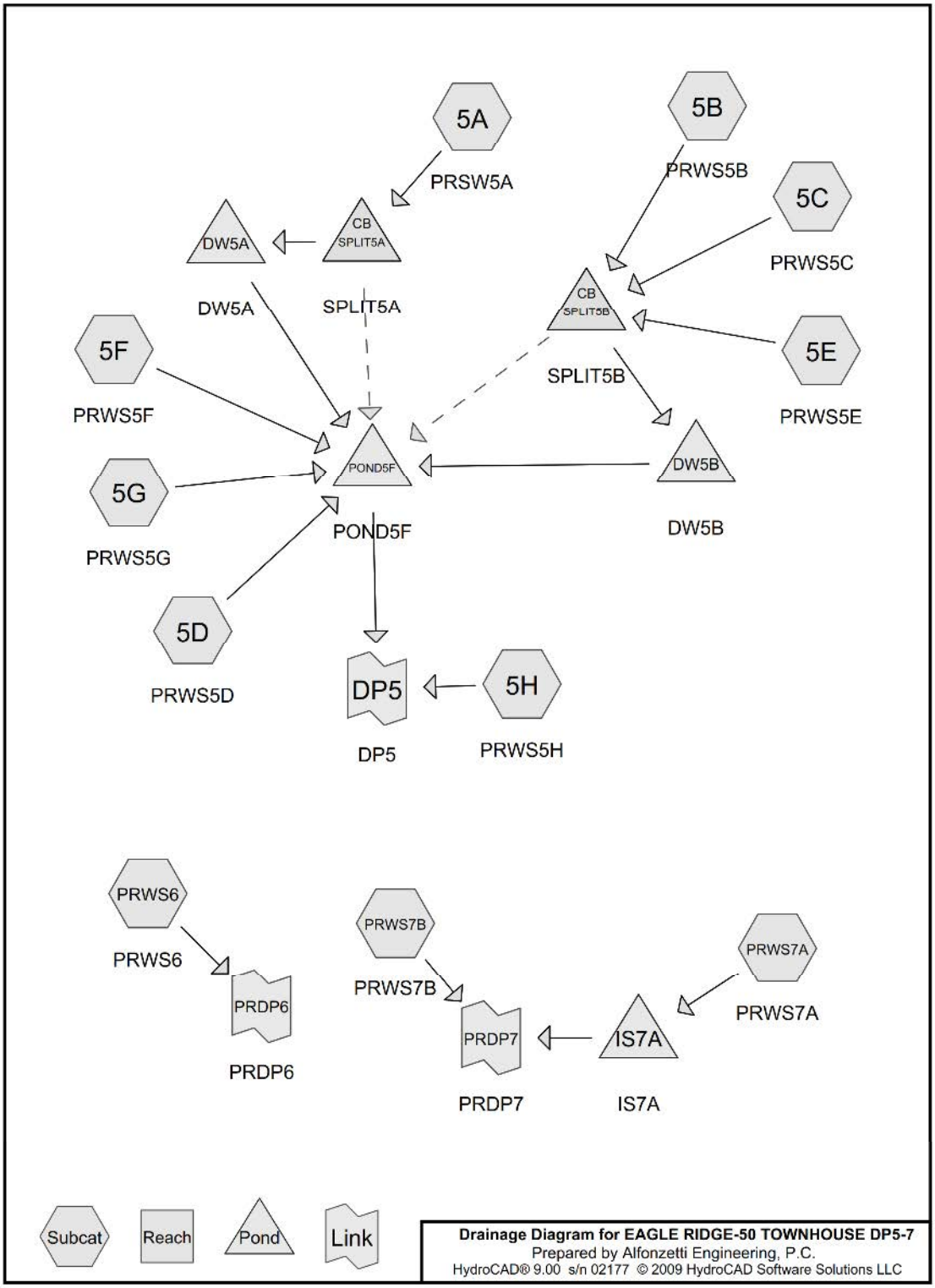
Inflow Area = 380,920 sf, 47.16% Impervious, Inflow Depth = 3.88" for 100 YR event
Inflow = 12.6 cfs @ 12.32 hrs, Volume= 123,321 cf
Primary = 12.6 cfs @ 12.32 hrs, Volume= 123,321 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link TRDP4: TRANSFERDP4



Proposed HydroCad Report (DP5-DP7):



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=2.0 cfs 6,577 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=2.0 cfs 6,577 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=1.0 cfs 3,289 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=0.1 cfs 895 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=0.74"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=1.6 cfs 8,189 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=180' Tc=10.6 min CN=61 Runoff=0.1 cfs 805 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=1.57"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=0.6 cfs 1,547 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=0.26"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=1.1 cfs 9,216 cf

Link DP5: DP5 Inflow=1.1 cfs 9,216 cf
Primary=1.1 cfs 9,216 cf

Pond DW5A: DW5A Peak Elev=480.27' Storage=2,712 cf Inflow=2.0 cfs 6,577 cf
Discarded=0.1 cfs 6,577 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 6,577 cf

Pond DW5B: DW5B Peak Elev=480.51' Storage=6,030 cf Inflow=3.5 cfs 18,054 cf
Discarded=0.5 cfs 18,054 cf Primary=0.0 cfs 0 cf Outflow=0.5 cfs 18,054 cf

Pond IS7A: IS7A Peak Elev=1.08' Storage=0.009 af Inflow=0.3 cfs 1,096 cf
Discarded=0.0 cfs 1,096 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 1,096 cf

Pond POND5F: POND5F Peak Elev=483.12' Storage=3,247 cf Inflow=0.6 cfs 3,247 cf
Outflow=0.0 cfs 0 cf

Link PRDP6: PRDP6 Inflow=2.2 cfs 8,762 cf
Primary=2.2 cfs 8,762 cf

Link PRDP7: PRDP7 Inflow=0.1 cfs 683 cf
Primary=0.1 cfs 683 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=0.61"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=2.2 cfs 8,762 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=0.3 cfs 1,096 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=0.19"
Flow Length=341' Tc=8.8 min CN=57 Runoff=0.1 cfs 683 cf

Pond SPLIT5A: SPLIT5A Peak Elev=482.38' Inflow=2.0 cfs 6,577 cf
Primary=2.0 cfs 6,577 cf Secondary=0.0 cfs 0 cf Outflow=2.0 cfs 6,577 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=479.21' Inflow=3.5 cfs 18,054 cf
Primary=3.5 cfs 18,054 cf Secondary=0.0 cfs 0 cf Outflow=3.5 cfs 18,054 cf

Total Runoff Area = 931,973 sf Runoff Volume = 47,637 cf Average Runoff Depth = 0.61"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5A: PRSW5A

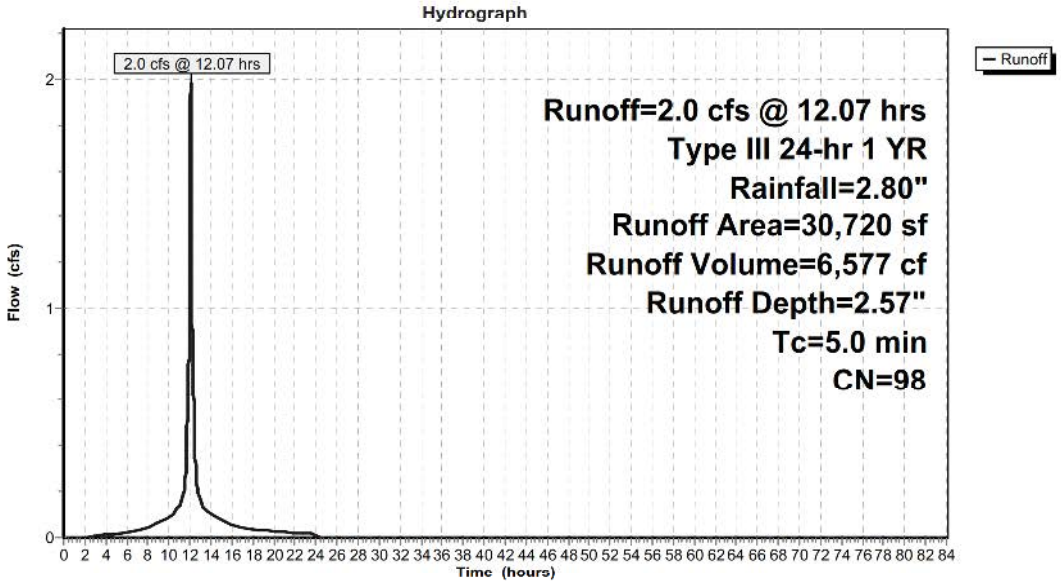
Runoff = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5B: PRWS5B

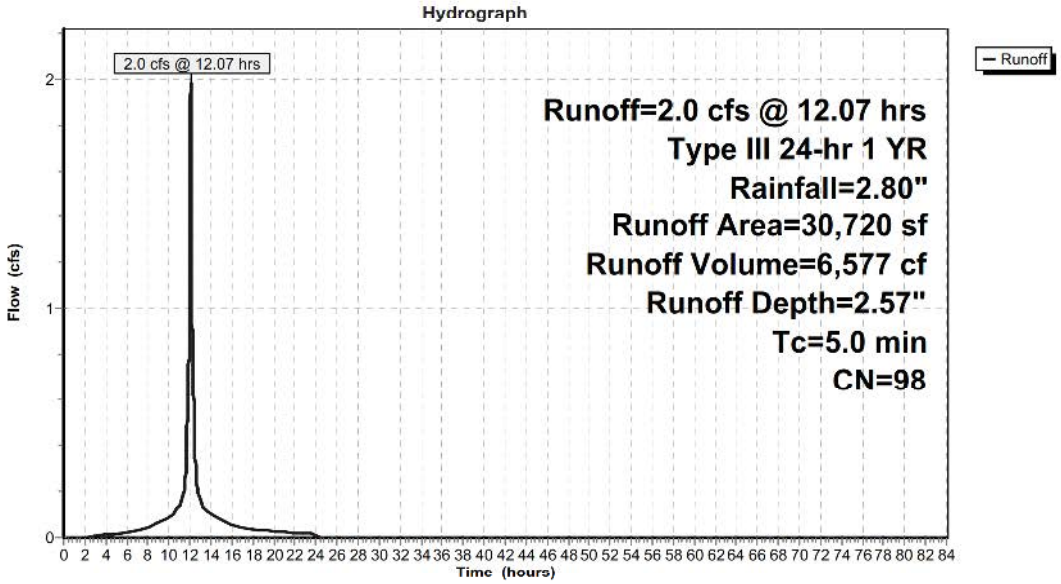
Runoff = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5B: PRWS5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5C: PRWS5C

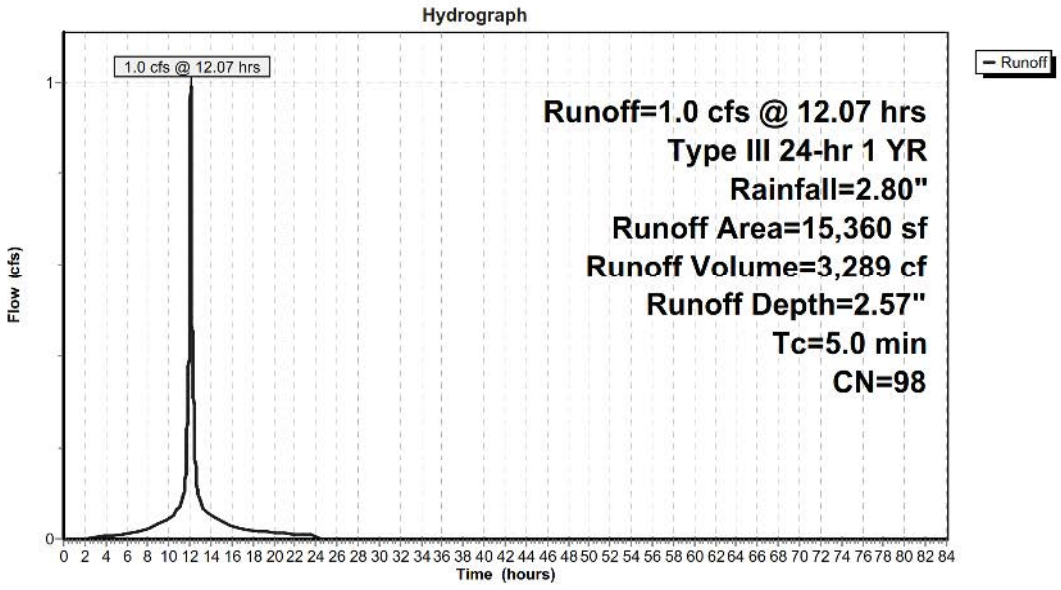
Runoff = 1.0 cfs @ 12.07 hrs, Volume= 3,289 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5D: PRWS5D

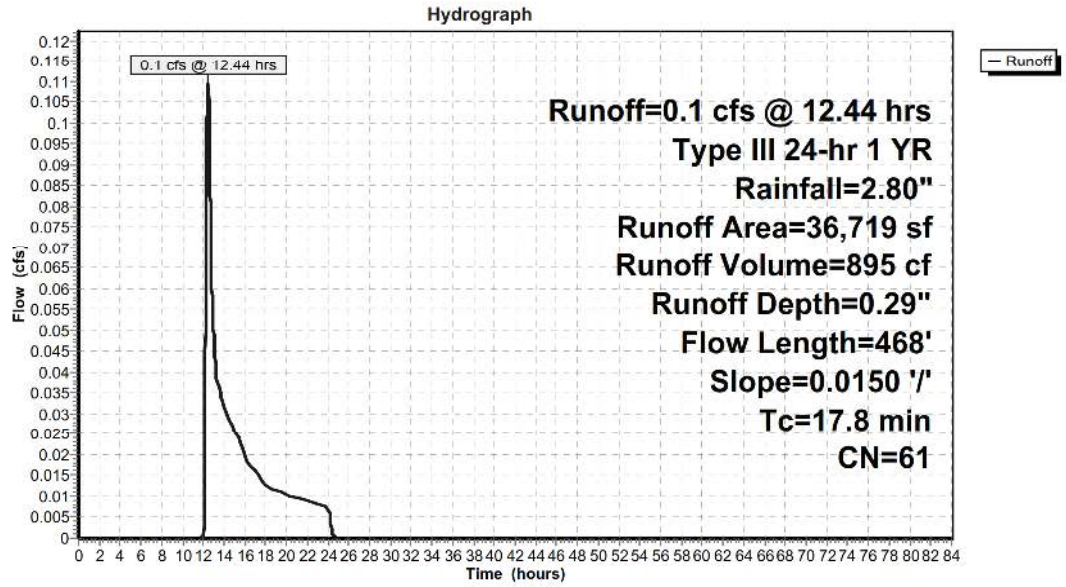
Runoff = 0.1 cfs @ 12.44 hrs, Volume= 895 cf, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5E: PRWS5E

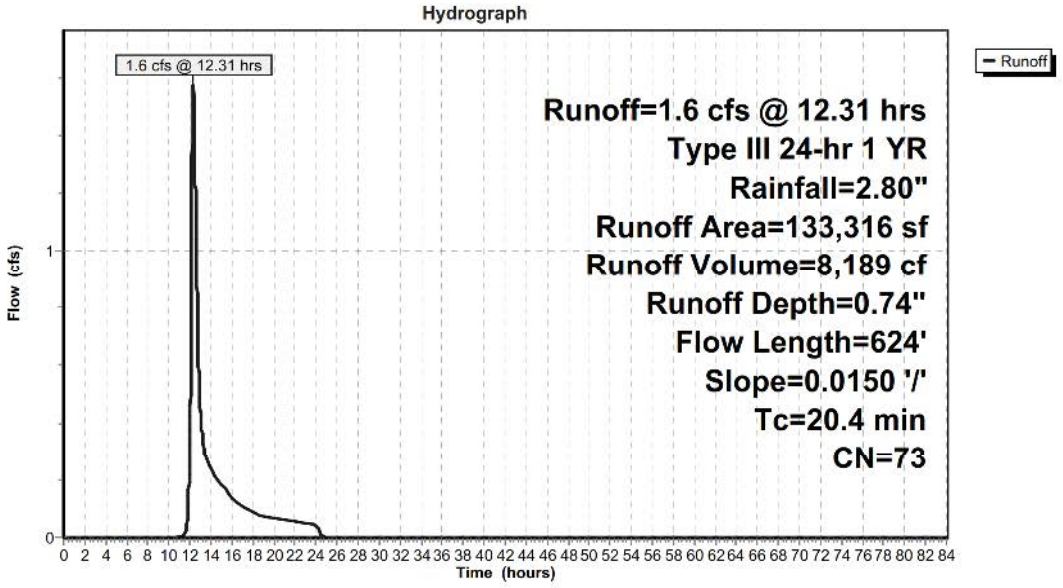
Runoff = 1.6 cfs @ 12.31 hrs, Volume= 8,189 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment 5F: PRWS5F

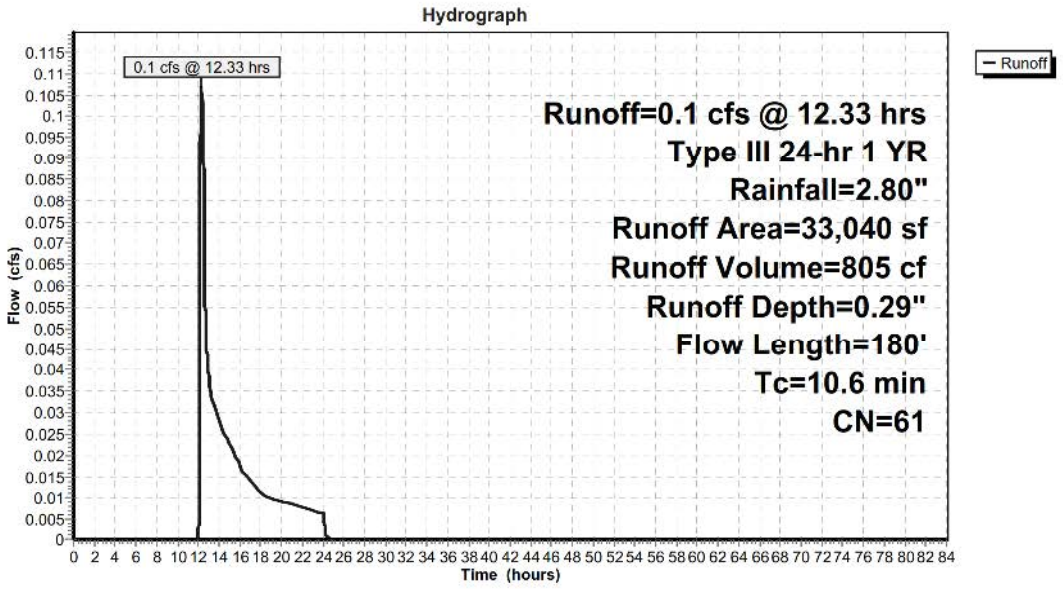
Runoff = 0.1 cfs @ 12.33 hrs, Volume= 805 cf, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5G: PRWS5G

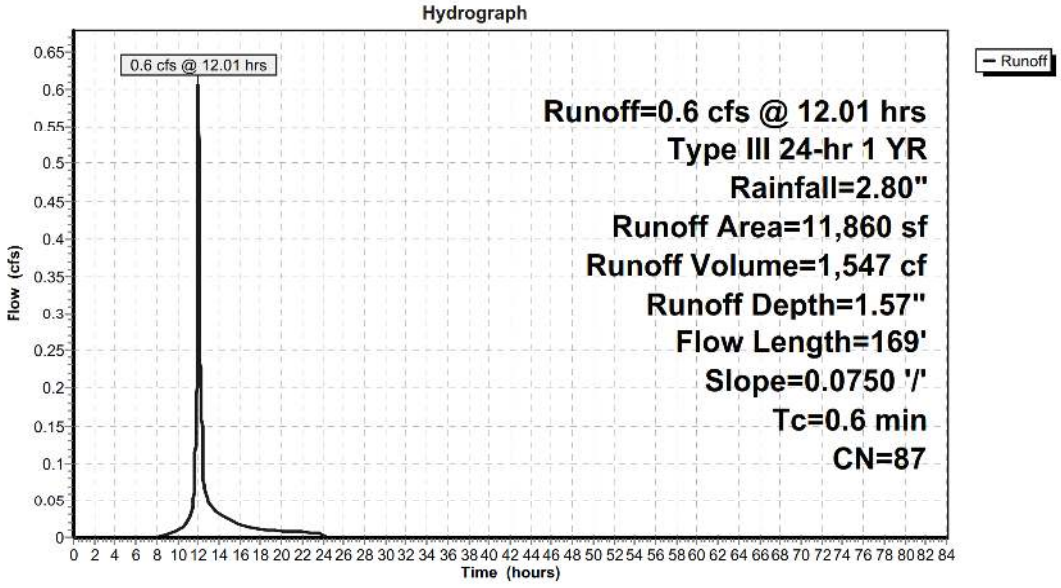
Runoff = 0.6 cfs @ 12.01 hrs, Volume= 1,547 cf, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5H: PRWS5H

Runoff = 1.1 cfs @ 12.45 hrs, Volume= 9,216 cf, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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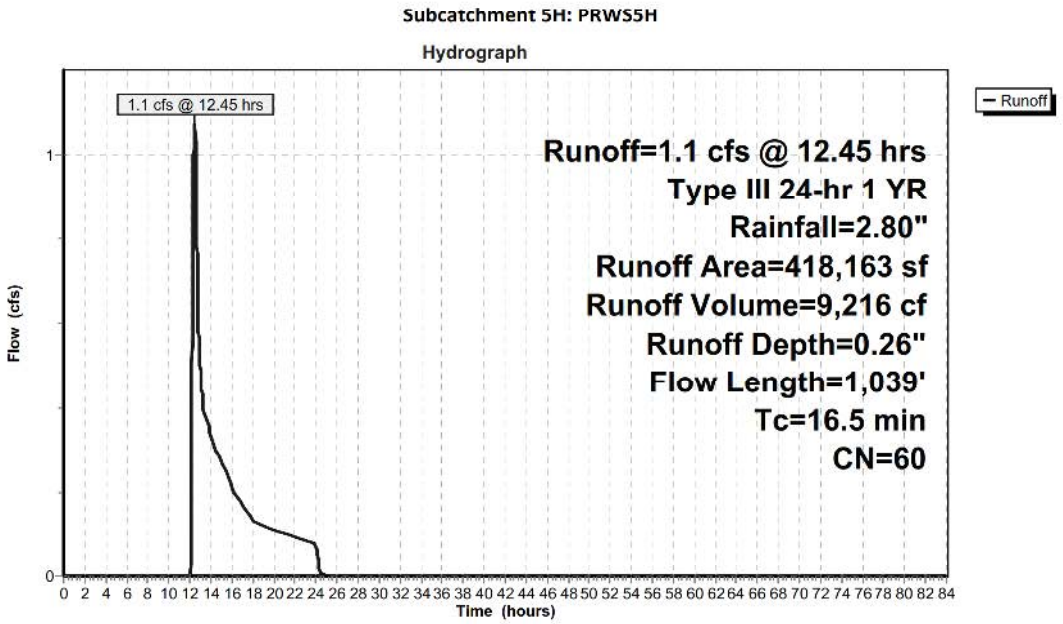

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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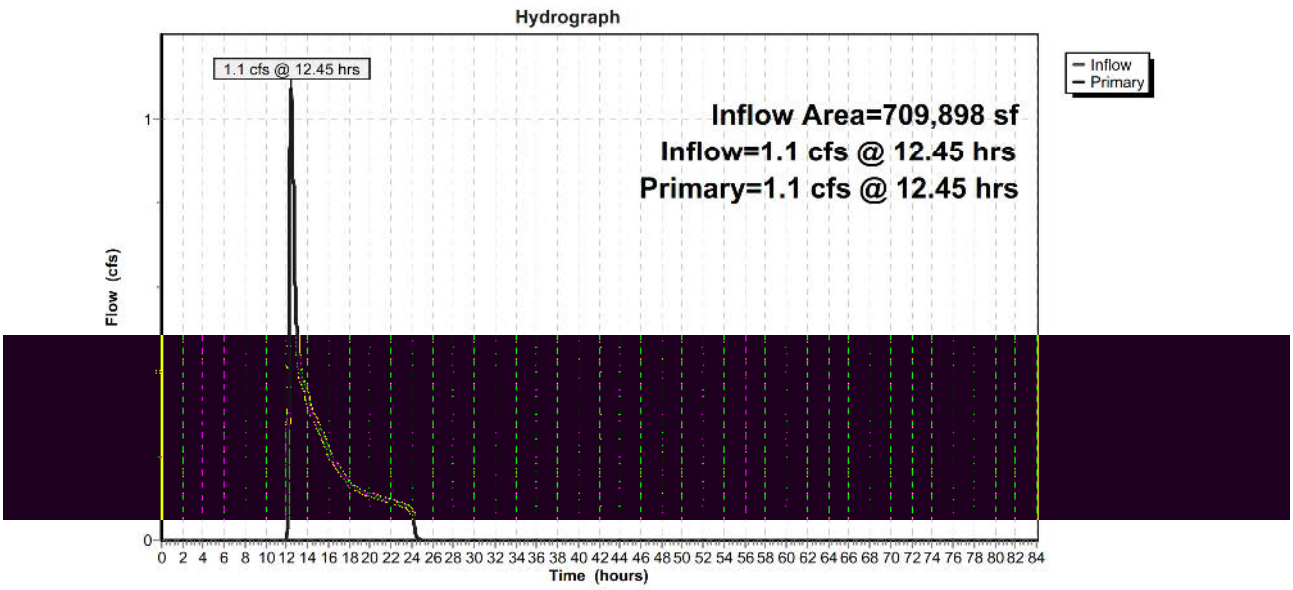
Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 0.16" for 1 YR event
Inflow = 1.1 cfs @ 12.45 hrs, Volume= 9,216 cf
Primary = 1.1 cfs @ 12.45 hrs, Volume= 9,216 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf
Outflow = 0.1 cfs @ 10.81 hrs, Volume= 6,577 cf, Atten= 94%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.81 hrs, Volume= 6,577 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 480.27' @ 13.59 hrs Surf.Area= 1,296 sf Storage= 2,712 cf

Plug-Flow detention time= 179.2 min calculated for 6,576 cf (100% of inflow)
Center-of-Mass det. time= 179.2 min (937.6 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 10.81 hrs HW=477.09' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
↑**2=Culvert** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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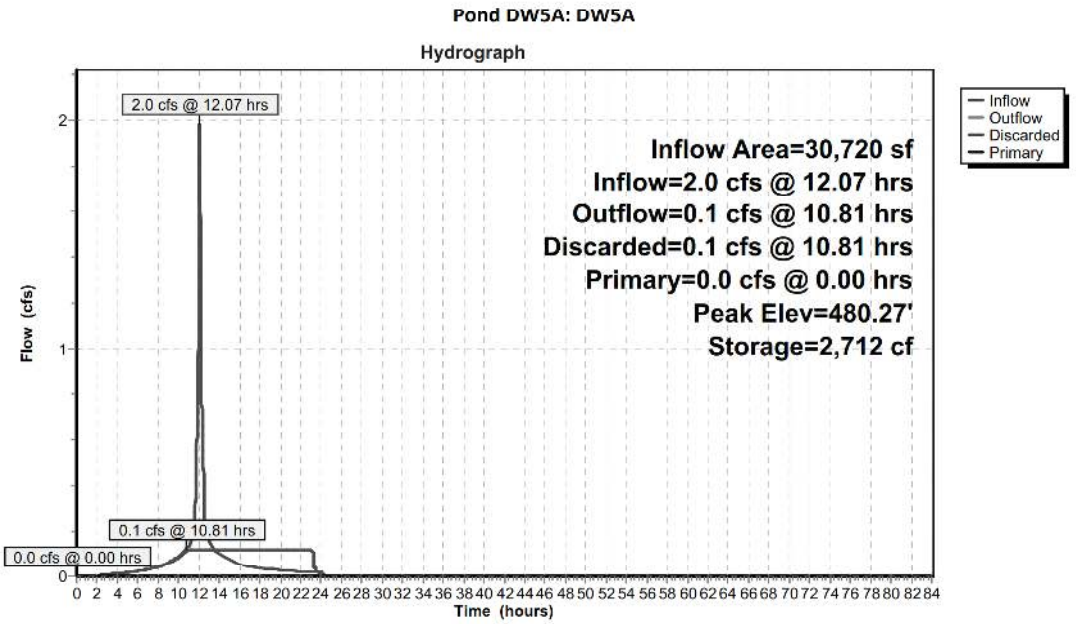

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 1.21" for 1 YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 18,054 cf
Outflow = 0.5 cfs @ 11.71 hrs, Volume= 18,054 cf, Atten= 86%, Lag= 0.0 min
Discarded = 0.5 cfs @ 11.71 hrs, Volume= 18,054 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 480.51' @ 13.36 hrs Surf.Area= 2,880 sf Storage= 6,030 cf

Plug-Flow detention time= 98.4 min calculated for 18,052 cf (100% of inflow)
Center-of-Mass det. time= 98.4 min (915.5 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 11.71 hrs HW=477.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.50' (Free Discharge)
↑**2=Culvert** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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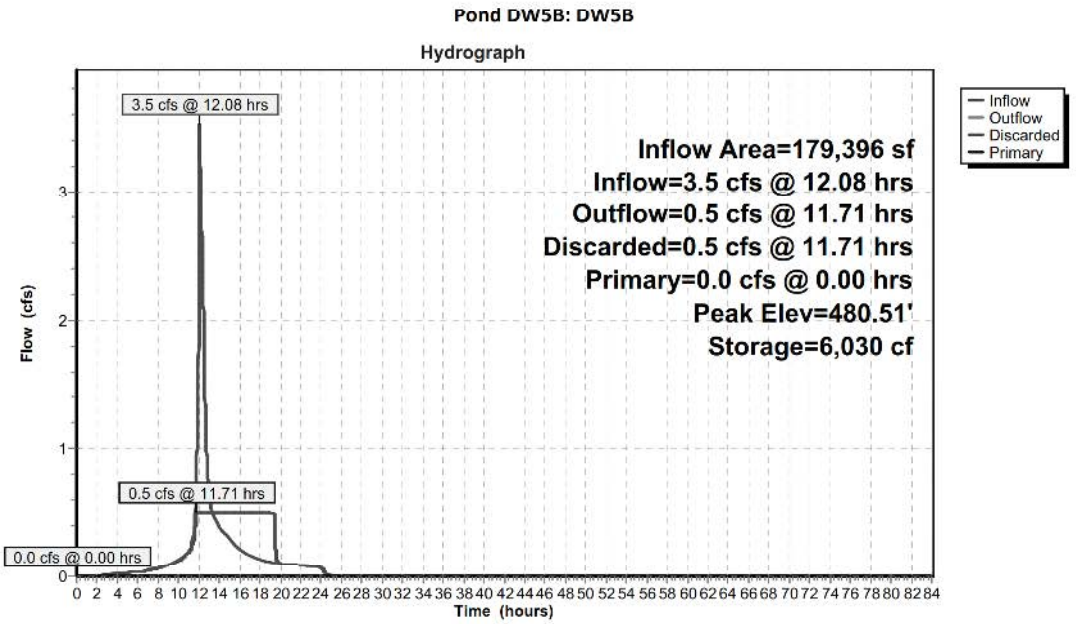

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 0.3 cfs @ 12.07 hrs, Volume= 1,096 cf
Outflow = 0.0 cfs @ 11.32 hrs, Volume= 1,096 cf, Atten= 92%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.32 hrs, Volume= 1,096 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 1.08' @ 12.97 hrs Surf.Area= 0.014 ac Storage= 0.009 af

Plug-Flow detention time= 104.8 min calculated for 1,096 cf (100% of inflow)
Center-of-Mass det. time= 104.8 min (863.2 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 11.32 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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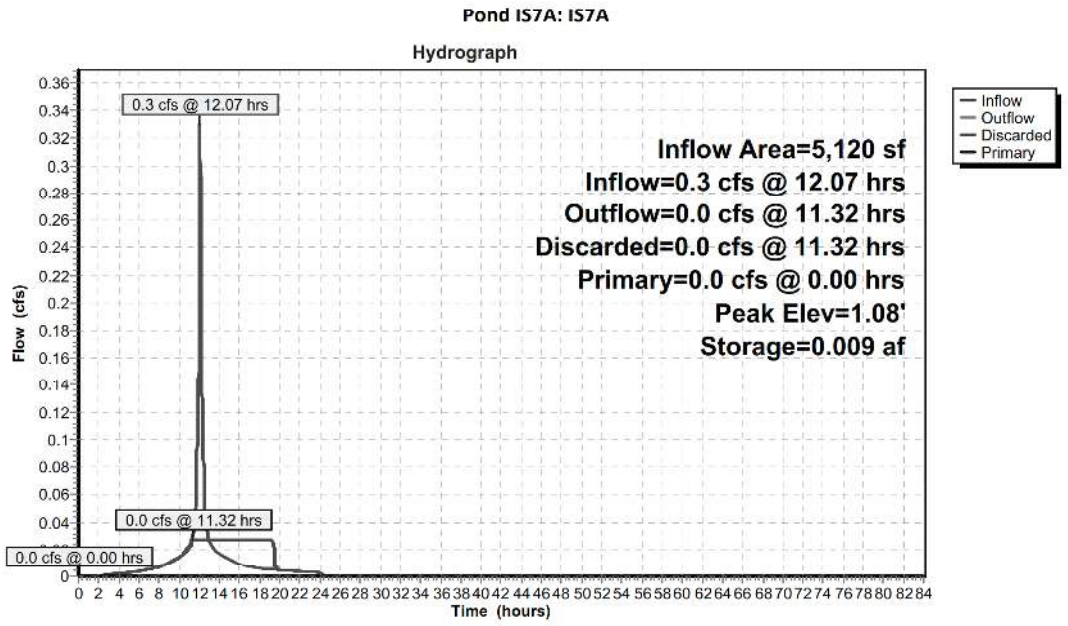

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 0.13" for 1 YR event
Inflow = 0.6 cfs @ 12.01 hrs, Volume= 3,247 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 483.12' @ 25.01 hrs Surf.Area= 3,465 sf Storage= 3,247 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=482.00' (Free Discharge)
↑**1=Culvert** (Controls 0.0 cfs)
↑**2=Orifice/Grate** (Controls 0.0 cfs)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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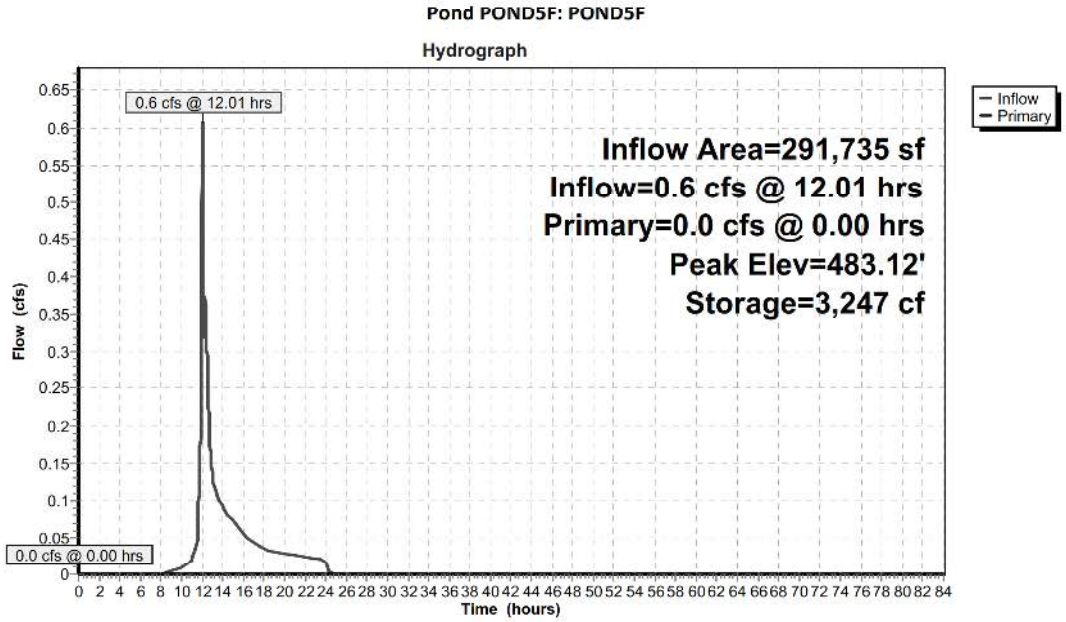

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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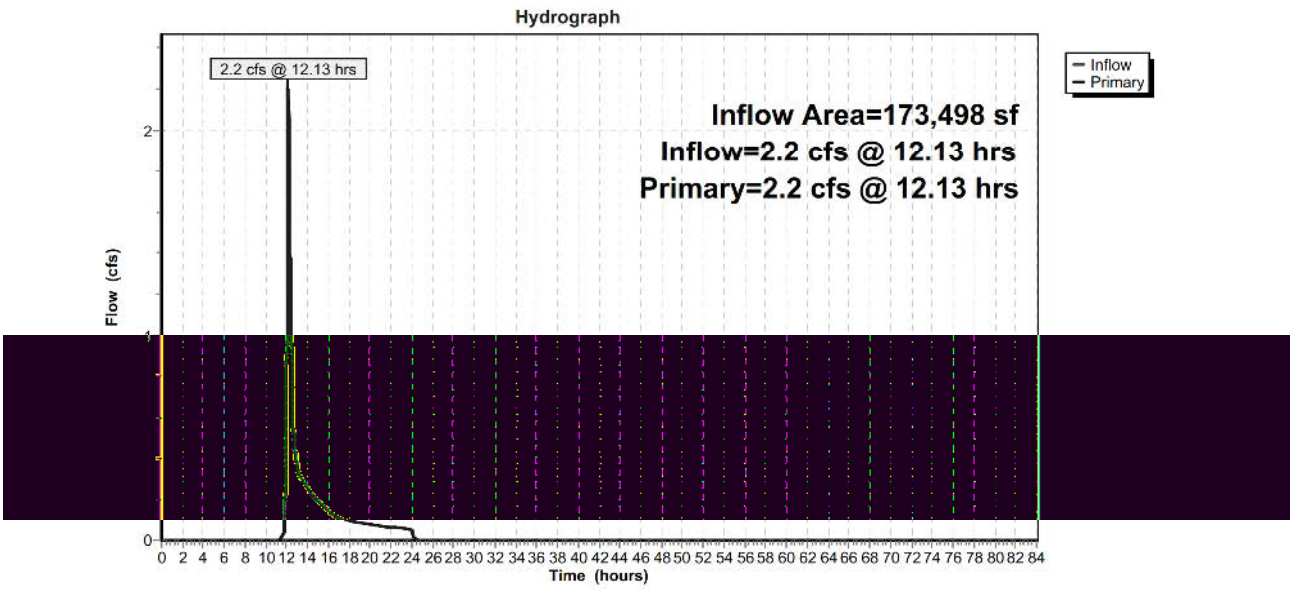
Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 0.61" for 1 YR event
Inflow = 2.2 cfs @ 12.13 hrs, Volume= 8,762 cf
Primary = 2.2 cfs @ 12.13 hrs, Volume= 8,762 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



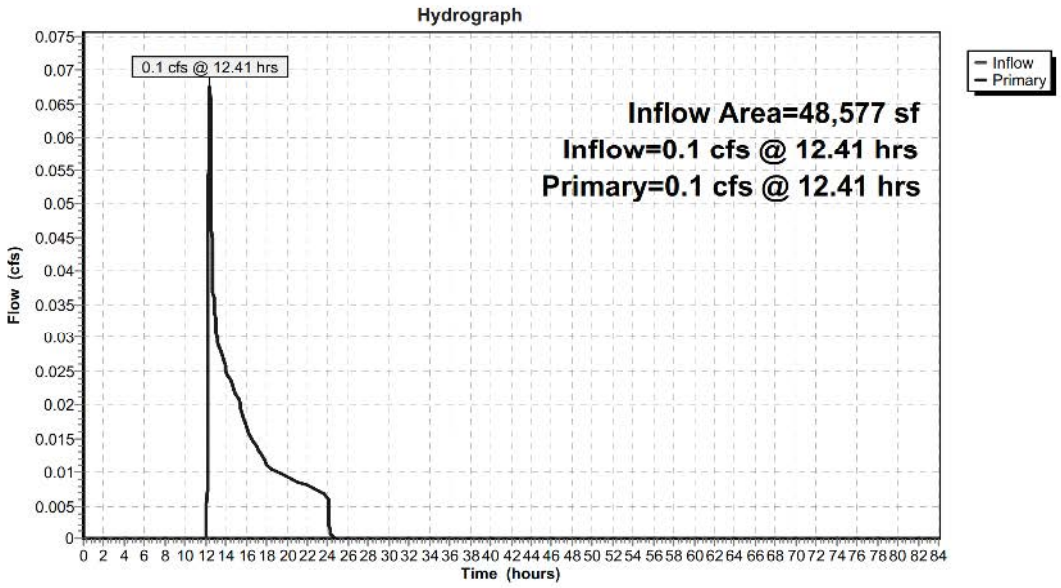
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 0.17" for 1 YR event
Inflow = 0.1 cfs @ 12.41 hrs, Volume= 683 cf
Primary = 0.1 cfs @ 12.41 hrs, Volume= 683 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment PRWS6: PRWS6

Runoff = 2.2 cfs @ 12.13 hrs, Volume= 8,762 cf, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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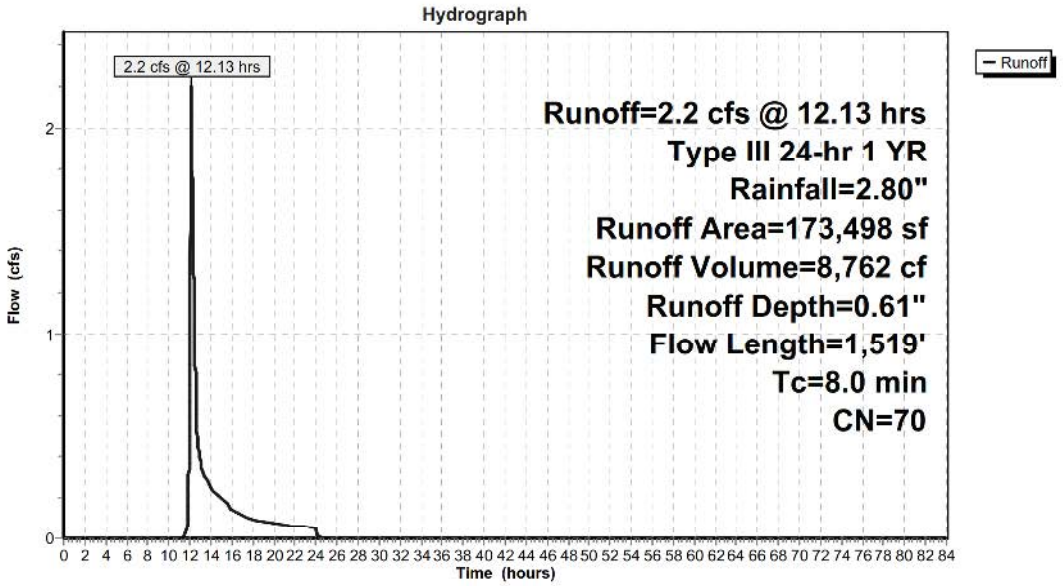
Subcatchment PRWS6: PRWS6



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Subcatchment PRWS7A: PRWS7A

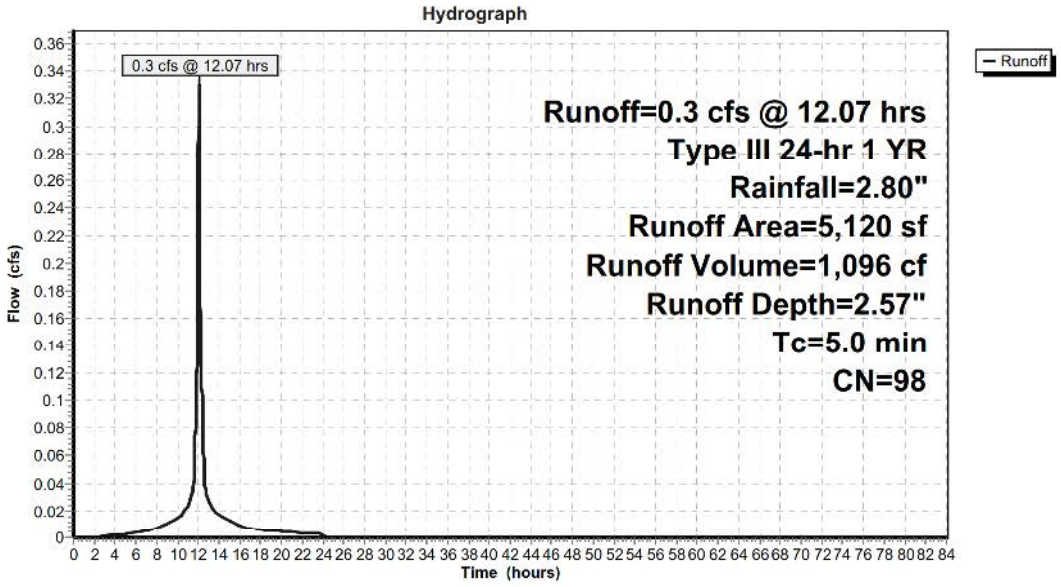
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 1,096 cf, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS7B: PRWS7B

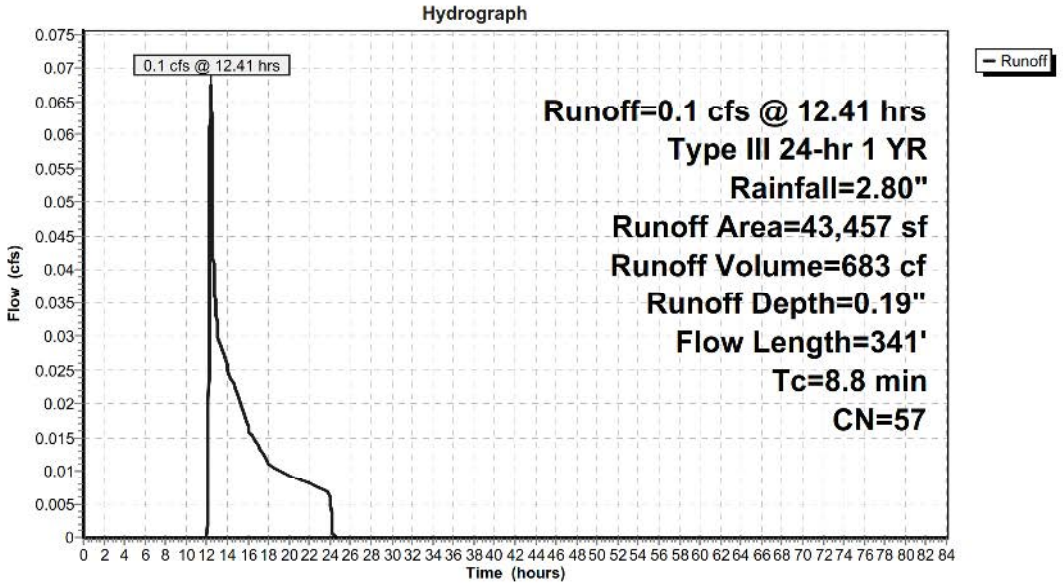
Runoff = 0.1 cfs @ 12.41 hrs, Volume= 683 cf, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 1 YR Rainfall=2.80"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 2.57" for 1 YR event
Inflow = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf
Outflow = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.0 cfs @ 12.07 hrs, Volume= 6,577 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

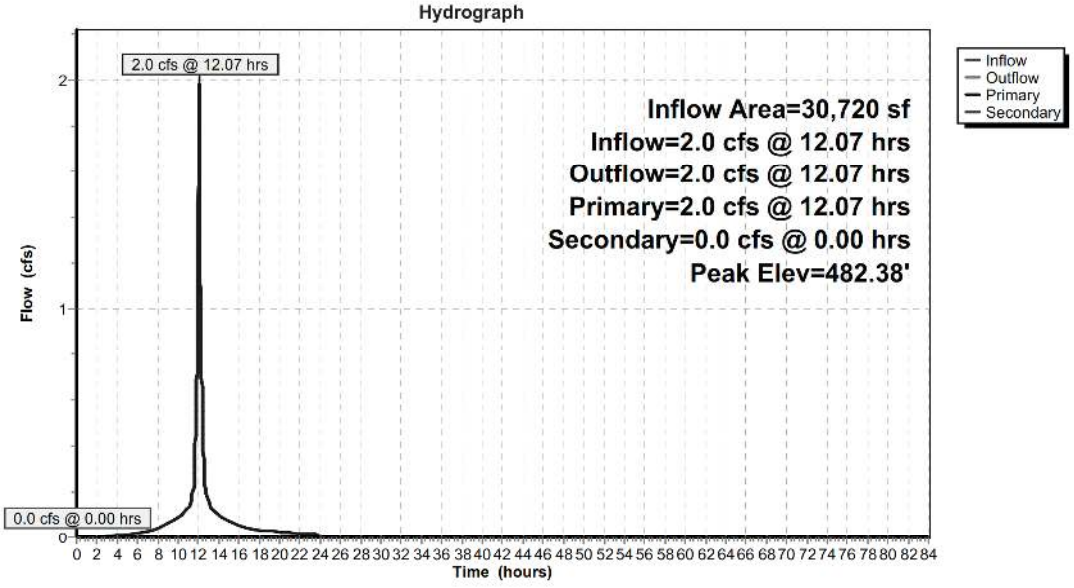
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.38' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.0 cfs @ 12.07 hrs HW=482.38' (Free Discharge)
↳**1=Culvert** (Barrel Controls 2.0 cfs @ 2.52 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=481.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 1 YR Rainfall=2.80"*
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Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 1.21" for 1 YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 18,054 cf
Outflow = 3.5 cfs @ 12.08 hrs, Volume= 18,054 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.08 hrs, Volume= 18,054 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

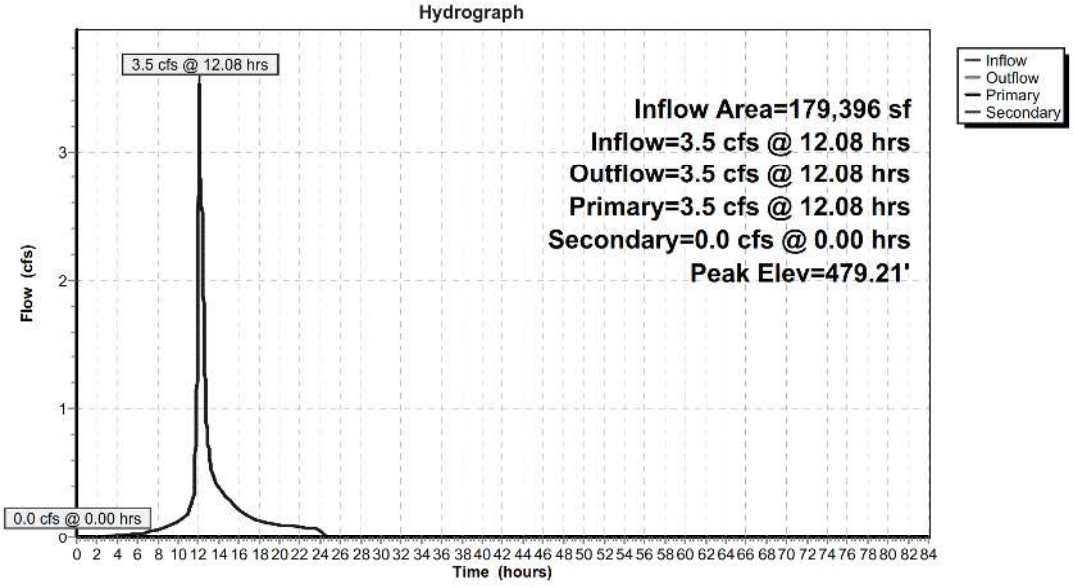
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 479.21' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.5 cfs @ 12.08 hrs HW=479.20' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.5 cfs @ 4.49 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=2.4 cfs 8,184 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=2.4 cfs 8,184 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=1.2 cfs 4,092 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=0.3 cfs 1,657 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=1.13"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=2.6 cfs 12,585 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=180' Tc=10.6 min CN=61 Runoff=0.3 cfs 1,491 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=2.12"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=0.8 cfs 2,095 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=0.50"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=2.7 cfs 17,480 cf

Link DP5: DP5 Inflow=2.7 cfs 17,480 cf
Primary=2.7 cfs 17,480 cf

Pond DW5A: DW5A Peak Elev=481.34' Storage=3,676 cf Inflow=2.4 cfs 8,184 cf
Discarded=0.1 cfs 8,184 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 8,184 cf

Pond DW5B: DW5B Peak Elev=482.50' Storage=10,022 cf Inflow=4.7 cfs 24,861 cf
Discarded=0.5 cfs 24,861 cf Primary=0.0 cfs 0 cf Outflow=0.5 cfs 24,861 cf

Pond IS7A: IS7A Peak Elev=1.37' Storage=0.012 af Inflow=0.4 cfs 1,364 cf
Discarded=0.0 cfs 1,364 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 1,364 cf

Pond POND5F: POND5F Peak Elev=483.66' Storage=5,243 cf Inflow=0.9 cfs 5,244 cf
Outflow=0.0 cfs 0 cf

Link PRDP6: PRDP6 Inflow=3.8 cfs 13,954 cf
Primary=3.8 cfs 13,954 cf

Link PRDP7: PRDP7 Inflow=0.2 cfs 1,412 cf
Primary=0.2 cfs 1,412 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=0.97"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=3.8 cfs 13,954 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=98 Runoff=0.4 cfs 1,364 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=341' Tc=8.8 min CN=57 Runoff=0.2 cfs 1,412 cf

Pond SPLIT5A: SPLIT5A Peak Elev=482.58' Inflow=2.4 cfs 8,184 cf
Primary=2.4 cfs 8,184 cf Secondary=0.0 cfs 0 cf Outflow=2.4 cfs 8,184 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=480.17' Inflow=4.7 cfs 24,861 cf
Primary=4.7 cfs 24,861 cf Secondary=0.0 cfs 0 cf Outflow=4.7 cfs 24,861 cf

Total Runoff Area = 931,973 sf Runoff Volume = 72,499 cf Average Runoff Depth = 0.93"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5A: PRSW5A

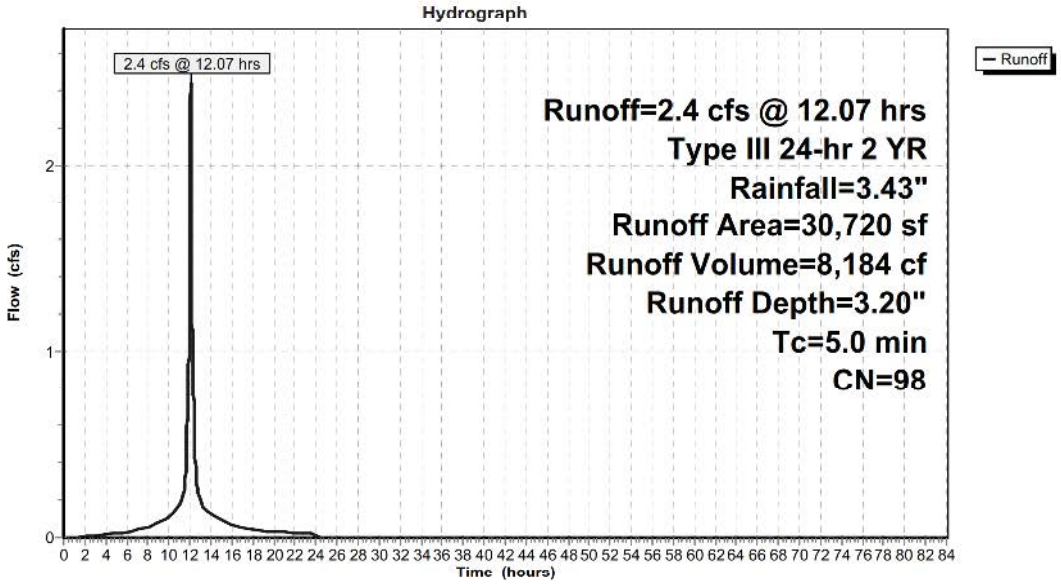
Runoff = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 5B: PRWS5B

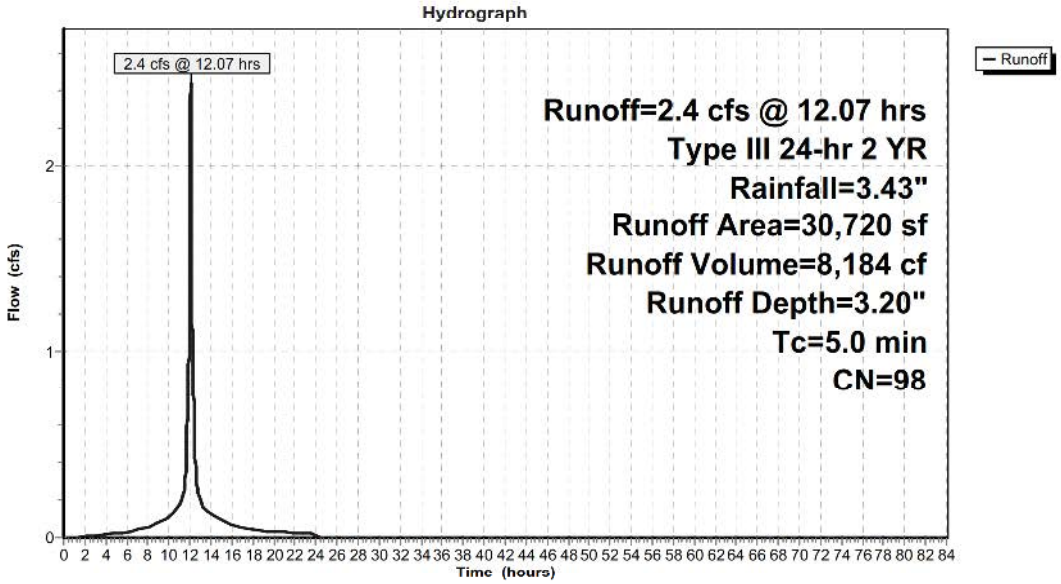
Runoff = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5B: PRWS5B



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Summary for Subcatchment 5C: PRWS5C

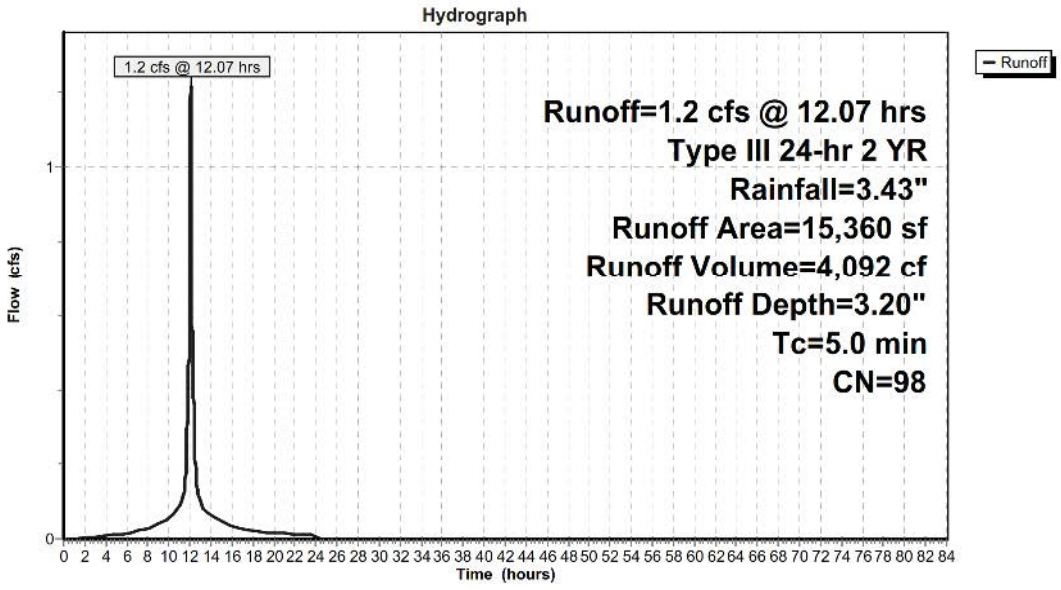
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 4,092 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 5D: PRWS5D

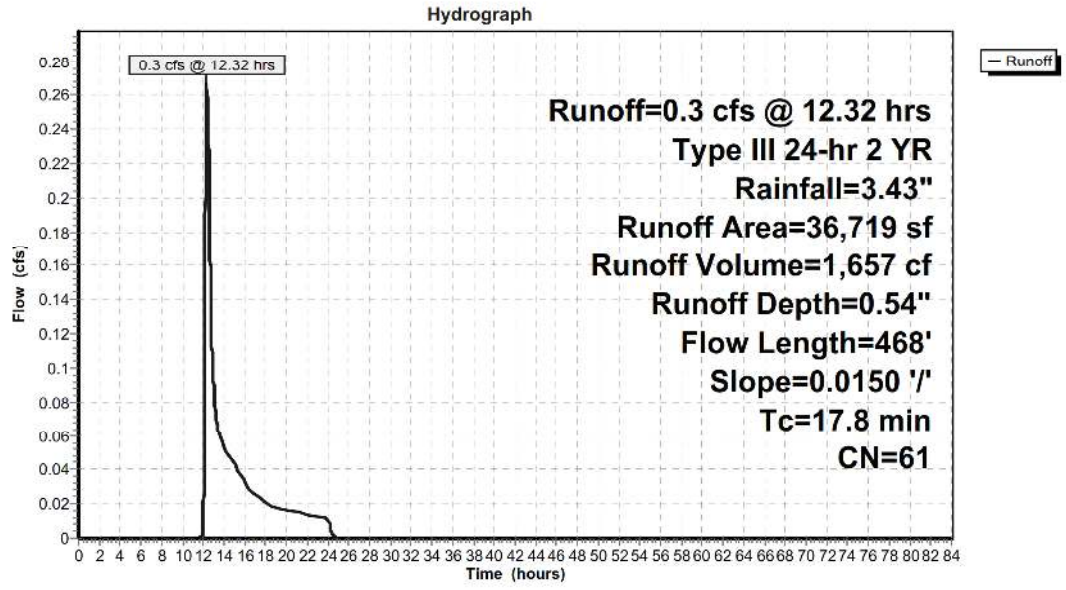
Runoff = 0.3 cfs @ 12.32 hrs, Volume= 1,657 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5E: PRWS5E

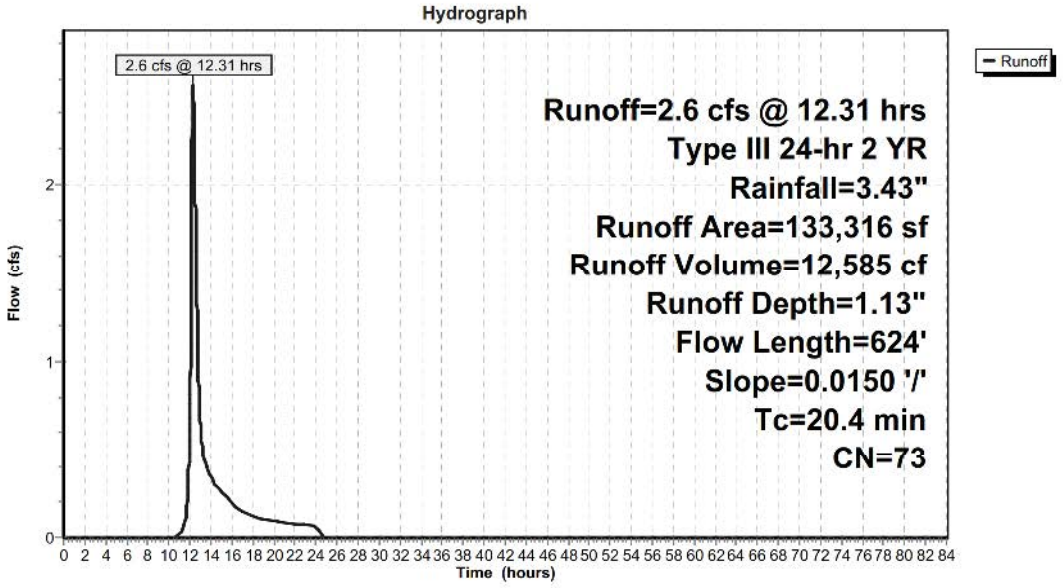
Runoff = 2.6 cfs @ 12.31 hrs, Volume= 12,585 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 5F: PRWS5F

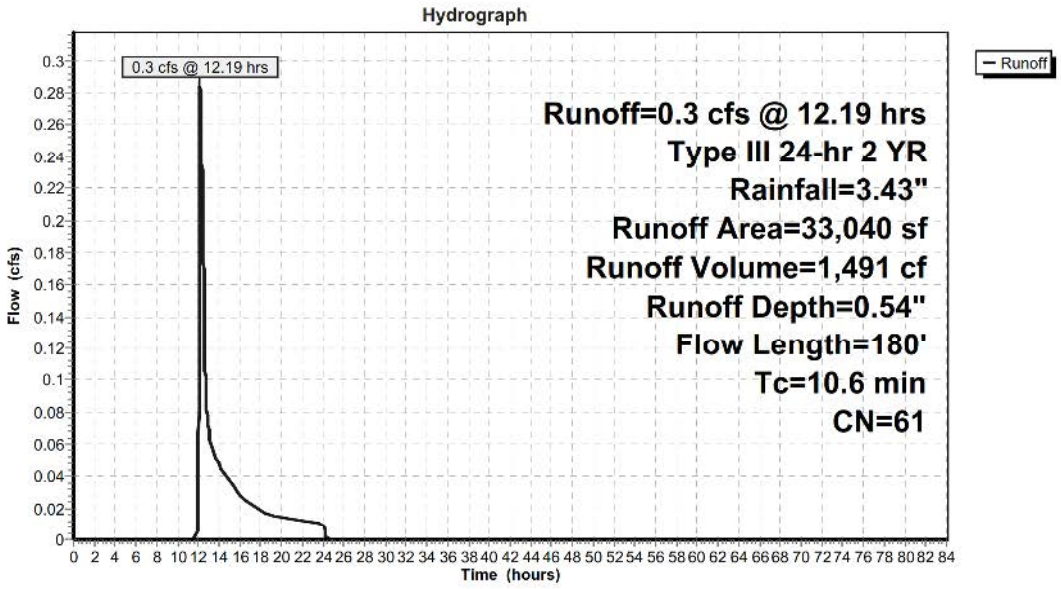
Runoff = 0.3 cfs @ 12.19 hrs, Volume= 1,491 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



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Summary for Subcatchment 5G: PRWS5G

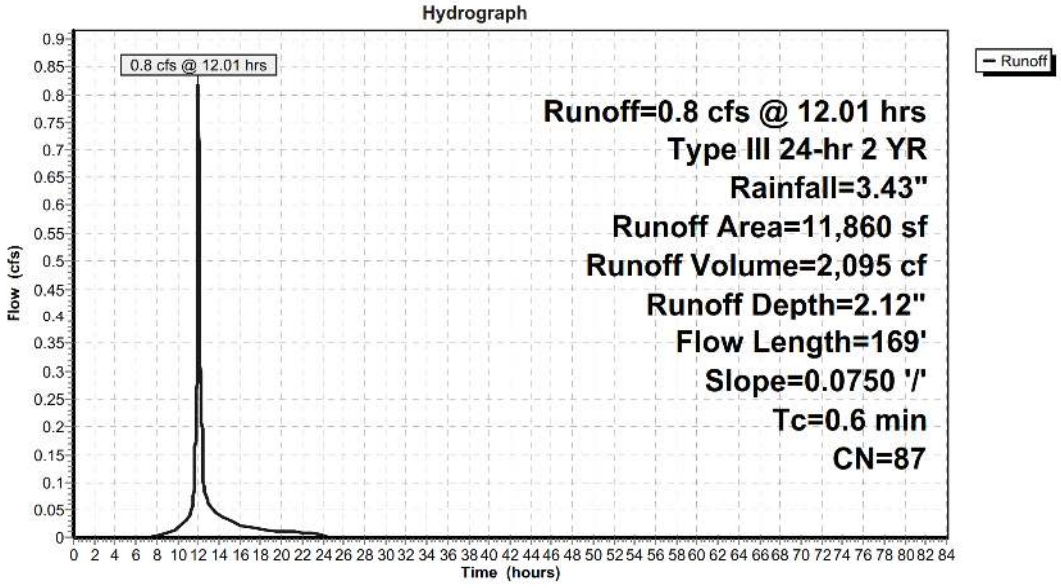
Runoff = 0.8 cfs @ 12.01 hrs, Volume= 2,095 cf, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment 5H: PRWS5H

Runoff = 2.7 cfs @ 12.31 hrs, Volume= 17,480 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

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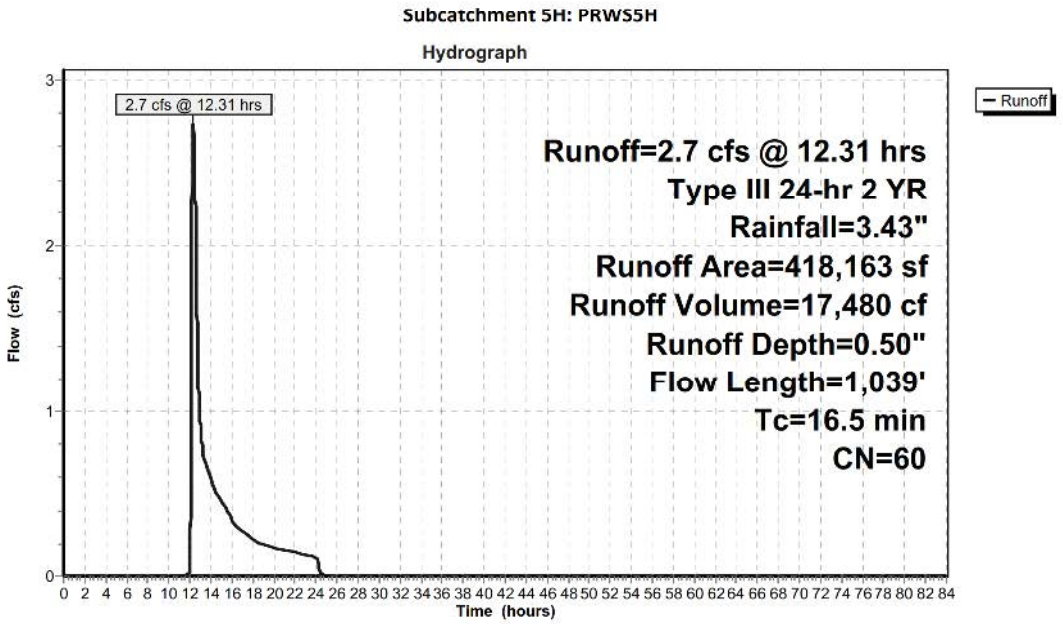

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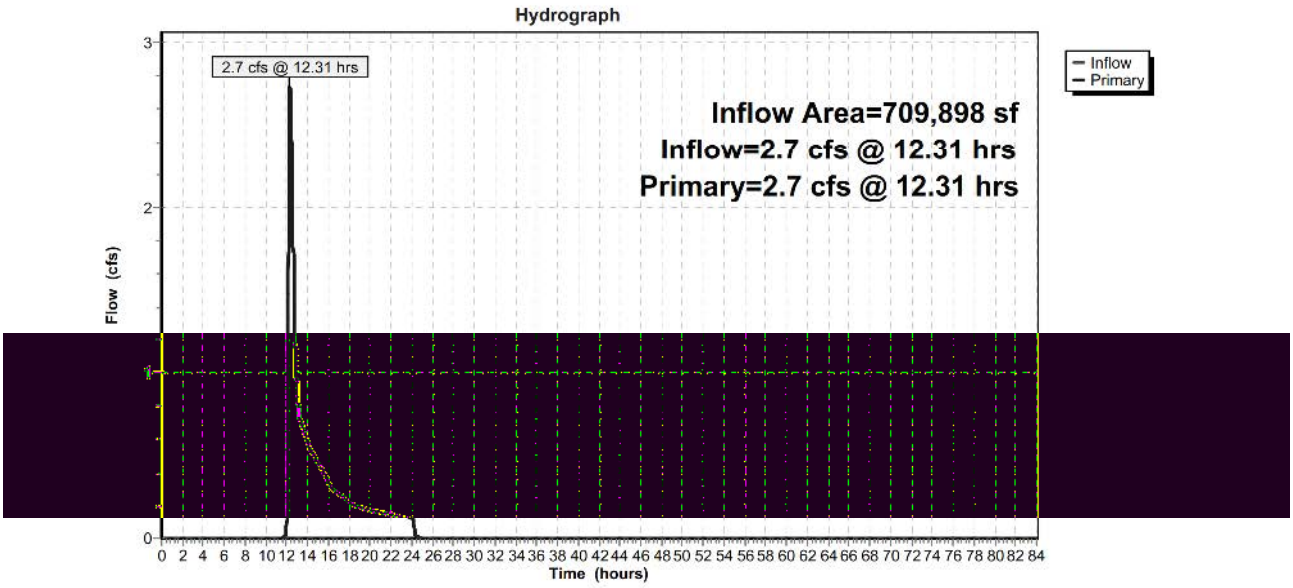
Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 0.30" for 2 YR event
Inflow = 2.7 cfs @ 12.31 hrs, Volume= 17,480 cf
Primary = 2.7 cfs @ 12.31 hrs, Volume= 17,480 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf
Outflow = 0.1 cfs @ 10.30 hrs, Volume= 8,184 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.1 cfs @ 10.30 hrs, Volume= 8,184 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 481.34' @ 14.06 hrs Surf.Area= 1,296 sf Storage= 3,676 cf

Plug-Flow detention time= 252.7 min calculated for 8,183 cf (100% of inflow)
Center-of-Mass det. time= 252.7 min (1,006.7 - 754.0)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 10.30 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

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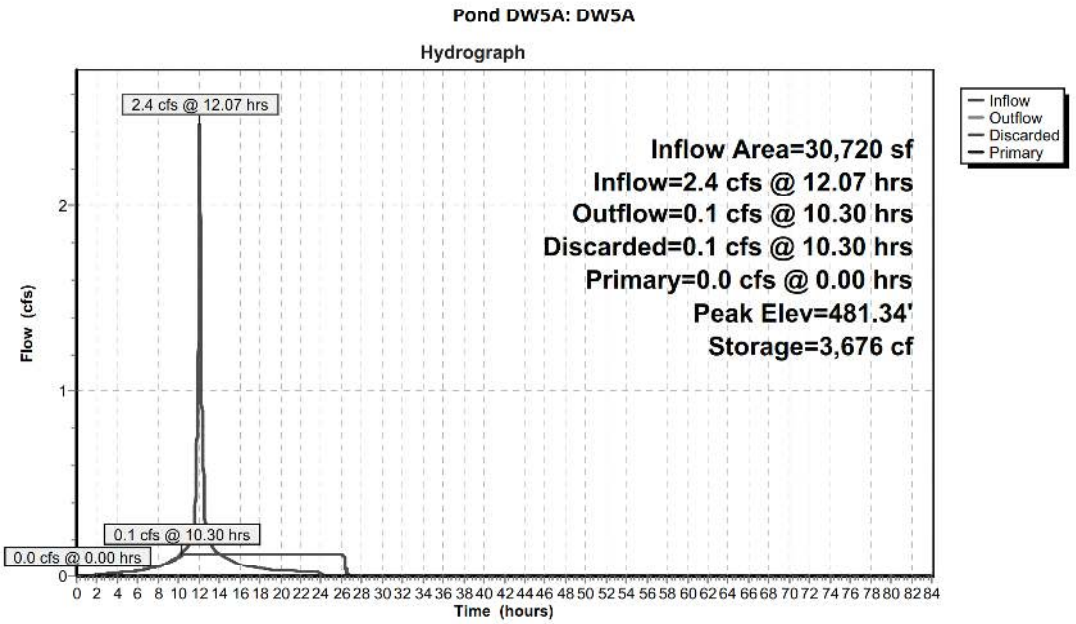

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Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 1.66" for 2 YR event
Inflow = 4.7 cfs @ 12.08 hrs, Volume= 24,861 cf
Outflow = 0.5 cfs @ 11.60 hrs, Volume= 24,861 cf, Atten= 89%, Lag= 0.0 min
Discarded = 0.5 cfs @ 11.60 hrs, Volume= 24,861 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.50' @ 14.16 hrs Surf.Area= 2,880 sf Storage= 10,022 cf

Plug-Flow detention time= 180.2 min calculated for 24,858 cf (100% of inflow)
Center-of-Mass det. time= 180.1 min (995.1 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 11.60 hrs HW=477.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.50' (Free Discharge)
↑**2=Culvert** (Controls 0.0 cfs)

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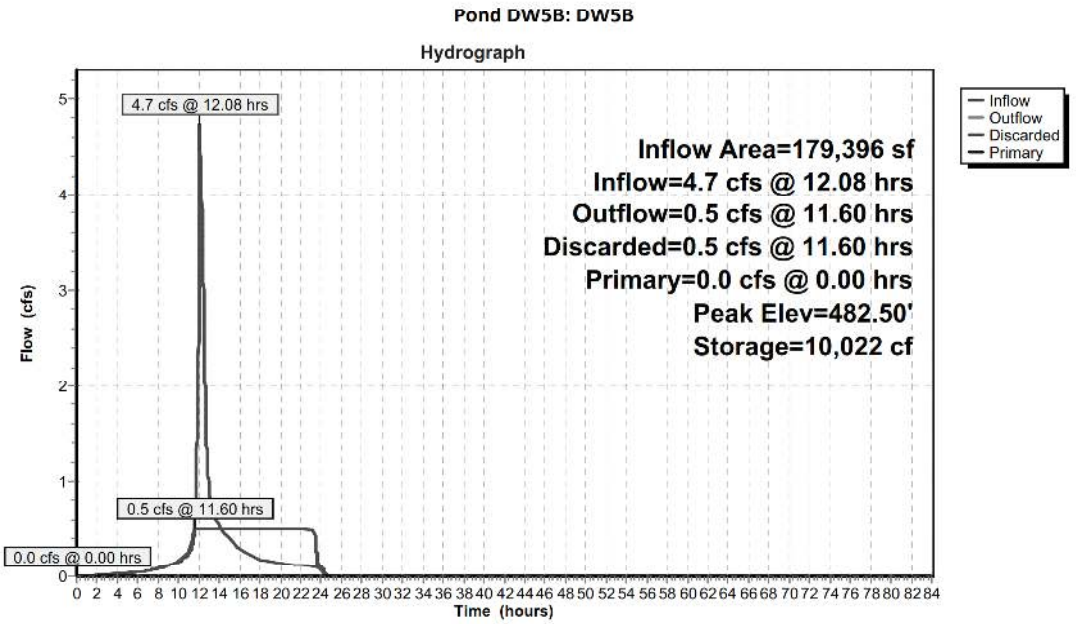

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Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 0.4 cfs @ 12.07 hrs, Volume= 1,364 cf
Outflow = 0.0 cfs @ 11.06 hrs, Volume= 1,364 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.06 hrs, Volume= 1,364 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 1.37' @ 13.29 hrs Surf.Area= 0.014 ac Storage= 0.012 af

Plug-Flow detention time= 148.1 min calculated for 1,364 cf (100% of inflow)
Center-of-Mass det. time= 148.1 min (902.1 - 754.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A** 0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 11.06 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

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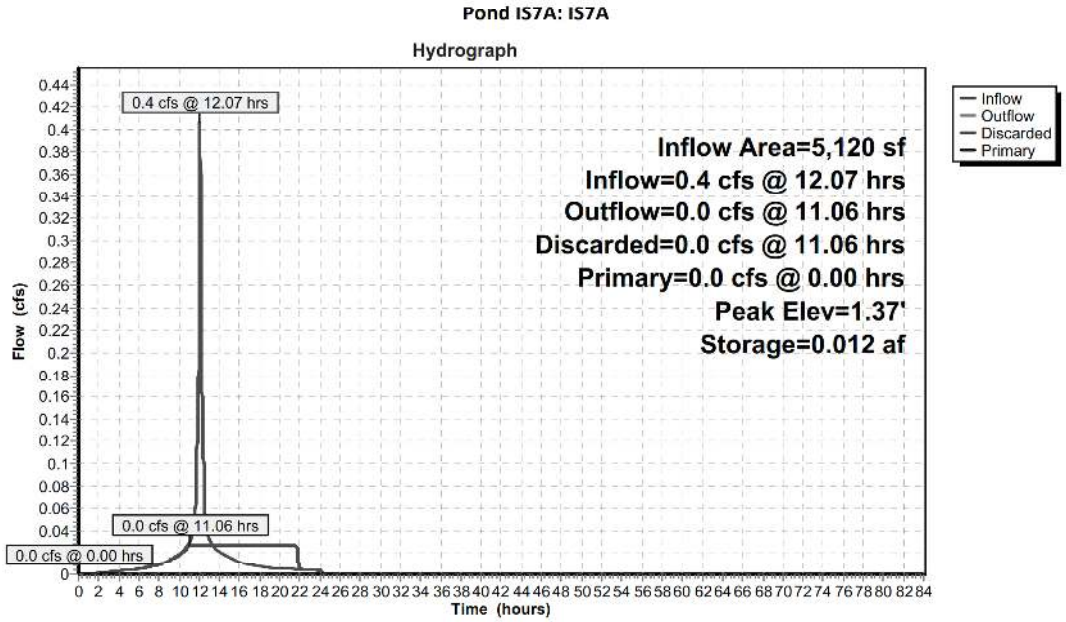

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 0.22" for 2 YR event
Inflow = 0.9 cfs @ 12.01 hrs, Volume= 5,244 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 483.66' @ 25.01 hrs Surf.Area= 4,008 sf Storage= 5,243 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=482.00' (Free Discharge)
↑**1=Culvert** (Controls 0.0 cfs)
↑**2=Orifice/Grate** (Controls 0.0 cfs)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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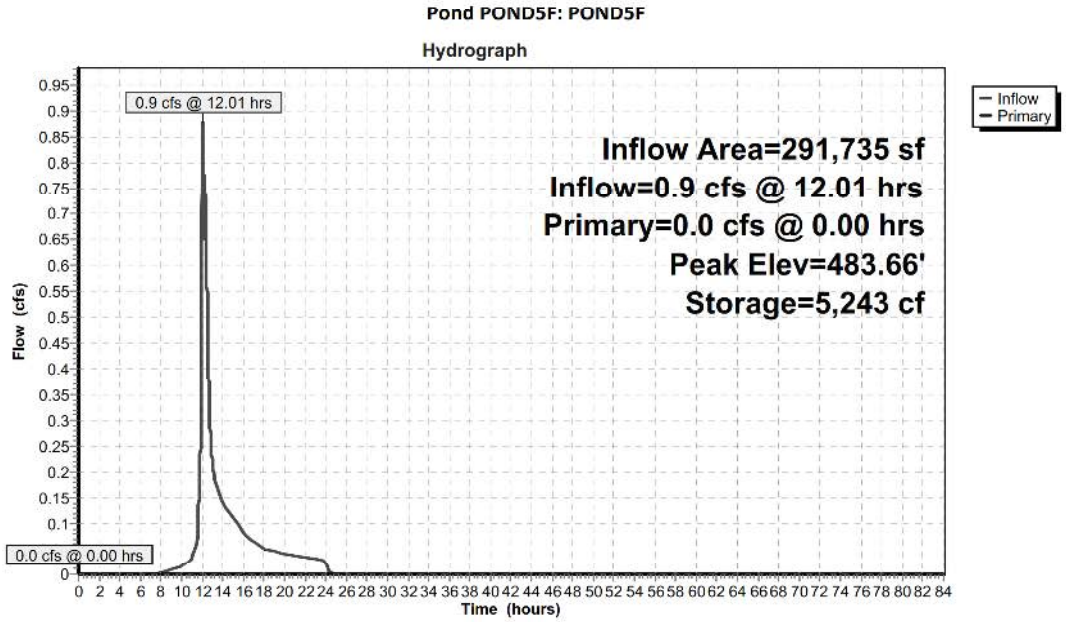

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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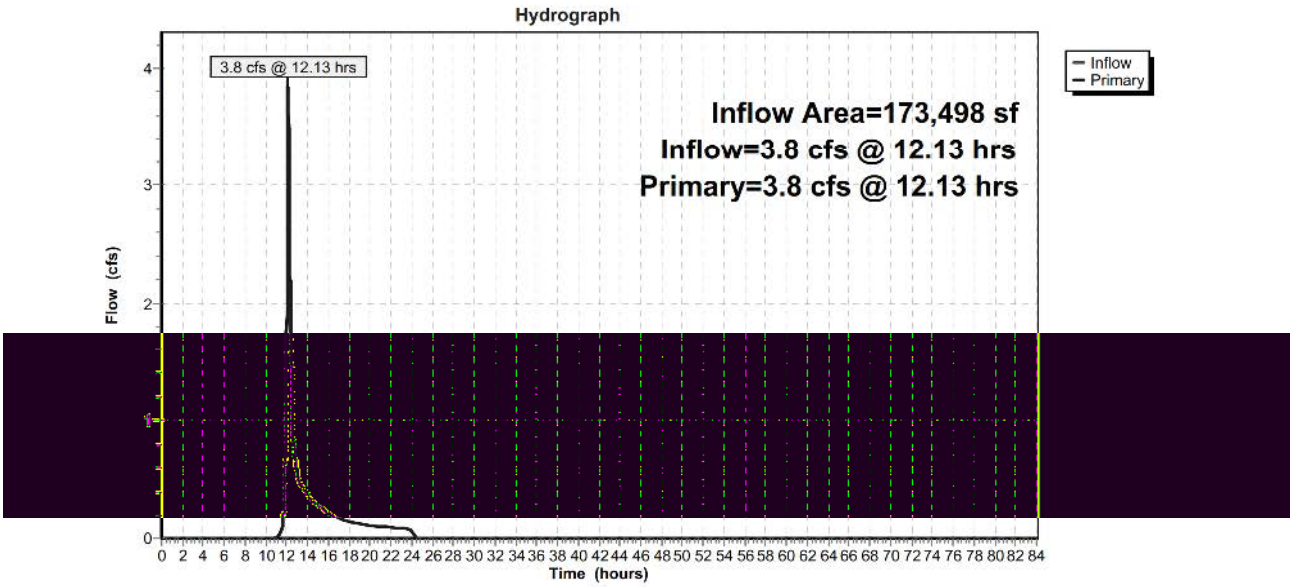
Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 0.97" for 2 YR event
Inflow = 3.8 cfs @ 12.13 hrs, Volume= 13,954 cf
Primary = 3.8 cfs @ 12.13 hrs, Volume= 13,954 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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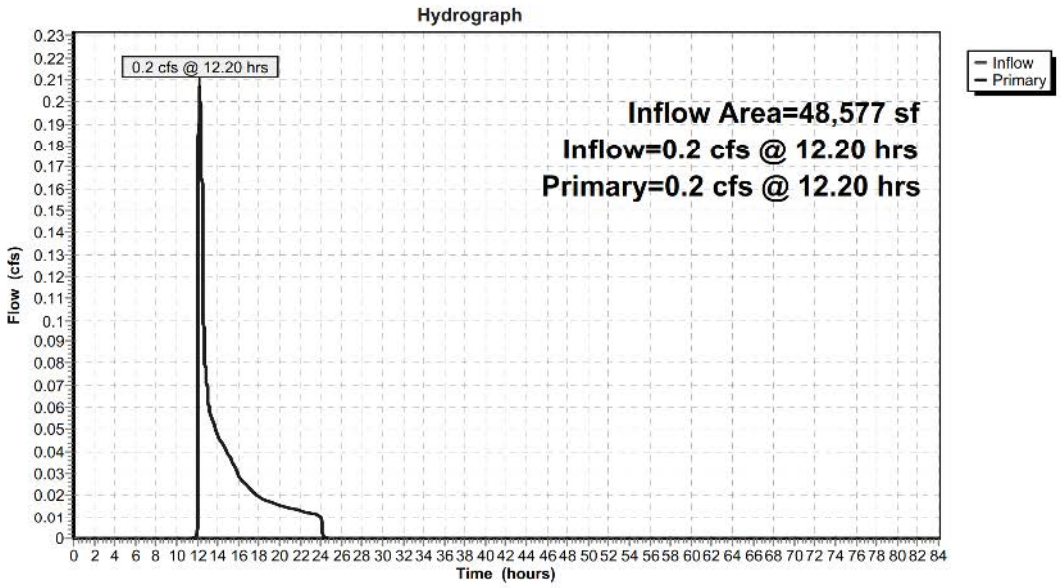
Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 0.35" for 2 YR event
Inflow = 0.2 cfs @ 12.20 hrs, Volume= 1,412 cf
Primary = 0.2 cfs @ 12.20 hrs, Volume= 1,412 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS6: PRWS6

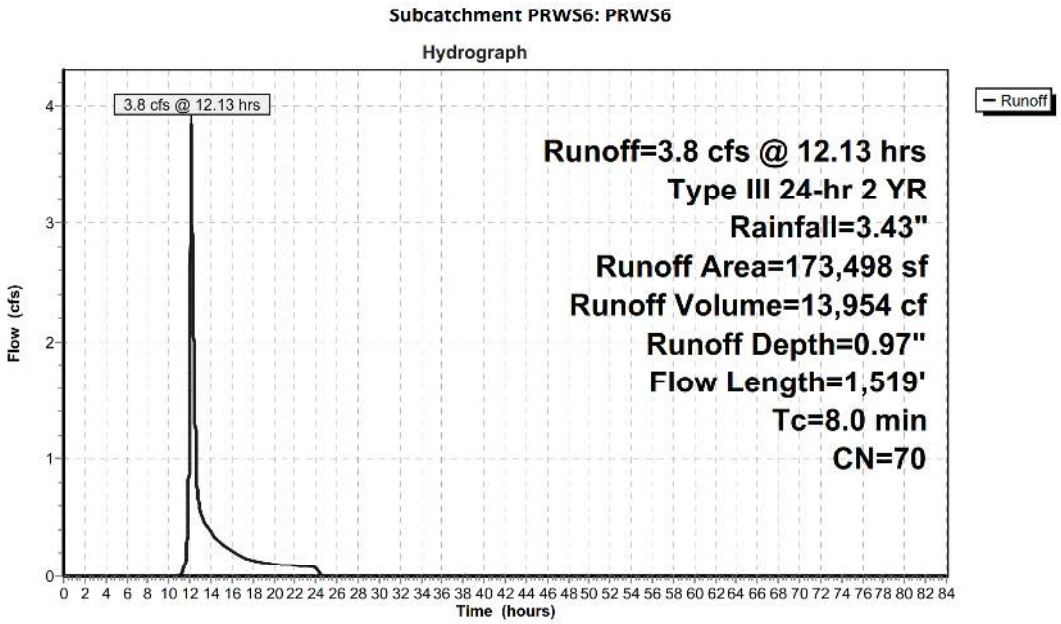
Runoff = 3.8 cfs @ 12.13 hrs, Volume= 13,954 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Subcatchment PRWS7A: PRWS7A

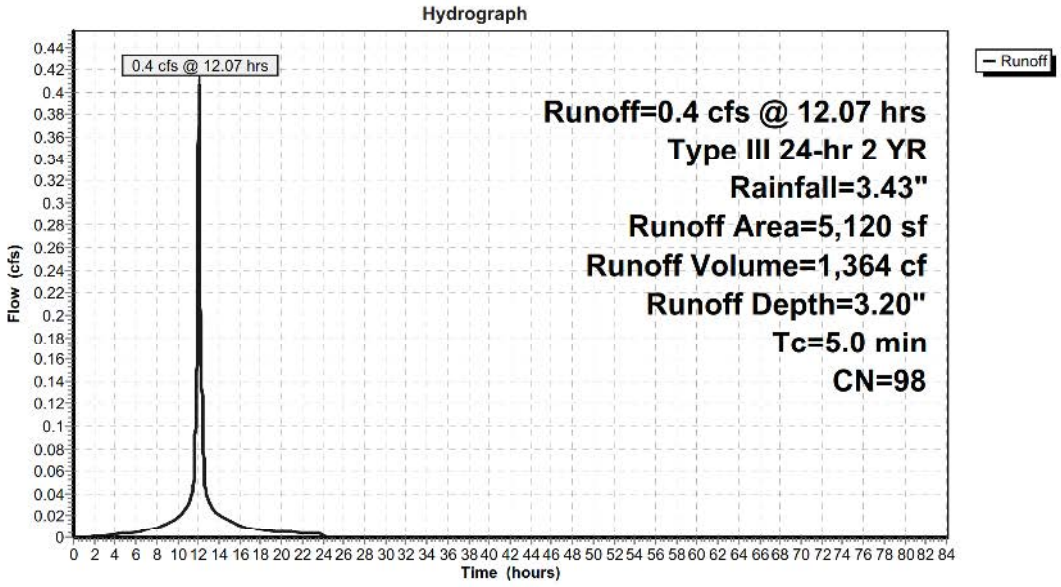
Runoff = 0.4 cfs @ 12.07 hrs, Volume= 1,364 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS7B: PRWS7B

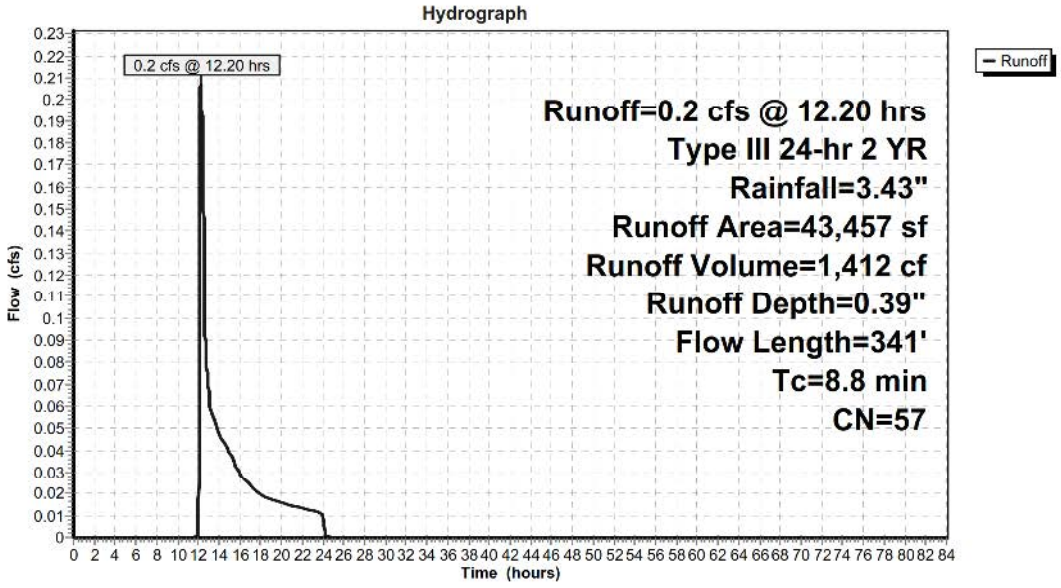
Runoff = 0.2 cfs @ 12.20 hrs, Volume= 1,412 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 2 YR Rainfall=3.43"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 3.20" for 2 YR event
Inflow = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf
Outflow = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.07 hrs, Volume= 8,184 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

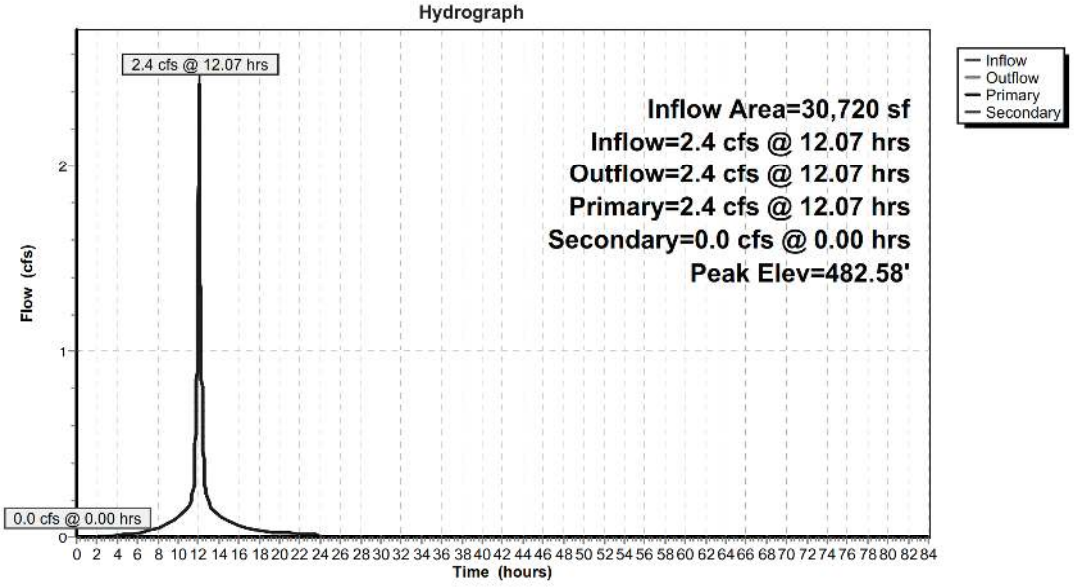
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.58' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.4 cfs @ 12.07 hrs HW=482.58' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.4 cfs @ 3.10 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=481.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 2 YR Rainfall=3.43"*
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Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 1.66" for 2 YR event
Inflow = 4.7 cfs @ 12.08 hrs, Volume= 24,861 cf
Outflow = 4.7 cfs @ 12.08 hrs, Volume= 24,861 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.7 cfs @ 12.08 hrs, Volume= 24,861 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

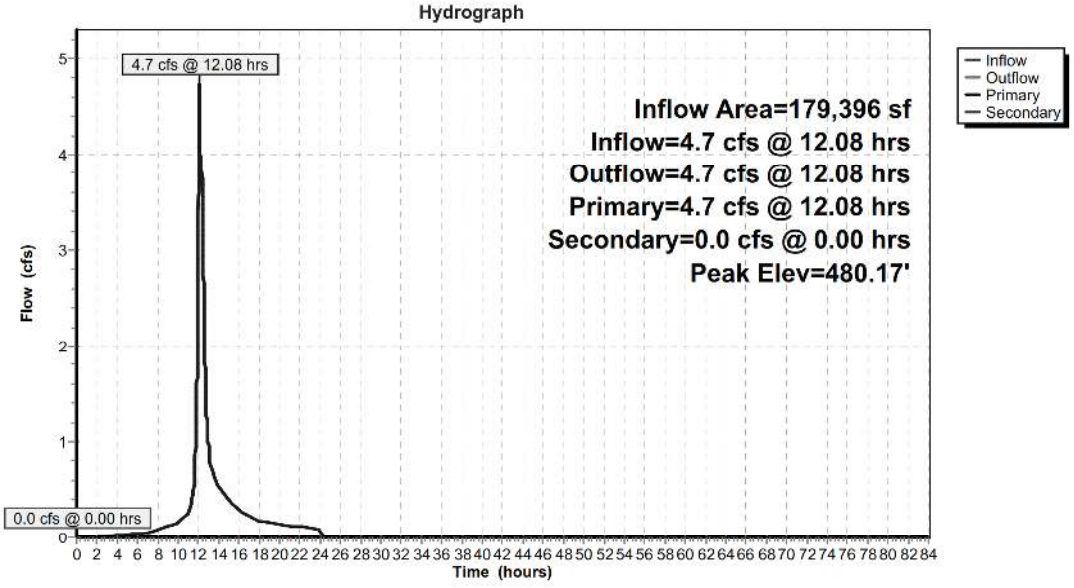
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 480.17' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.7 cfs @ 12.08 hrs HW=480.17' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.7 cfs @ 6.02 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=3.1 cfs 10,430 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=3.1 cfs 10,430 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=1.5 cfs 5,215 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=0.6 cfs 2,983 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=1.75"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=4.1 cfs 19,482 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=180' Tc=10.6 min CN=61 Runoff=0.6 cfs 2,684 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=2.92"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=1.1 cfs 2,888 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=0.92"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=6.2 cfs 32,018 cf

Link DP5: DP5 Inflow=6.2 cfs 36,633 cf
Primary=6.2 cfs 36,633 cf

Pond DW5A: DW5A Peak Elev=482.99' Storage=5,164 cf Inflow=3.1 cfs 10,430 cf
Discarded=0.1 cfs 10,430 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 10,430 cf

Pond DW5B: DW5B Peak Elev=484.82' Storage=14,668 cf Inflow=6.5 cfs 35,128 cf
Discarded=0.5 cfs 32,385 cf Primary=0.6 cfs 2,743 cf Outflow=1.1 cfs 35,128 cf

Pond IS7A: IS7A Peak Elev=1.83' Storage=0.017 af Inflow=0.5 cfs 1,738 cf
Discarded=0.0 cfs 1,738 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 1,738 cf

Pond POND5F: POND5F Peak Elev=484.41' Storage=8,553 cf Inflow=1.5 cfs 11,299 cf
Outflow=0.1 cfs 4,615 cf

Link PRDP6: PRDP6 Inflow=6.5 cfs 22,275 cf
Primary=6.5 cfs 22,275 cf

Link PRDP7: PRDP7 Inflow=0.6 cfs 2,747 cf
Primary=0.6 cfs 2,747 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=1.54"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=6.5 cfs 22,275 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=4.07"
Tc=5.0 min CN=98 Runoff=0.5 cfs 1,738 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=0.76"
Flow Length=341' Tc=8.8 min CN=57 Runoff=0.6 cfs 2,747 cf

Pond SPLIT5A: SPLIT5A Peak Elev=482.92' Inflow=3.1 cfs 10,430 cf
Primary=3.1 cfs 10,430 cf Secondary=0.0 cfs 0 cf Outflow=3.1 cfs 10,430 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=482.14' Inflow=6.5 cfs 35,128 cf
Primary=6.5 cfs 35,128 cf Secondary=0.0 cfs 0 cf Outflow=6.5 cfs 35,128 cf

Total Runoff Area = 931,973 sf Runoff Volume = 112,893 cf Average Runoff Depth = 1.45"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 5A: PRSW5A

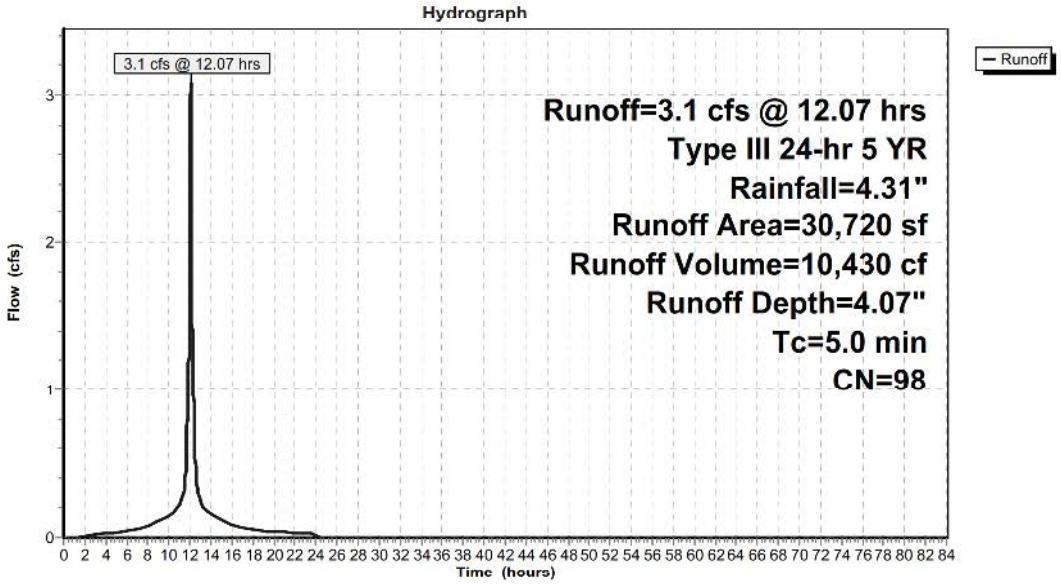
Runoff = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



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Summary for Subcatchment 5B: PRWS5B

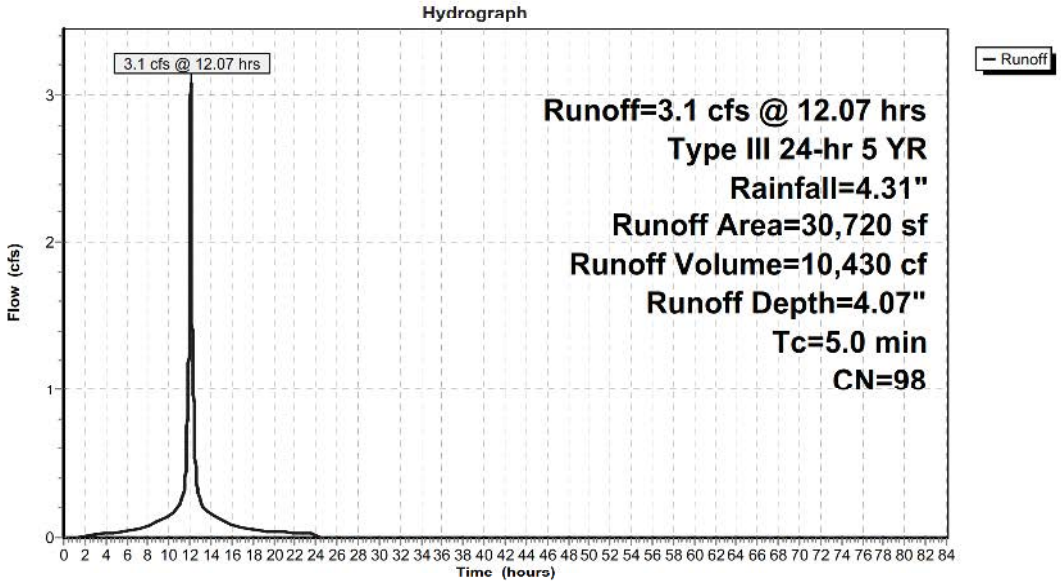
Runoff = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5B: PRWS5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 5C: PRWS5C

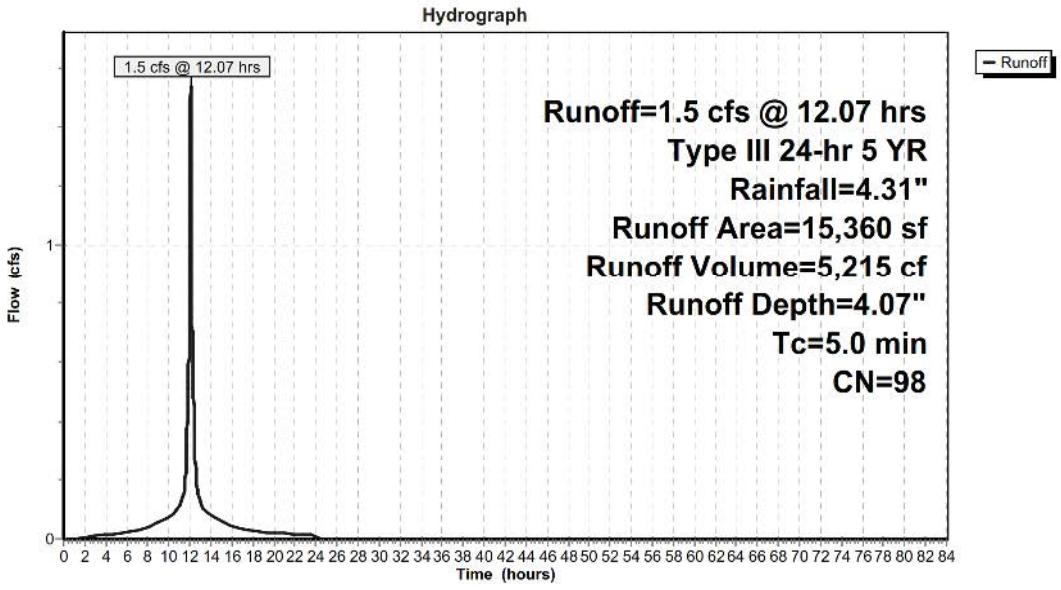
Runoff = 1.5 cfs @ 12.07 hrs, Volume= 5,215 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Subcatchment 5D: PRWS5D

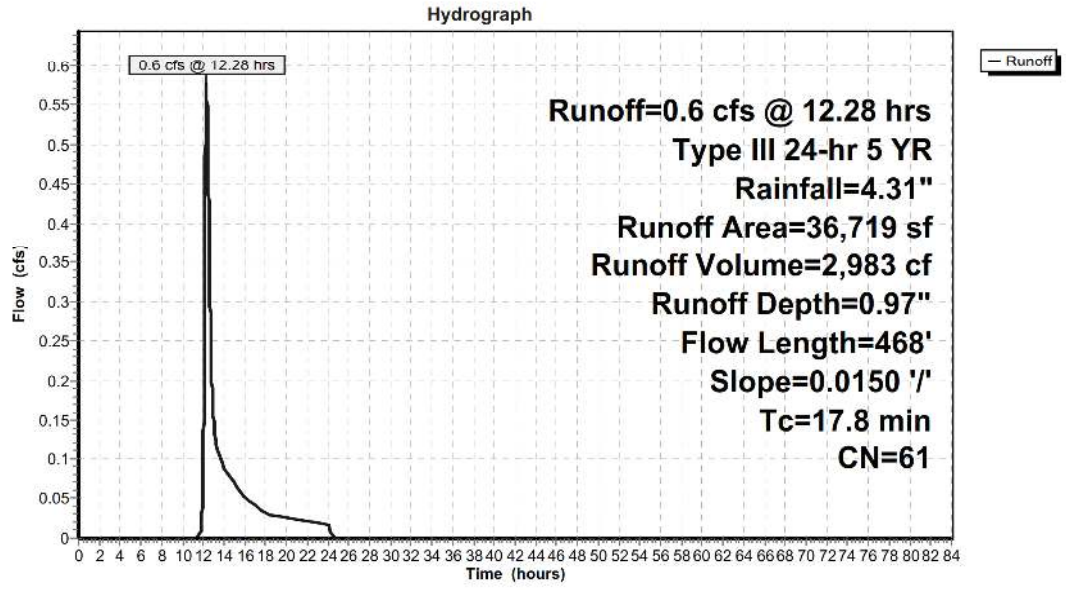
Runoff = 0.6 cfs @ 12.28 hrs, Volume= 2,983 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5E: PRWS5E

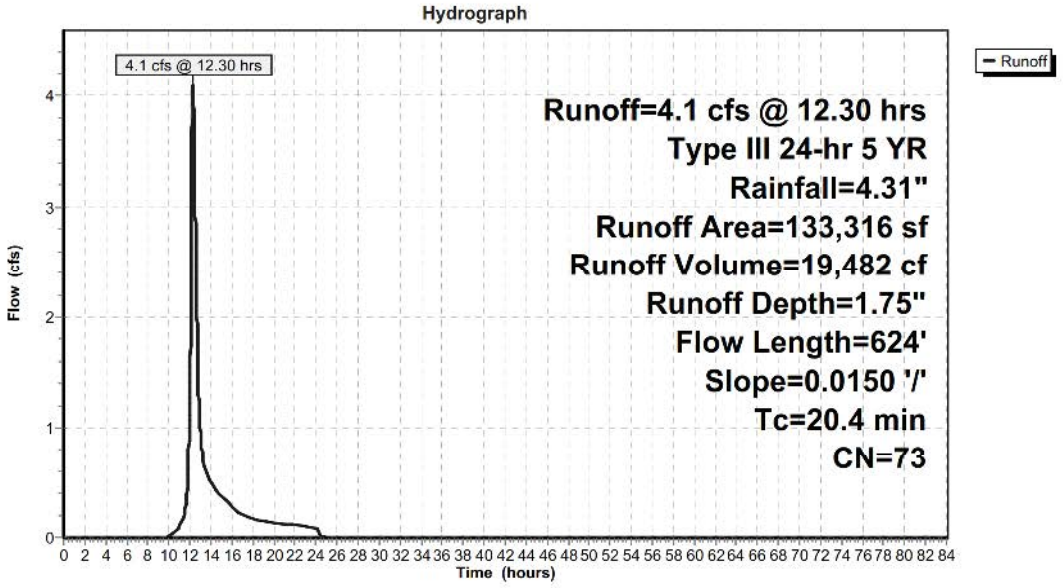
Runoff = 4.1 cfs @ 12.30 hrs, Volume= 19,482 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5F: PRWS5F

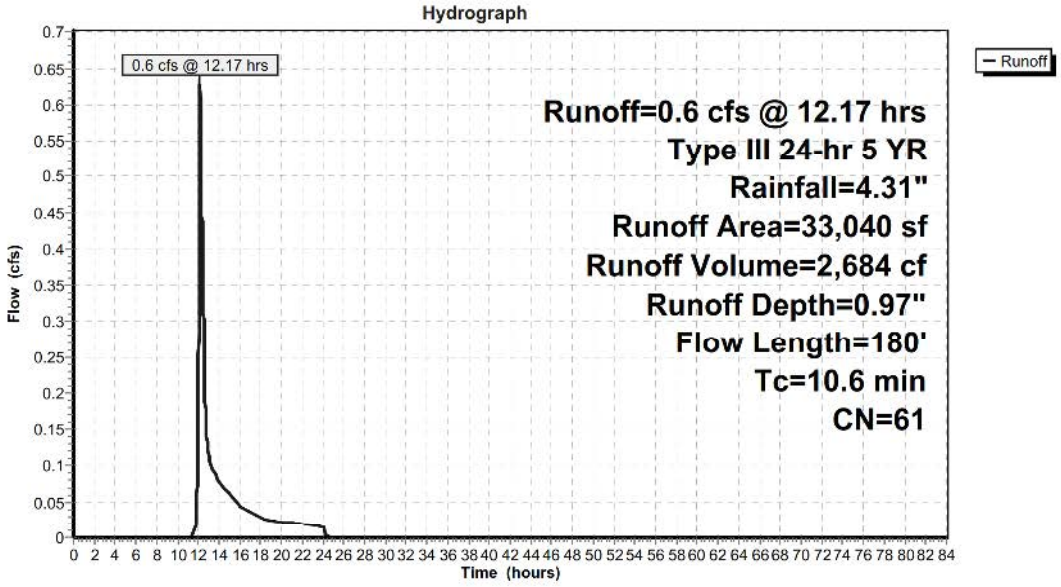
Runoff = 0.6 cfs @ 12.17 hrs, Volume= 2,684 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5G: PRWS5G

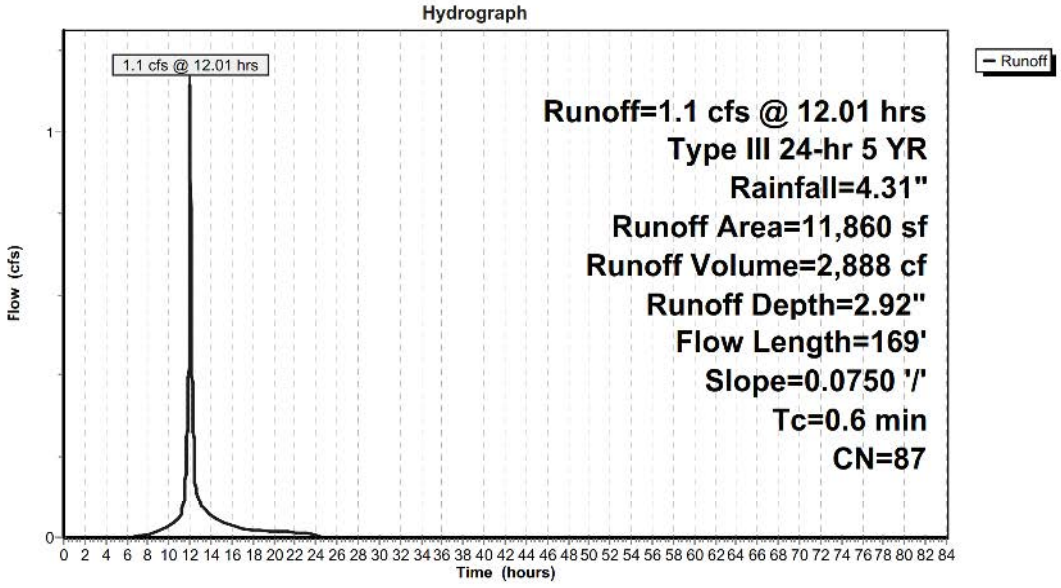
Runoff = 1.1 cfs @ 12.01 hrs, Volume= 2,888 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5H: PRWS5H

Runoff = 6.2 cfs @ 12.27 hrs, Volume= 32,018 cf, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

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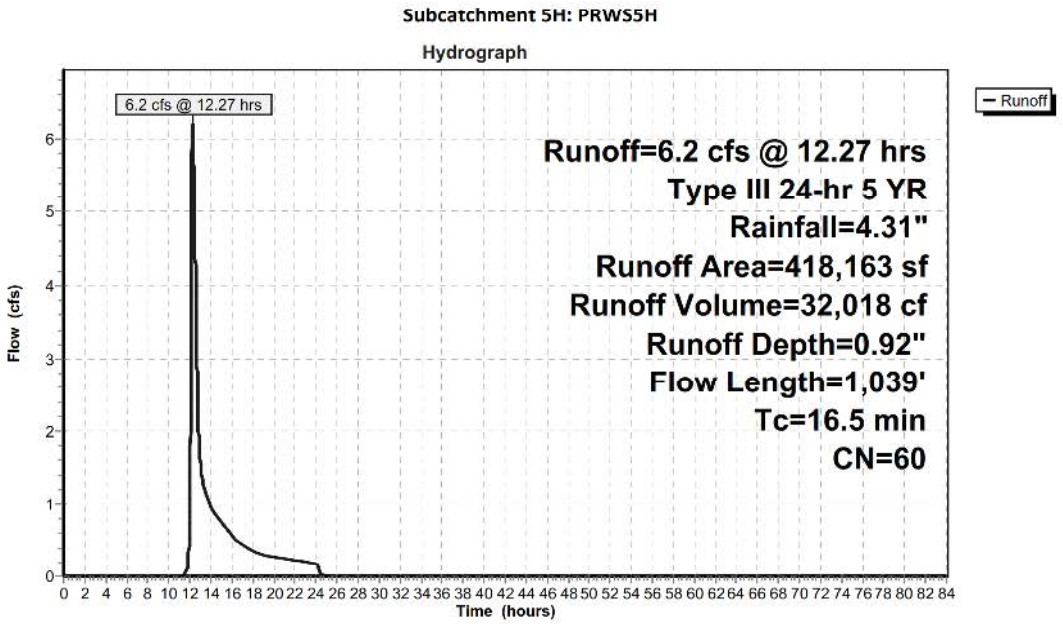
Type III 24-hr 5 YR Rainfall=4.31"



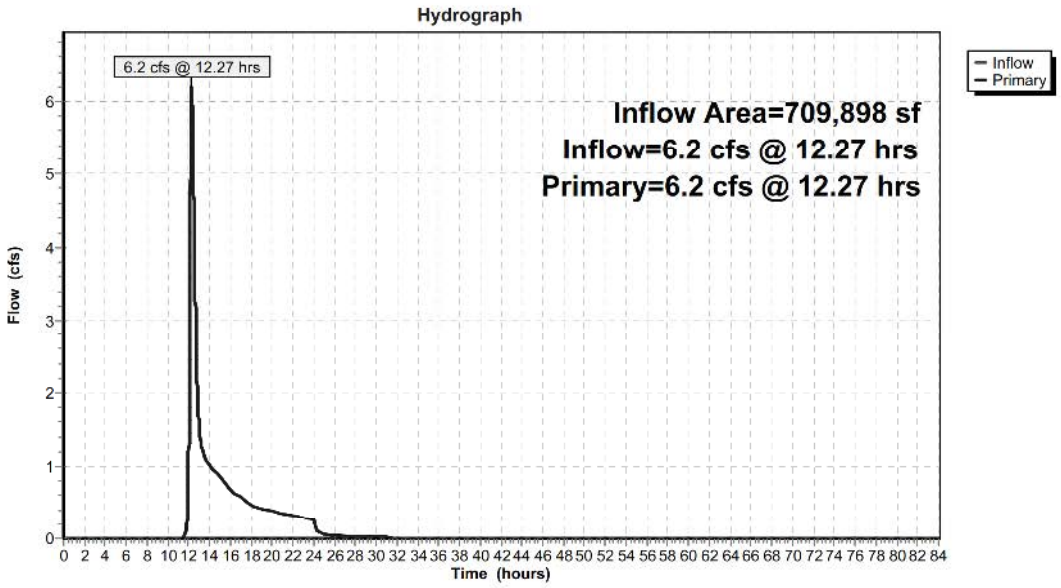
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 0.62" for 5 YR event
Inflow = 6.2 cfs @ 12.27 hrs, Volume= 36,633 cf
Primary = 6.2 cfs @ 12.27 hrs, Volume= 36,633 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf
Outflow = 0.1 cfs @ 9.52 hrs, Volume= 10,430 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.1 cfs @ 9.52 hrs, Volume= 10,430 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.99' @ 14.92 hrs Surf.Area= 1,296 sf Storage= 5,164 cf

Plug-Flow detention time= 362.6 min calculated for 10,430 cf (100% of inflow)
Center-of-Mass det. time= 362.6 min (1,112.2 - 749.7)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 9.52 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

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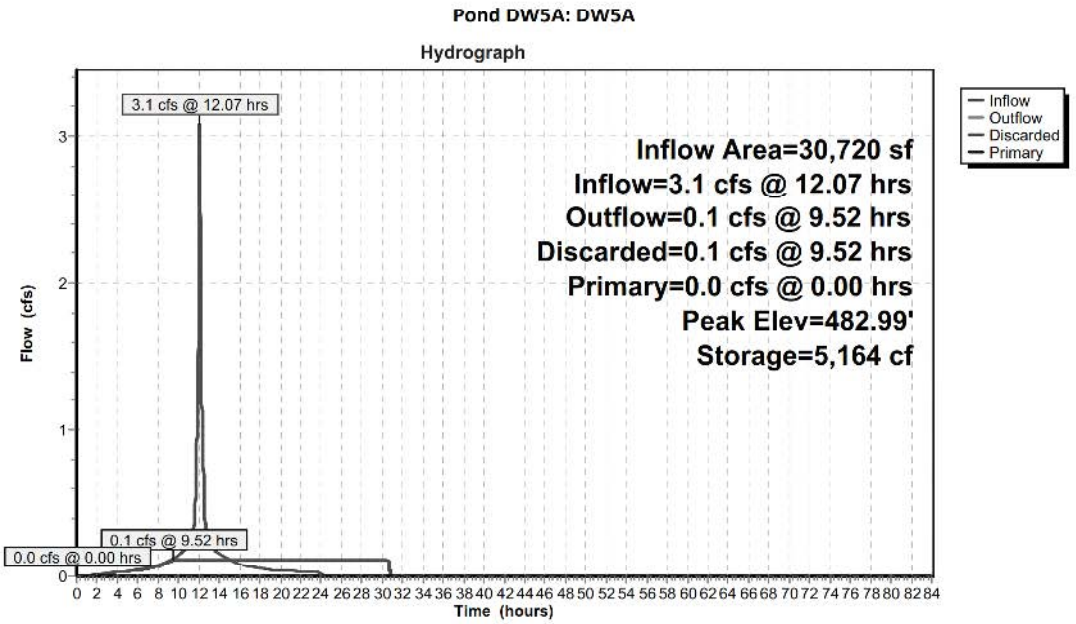
Type III 24-hr 5 YR Rainfall=4.31"



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 2.35" for 5 YR event
Inflow = 6.5 cfs @ 12.09 hrs, Volume= 35,128 cf
Outflow = 1.1 cfs @ 13.11 hrs, Volume= 35,128 cf, Atten= 82%, Lag= 61.3 min
Discarded = 0.5 cfs @ 11.27 hrs, Volume= 32,385 cf
Primary = 0.6 cfs @ 13.11 hrs, Volume= 2,743 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.82' @ 13.11 hrs Surf.Area= 2,880 sf Storage= 14,668 cf

Plug-Flow detention time= 250.7 min calculated for 35,128 cf (100% of inflow)
Center-of-Mass det. time= 250.7 min (1,062.2 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 11.27 hrs HW=477.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.6 cfs @ 13.11 hrs HW=484.82' (Free Discharge)
↑**2=Culvert** (Inlet Controls 0.6 cfs @ 1.94 fps)

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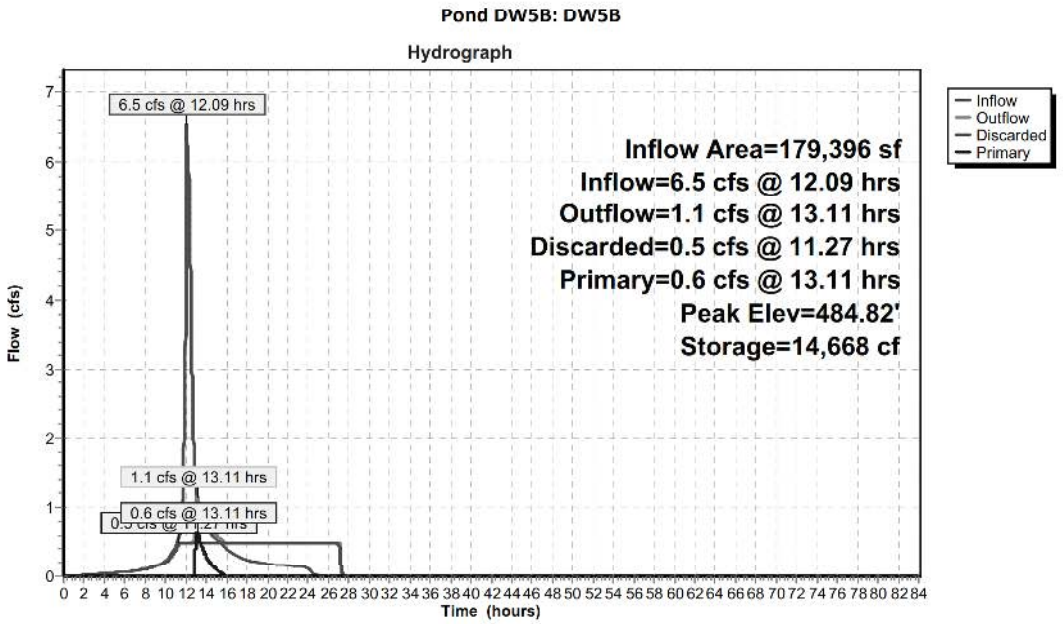

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Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 0.5 cfs @ 12.07 hrs, Volume= 1,738 cf
Outflow = 0.0 cfs @ 10.45 hrs, Volume= 1,738 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.0 cfs @ 10.45 hrs, Volume= 1,738 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 1.83' @ 13.88 hrs Surf.Area= 0.014 ac Storage= 0.017 af

Plug-Flow detention time= 218.9 min calculated for 1,738 cf (100% of inflow)
Center-of-Mass det. time= 218.9 min (968.5 - 749.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 10.45 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

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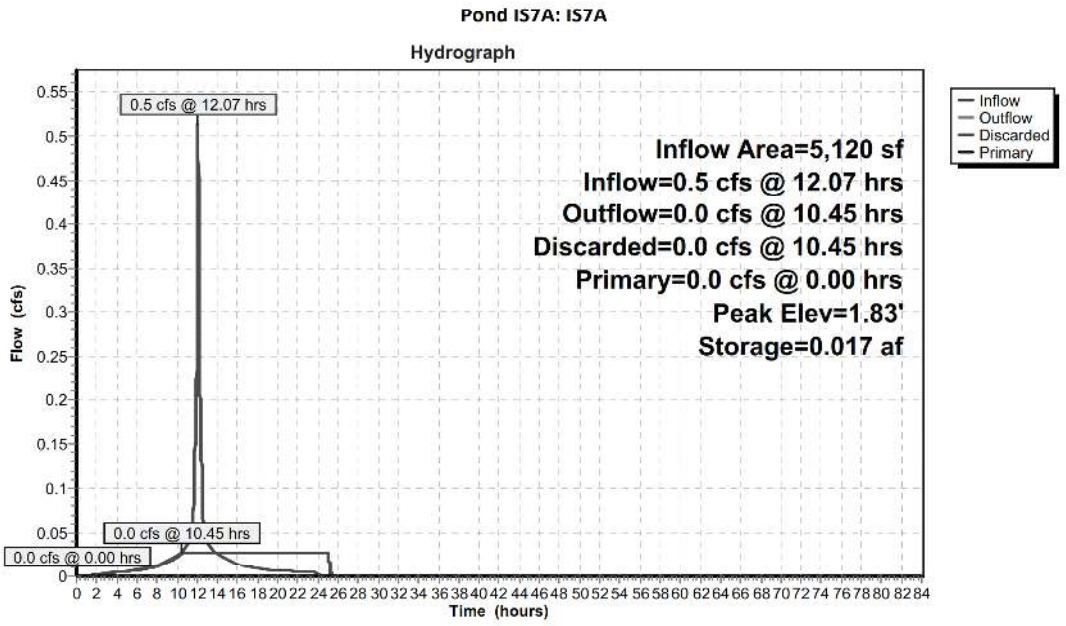

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 0.46" for 5 YR event
Inflow = 1.5 cfs @ 12.20 hrs, Volume= 11,299 cf
Outflow = 0.1 cfs @ 15.99 hrs, Volume= 4,615 cf, Atten= 92%, Lag= 227.6 min
Primary = 0.1 cfs @ 15.99 hrs, Volume= 4,615 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.41' @ 15.99 hrs Surf.Area= 4,866 sf Storage= 8,553 cf

Plug-Flow detention time= 531.2 min calculated for 4,615 cf (41% of inflow)
Center-of-Mass det. time= 407.9 min (1,260.1 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.1 cfs @ 15.99 hrs HW=484.41' (Free Discharge)
↑**1=Culvert** (Passes 0.1 cfs of 1.0 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 2.55 fps)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

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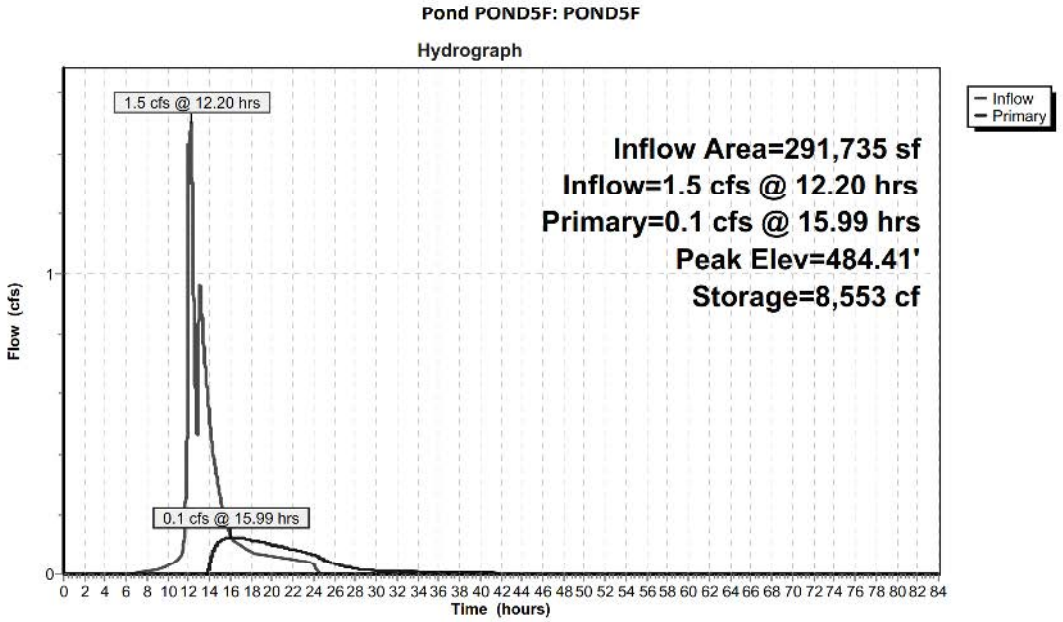
Type III 24-hr 5 YR Rainfall=4.31"



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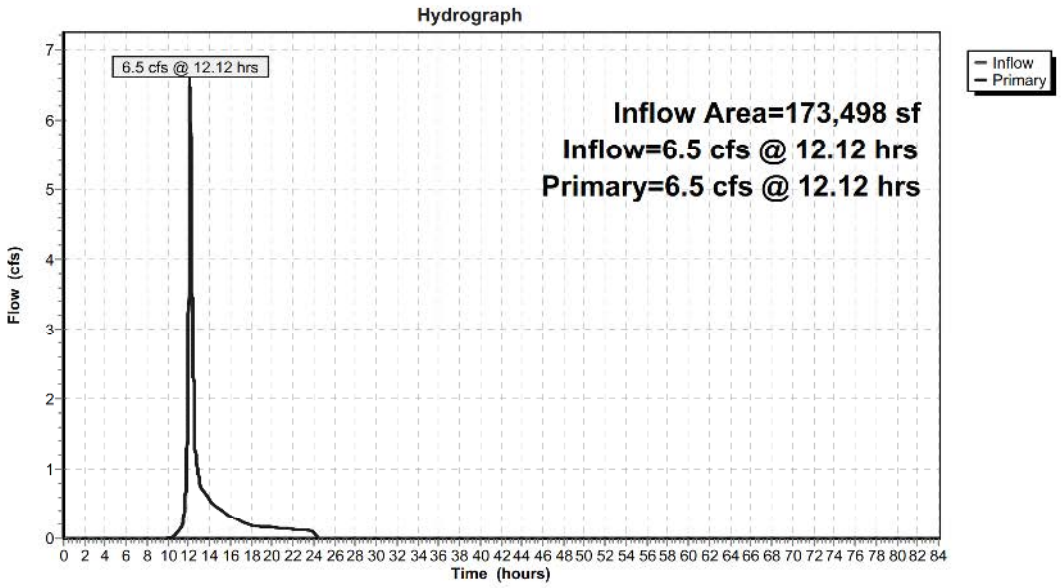
Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 1.54" for 5 YR event
Inflow = 6.5 cfs @ 12.12 hrs, Volume= 22,275 cf
Primary = 6.5 cfs @ 12.12 hrs, Volume= 22,275 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



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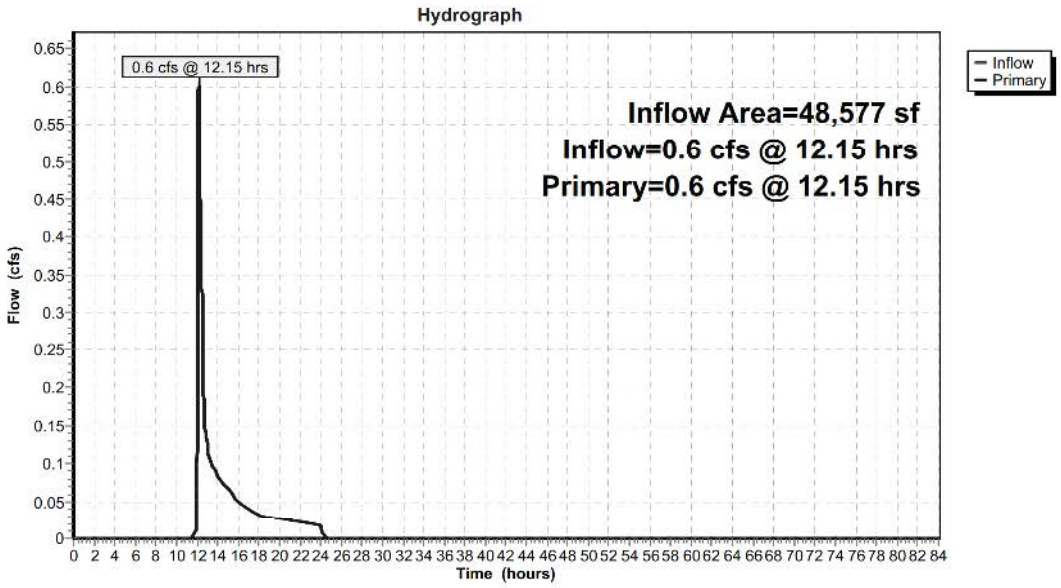
Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 0.68" for 5 YR event
Inflow = 0.6 cfs @ 12.15 hrs, Volume= 2,747 cf
Primary = 0.6 cfs @ 12.15 hrs, Volume= 2,747 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS6: PRWS6

Runoff = 6.5 cfs @ 12.12 hrs, Volume= 22,275 cf, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

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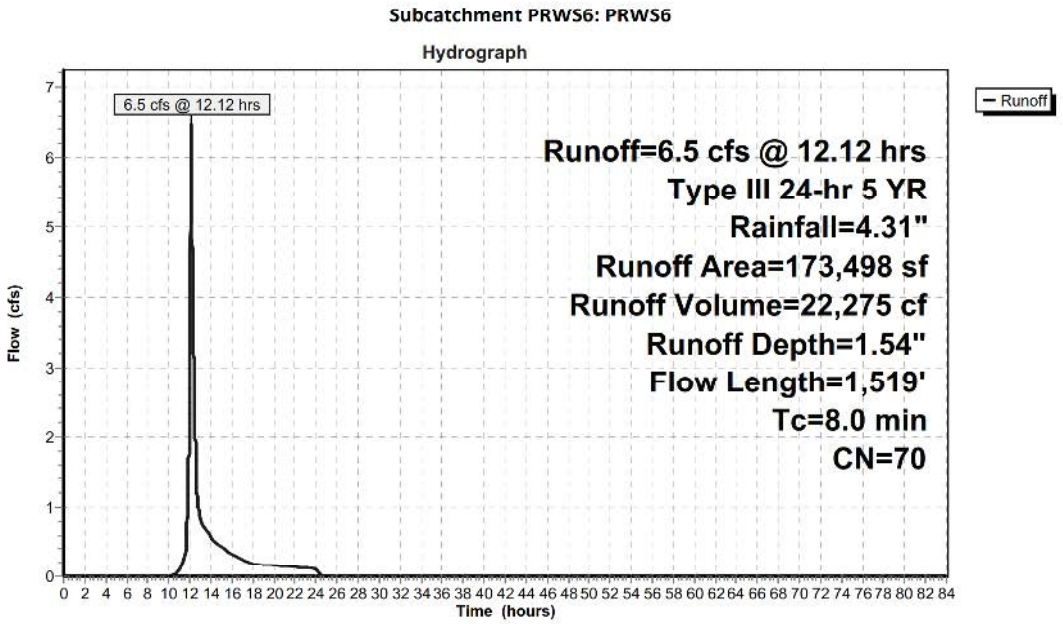
Type III 24-hr 5 YR Rainfall=4.31"



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Summary for Subcatchment PRWS7A: PRWS7A

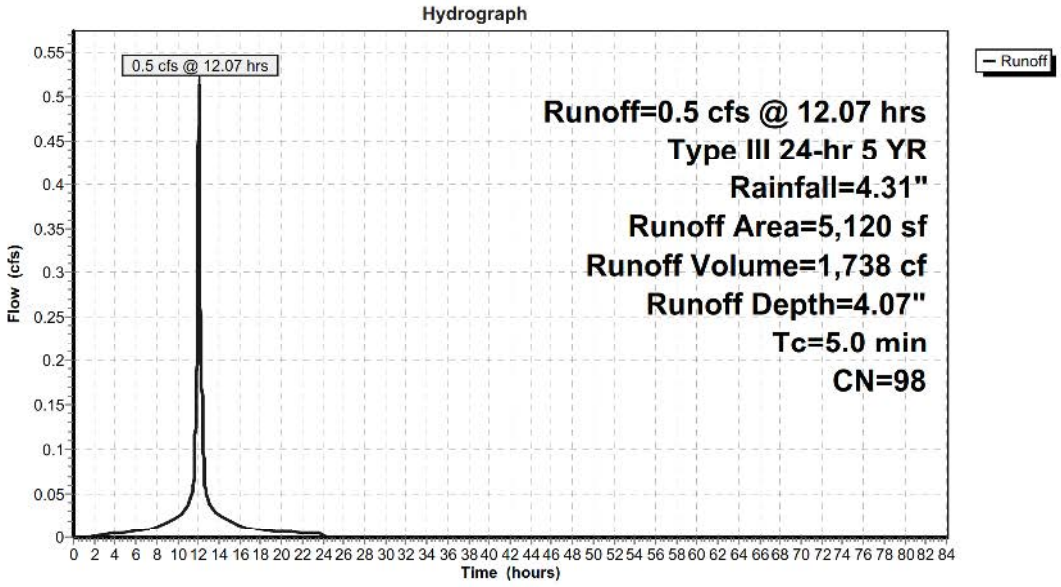
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 1,738 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS7B: PRWS7B

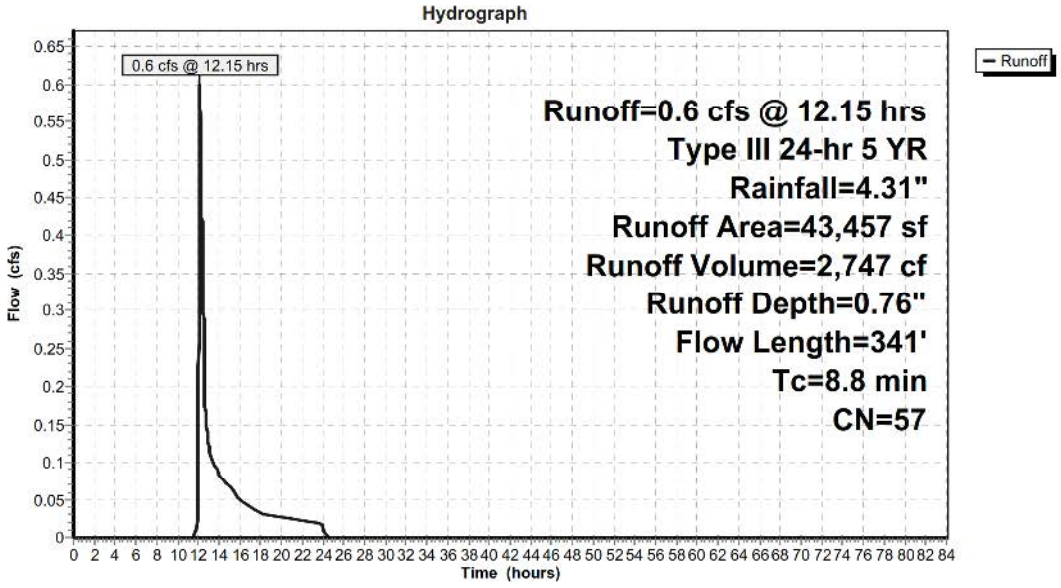
Runoff = 0.6 cfs @ 12.15 hrs, Volume= 2,747 cf, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 5 YR Rainfall=4.31"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 4.07" for 5 YR event
Inflow = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf
Outflow = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.07 hrs, Volume= 10,430 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

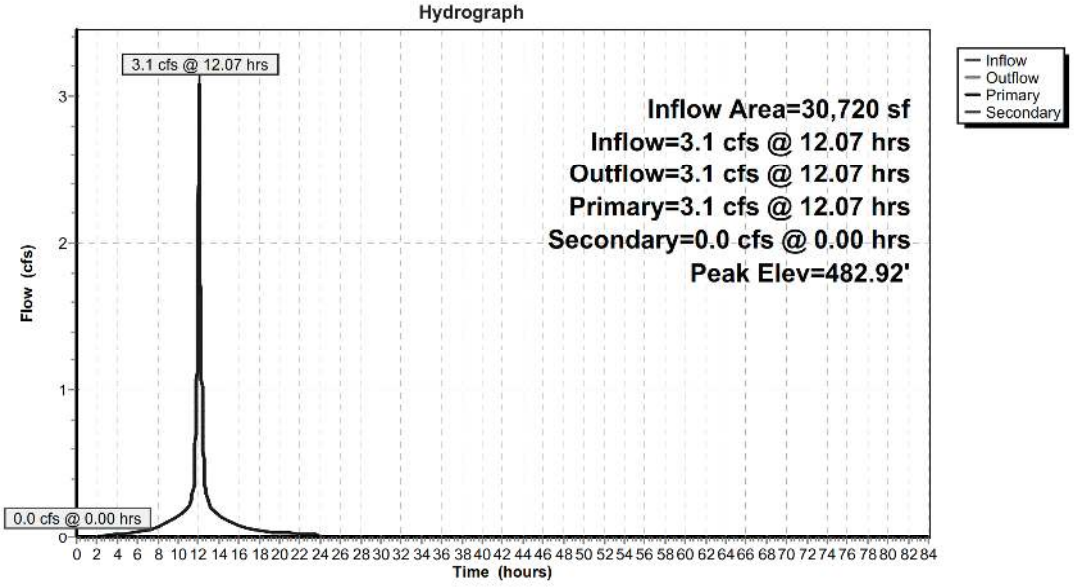
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.92' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.1 cfs @ 12.07 hrs HW=482.92' (Free Discharge)
↳**1=Culvert** (Barrel Controls 3.1 cfs @ 3.91 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=481.00' (Free Discharge)
↳**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 5 YR Rainfall=4.31"*
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Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 2.35" for 5 YR event
Inflow = 6.5 cfs @ 12.09 hrs, Volume= 35,128 cf
Outflow = 6.5 cfs @ 12.09 hrs, Volume= 35,128 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.09 hrs, Volume= 35,128 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

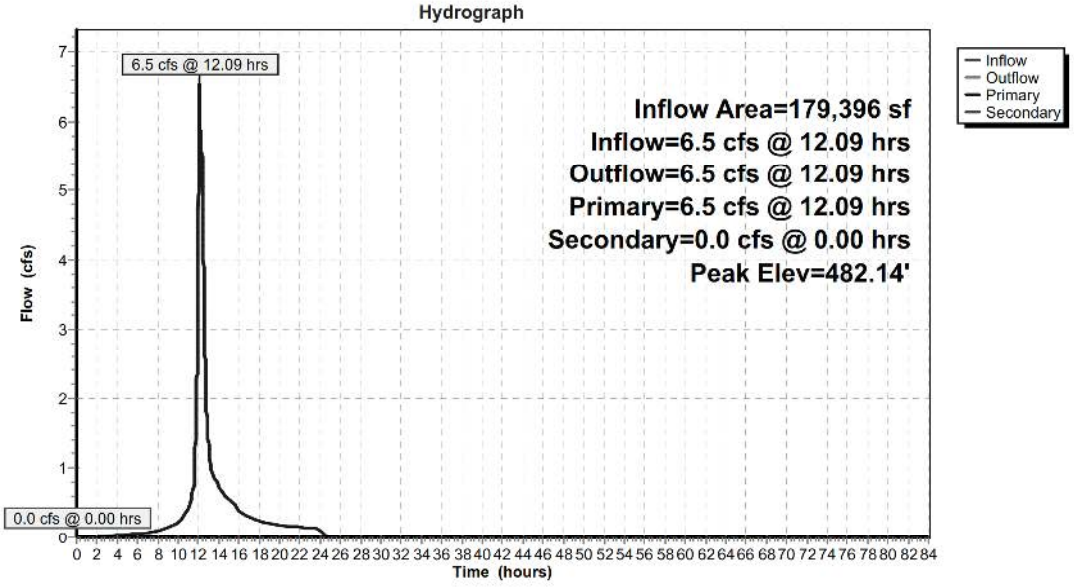
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 482.14' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=6.5 cfs @ 12.09 hrs HW=482.13' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.5 cfs @ 8.30 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=477.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=3.7 cfs 12,526 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=3.7 cfs 12,526 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=1.8 cfs 6,263 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=0.9 cfs 4,430 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=2.38"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=5.7 cfs 26,472 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=180' Tc=10.6 min CN=61 Runoff=1.0 cfs 3,986 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=3.69"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=1.4 cfs 3,647 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=1.38"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=10.1 cfs 48,006 cf

Link DP5: DP5 Inflow=10.1 cfs 64,058 cf
Primary=10.1 cfs 64,058 cf

Pond DW5A: DW5A Peak Elev=484.21' Storage=6,259 cf Inflow=3.7 cfs 12,526 cf
Discarded=0.1 cfs 11,993 cf Primary=0.1 cfs 533 cf Outflow=0.2 cfs 12,526 cf

Pond DW5B: DW5B Peak Elev=485.32' Storage=15,667 cf Inflow=8.2 cfs 45,256 cf
Discarded=0.5 cfs 35,122 cf Primary=3.8 cfs 10,134 cf Outflow=4.3 cfs 45,256 cf

Pond IS7A: IS7A Peak Elev=2.35' Storage=0.022 af Inflow=0.6 cfs 2,088 cf
Discarded=0.0 cfs 2,088 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 2,088 cf

Pond POND5F: POND5F Peak Elev=485.82' Storage=16,703 cf Inflow=4.9 cfs 22,736 cf
Outflow=0.3 cfs 16,051 cf

Link PRDP6: PRDP6 Inflow=9.1 cfs 30,842 cf
Primary=9.1 cfs 30,842 cf

Link PRDP7: PRDP7 Inflow=1.1 cfs 4,253 cf
Primary=1.1 cfs 4,253 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=2.13"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=9.1 cfs 30,842 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=0.6 cfs 2,088 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=1.17"
Flow Length=341' Tc=8.8 min CN=57 Runoff=1.1 cfs 4,253 cf

Pond SPLIT5A: SPLIT5A Peak Elev=483.31' Inflow=3.7 cfs 12,526 cf
Primary=3.7 cfs 12,526 cf Secondary=0.0 cfs 0 cf Outflow=3.7 cfs 12,526 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=484.59' Inflow=8.3 cfs 45,261 cf
Primary=8.2 cfs 45,256 cf Secondary=0.1 cfs 5 cf Outflow=8.3 cfs 45,261 cf

Total Runoff Area = 931,973 sf Runoff Volume = 155,041 cf Average Runoff Depth = 2.00"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 5A: PRSW5A

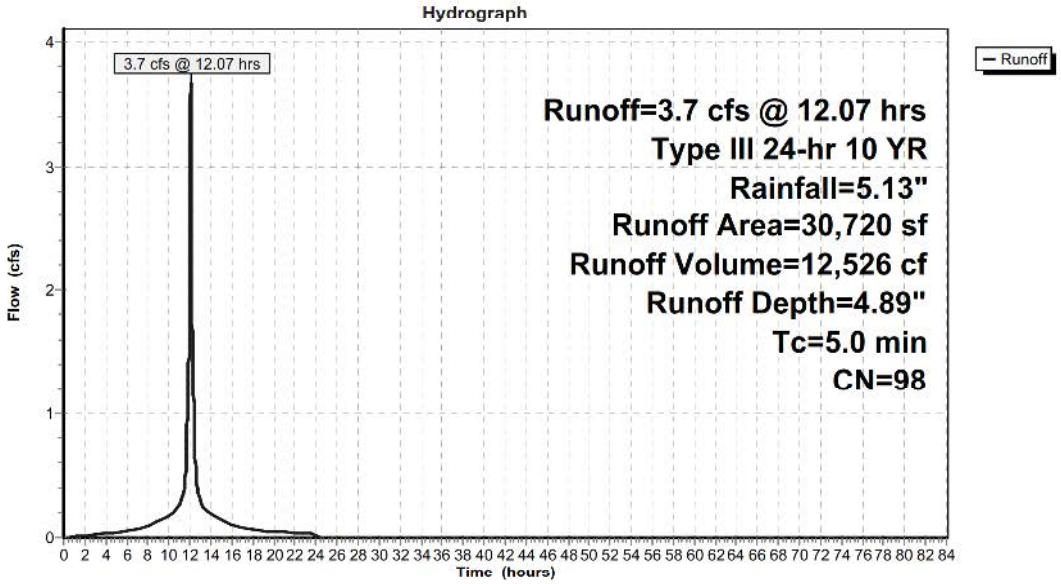
Runoff = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 5B: PRWS5B

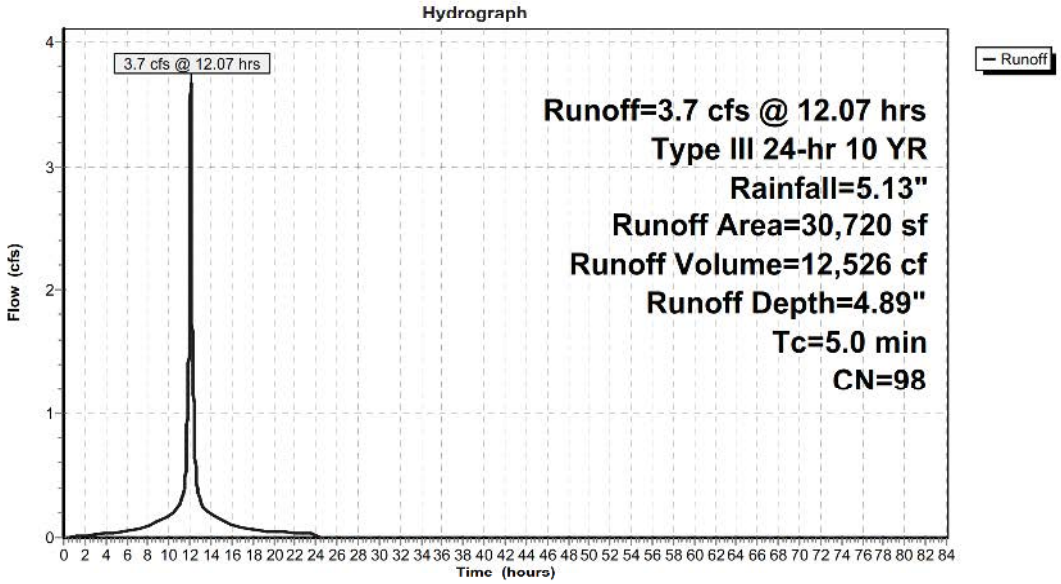
Runoff = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5B: PRWS5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 5C: PRWS5C

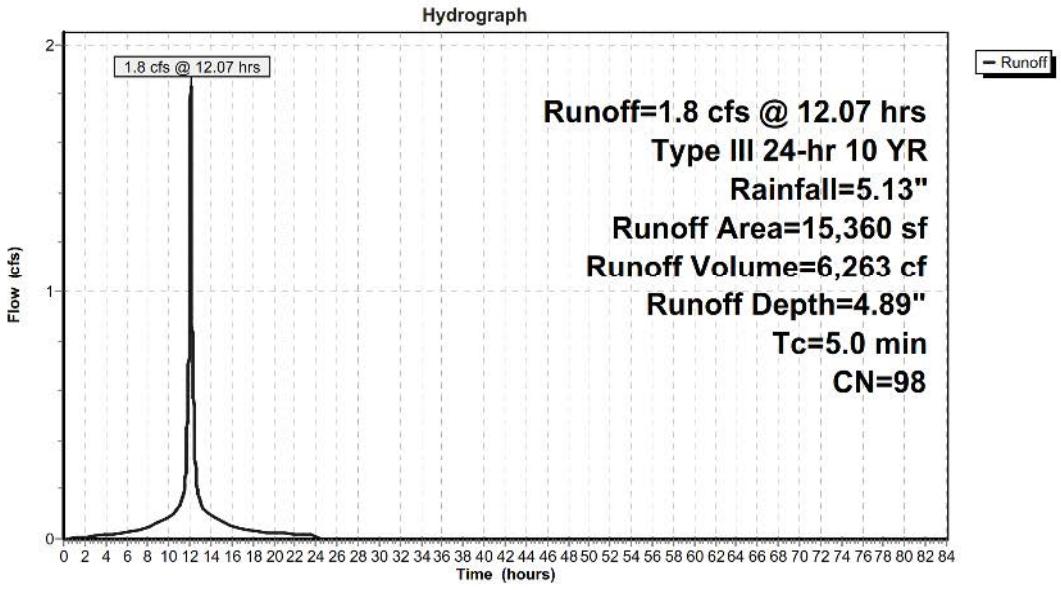
Runoff = 1.8 cfs @ 12.07 hrs, Volume= 6,263 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment 5D: PRWS5D

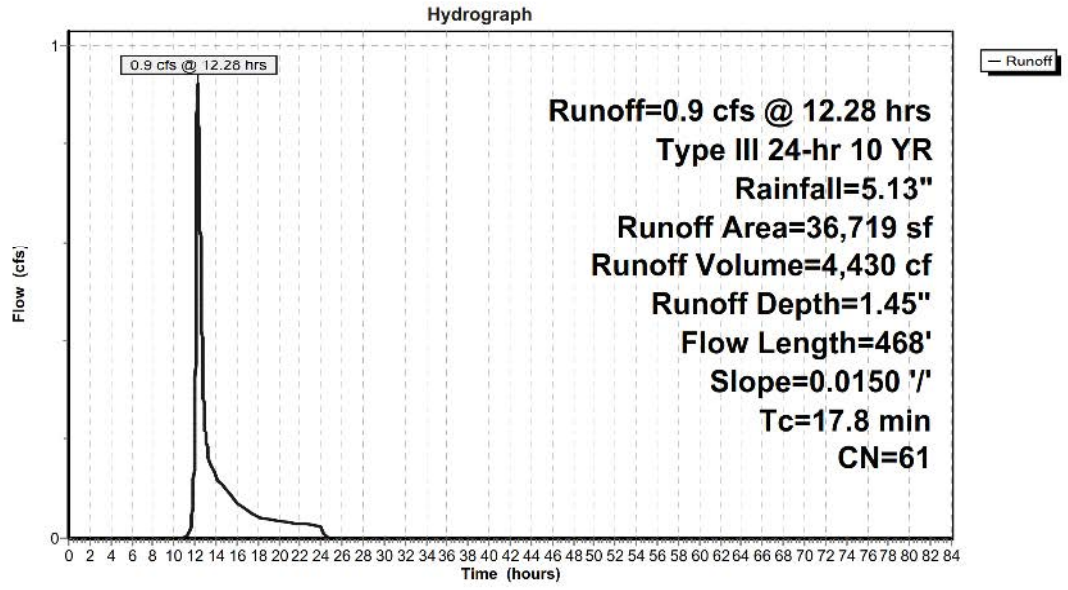
Runoff = 0.9 cfs @ 12.28 hrs, Volume= 4,430 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5E: PRWS5E

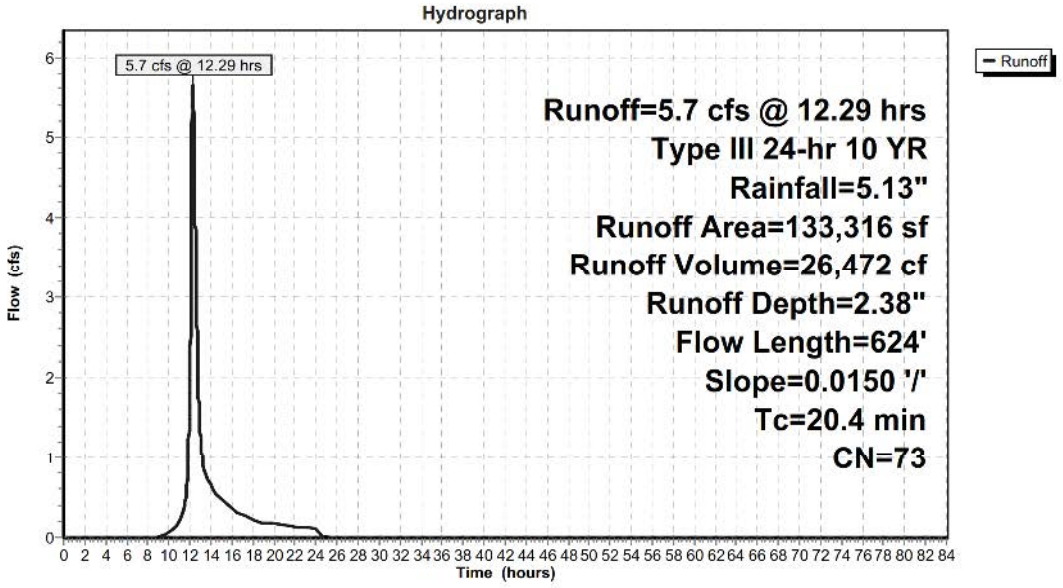
Runoff = 5.7 cfs @ 12.29 hrs, Volume= 26,472 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5F: PRWS5F

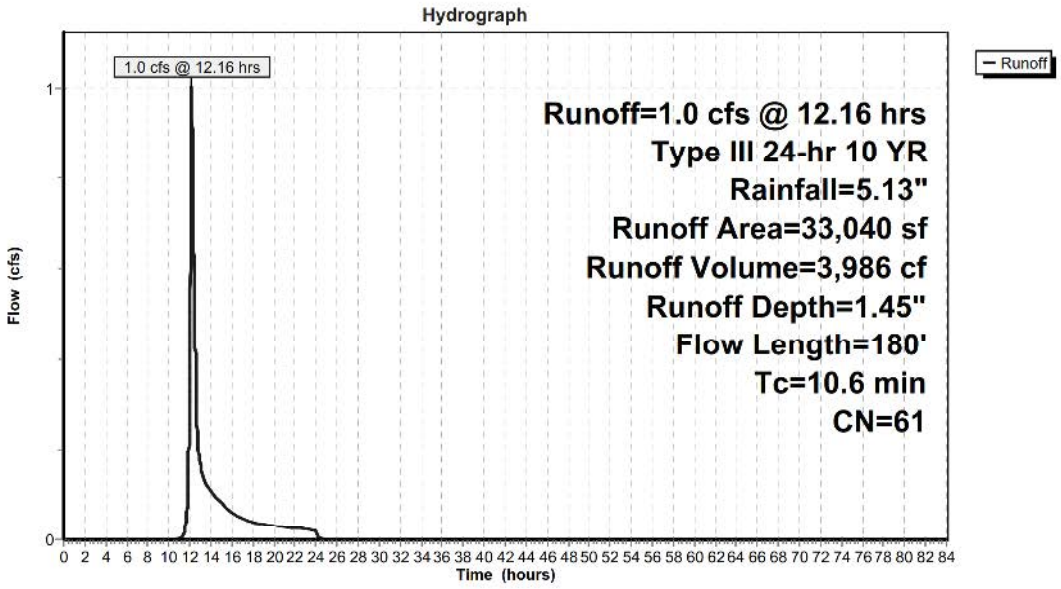
Runoff = 1.0 cfs @ 12.16 hrs, Volume= 3,986 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5G: PRWS5G

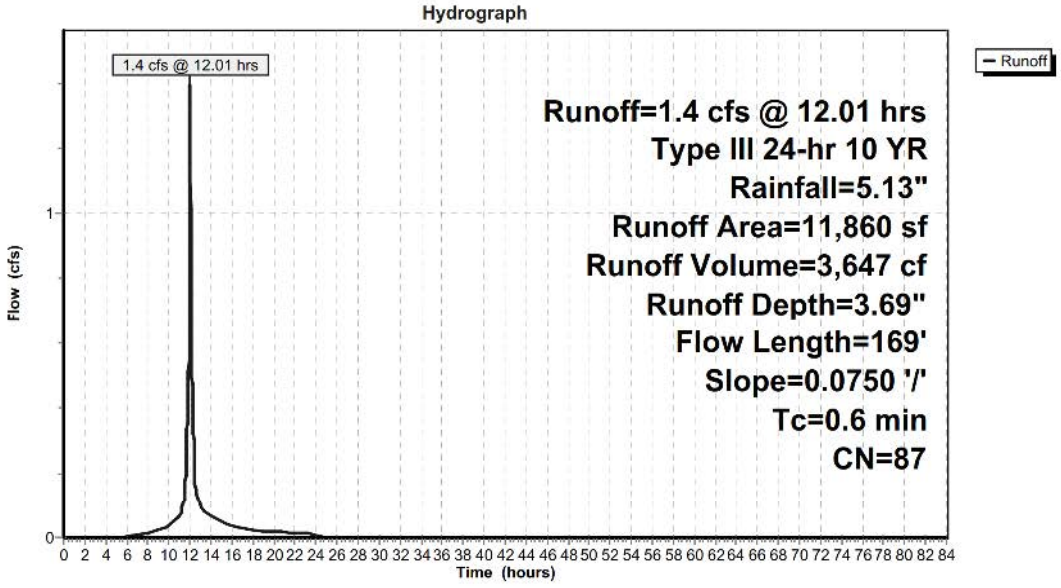
Runoff = 1.4 cfs @ 12.01 hrs, Volume= 3,647 cf, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5H: PRWS5H

Runoff = 10.1 cfs @ 12.26 hrs, Volume= 48,006 cf, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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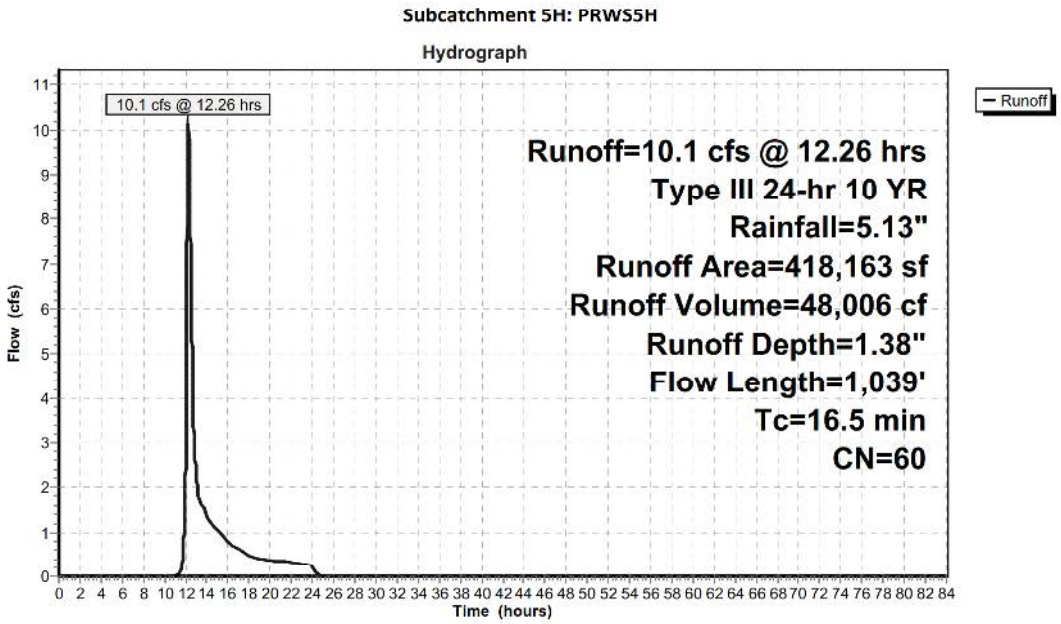


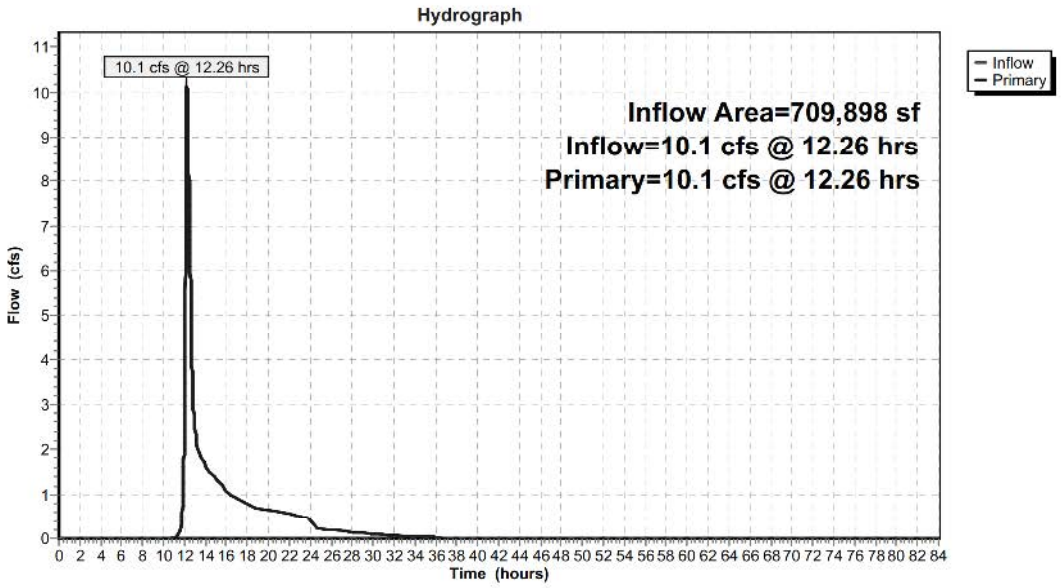
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 1.08" for 10 YR event
Inflow = 10.1 cfs @ 12.26 hrs, Volume= 64,058 cf
Primary = 10.1 cfs @ 12.26 hrs, Volume= 64,058 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf
Outflow = 0.2 cfs @ 13.64 hrs, Volume= 12,526 cf, Atten= 94%, Lag= 94.4 min
Discarded = 0.1 cfs @ 8.93 hrs, Volume= 11,993 cf
Primary = 0.1 cfs @ 13.64 hrs, Volume= 533 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.21' @ 13.64 hrs Surf.Area= 1,296 sf Storage= 6,259 cf

Plug-Flow detention time= 420.3 min calculated for 12,525 cf (100% of inflow)
Center-of-Mass det. time= 420.3 min (1,167.0 - 746.7)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 8.93 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.1 cfs @ 13.64 hrs HW=484.21' (Free Discharge)
↳**2=Culvert** (Barrel Controls 0.1 cfs @ 0.95 fps)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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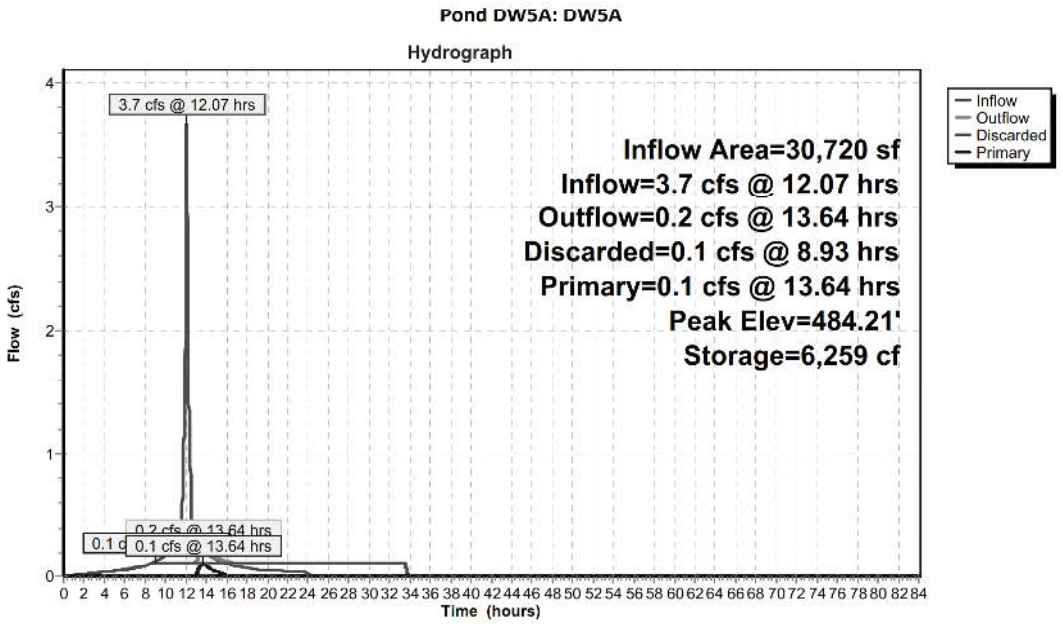

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 3.03" for 10 YR event
Inflow = 8.2 cfs @ 12.09 hrs, Volume= 45,256 cf
Outflow = 4.3 cfs @ 12.57 hrs, Volume= 45,256 cf, Atten= 48%, Lag= 28.6 min
Discarded = 0.5 cfs @ 10.84 hrs, Volume= 35,122 cf
Primary = 3.8 cfs @ 12.57 hrs, Volume= 10,134 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.32' @ 12.57 hrs Surf.Area= 2,880 sf Storage= 15,667 cf

Plug-Flow detention time= 218.0 min calculated for 45,251 cf (100% of inflow)
Center-of-Mass det. time= 218.0 min (1,026.3 - 808.3)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 10.84 hrs HW=477.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=3.8 cfs @ 12.57 hrs HW=485.32' (Free Discharge)
↑**2=Culvert** (Inlet Controls 3.8 cfs @ 3.09 fps)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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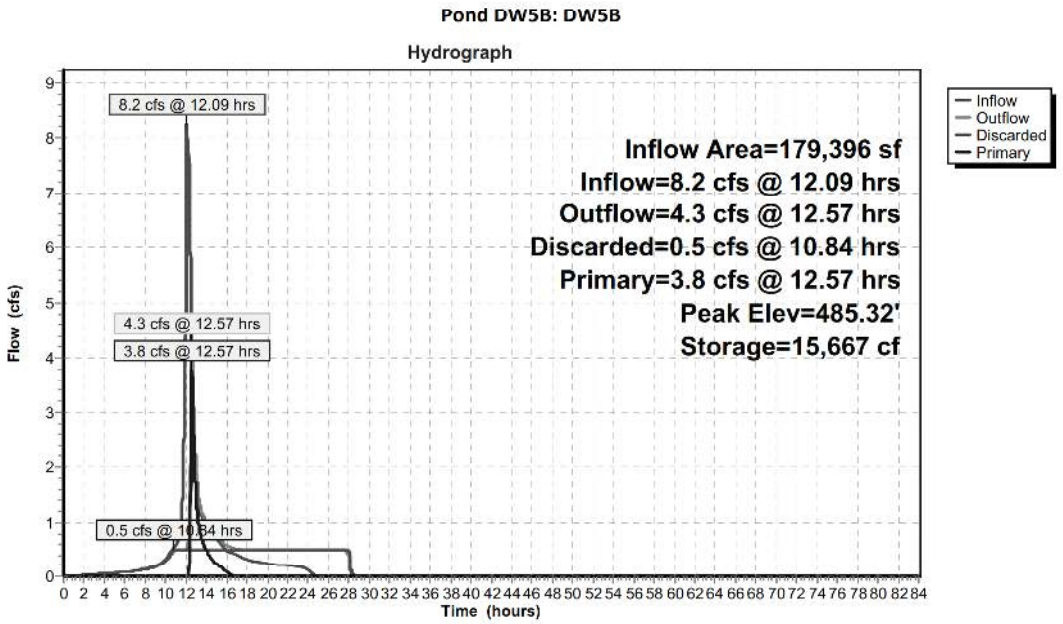

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 0.6 cfs @ 12.07 hrs, Volume= 2,088 cf
Outflow = 0.0 cfs @ 9.97 hrs, Volume= 2,088 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.0 cfs @ 9.97 hrs, Volume= 2,088 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 2.35' @ 14.41 hrs Surf.Area= 0.014 ac Storage= 0.022 af

Plug-Flow detention time= 290.4 min calculated for 2,087 cf (100% of inflow)
Center-of-Mass det. time= 290.4 min (1,037.1 - 746.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 9.97 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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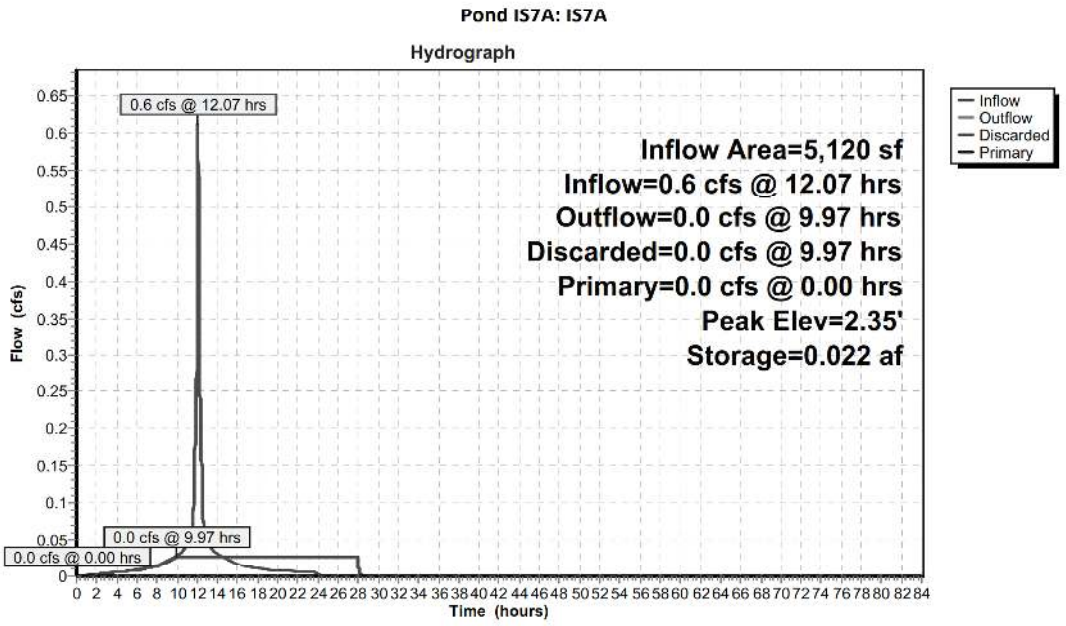

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 0.94" for 10 YR event
Inflow = 4.9 cfs @ 12.55 hrs, Volume= 22,736 cf
Outflow = 0.3 cfs @ 15.72 hrs, Volume= 16,051 cf, Atten= 94%, Lag= 189.9 min
Primary = 0.3 cfs @ 15.72 hrs, Volume= 16,051 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.82' @ 15.72 hrs Surf.Area= 6,641 sf Storage= 16,703 cf

Plug-Flow detention time= 535.5 min calculated for 16,051 cf (71% of inflow)
Center-of-Mass det. time= 465.4 min (1,293.1 - 827.7)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.3 cfs @ 15.72 hrs HW=485.82' (Free Discharge)
↑**1=Culvert** (Passes 0.3 cfs of 13.8 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 6.27 fps)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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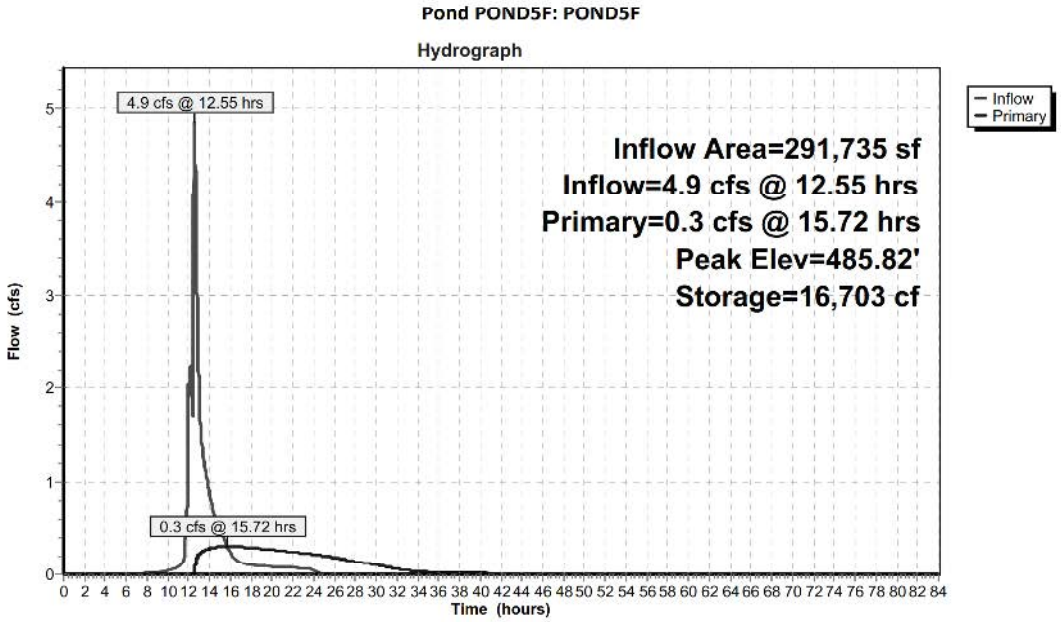


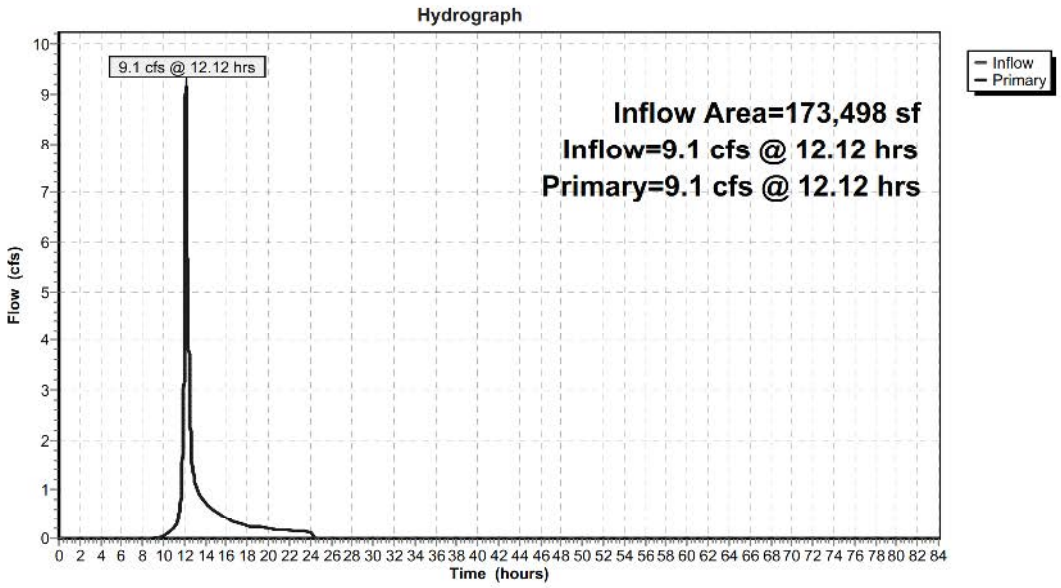
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 2.13" for 10 YR event
Inflow = 9.1 cfs @ 12.12 hrs, Volume= 30,842 cf
Primary = 9.1 cfs @ 12.12 hrs, Volume= 30,842 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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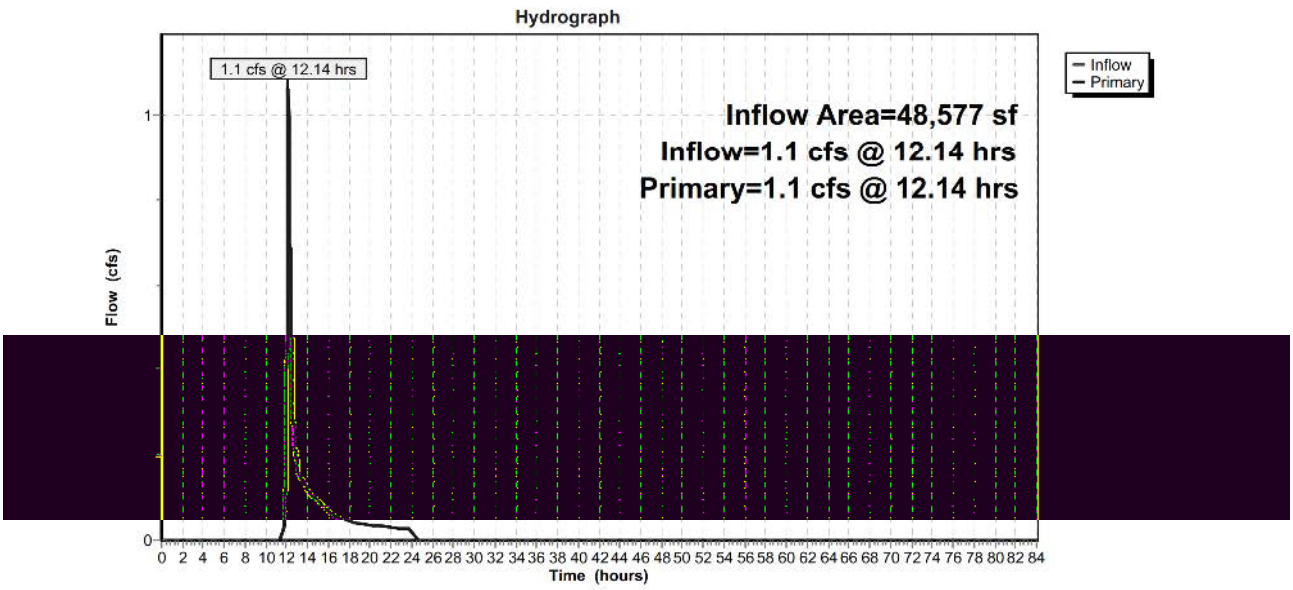
Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 1.05" for 10 YR event
Inflow = 1.1 cfs @ 12.14 hrs, Volume= 4,253 cf
Primary = 1.1 cfs @ 12.14 hrs, Volume= 4,253 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS6: PRWS6

Runoff = 9.1 cfs @ 12.12 hrs, Volume= 30,842 cf, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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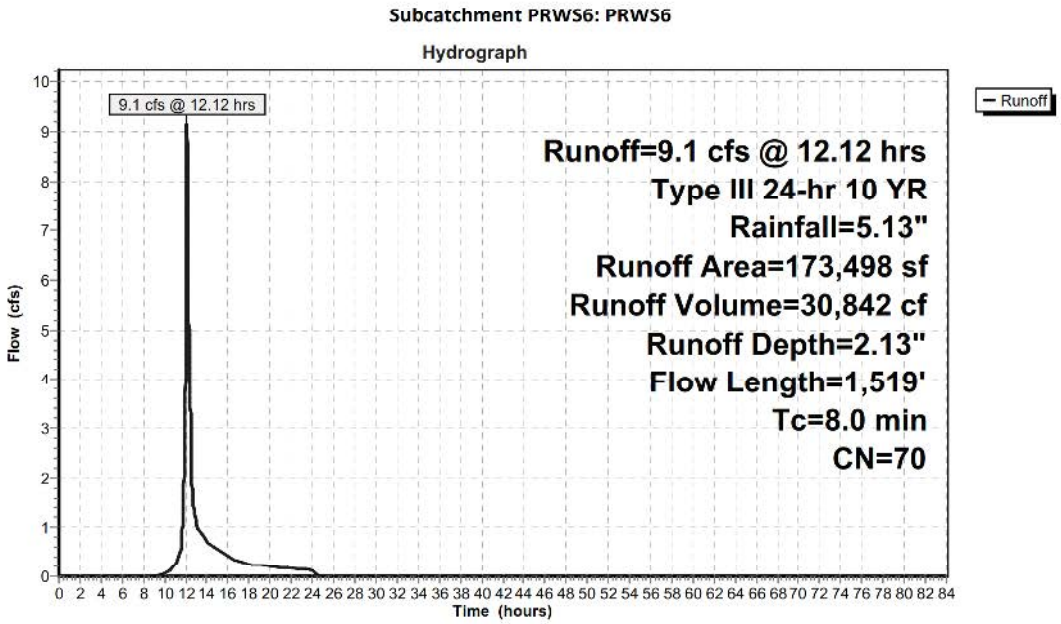

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment PRWS7A: PRWS7A

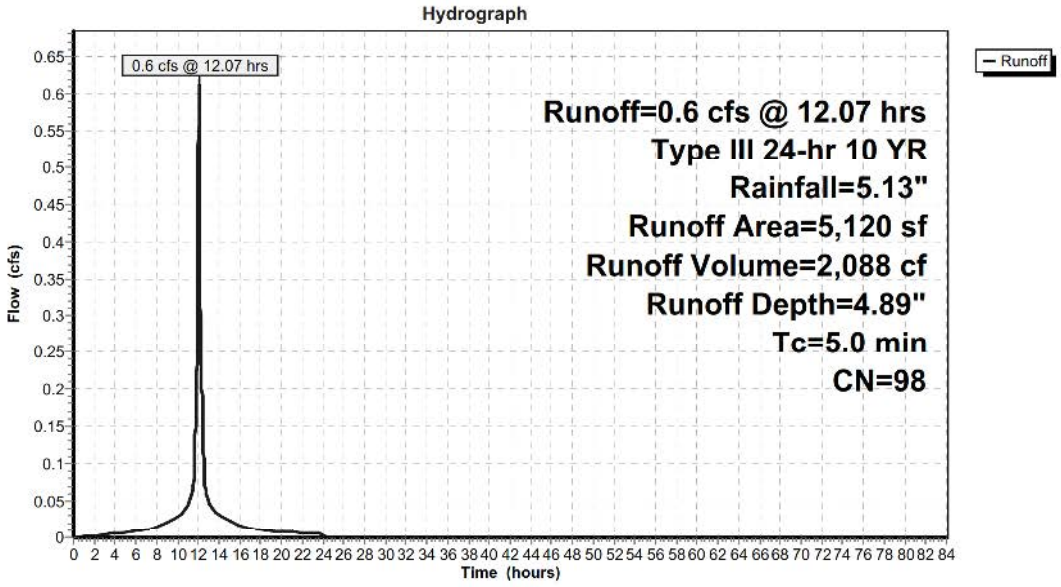
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 2,088 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Subcatchment PRWS7B: PRWS7B

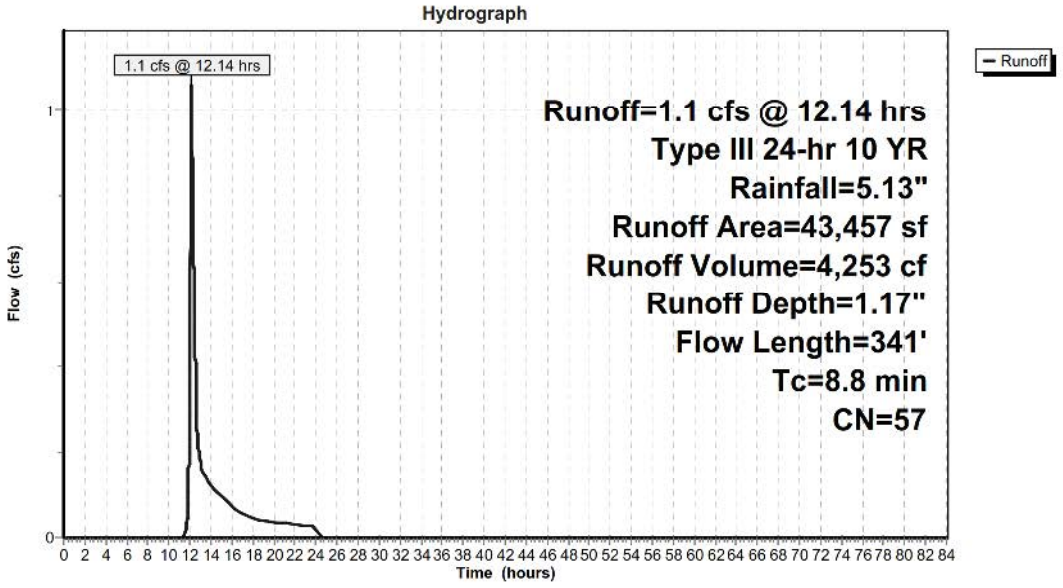
Runoff = 1.1 cfs @ 12.14 hrs, Volume= 4,253 cf, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 10 YR Rainfall=5.13"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 4.89" for 10 YR event
Inflow = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf
Outflow = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.07 hrs, Volume= 12,526 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

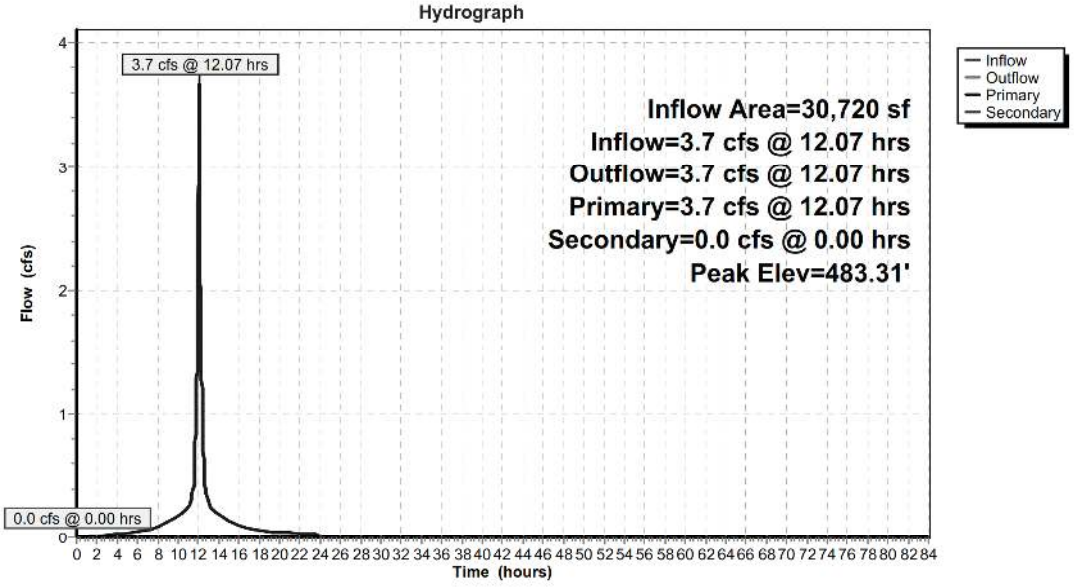
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 483.31' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.7 cfs @ 12.07 hrs HW=483.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.7 cfs @ 4.67 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=481.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 10 YR Rainfall=5.13"*
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Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 3.03" for 10 YR event
Inflow = 8.3 cfs @ 12.09 hrs, Volume= 45,261 cf
Outflow = 8.3 cfs @ 12.09 hrs, Volume= 45,261 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.2 cfs @ 12.09 hrs, Volume= 45,256 cf
Secondary = 0.1 cfs @ 12.09 hrs, Volume= 5 cf

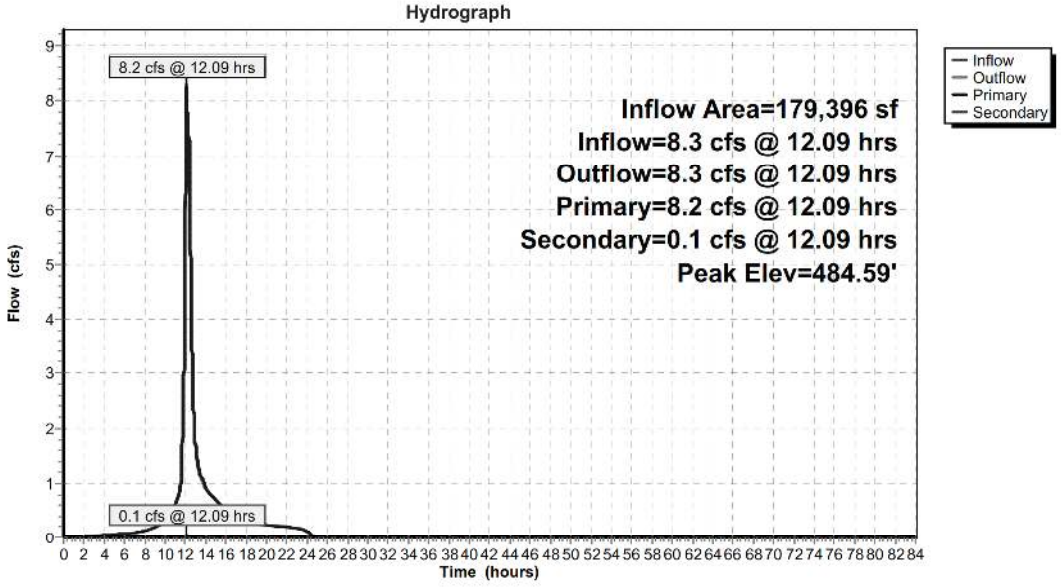
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.59' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.2 cfs @ 12.09 hrs HW=484.59' (Free Discharge)
↳**1=Culvert** (Barrel Controls 8.2 cfs @ 10.49 fps)

Secondary OutFlow Max=0.1 cfs @ 12.09 hrs HW=484.59' (Free Discharge)
↳**2=Culvert** (Inlet Controls 0.1 cfs @ 1.02 fps)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=4.6 cfs 15,927 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=4.6 cfs 15,927 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=2.3 cfs 7,963 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=1.6 cfs 7,097 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=3.47"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=8.3 cfs 38,595 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=180' Tc=10.6 min CN=61 Runoff=1.7 cfs 6,386 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=4.96"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=1.9 cfs 4,901 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=2.23"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=17.4 cfs 77,660 cf

Link DP5: DP5 Inflow=17.5 cfs 116,109 cf
Primary=17.5 cfs 116,109 cf

Pond DW5A: DW5A Peak Elev=484.67' Storage=6,676 cf Inflow=4.6 cfs 15,925 cf
Discarded=0.1 cfs 12,814 cf Primary=1.2 cfs 3,111 cf Outflow=1.3 cfs 15,925 cf

Pond DW5B: DW5B Peak Elev=485.74' Storage=16,254 cf Inflow=8.6 cfs 59,578 cf
Discarded=0.5 cfs 38,845 cf Primary=7.8 cfs 20,733 cf Outflow=8.3 cfs 59,578 cf

Pond IS7A: IS7A Peak Elev=3.28' Storage=0.029 af Inflow=0.8 cfs 2,654 cf
Discarded=0.0 cfs 2,537 cf Primary=0.0 cfs 117 cf Outflow=0.1 cfs 2,654 cf

Pond POND5F: POND5F Peak Elev=488.03' Storage=34,894 cf Inflow=12.3 cfs 45,137 cf
Outflow=0.5 cfs 38,449 cf

Link PRDP6: PRDP6 Inflow=13.8 cfs 45,899 cf
Primary=13.8 cfs 45,899 cf

Link PRDP7: PRDP7 Inflow=1.9 cfs 7,222 cf
Primary=1.9 cfs 7,222 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=3.17"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=13.8 cfs 45,899 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=98 Runoff=0.8 cfs 2,654 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=1.96"
Flow Length=341' Tc=8.8 min CN=57 Runoff=1.9 cfs 7,105 cf

Pond SPLIT5A: SPLIT5A Peak Elev=484.06' Inflow=4.6 cfs 15,927 cf
Primary=4.6 cfs 15,925 cf Secondary=0.0 cfs 2 cf Outflow=4.6 cfs 15,927 cf

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Pond SPLIT5B: SPLIT5B Peak Elev=485.19' Inflow=11.3 cfs 62,485 cf
Primary=8.6 cfs 59,578 cf Secondary=2.7 cfs 2,907 cf Outflow=11.3 cfs 62,485 cf

Total Runoff Area = 931,973 sf Runoff Volume = 230,114 cf Average Runoff Depth = 2.96"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

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Summary for Subcatchment 5A: PRSW5A

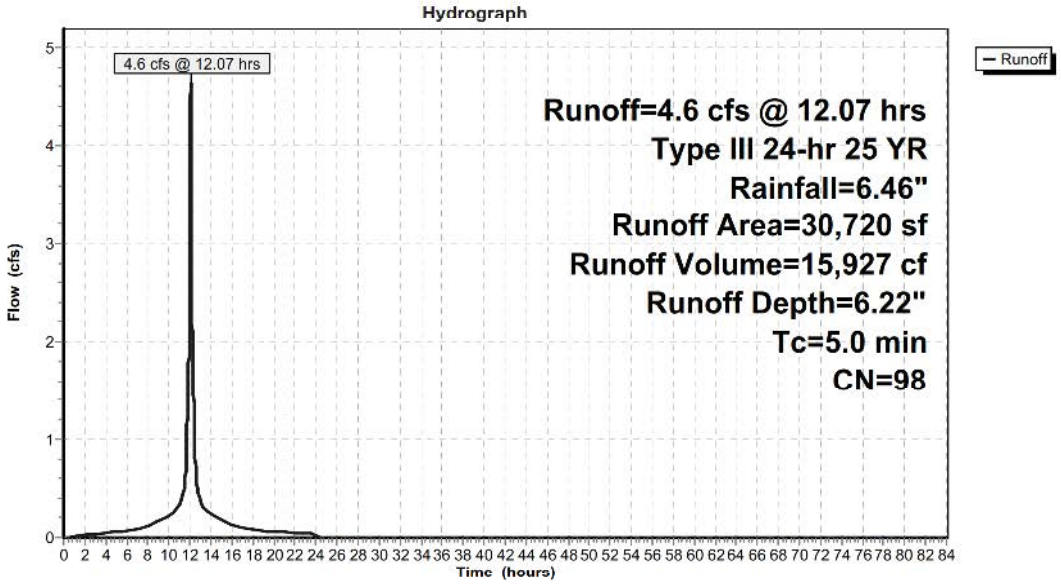
Runoff = 4.6 cfs @ 12.07 hrs, Volume= 15,927 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 5B: PRWS5B

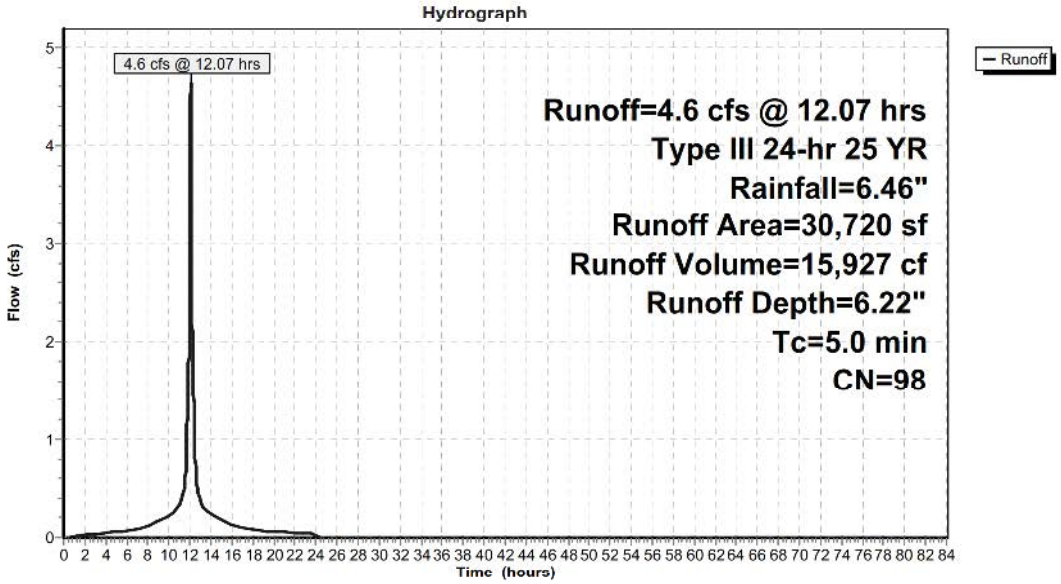
Runoff = 4.6 cfs @ 12.07 hrs, Volume= 15,927 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5B: PRWS5B



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Summary for Subcatchment 5C: PRWS5C

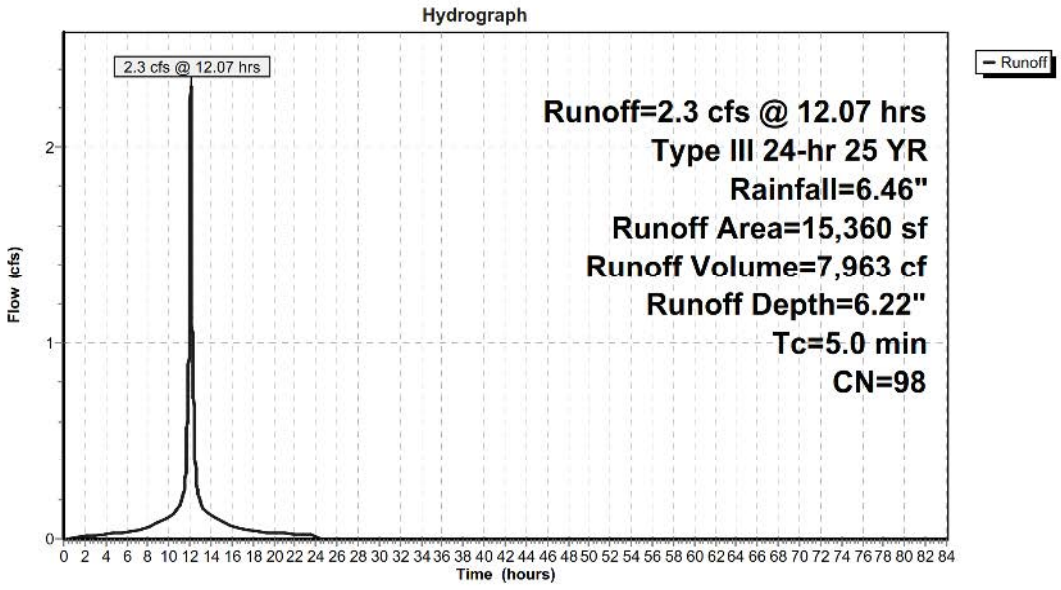
Runoff = 2.3 cfs @ 12.07 hrs, Volume= 7,963 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



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Summary for Subcatchment 5D: PRWS5D

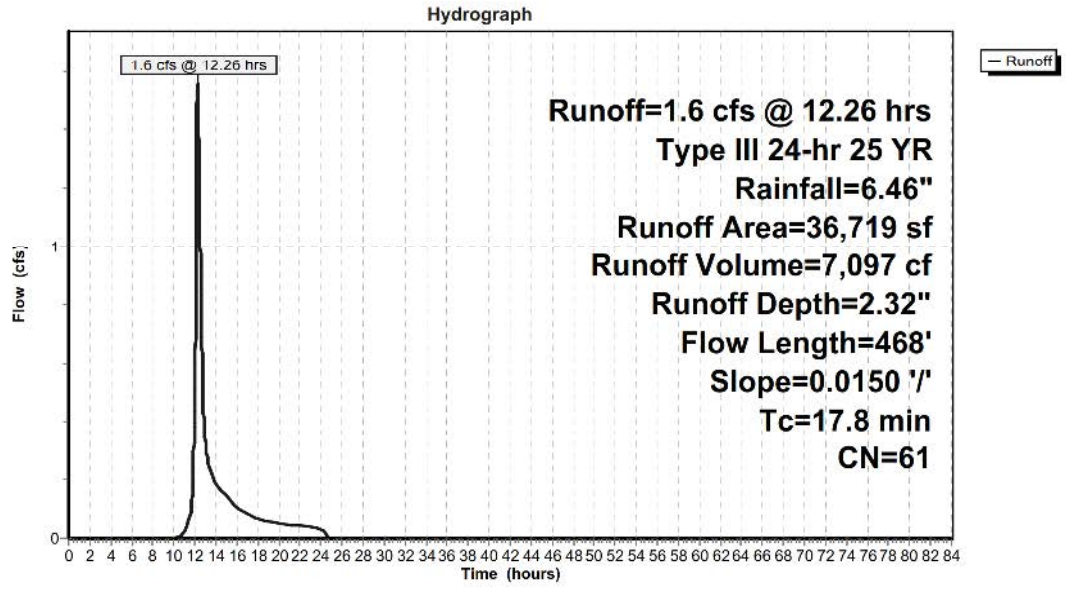
Runoff = 1.6 cfs @ 12.26 hrs, Volume= 7,097 cf, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 5E: PRWS5E

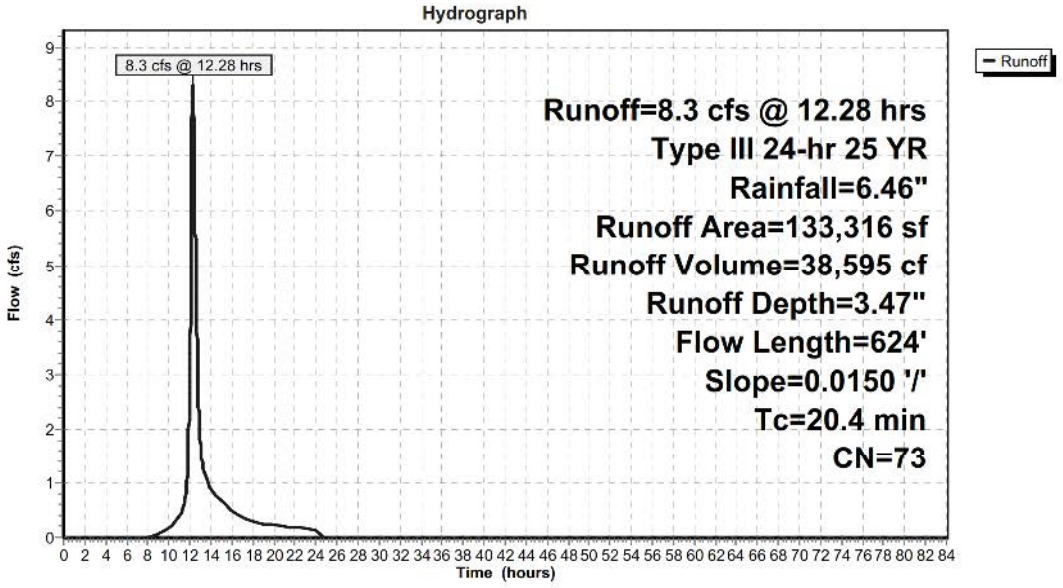
Runoff = 8.3 cfs @ 12.28 hrs, Volume= 38,595 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



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Summary for Subcatchment 5F: PRWS5F

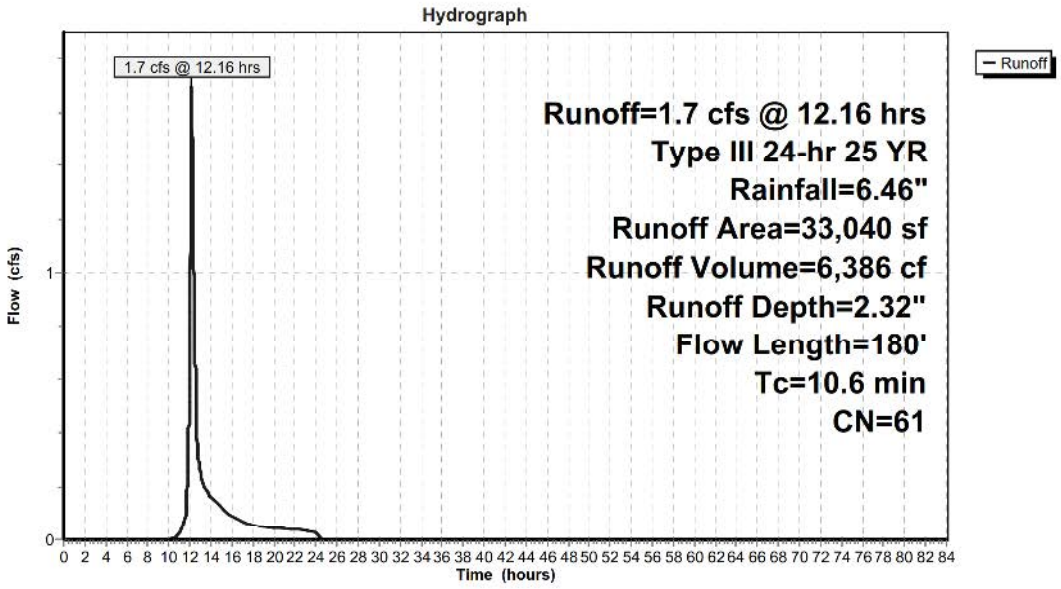
Runoff = 1.7 cfs @ 12.16 hrs, Volume= 6,386 cf, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 5G: PRWS5G

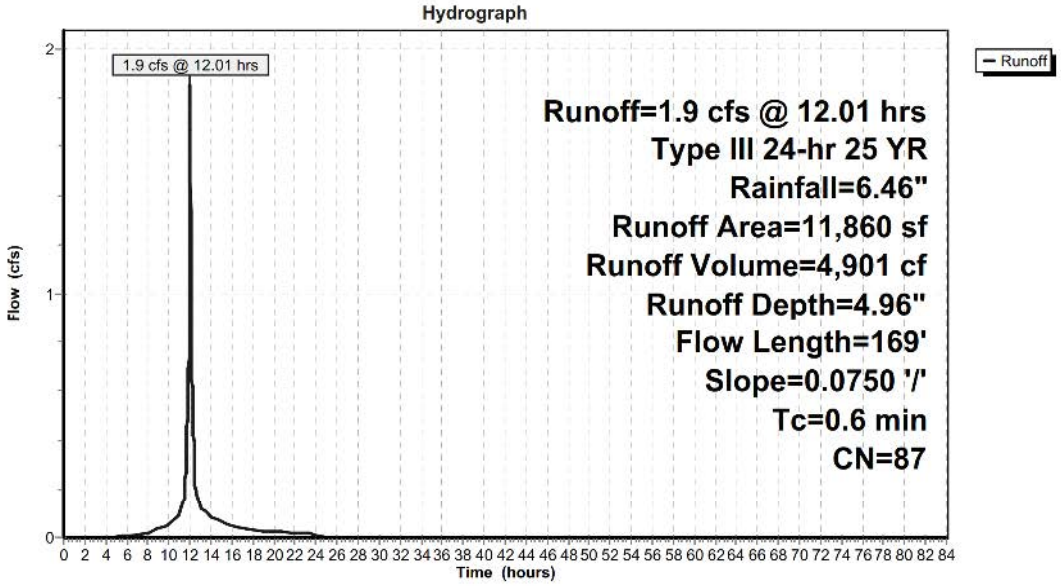
Runoff = 1.9 cfs @ 12.01 hrs, Volume= 4,901 cf, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment 5H: PRWS5H

Runoff = 17.4 cfs @ 12.24 hrs, Volume= 77,660 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

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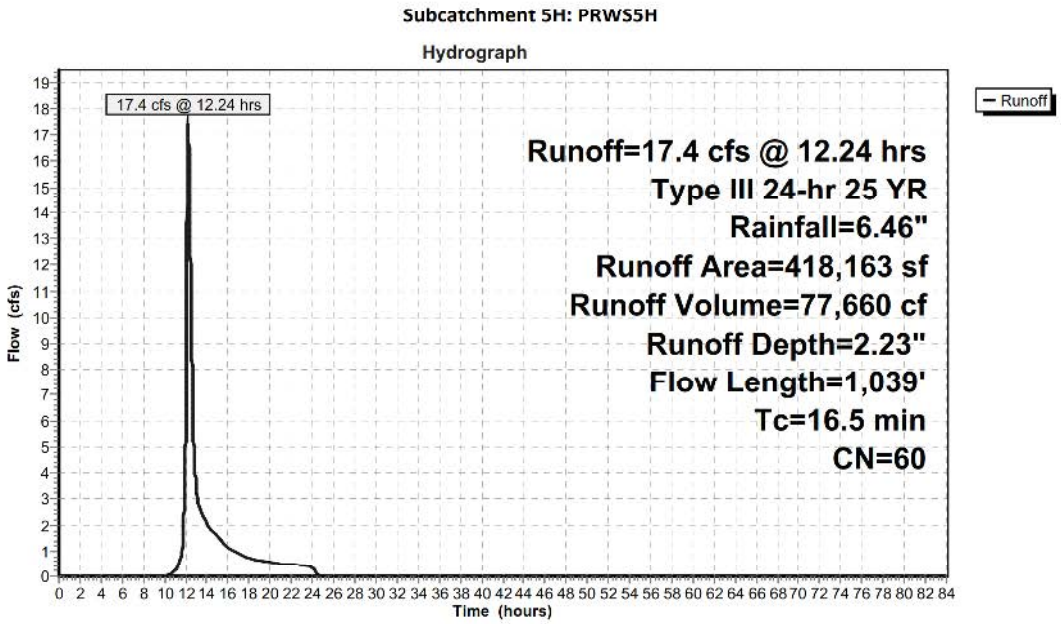

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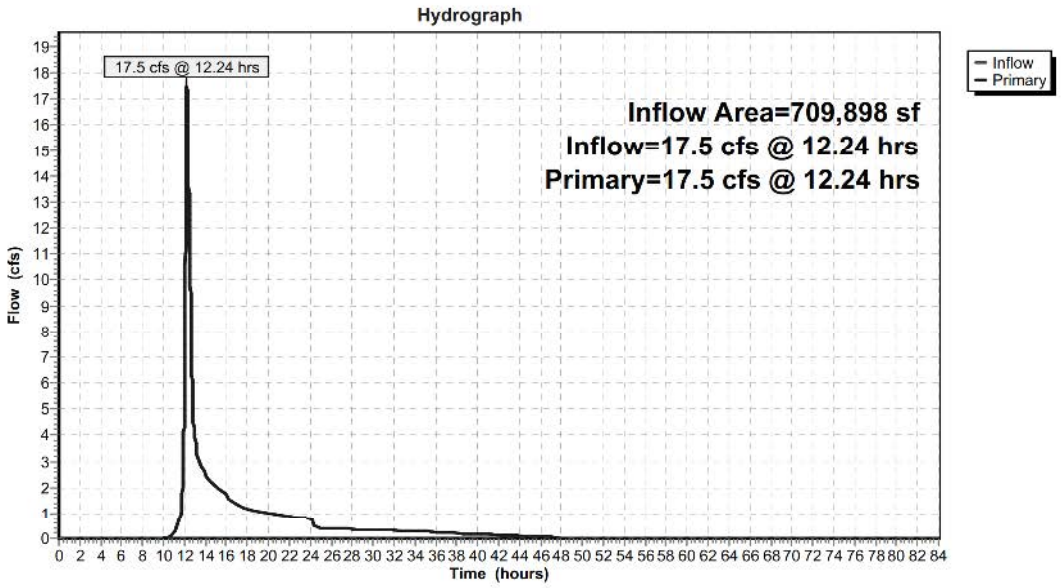
Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 1.96" for 25 YR event
Inflow = 17.5 cfs @ 12.24 hrs, Volume= 116,109 cf
Primary = 17.5 cfs @ 12.24 hrs, Volume= 116,109 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 4.6 cfs @ 12.07 hrs, Volume= 15,925 cf
Outflow = 1.3 cfs @ 12.39 hrs, Volume= 15,925 cf, Atten= 71%, Lag= 19.0 min
Discarded = 0.1 cfs @ 8.29 hrs, Volume= 12,814 cf
Primary = 1.2 cfs @ 12.39 hrs, Volume= 3,111 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.67' @ 12.39 hrs Surf.Area= 1,296 sf Storage= 6,676 cf

Plug-Flow detention time= 362.5 min calculated for 15,925 cf (100% of inflow)
Center-of-Mass det. time= 362.5 min (1,105.7 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 8.29 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=1.2 cfs @ 12.39 hrs HW=484.67' (Free Discharge)
↳**2=Culvert** (Barrel Controls 1.2 cfs @ 2.30 fps)

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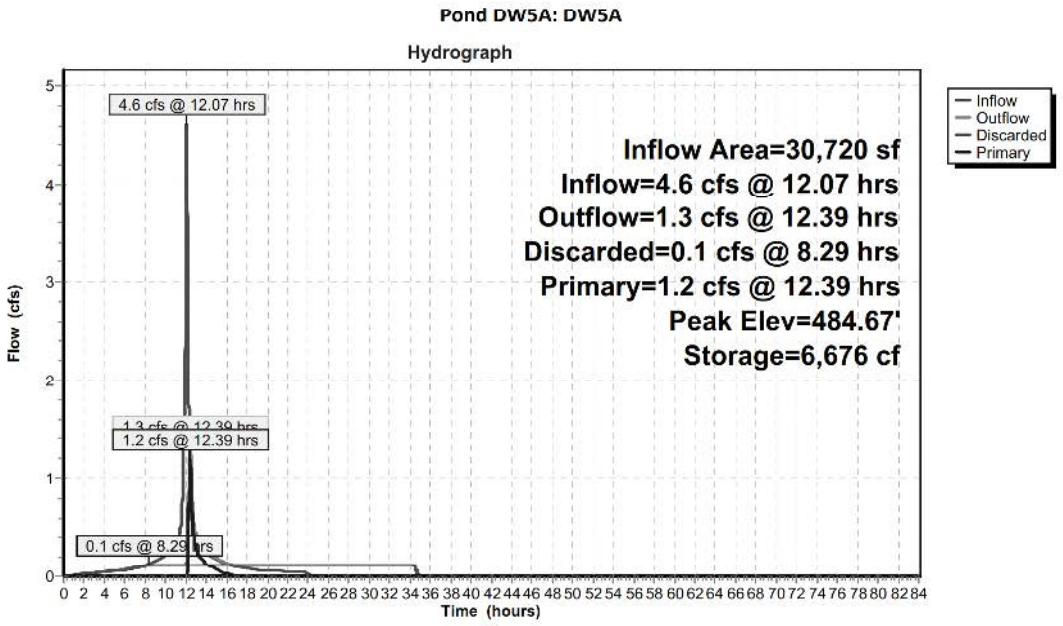
Type III 24-hr 25 YR Rainfall=6.46"



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Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 3.99" for 25 YR event
Inflow = 8.6 cfs @ 12.09 hrs, Volume= 59,578 cf
Outflow = 8.3 cfs @ 12.43 hrs, Volume= 59,578 cf, Atten= 4%, Lag= 20.3 min
Discarded = 0.5 cfs @ 10.15 hrs, Volume= 38,845 cf
Primary = 7.8 cfs @ 12.43 hrs, Volume= 20,733 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.74' @ 12.43 hrs Surf.Area= 2,880 sf Storage= 16,254 cf

Plug-Flow detention time= 189.4 min calculated for 59,571 cf (100% of inflow)
Center-of-Mass det. time= 189.4 min (996.6 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 10.15 hrs HW=477.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=7.8 cfs @ 12.43 hrs HW=485.74' (Free Discharge)
↑**2=Culvert** (Inlet Controls 7.8 cfs @ 3.80 fps)

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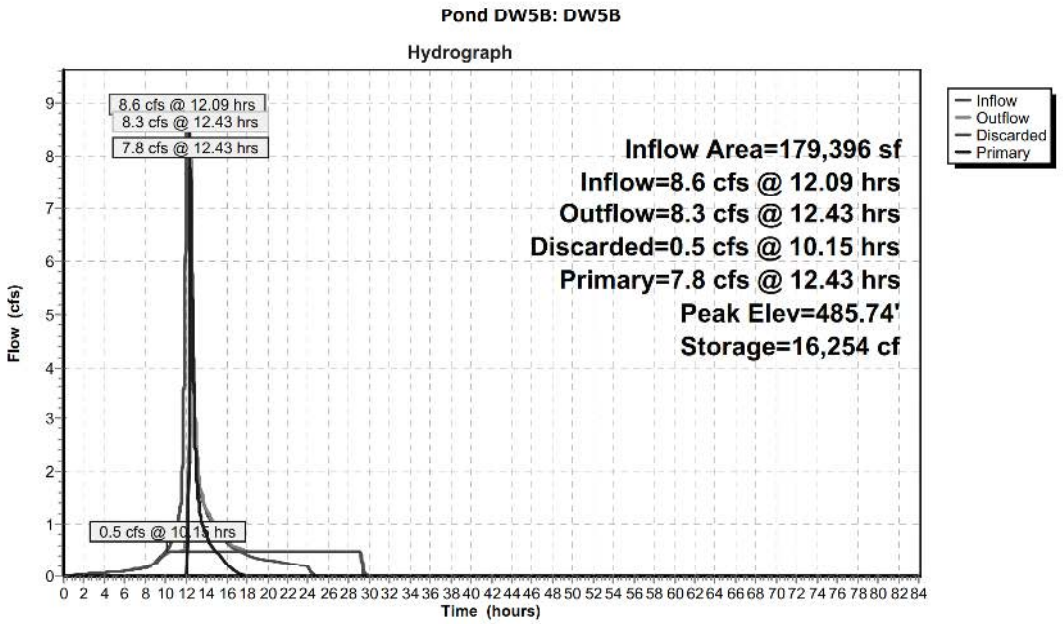

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 2,654 cf
Outflow = 0.1 cfs @ 12.99 hrs, Volume= 2,654 cf, Atten= 92%, Lag= 55.0 min
Discarded = 0.0 cfs @ 9.13 hrs, Volume= 2,537 cf
Primary = 0.0 cfs @ 12.99 hrs, Volume= 117 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 3.28' @ 12.99 hrs Surf.Area= 0.014 ac Storage= 0.029 af

Plug-Flow detention time= 365.6 min calculated for 2,654 cf (100% of inflow)
Center-of-Mass det. time= 365.6 min (1,108.7 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 9.13 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.99 hrs HW=3.28' (Free Discharge)
↑**2=Orifice/Grate** (Weir Controls 0.0 cfs @ 0.53 fps)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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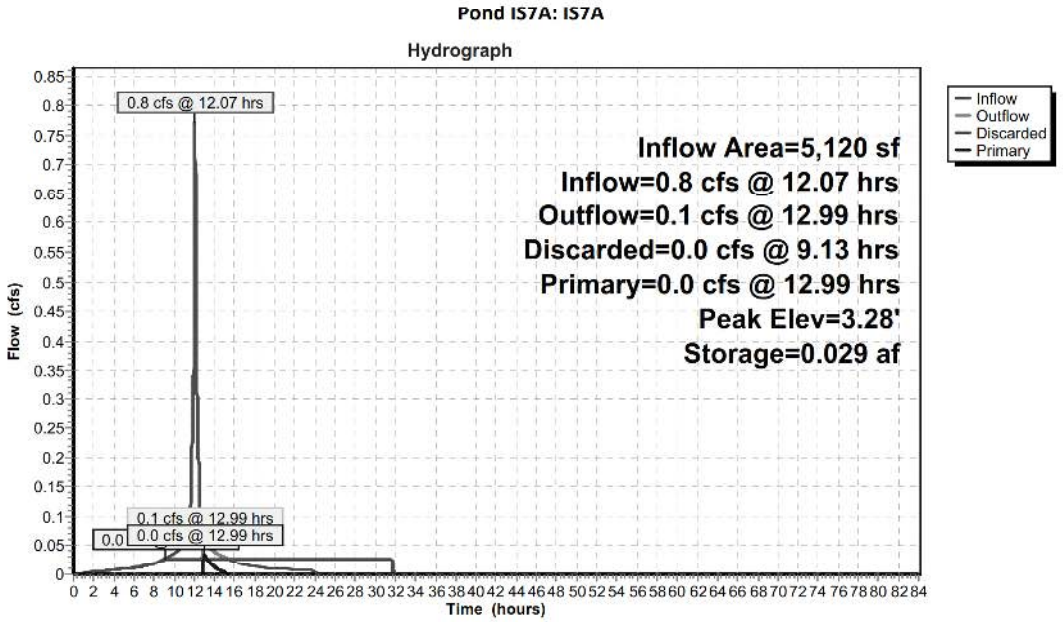

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 1.86" for 25 YR event
Inflow = 12.3 cfs @ 12.38 hrs, Volume= 45,137 cf
Outflow = 0.5 cfs @ 15.83 hrs, Volume= 38,449 cf, Atten= 96%, Lag= 207.0 min
Primary = 0.5 cfs @ 15.83 hrs, Volume= 38,449 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 488.03' @ 15.83 hrs Surf.Area= 9,888 sf Storage= 34,894 cf

Plug-Flow detention time= 773.2 min calculated for 38,445 cf (85% of inflow)
Center-of-Mass det. time= 729.3 min (1,539.1 - 809.8)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.5 cfs @ 15.83 hrs HW=488.03' (Free Discharge)
↑**1=Culvert** (Passes 0.5 cfs of 26.3 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 9.51 fps)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.47 fps)

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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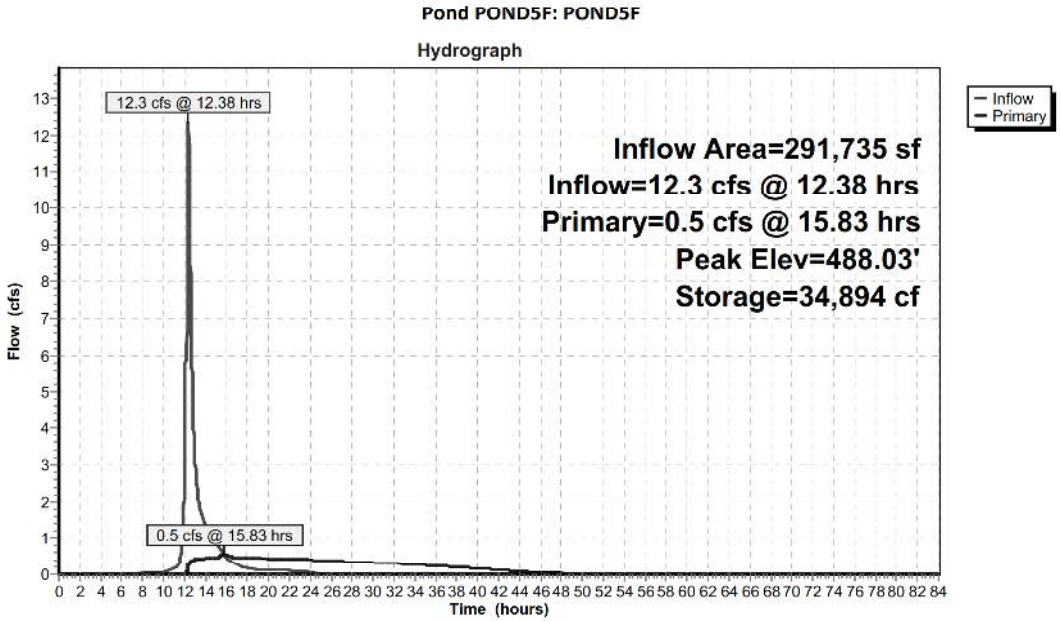

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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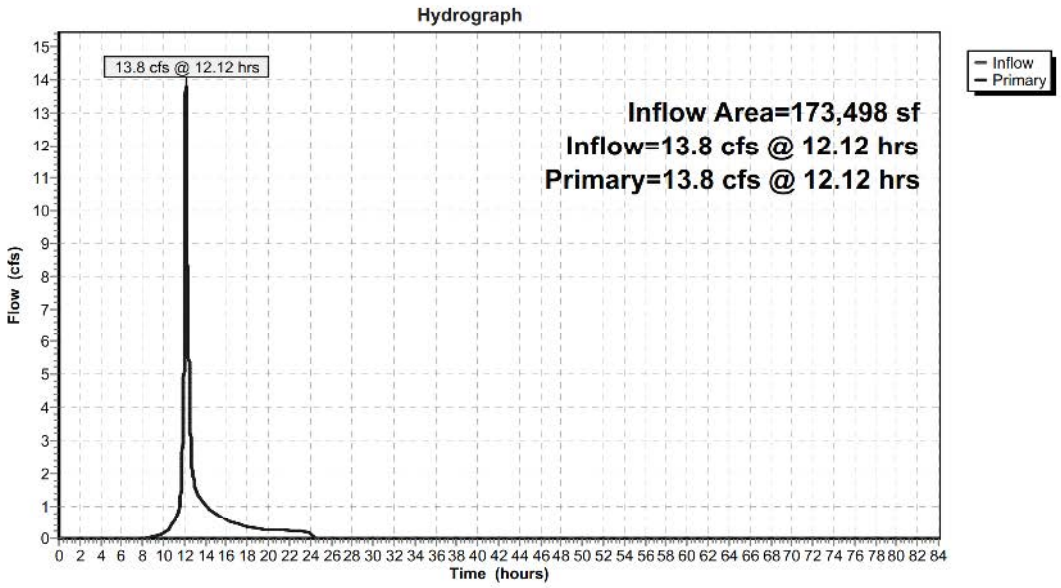
Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 3.17" for 25 YR event
Inflow = 13.8 cfs @ 12.12 hrs, Volume= 45,899 cf
Primary = 13.8 cfs @ 12.12 hrs, Volume= 45,899 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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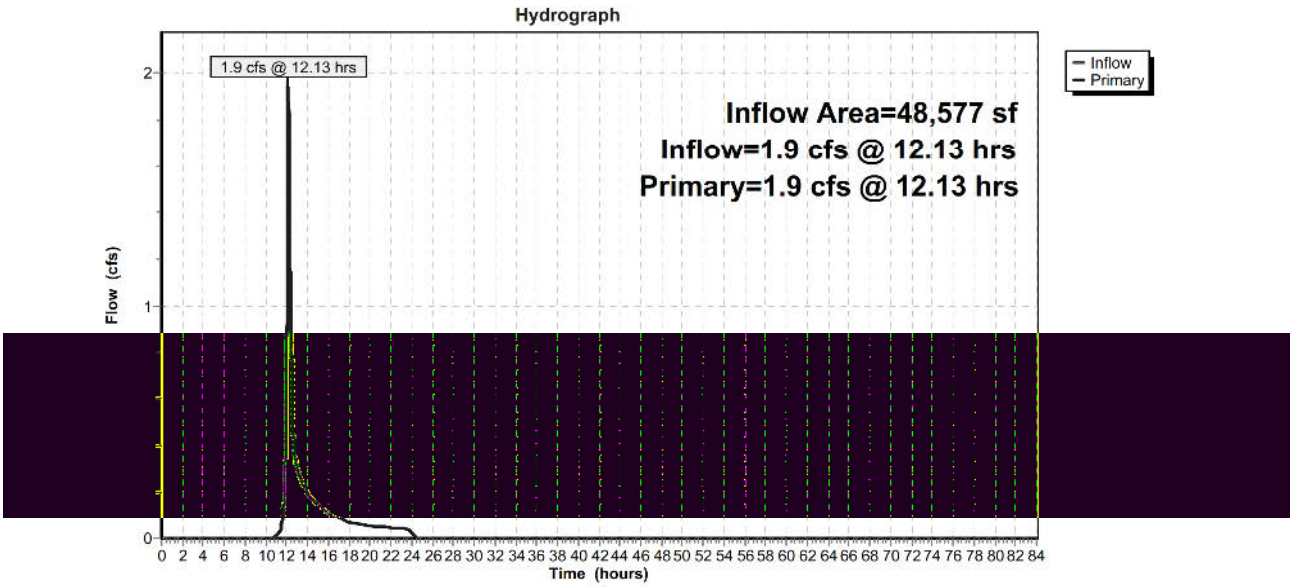
Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 1.78" for 25 YR event
Inflow = 1.9 cfs @ 12.13 hrs, Volume= 7,222 cf
Primary = 1.9 cfs @ 12.13 hrs, Volume= 7,222 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment PRWS6: PRWS6

Runoff = 13.8 cfs @ 12.12 hrs, Volume= 45,899 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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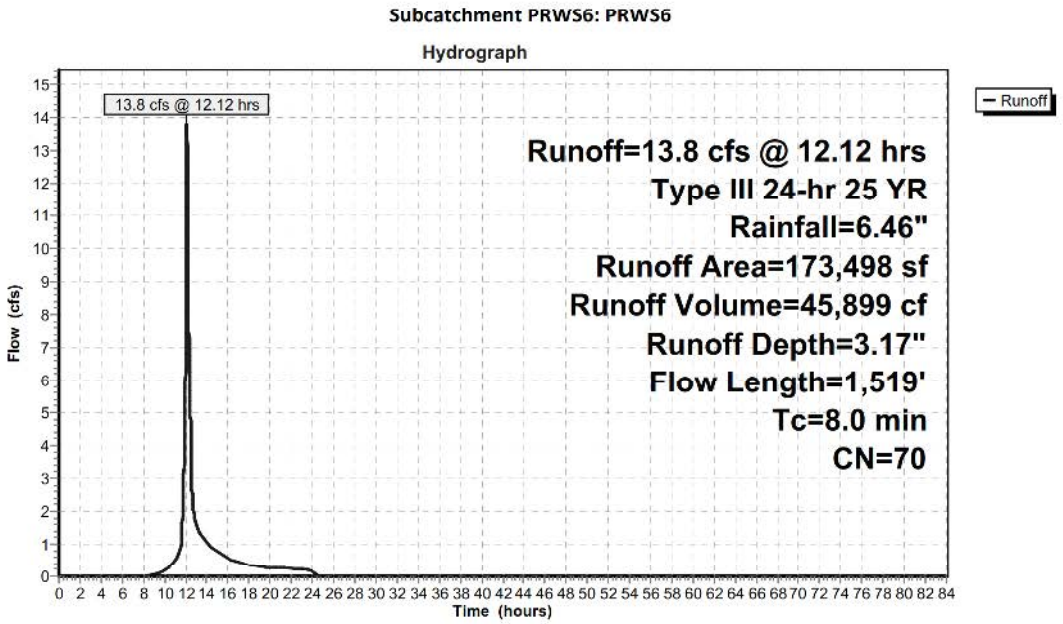

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Subcatchment PRWS7A: PRWS7A

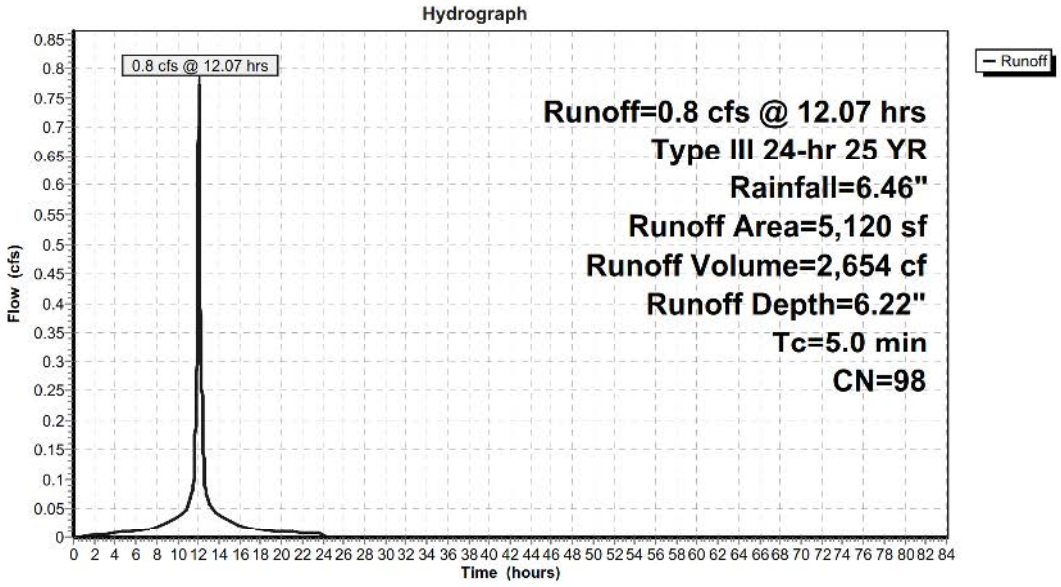
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 2,654 cf, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS7B: PRWS7B

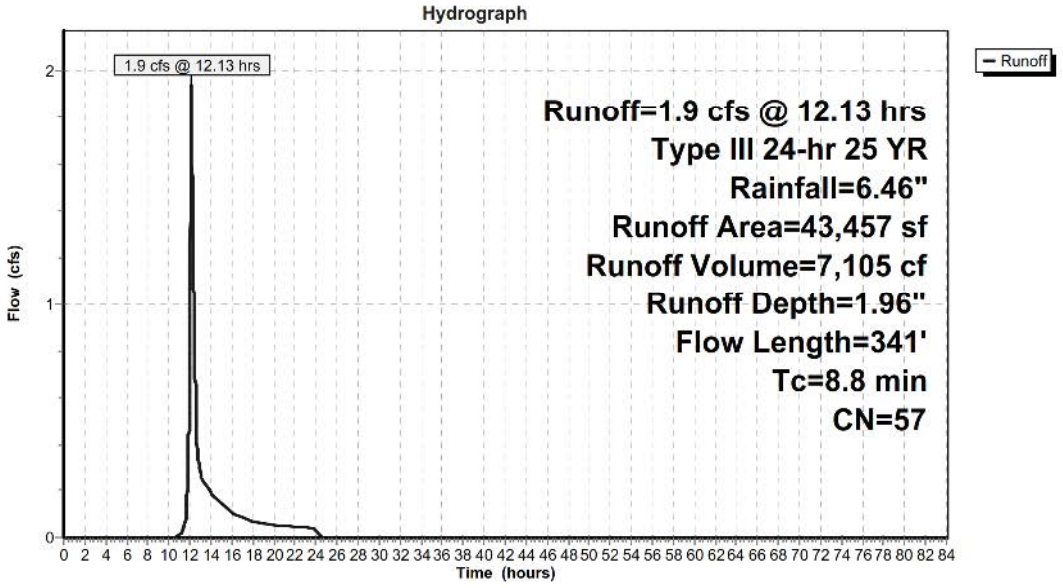
Runoff = 1.9 cfs @ 12.13 hrs, Volume= 7,105 cf, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 25 YR Rainfall=6.46"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 6.22" for 25 YR event
Inflow = 4.6 cfs @ 12.07 hrs, Volume= 15,927 cf
Outflow = 4.6 cfs @ 12.07 hrs, Volume= 15,927 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.07 hrs, Volume= 15,925 cf
Secondary = 0.0 cfs @ 12.07 hrs, Volume= 2 cf

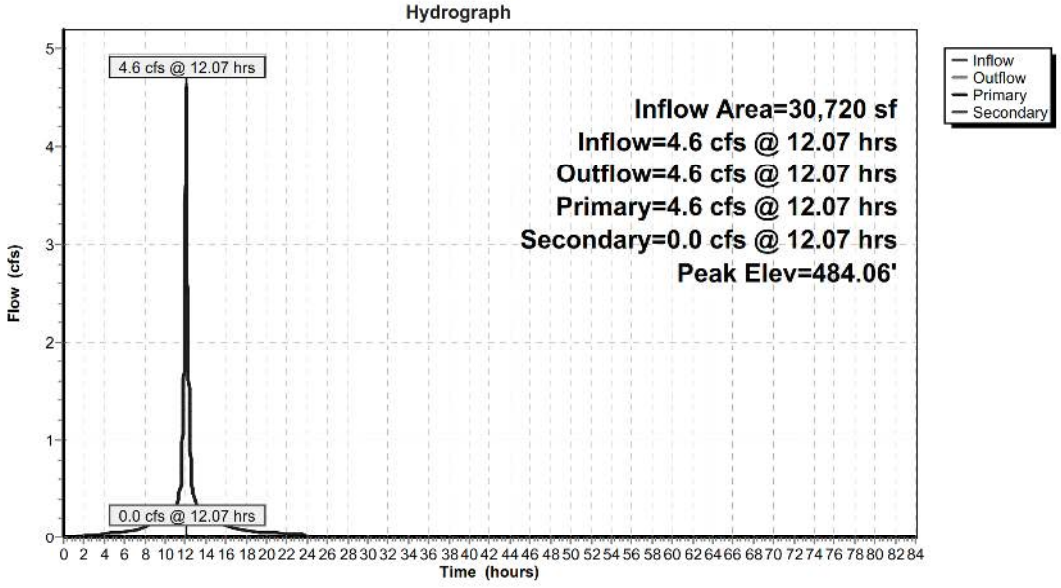
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.06' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.6 cfs @ 12.07 hrs HW=484.06' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.6 cfs @ 5.86 fps)

Secondary OutFlow Max=0.0 cfs @ 12.07 hrs HW=484.06' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.0 cfs @ 0.82 fps)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 25 YR Rainfall=6.46"*
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Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 4.18" for 25 YR event
Inflow = 11.3 cfs @ 12.09 hrs, Volume= 62,485 cf
Outflow = 11.3 cfs @ 12.09 hrs, Volume= 62,485 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.09 hrs, Volume= 59,578 cf
Secondary = 2.7 cfs @ 12.09 hrs, Volume= 2,907 cf

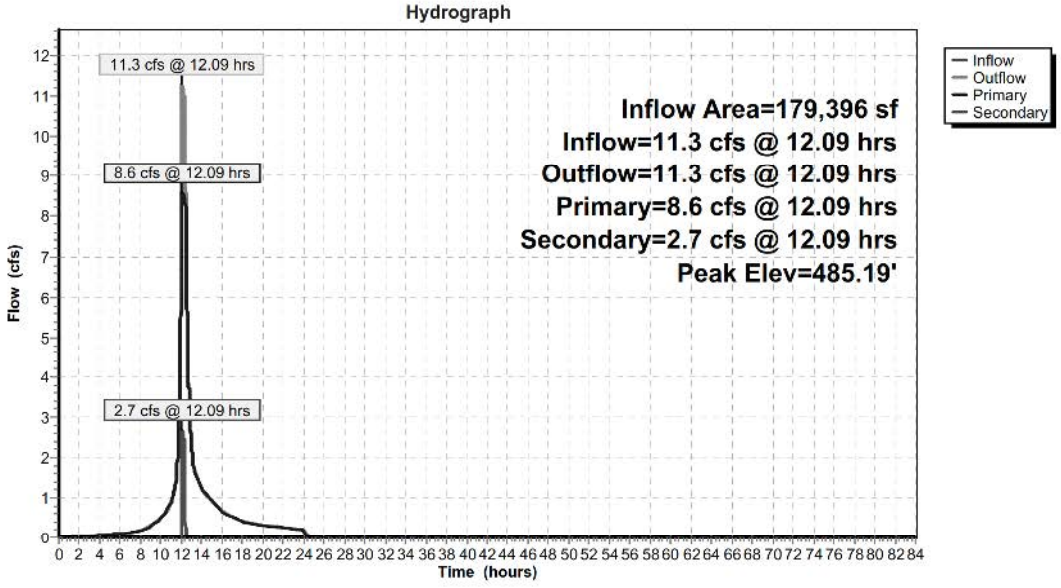
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.19' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.6 cfs @ 12.09 hrs HW=485.18' (Free Discharge)
↳**1=Culvert** (Barrel Controls 8.6 cfs @ 10.96 fps)

Secondary OutFlow Max=2.7 cfs @ 12.09 hrs HW=485.18' (Free Discharge)
↳**2=Culvert** (Inlet Controls 2.7 cfs @ 2.82 fps)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=5.5 cfs 19,073 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=5.5 cfs 19,073 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=2.8 cfs 9,537 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=2.2 cfs 9,823 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=4.54"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=10.9 cfs 50,396 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=180' Tc=10.6 min CN=61 Runoff=2.4 cfs 8,839 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=6.15"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=2.3 cfs 6,076 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=3.10"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=24.9 cfs 108,119 cf

Link DP5: DP5 Inflow=25.1 cfs 169,119 cf
Primary=25.1 cfs 169,119 cf

Pond DW5A: DW5A Peak Elev=484.97' Storage=6,945 cf Inflow=4.9 cfs 18,943 cf
Discarded=0.1 cfs 13,463 cf Primary=2.4 cfs 5,479 cf Outflow=2.6 cfs 18,943 cf

Pond DW5B: DW5B Peak Elev=485.78' Storage=16,293 cf Inflow=8.8 cfs 71,651 cf
Discarded=0.5 cfs 41,665 cf Primary=8.2 cfs 29,986 cf Outflow=8.7 cfs 71,651 cf

Pond IS7A: IS7A Peak Elev=3.37' Storage=0.029 af Inflow=0.9 cfs 3,179 cf
Discarded=0.0 cfs 2,675 cf Primary=0.3 cfs 504 cf Outflow=0.3 cfs 3,179 cf

Pond POND5F: POND5F Peak Elev=488.46' Storage=39,348 cf Inflow=20.0 cfs 67,688 cf
Outflow=3.8 cfs 61,000 cf

Link PRDP6: PRDP6 Inflow=18.3 cfs 60,711 cf
Primary=18.3 cfs 60,711 cf

Link PRDP7: PRDP7 Inflow=2.9 cfs 10,585 cf
Primary=2.9 cfs 10,585 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=4.20"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=18.3 cfs 60,711 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=98 Runoff=0.9 cfs 3,179 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=2.78"
Flow Length=341' Tc=8.8 min CN=57 Runoff=2.9 cfs 10,081 cf

Pond SPLIT5A: SPLIT5A Peak Elev=484.32' Inflow=5.5 cfs 19,073 cf
Primary=4.9 cfs 18,943 cf Secondary=0.6 cfs 130 cf Outflow=5.5 cfs 19,073 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=485.50' Inflow=14.2 cfs 79,006 cf
Primary=8.8 cfs 71,651 cf Secondary=5.4 cfs 7,355 cf Outflow=14.2 cfs 79,006 cf

Total Runoff Area = 931,973 sf Runoff Volume = 304,907 cf Average Runoff Depth = 3.93"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5A: PRSW5A

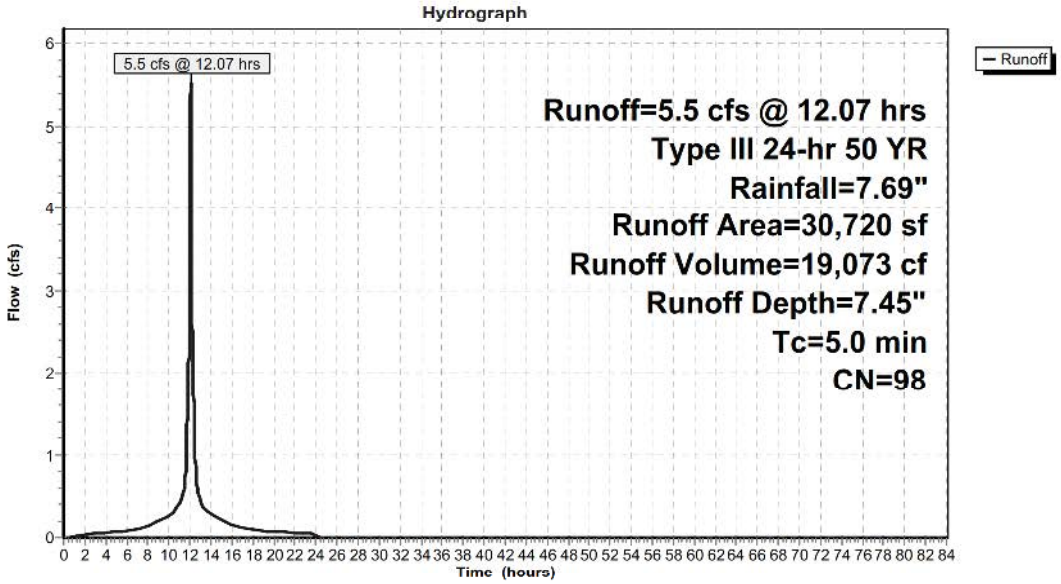
Runoff = 5.5 cfs @ 12.07 hrs, Volume= 19,073 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5B: PRWS5B

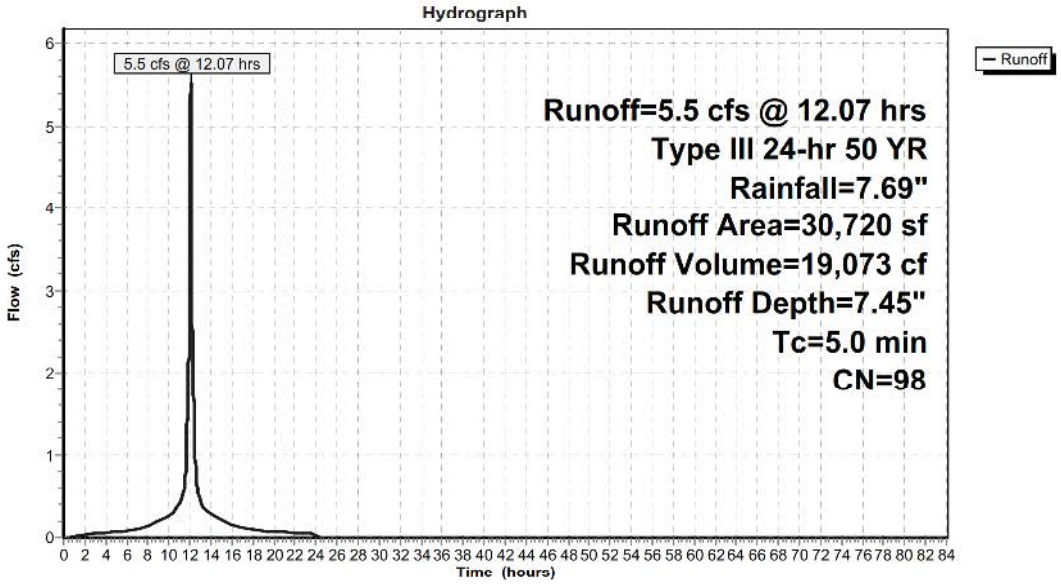
Runoff = 5.5 cfs @ 12.07 hrs, Volume= 19,073 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5B: PRWS5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5C: PRWS5C

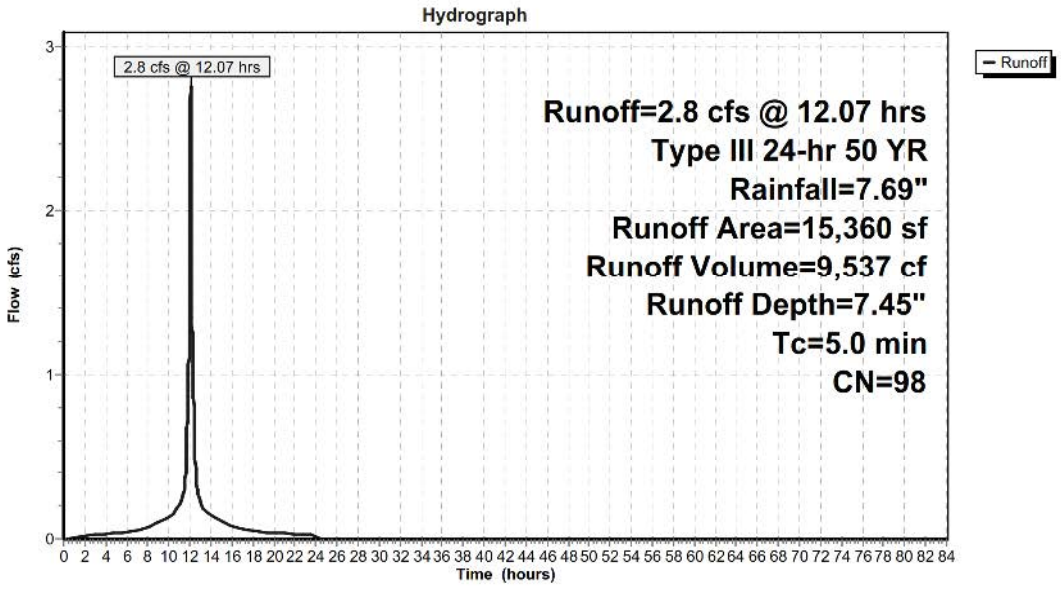
Runoff = 2.8 cfs @ 12.07 hrs, Volume= 9,537 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5D: PRWS5D

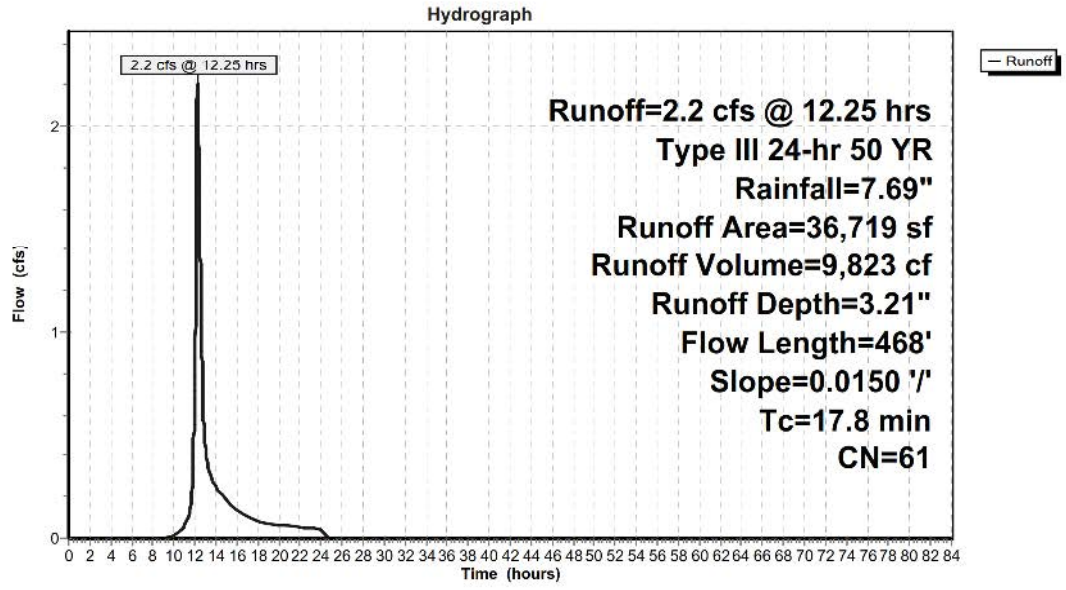
Runoff = 2.2 cfs @ 12.25 hrs, Volume= 9,823 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5E: PRWS5E

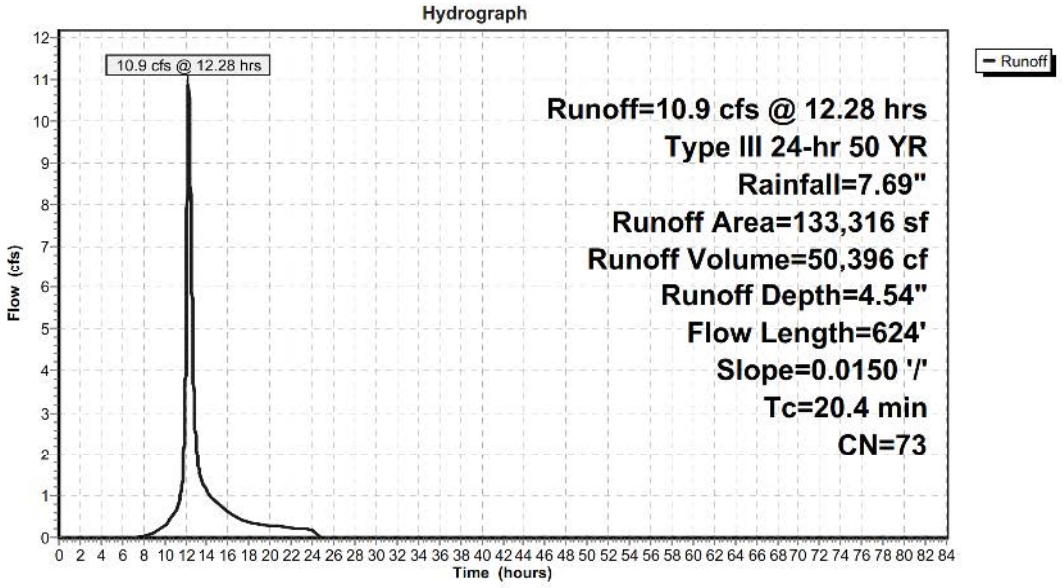
Runoff = 10.9 cfs @ 12.28 hrs, Volume= 50,396 cf, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5F: PRWS5F

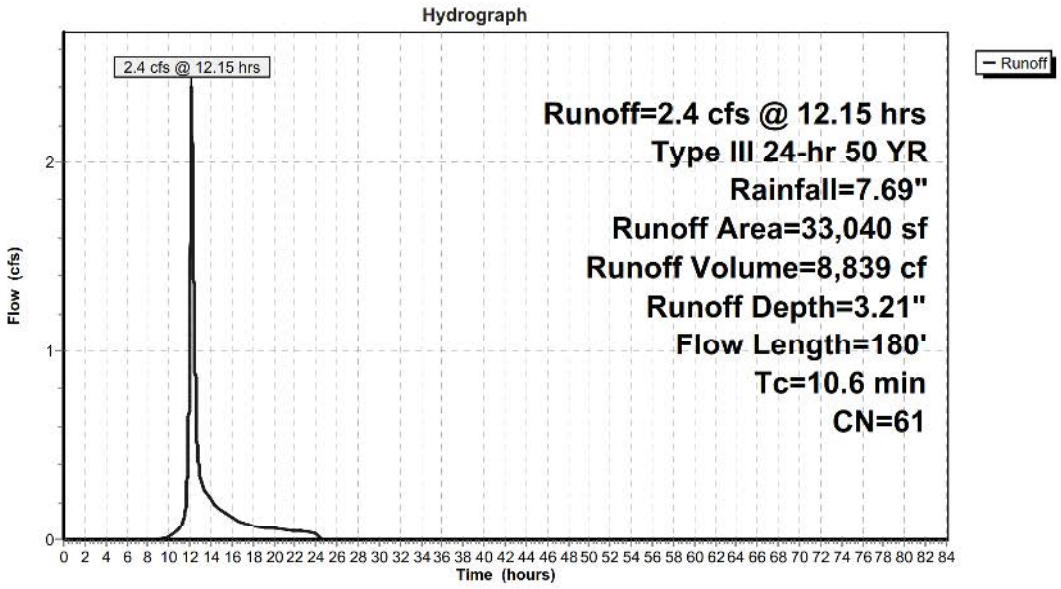
Runoff = 2.4 cfs @ 12.15 hrs, Volume= 8,839 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5G: PRWS5G

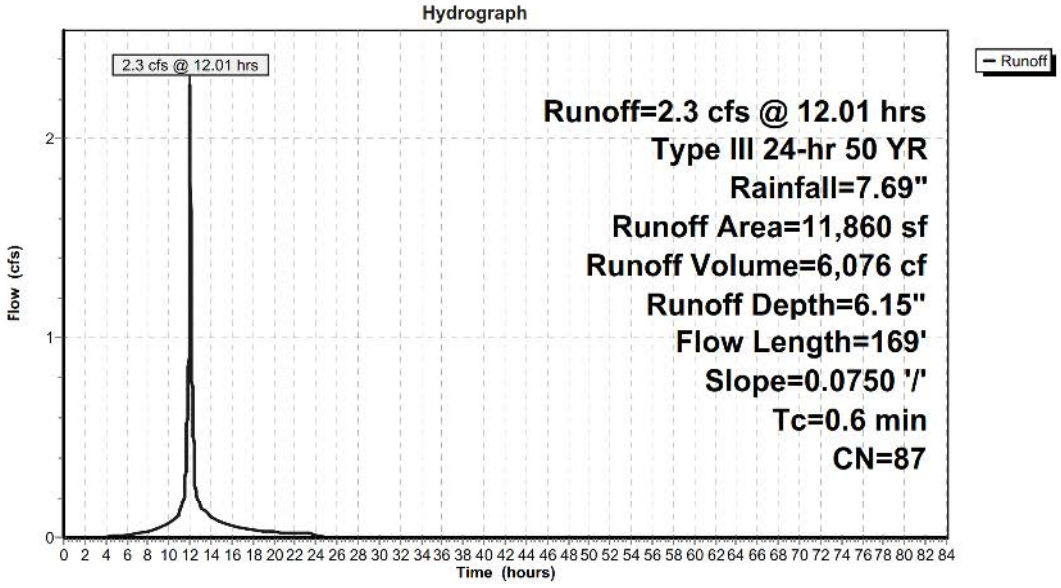
Runoff = 2.3 cfs @ 12.01 hrs, Volume= 6,076 cf, Depth= 6.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment 5H: PRWS5H

Runoff = 24.9 cfs @ 12.23 hrs, Volume= 108,119 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

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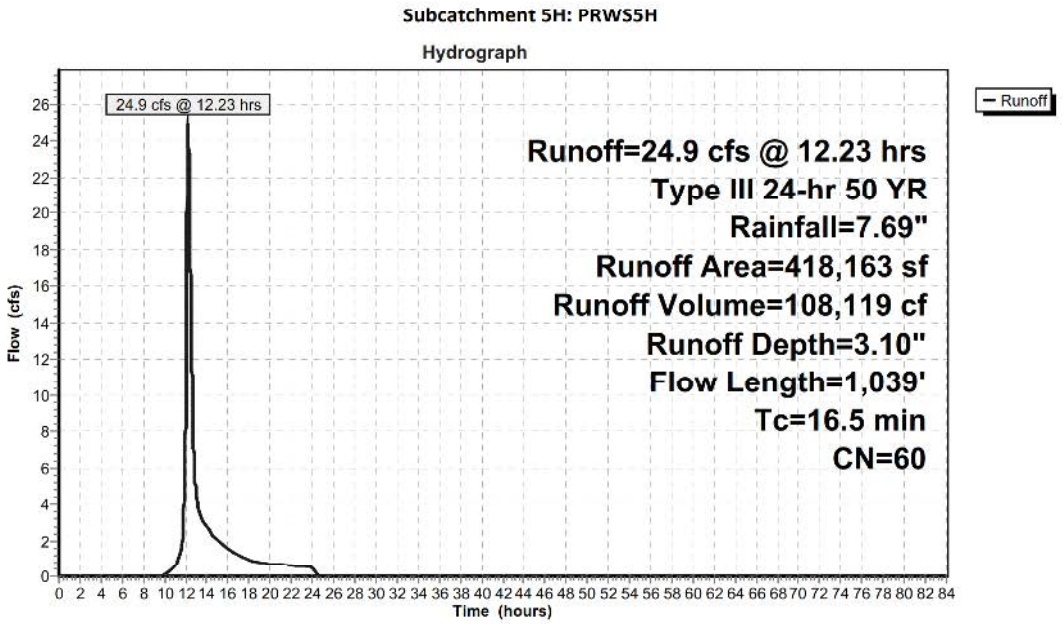

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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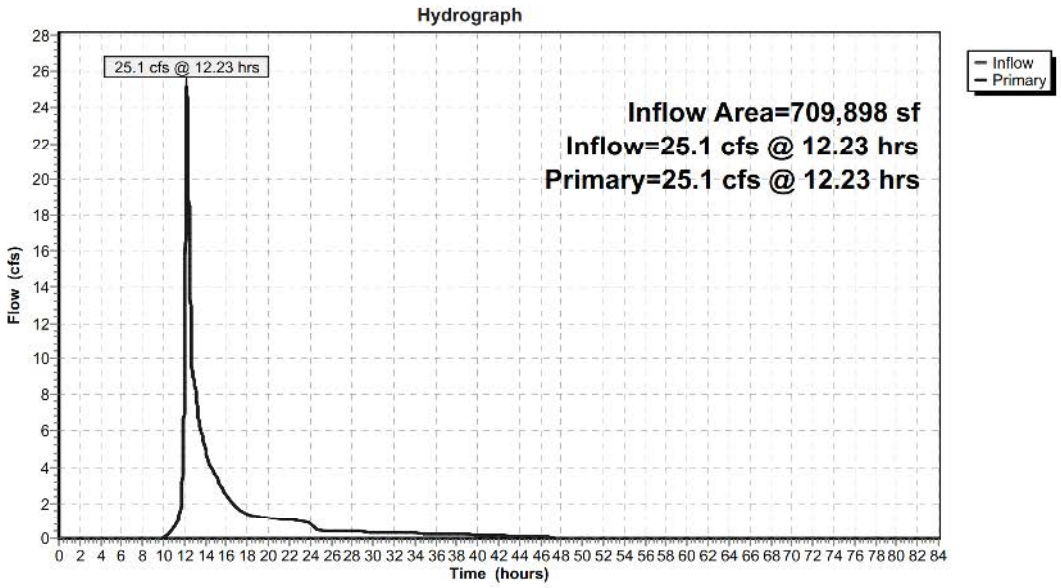
Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 2.86" for 50 YR event
Inflow = 25.1 cfs @ 12.23 hrs, Volume= 169,119 cf
Primary = 25.1 cfs @ 12.23 hrs, Volume= 169,119 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 7.40" for 50 YR event
Inflow = 4.9 cfs @ 12.07 hrs, Volume= 18,943 cf
Outflow = 2.6 cfs @ 12.21 hrs, Volume= 18,943 cf, Atten= 48%, Lag= 8.6 min
Discarded = 0.1 cfs @ 7.58 hrs, Volume= 13,463 cf
Primary = 2.4 cfs @ 12.21 hrs, Volume= 5,479 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.97' @ 12.21 hrs Surf.Area= 1,296 sf Storage= 6,945 cf

Plug-Flow detention time= 325.6 min calculated for 18,940 cf (100% of inflow)
Center-of-Mass det. time= 325.7 min (1,066.6 - 740.9)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 7.58 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=2.4 cfs @ 12.21 hrs HW=484.97' (Free Discharge)
↳**2=Culvert** (Barrel Controls 2.4 cfs @ 2.88 fps)

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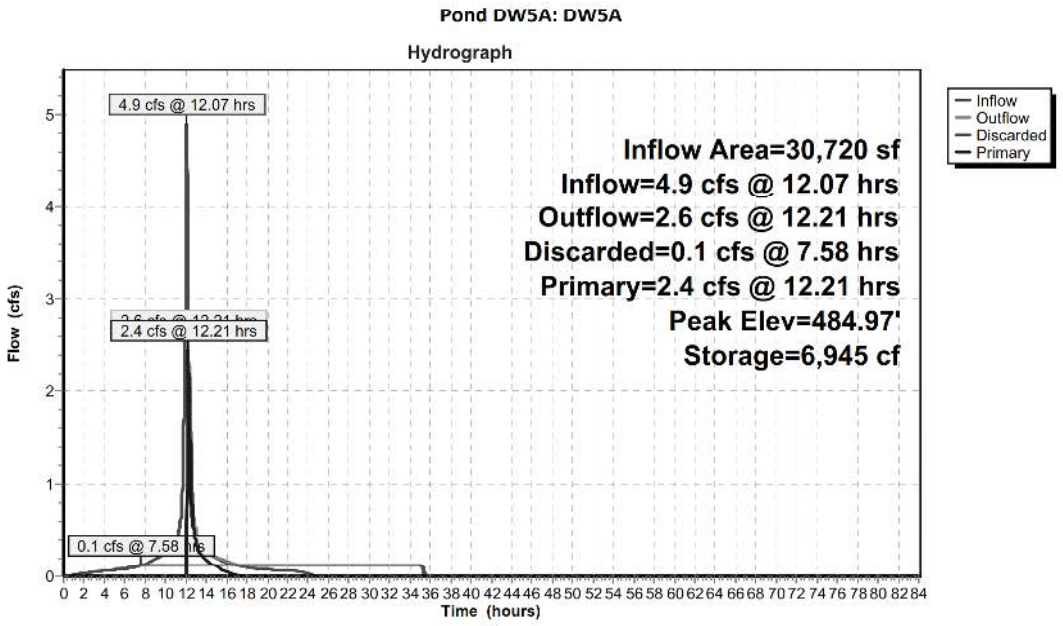

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 4.79" for 50 YR event
Inflow = 8.8 cfs @ 12.26 hrs, Volume= 71,651 cf
Outflow = 8.7 cfs @ 12.34 hrs, Volume= 71,651 cf, Atten= 1%, Lag= 5.1 min
Discarded = 0.5 cfs @ 9.49 hrs, Volume= 41,665 cf
Primary = 8.2 cfs @ 12.34 hrs, Volume= 29,986 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.78' @ 12.34 hrs Surf.Area= 2,880 sf Storage= 16,293 cf

Plug-Flow detention time= 173.5 min calculated for 71,643 cf (100% of inflow)
Center-of-Mass det. time= 173.5 min (980.3 - 806.7)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 9.49 hrs HW=477.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=8.2 cfs @ 12.34 hrs HW=485.78' (Free Discharge)
↳**2=Culvert** (Inlet Controls 8.2 cfs @ 3.86 fps)

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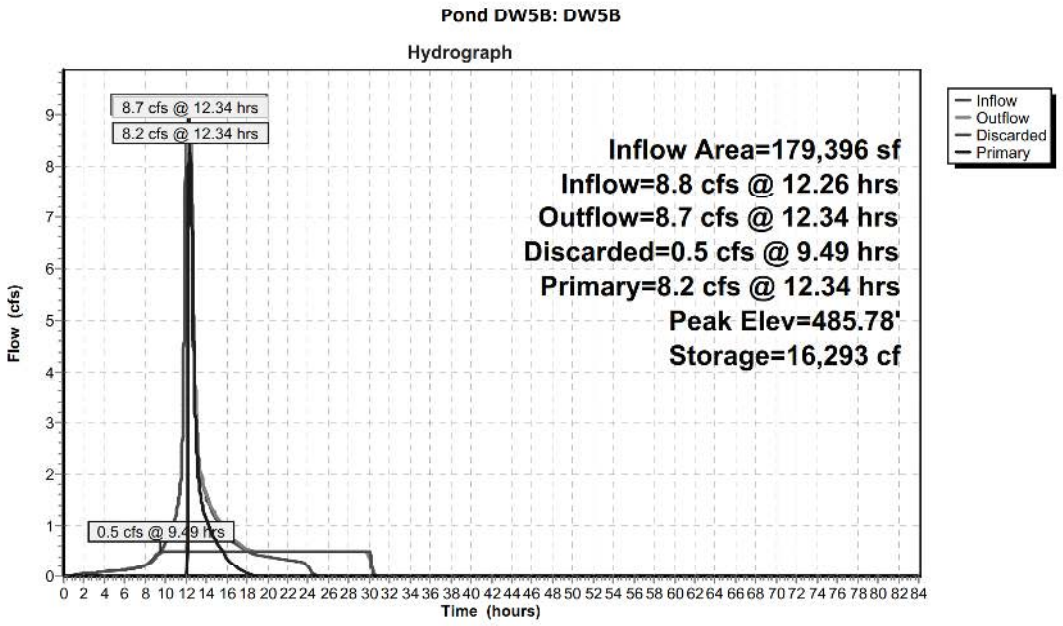

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 0.9 cfs @ 12.07 hrs, Volume= 3,179 cf
Outflow = 0.3 cfs @ 12.32 hrs, Volume= 3,179 cf, Atten= 66%, Lag= 15.3 min
Discarded = 0.0 cfs @ 8.61 hrs, Volume= 2,675 cf
Primary = 0.3 cfs @ 12.32 hrs, Volume= 504 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 3.37' @ 12.32 hrs Surf.Area= 0.014 ac Storage= 0.029 af

Plug-Flow detention time= 327.6 min calculated for 3,178 cf (100% of inflow)
Center-of-Mass det. time= 327.6 min (1,068.4 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 8.61 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.32 hrs HW=3.37' (Free Discharge)
↑**2=Orifice/Grate** (Weir Controls 0.3 cfs @ 1.13 fps)

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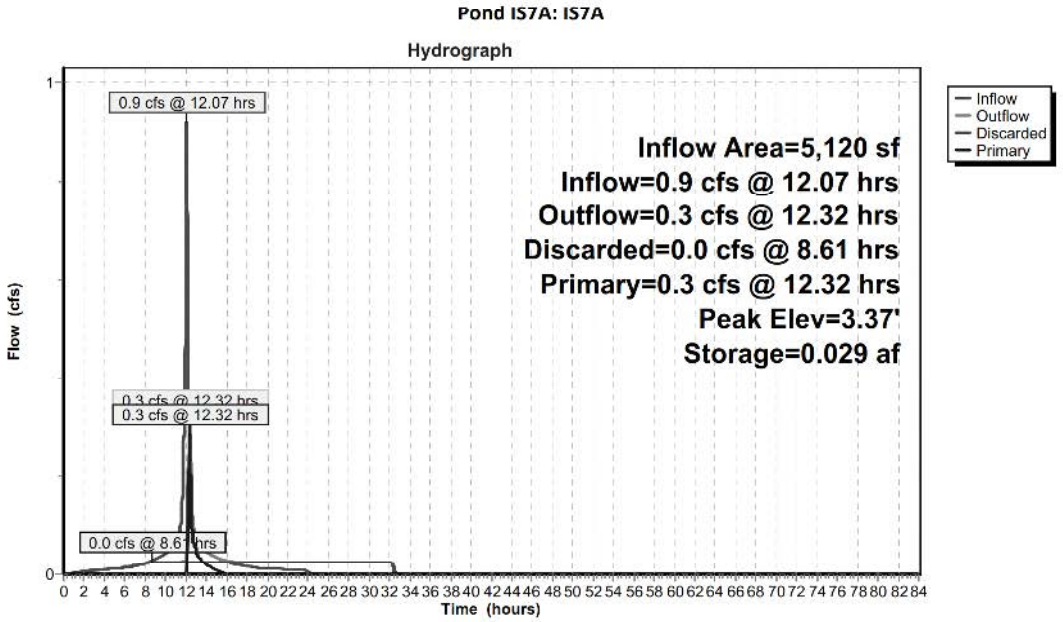

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 2.78" for 50 YR event
Inflow = 20.0 cfs @ 12.27 hrs, Volume= 67,688 cf
Outflow = 3.8 cfs @ 13.04 hrs, Volume= 61,000 cf, Atten= 81%, Lag= 46.2 min
Primary = 3.8 cfs @ 13.04 hrs, Volume= 61,000 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 488.46' @ 13.04 hrs Surf.Area= 10,570 sf Storage= 39,348 cf

Plug-Flow detention time= 549.1 min calculated for 60,993 cf (90% of inflow)
Center-of-Mass det. time= 515.3 min (1,318.2 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.8 cfs @ 13.04 hrs HW=488.46' (Free Discharge)
↑**1=Culvert** (Passes 3.8 cfs of 28.2 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 10.03 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 3.3 cfs @ 2.02 fps)

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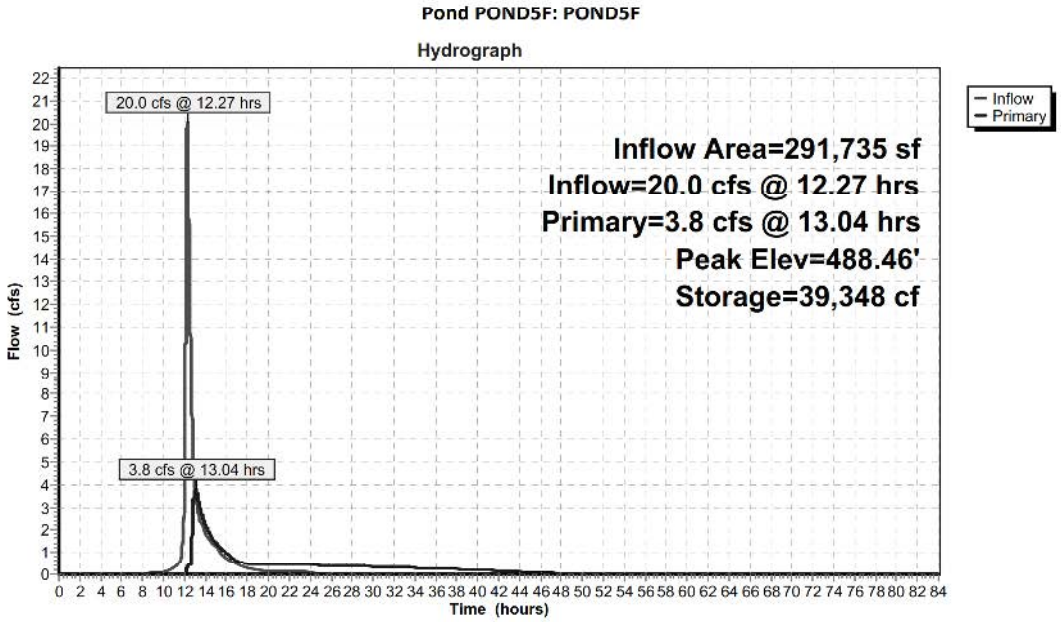

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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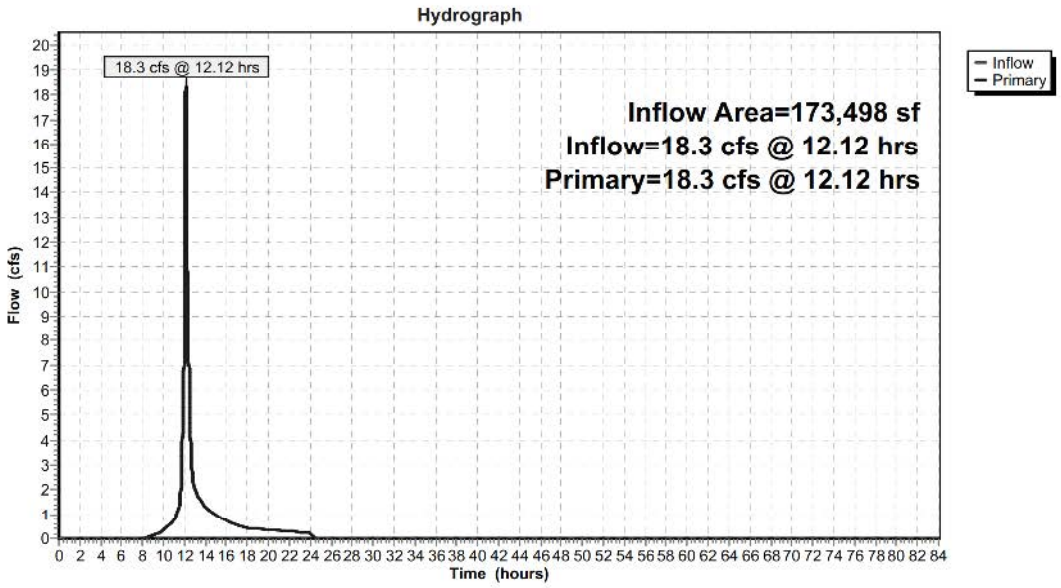
Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 4.20" for 50 YR event
Inflow = 18.3 cfs @ 12.12 hrs, Volume= 60,711 cf
Primary = 18.3 cfs @ 12.12 hrs, Volume= 60,711 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



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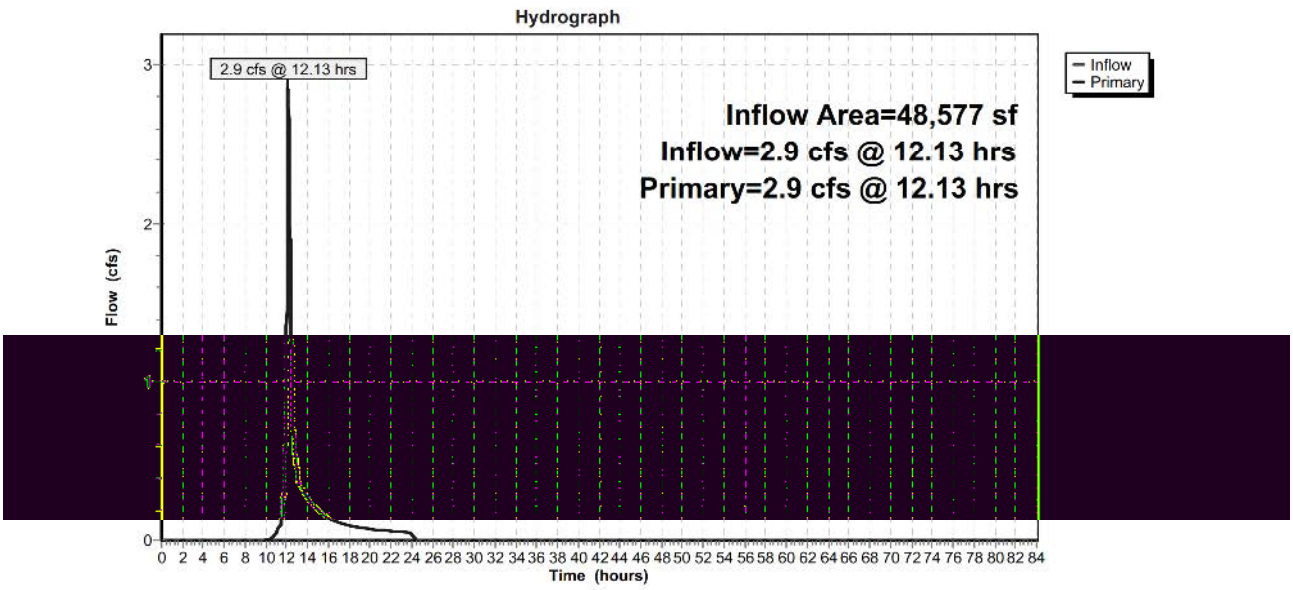
Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 2.61" for 50 YR event
Inflow = 2.9 cfs @ 12.13 hrs, Volume= 10,585 cf
Primary = 2.9 cfs @ 12.13 hrs, Volume= 10,585 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



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Summary for Subcatchment PRWS6: PRWS6

Runoff = 18.3 cfs @ 12.12 hrs, Volume= 60,711 cf, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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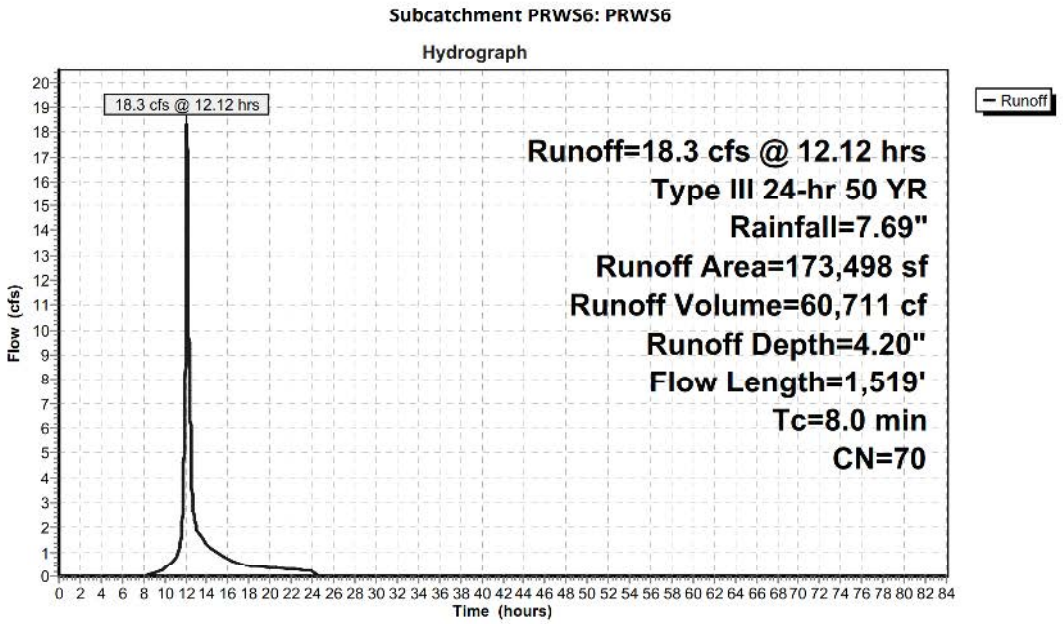

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment PRWS7A: PRWS7A

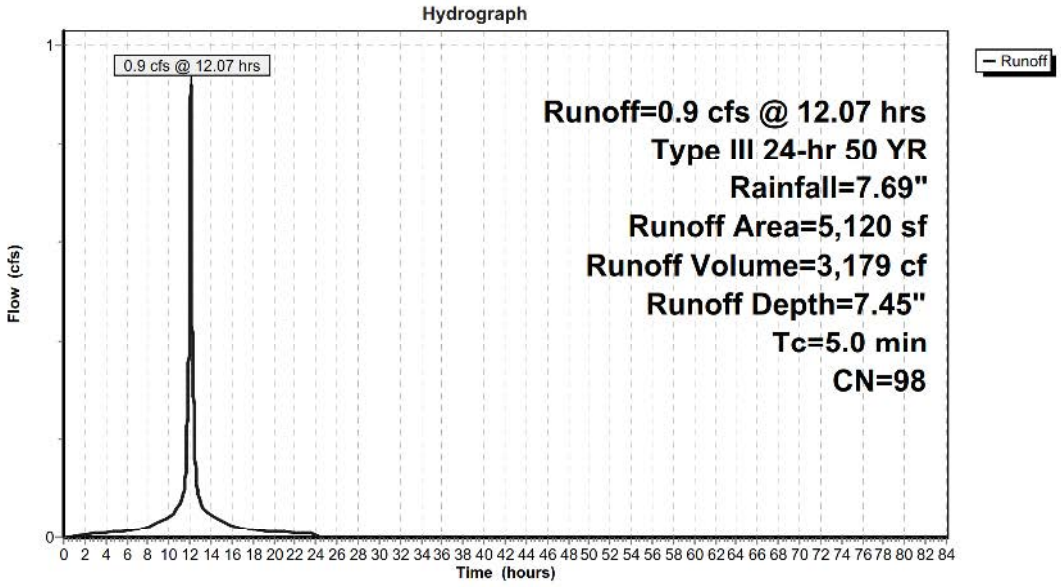
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 3,179 cf, Depth= 7.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
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Summary for Subcatchment PRWS7B: PRWS7B

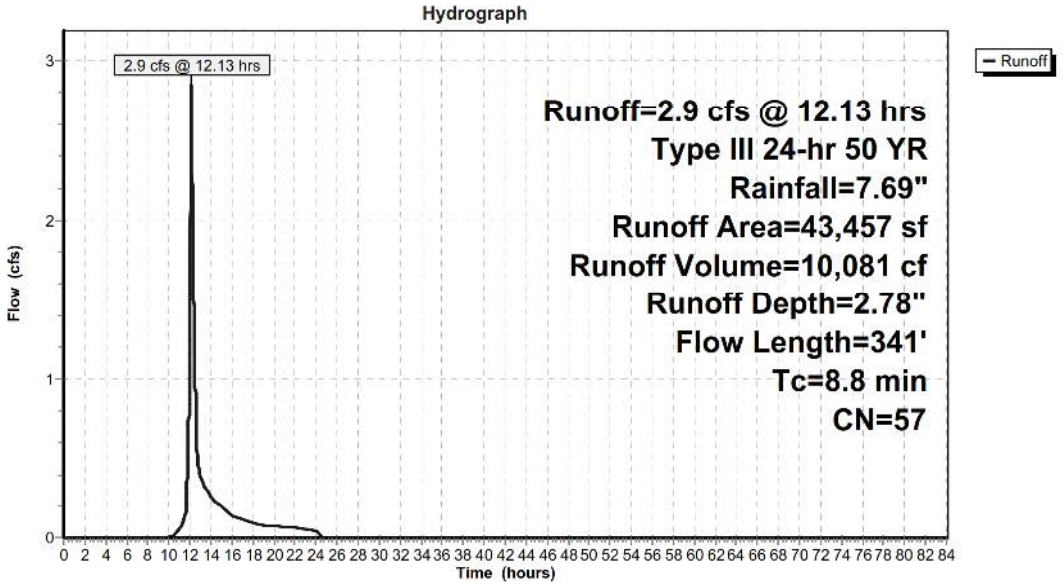
Runoff = 2.9 cfs @ 12.13 hrs, Volume= 10,081 cf, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 50 YR Rainfall=7.69"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 7.45" for 50 YR event
Inflow = 5.5 cfs @ 12.07 hrs, Volume= 19,073 cf
Outflow = 5.5 cfs @ 12.07 hrs, Volume= 19,073 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.07 hrs, Volume= 18,943 cf
Secondary = 0.6 cfs @ 12.07 hrs, Volume= 130 cf

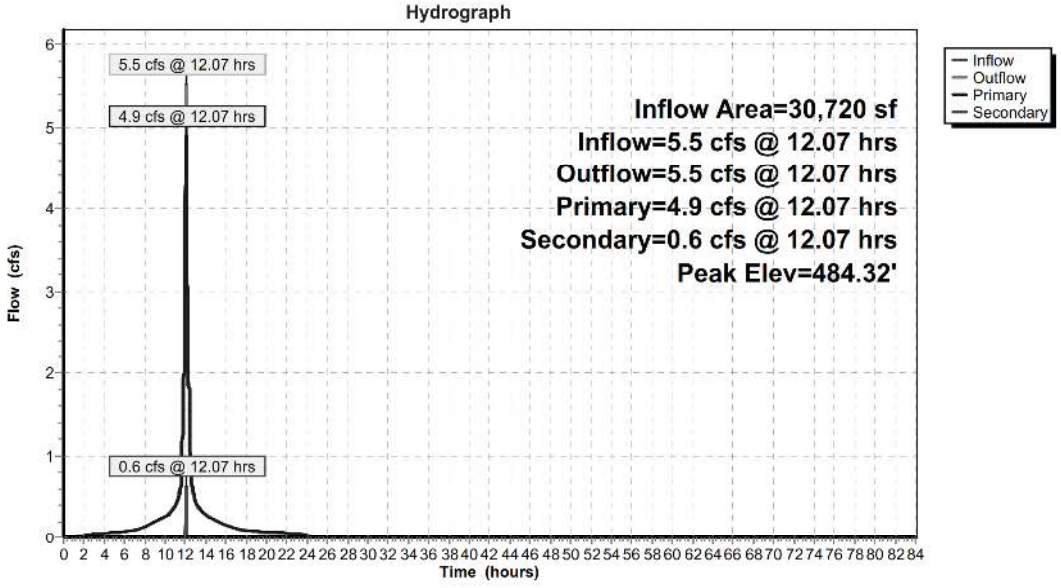
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.32' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.9 cfs @ 12.07 hrs HW=484.32' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.9 cfs @ 6.22 fps)

Secondary OutFlow Max=0.6 cfs @ 12.07 hrs HW=484.32' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.6 cfs @ 1.92 fps)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 50 YR Rainfall=7.69"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 5.28" for 50 YR event
Inflow = 14.2 cfs @ 12.26 hrs, Volume= 79,006 cf
Outflow = 14.2 cfs @ 12.26 hrs, Volume= 79,006 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.8 cfs @ 12.26 hrs, Volume= 71,651 cf
Secondary = 5.4 cfs @ 12.26 hrs, Volume= 7,355 cf

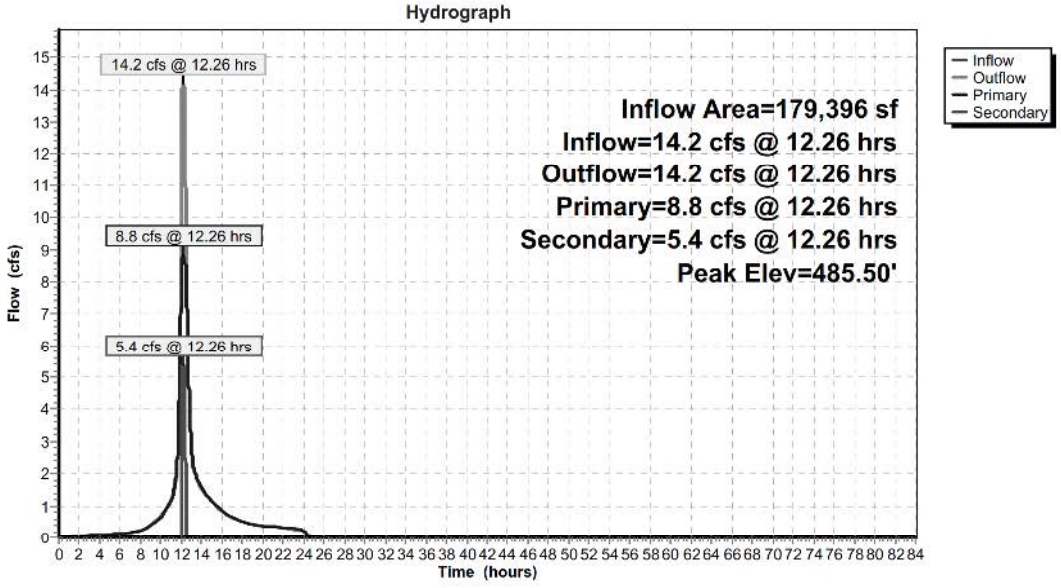
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.50' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.8 cfs @ 12.26 hrs HW=485.50' (Free Discharge)
↳**1=Culvert** (Barrel Controls 8.8 cfs @ 11.19 fps)

Secondary OutFlow Max=5.4 cfs @ 12.26 hrs HW=485.50' (Free Discharge)
↳**2=Culvert** (Inlet Controls 5.4 cfs @ 3.41 fps)

Pond SPLIT5B: SPLIT5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Time span=0.00-84.00 hrs, dt=0.010 hrs, 8401 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5A: PRSW5A Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=6.6 cfs 22,860 cf

Subcatchment 5B: PRWS5B Runoff Area=30,720 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=6.6 cfs 22,860 cf

Subcatchment 5C: PRWS5C Runoff Area=15,360 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=3.3 cfs 11,430 cf

Subcatchment 5D: PRWS5D Runoff Area=36,719 sf 0.00% Impervious Runoff Depth=4.36"
Flow Length=468' Slope=0.0150 '/' Tc=17.8 min CN=61 Runoff=3.0 cfs 13,339 cf

Subcatchment 5E: PRWS5E Runoff Area=133,316 sf 24.04% Impervious Runoff Depth=5.86"
Flow Length=624' Slope=0.0150 '/' Tc=20.4 min CN=73 Runoff=14.0 cfs 65,097 cf

Subcatchment 5F: PRWS5F Runoff Area=33,040 sf 0.00% Impervious Runoff Depth=4.36"
Flow Length=180' Tc=10.6 min CN=61 Runoff=3.3 cfs 12,003 cf

Subcatchment 5G: PRWS5G Runoff Area=11,860 sf 71.05% Impervious Runoff Depth=7.59"
Flow Length=169' Slope=0.0750 '/' Tc=0.6 min CN=87 Runoff=2.8 cfs 7,504 cf

Subcatchment 5H: PRWS5H Runoff Area=418,163 sf 11.91% Impervious Runoff Depth=4.23"
Flow Length=1,039' Tc=16.5 min CN=60 Runoff=34.5 cfs 147,557 cf

Link DP5: DP5 Inflow=34.9 cfs 237,428 cf
Primary=34.9 cfs 237,428 cf

Pond DW5A: DW5A Peak Elev=485.31' Storage=7,254 cf Inflow=5.1 cfs 22,416 cf
Discarded=0.1 cfs 14,122 cf Primary=4.2 cfs 8,294 cf Outflow=4.3 cfs 22,416 cf

Pond DW5B: DW5B Peak Elev=485.81' Storage=16,317 cf Inflow=9.0 cfs 85,629 cf
Discarded=0.5 cfs 44,410 cf Primary=8.5 cfs 41,219 cf Outflow=9.0 cfs 85,629 cf

Pond IS7A: IS7A Peak Elev=3.47' Storage=0.030 af Inflow=1.1 cfs 3,810 cf
Discarded=0.0 cfs 2,822 cf Primary=0.7 cfs 988 cf Outflow=0.7 cfs 3,810 cf

Pond POND5F: POND5F Peak Elev=488.97' Storage=44,891 cf Inflow=27.8 cfs 96,560 cf
Outflow=11.6 cfs 89,872 cf

Link PRDP6: PRDP6 Inflow=23.9 cfs 79,304 cf
Primary=23.9 cfs 79,304 cf

Link PRDP7: PRDP7 Inflow=4.7 cfs 14,967 cf
Primary=4.7 cfs 14,967 cf

Subcatchment PRWS6: PRWS6 Runoff Area=173,498 sf 26.08% Impervious Runoff Depth=5.49"
Flow Length=1,519' Tc=8.0 min CN=70 Runoff=23.9 cfs 79,304 cf

Subcatchment PRWS7A: PRWS7A Runoff Area=5,120 sf 100.00% Impervious Runoff Depth=8.93"
Tc=5.0 min CN=98 Runoff=1.1 cfs 3,810 cf

Subcatchment PRWS7B: PRWS7B Runoff Area=43,457 sf 0.00% Impervious Runoff Depth=3.86"
Flow Length=341' Tc=8.8 min CN=57 Runoff=4.0 cfs 13,979 cf

Pond SPLIT5A: SPLIT5A Peak Elev=484.50' Inflow=6.6 cfs 22,860 cf
Primary=5.1 cfs 22,416 cf Secondary=1.5 cfs 444 cf Outflow=6.6 cfs 22,860 cf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Pond SPLIT5B: SPLIT5B Peak Elev=485.85' Inflow=18.0 cfs 99,387 cf
Primary=9.0 cfs 85,629 cf Secondary=9.0 cfs 13,758 cf Outflow=18.0 cfs 99,387 cf

Total Runoff Area = 931,973 sf Runoff Volume = 399,742 cf Average Runoff Depth = 5.15"
76.67% Pervious = 714,530 sf 23.33% Impervious = 217,443 sf

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 5A: PRSW5A

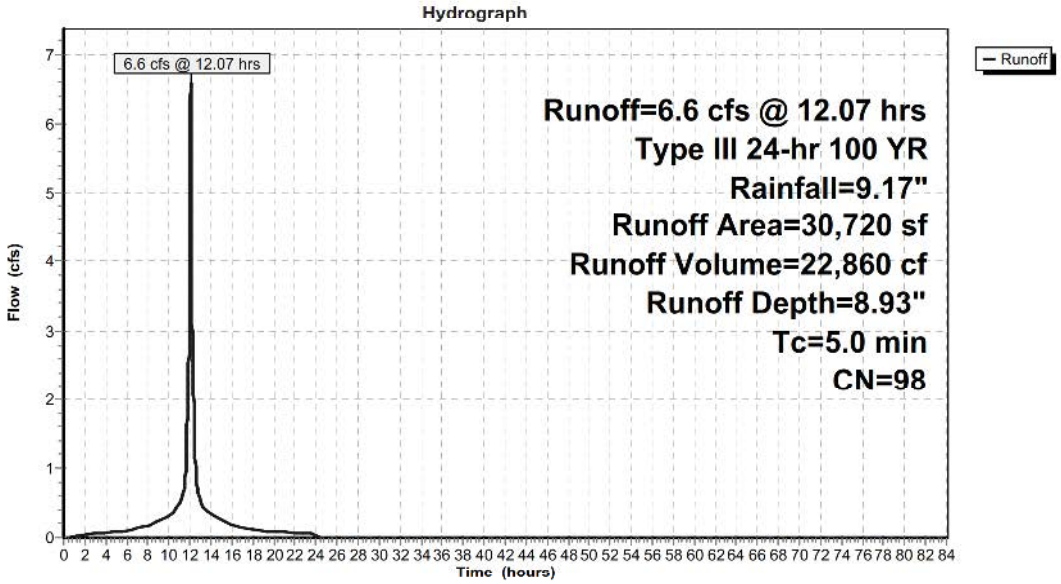
Runoff = 6.6 cfs @ 12.07 hrs, Volume= 22,860 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5A: PRSW5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 5B: PRWS5B

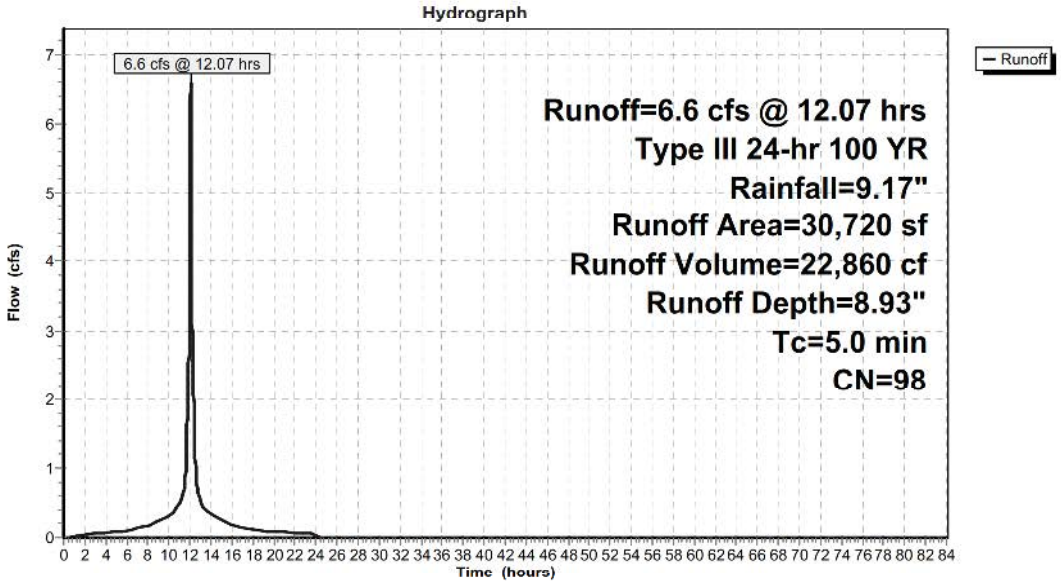
Runoff = 6.6 cfs @ 12.07 hrs, Volume= 22,860 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
30,720	98	Weighted Average
30,720		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5B: PRWS5B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 5C: PRWS5C

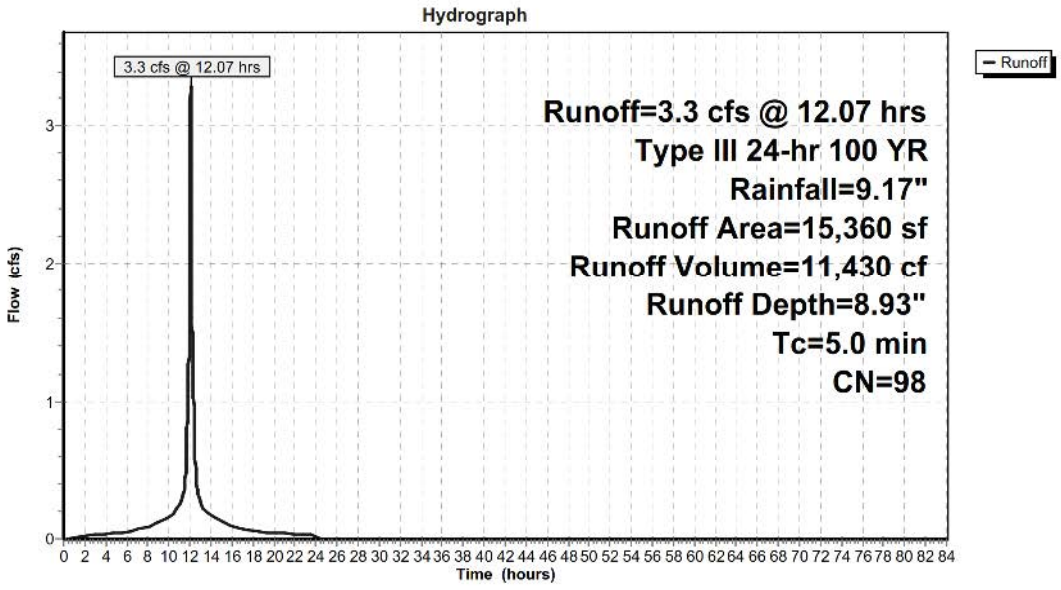
Runoff = 3.3 cfs @ 12.07 hrs, Volume= 11,430 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
5,120	98	Roofs, HSG B
15,360	98	Weighted Average
15,360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5C: PRWS5C



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment 5D: PRWS5D

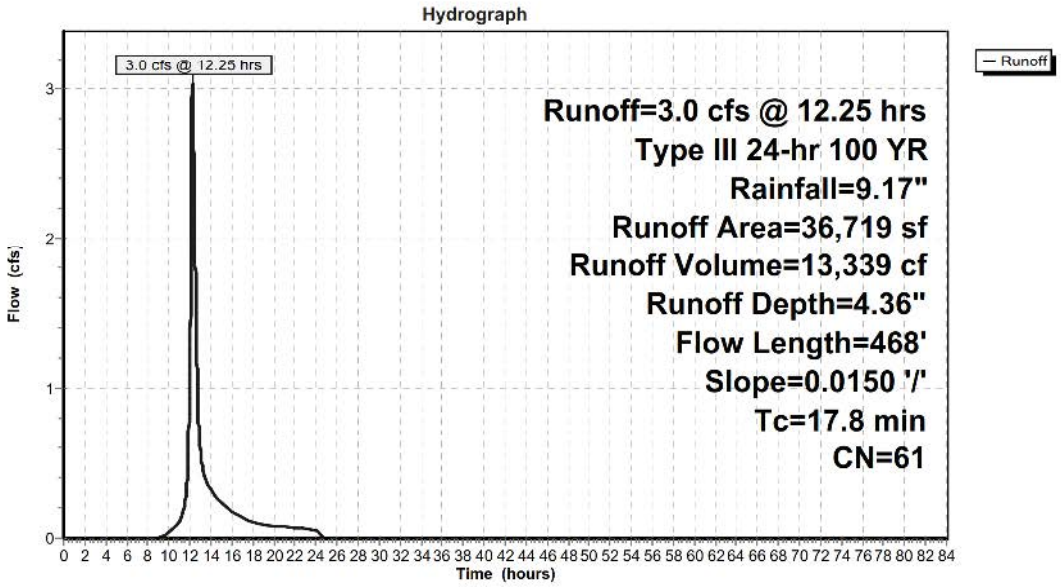
Runoff = 3.0 cfs @ 12.25 hrs, Volume= 13,339 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
36,719	61	>75% Grass cover, Good, HSG B
36,719		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
7.2	368	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	468	Total			

Subcatchment 5D: PRWS5D



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5E: PRWS5E

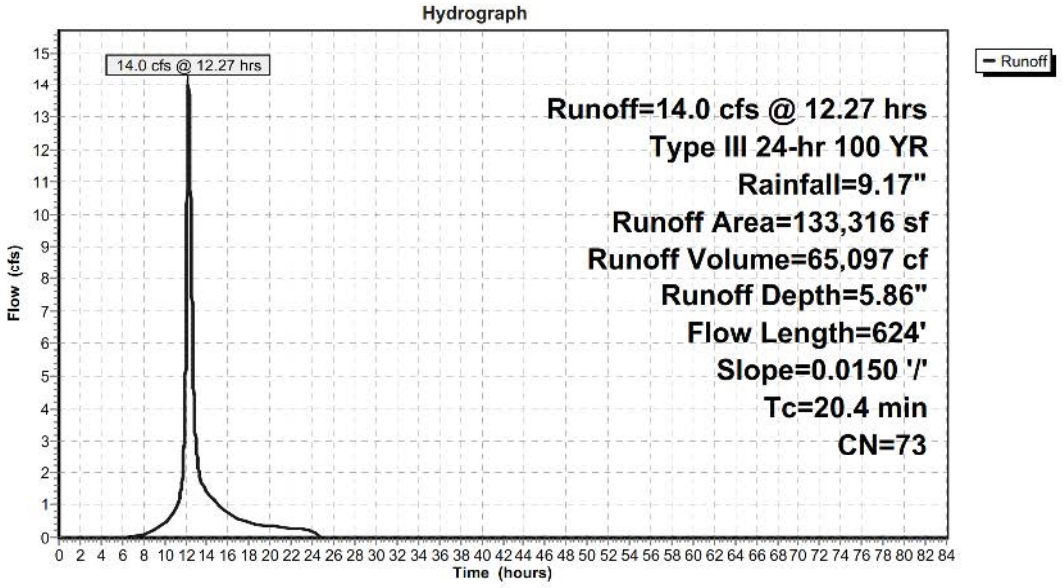
Runoff = 14.0 cfs @ 12.27 hrs, Volume= 65,097 cf, Depth= 5.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
32,054	98	Paved parking, HSG B
14,960	85	Gravel roads, HSG B
86,302	61	>75% Grass cover, Good, HSG B
133,316	73	Weighted Average
101,262		75.96% Pervious Area
32,054		24.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0150	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
9.7	500	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0150	4.24	1.480	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
20.4	624	Total			

Subcatchment 5E: PRWS5E



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5F: PRWS5F

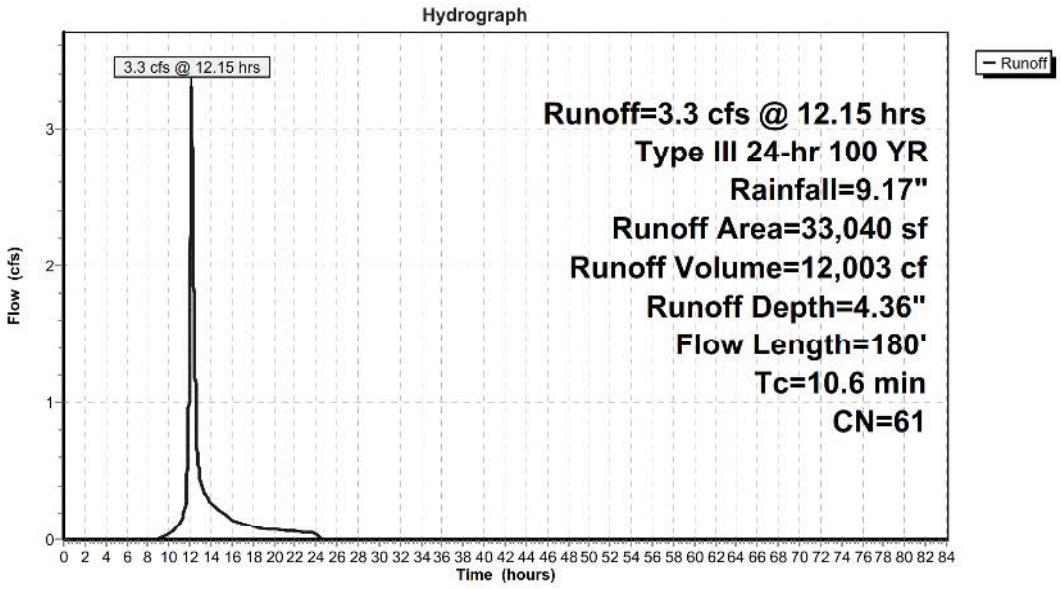
Runoff = 3.3 cfs @ 12.15 hrs, Volume= 12,003 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
33,040	61	>75% Grass cover, Good, HSG B
33,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
8.9	80	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.5	28	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	180	Total			

Subcatchment 5F: PRWS5F



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5G: PRWS5G

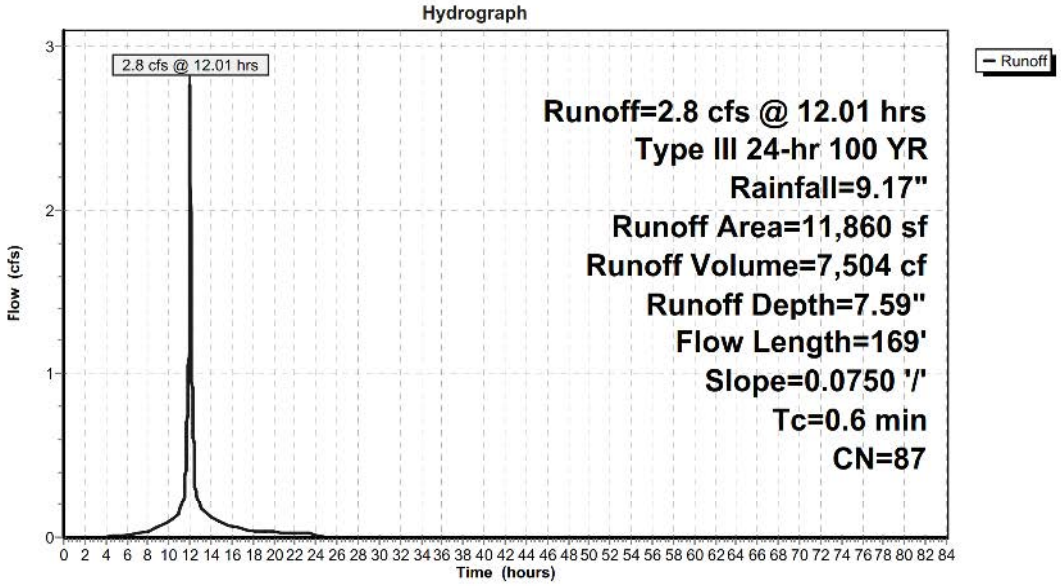
Runoff = 2.8 cfs @ 12.01 hrs, Volume= 7,504 cf, Depth= 7.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
8,427	98	Paved parking, HSG B
3,433	61	>75% Grass cover, Good, HSG B
11,860	87	Weighted Average
3,433		28.95% Pervious Area
8,427		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	100	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	46	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	169	Total			

Subcatchment 5G: PRWS5G



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment 5H: PRWS5H

Runoff = 34.5 cfs @ 12.23 hrs, Volume= 147,557 cf, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
2,742	55	Woods, Good, HSG B
80,697	55	Woods, Good, HSG B
42,646	55	Woods, Good, HSG B
22,043	55	Woods, Good, HSG B
87,992	55	Woods, Good, HSG B
49,787	98	Paved parking, HSG B
1,901	61	>75% Grass cover, Good, HSG B
7,566	61	>75% Grass cover, Good, HSG B
122,789	55	Woods, Good, HSG B
418,163	60	Weighted Average
368,376		88.09% Pervious Area
49,787		11.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0275	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.43"
0.8	60	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	31	0.2420	3.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	320	0.0569	4.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	120	0.1840	17.23	9.398	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Concrete pipe, bends & connections
0.2	90	0.3100	8.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	100	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	83	0.1920	2.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	135	0.3090	6.81	13.615	**Parabolic Channel,** W=3.00' D=1.00' Area=2.0 sf Perim=3.7' n= 0.080 Earth, long dense weeds
16.5	1,039	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7
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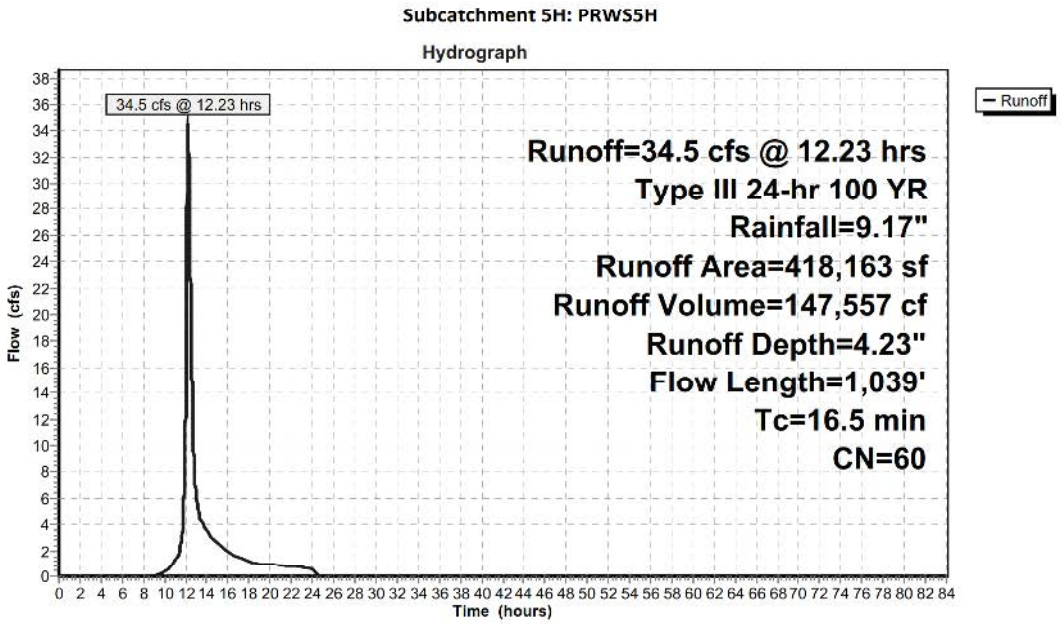
Type III 24-hr 100 YR Rainfall=9.17"



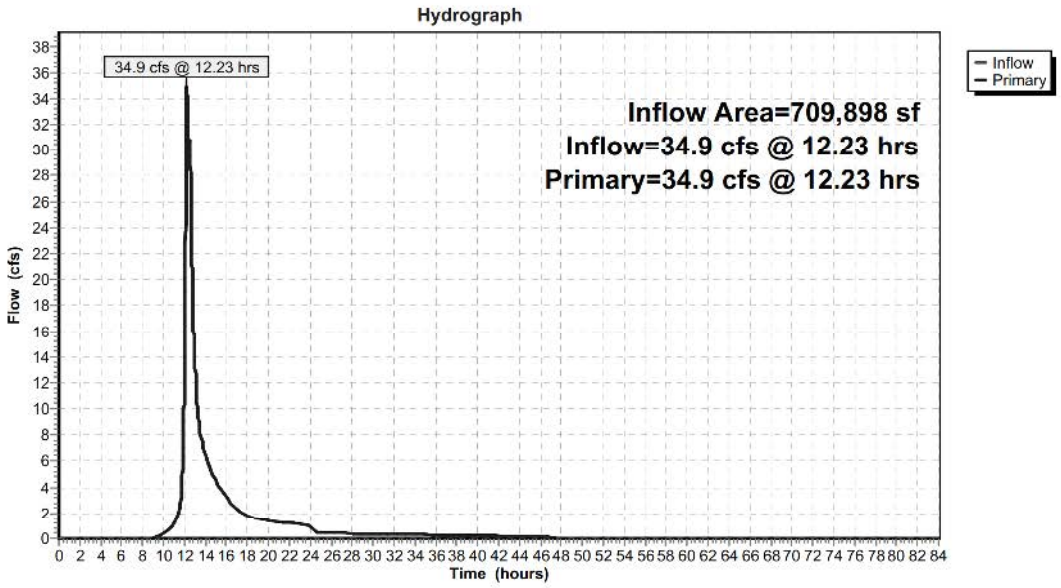
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link DP5: DP5

Inflow Area = 709,898 sf, 23.53% Impervious, Inflow Depth = 4.01" for 100 YR event
Inflow = 34.9 cfs @ 12.23 hrs, Volume= 237,428 cf
Primary = 34.9 cfs @ 12.23 hrs, Volume= 237,428 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link DP5: DP5



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5A: DW5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 8.76" for 100 YR event
Inflow = 5.1 cfs @ 12.07 hrs, Volume= 22,416 cf
Outflow = 4.3 cfs @ 12.15 hrs, Volume= 22,416 cf, Atten= 15%, Lag= 4.9 min
Discarded = 0.1 cfs @ 6.83 hrs, Volume= 14,122 cf
Primary = 4.2 cfs @ 12.15 hrs, Volume= 8,294 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.31' @ 12.15 hrs Surf.Area= 1,296 sf Storage= 7,254 cf

Plug-Flow detention time= 294.7 min calculated for 22,416 cf (100% of inflow)
Center-of-Mass det. time= 294.7 min (1,033.7 - 738.9)

Volume	Invert	Avail.Storage	Storage Description
#1	477.00'	1,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 9 11,016 cf Overall - 5,655 cf Embedded = 5,361 cf x 33.0% Voids
#2	477.50'	5,655 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 9 Inside #1
		7,424 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.00	144	0	0
485.50	144	1,224	1,224

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.00'	**4.000 in/hr Exfiltration over Surface area**
#2	Primary	484.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 484.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.1 cfs @ 6.83 hrs HW=477.09' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=4.2 cfs @ 12.15 hrs HW=485.31' (Free Discharge)
↳**2=Culvert** (Barrel Controls 4.2 cfs @ 3.42 fps)

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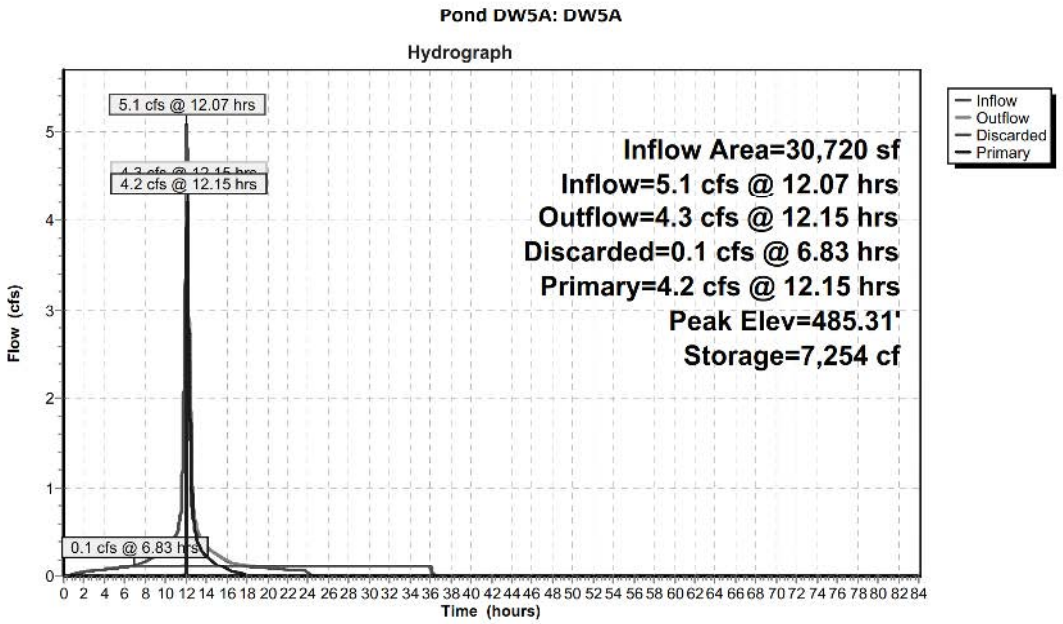

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond DW5B: DW5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 5.73" for 100 YR event
Inflow = 9.0 cfs @ 12.26 hrs, Volume= 85,629 cf
Outflow = 9.0 cfs @ 12.27 hrs, Volume= 85,629 cf, Atten= 0%, Lag= 1.0 min
Discarded = 0.5 cfs @ 8.88 hrs, Volume= 44,410 cf
Primary = 8.5 cfs @ 12.27 hrs, Volume= 41,219 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.81' @ 12.27 hrs Surf.Area= 2,880 sf Storage= 16,317 cf

Plug-Flow detention time= 159.3 min calculated for 85,629 cf (100% of inflow)
Center-of-Mass det. time= 159.2 min (965.1 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	477.50'	4,407 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 20 25,920 cf Overall - 12,566 cf Embedded = 13,354 cf x 33.0% Voids
#2	477.50'	12,566 cf	**10.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1
		16,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
477.50	144	0	0
486.50	144	1,296	1,296

Device	Routing	Invert	Outlet Devices
#1	Discarded	477.50'	**7.500 in/hr Exfiltration over Surface area**
#2	Primary	484.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0900 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Discarded OutFlow Max=0.5 cfs @ 8.88 hrs HW=477.59' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=8.5 cfs @ 12.27 hrs HW=485.81' (Free Discharge)
↳**2=Culvert** (Inlet Controls 8.5 cfs @ 3.90 fps)

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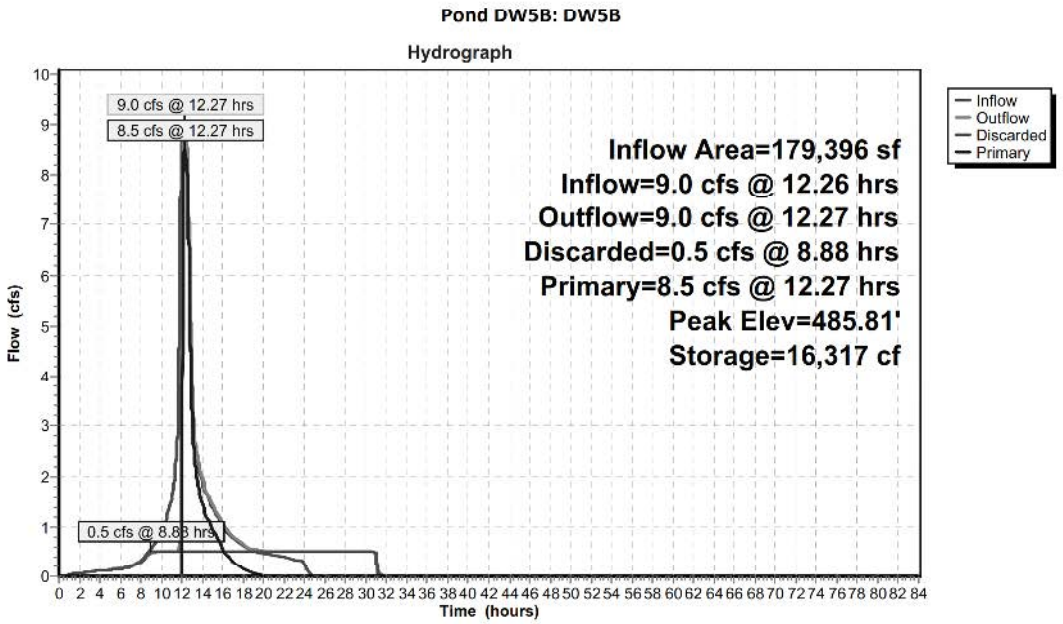
Type III 24-hr 100 YR Rainfall=9.17"



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond IS7A: IS7A

Inflow Area = 5,120 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 1.1 cfs @ 12.07 hrs, Volume= 3,810 cf
Outflow = 0.7 cfs @ 12.15 hrs, Volume= 3,810 cf, Atten= 34%, Lag= 4.9 min
Discarded = 0.0 cfs @ 8.14 hrs, Volume= 2,822 cf
Primary = 0.7 cfs @ 12.15 hrs, Volume= 988 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 3.47' @ 12.15 hrs Surf.Area= 0.014 ac Storage= 0.030 af

Plug-Flow detention time= 293.3 min calculated for 3,809 cf (100% of inflow)
Center-of-Mass det. time= 293.3 min (1,032.0 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.012 af	**16.00'W x 37.00'L x 3.54'H Field A**
			0.048 af Overall - 0.018 af Embedded = 0.030 af x 40.0% Voids
#2A	0.50'	0.018 af	**Cultec R-330XL** x 15 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.030 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	3.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 8.14 hrs HW=0.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.7 cfs @ 12.15 hrs HW=3.47' (Free Discharge)
↑**2=Orifice/Grate** (Weir Controls 0.7 cfs @ 1.53 fps)

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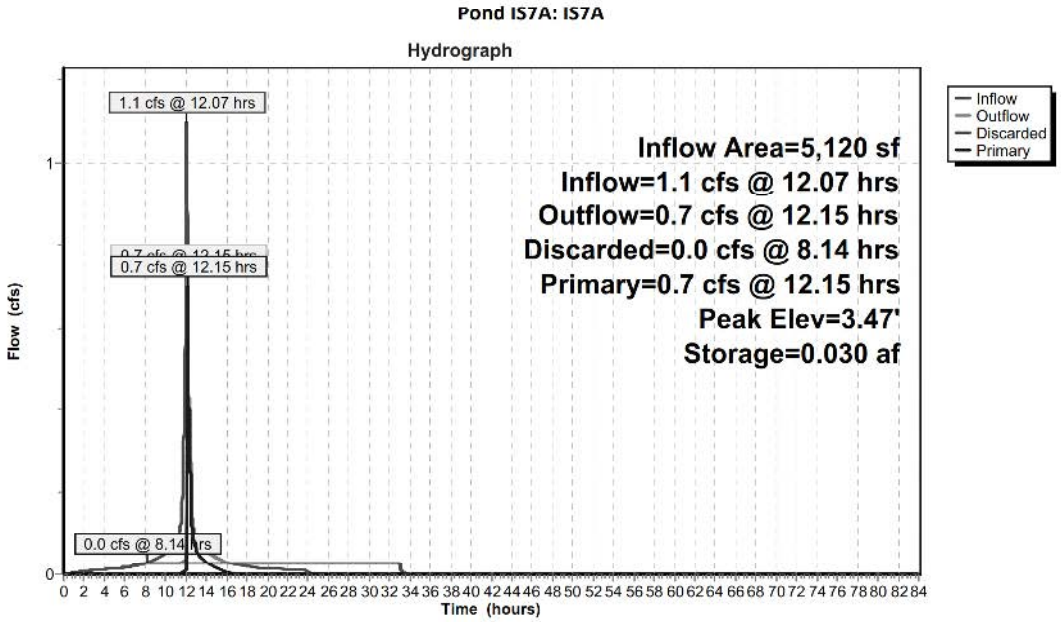
Type III 24-hr 100 YR Rainfall=9.17"



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond POND5F: POND5F

Inflow Area = 291,735 sf, 40.20% Impervious, Inflow Depth = 3.97" for 100 YR event
Inflow = 27.8 cfs @ 12.17 hrs, Volume= 96,560 cf
Outflow = 11.6 cfs @ 12.60 hrs, Volume= 89,872 cf, Atten= 58%, Lag= 26.1 min
Primary = 11.6 cfs @ 12.60 hrs, Volume= 89,872 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 488.97' @ 12.60 hrs Surf.Area= 11,361 sf Storage= 44,891 cf

Plug-Flow detention time= 405.1 min calculated for 89,872 cf (93% of inflow)
Center-of-Mass det. time= 377.9 min (1,176.8 - 798.8)

Volume	Invert	Avail.Storage	Storage Description
#1	482.00'	57,434 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
482.00	2,326	0	0
484.00	4,358	6,684	6,684
486.00	6,865	11,223	17,907
488.00	9,844	16,709	34,616
490.00	12,974	22,818	57,434

Device	Routing	Invert	Outlet Devices
#1	Primary	484.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 482.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	484.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	488.00'	**3.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=11.6 cfs @ 12.60 hrs HW=488.97' (Free Discharge)
↑**1=Culvert** (Passes 11.6 cfs of 30.1 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 10.60 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 11.1 cfs @ 3.27 fps)

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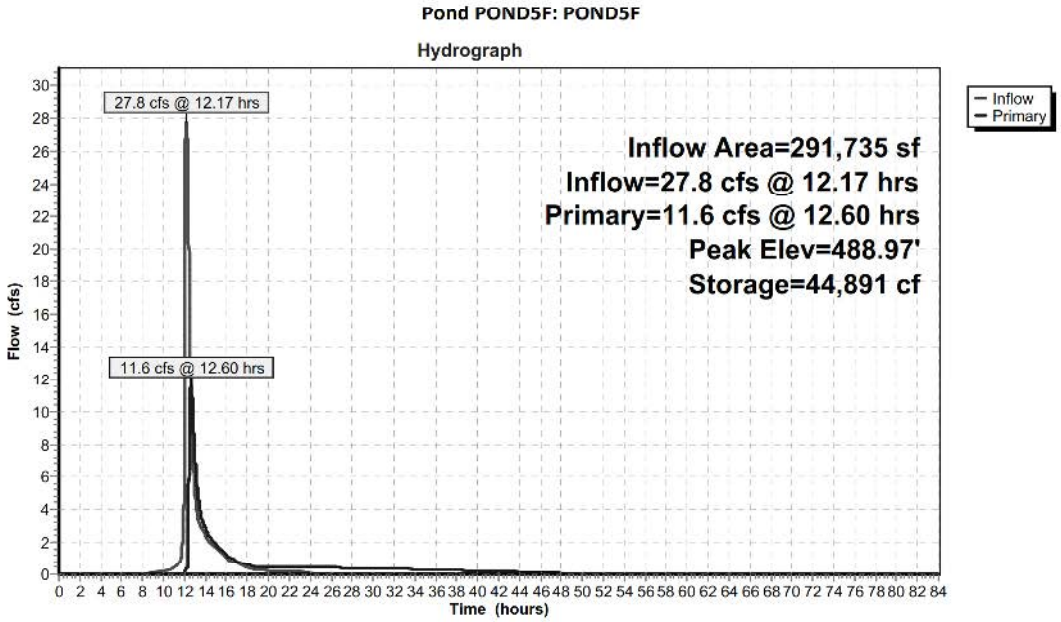


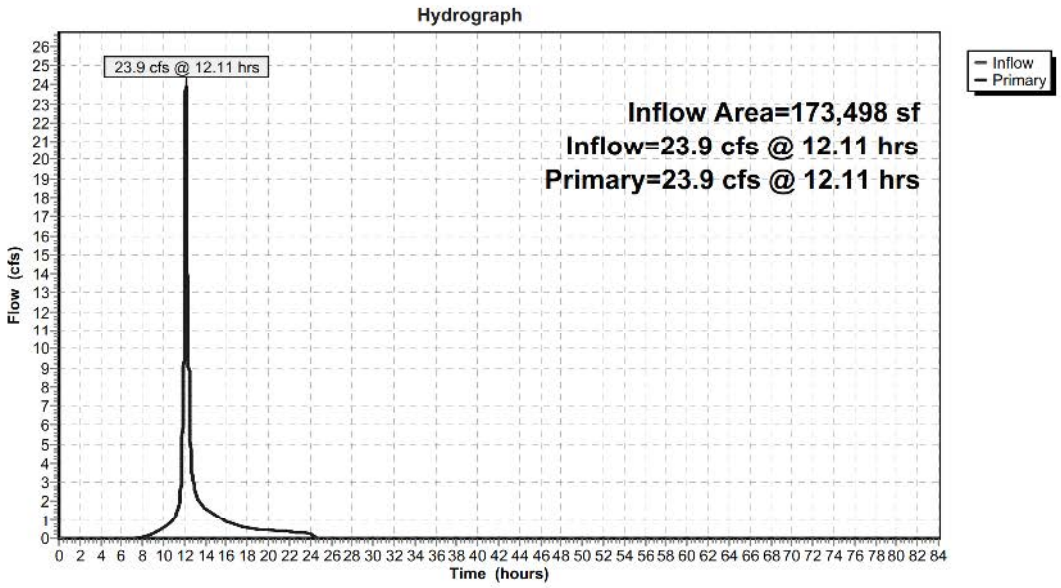
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP6: PRDP6

Inflow Area = 173,498 sf, 26.08% Impervious, Inflow Depth = 5.49" for 100 YR event
Inflow = 23.9 cfs @ 12.11 hrs, Volume= 79,304 cf
Primary = 23.9 cfs @ 12.11 hrs, Volume= 79,304 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP6: PRDP6



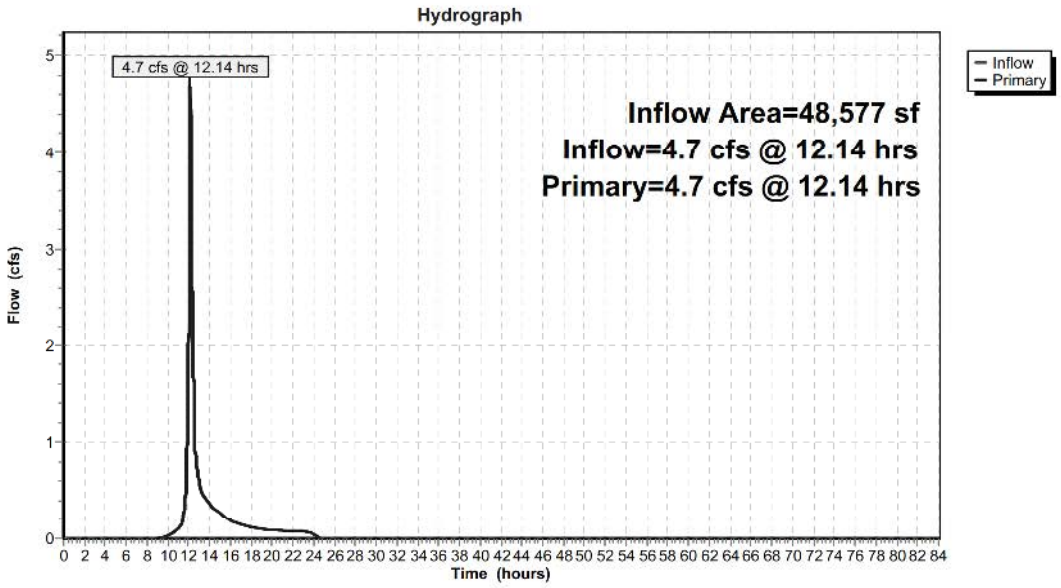
EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Link PRDP7: PRDP7

Inflow Area = 48,577 sf, 10.54% Impervious, Inflow Depth = 3.70" for 100 YR event
Inflow = 4.7 cfs @ 12.14 hrs, Volume= 14,967 cf
Primary = 4.7 cfs @ 12.14 hrs, Volume= 14,967 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs

Link PRDP7: PRDP7



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Subcatchment PRWS6: PRWS6

Runoff = 23.9 cfs @ 12.11 hrs, Volume= 79,304 cf, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
123,319	61	>75% Grass cover, Good, HSG B
45,255	98	Paved parking, HSG B
4,924	55	Woods, Good, HSG B
173,498	70	Weighted Average
128,243		73.92% Pervious Area
45,255		26.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.0670	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.8	198	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	474	0.0790	20.24	63.585	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	200	0.0600	17.64	55.413	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.2	189	0.0700	19.05	59.853	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.6	358	0.0170	9.39	29.496	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
8.0	1,519	Total			

EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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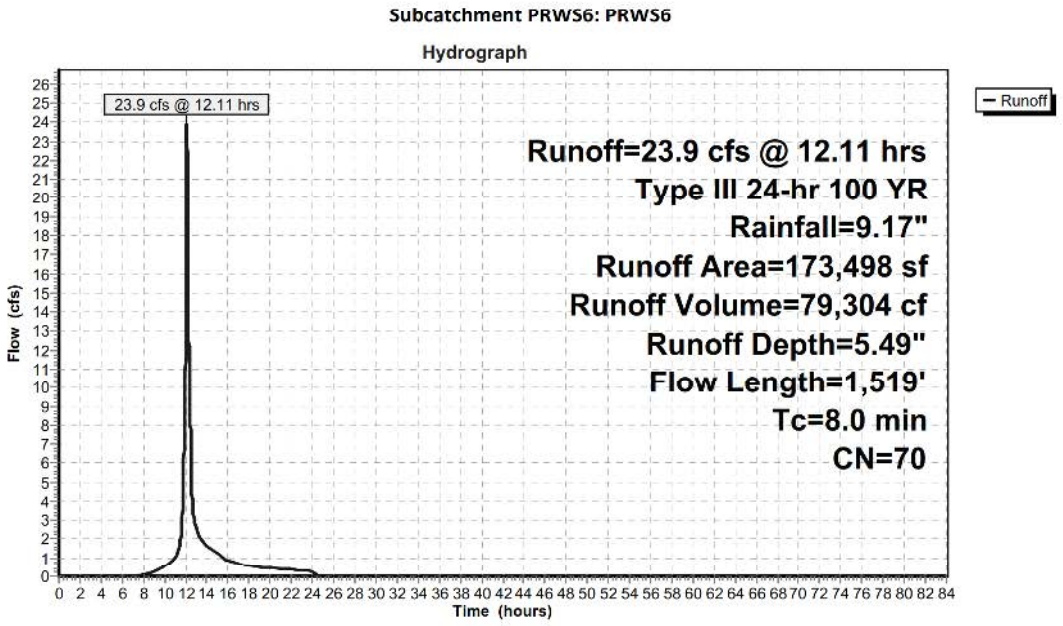

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Summary for Subcatchment PRWS7A: PRWS7A

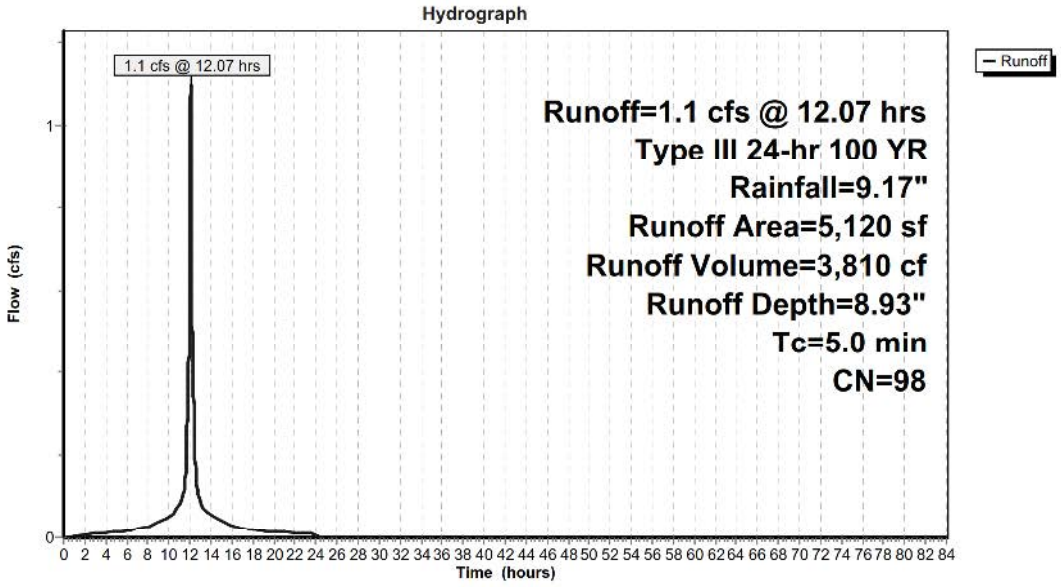
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 3,810 cf, Depth= 8.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
5,120	98	Paved parking, HSG B
5,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment PRWS7A: PRWS7A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
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Summary for Subcatchment PRWS7B: PRWS7B

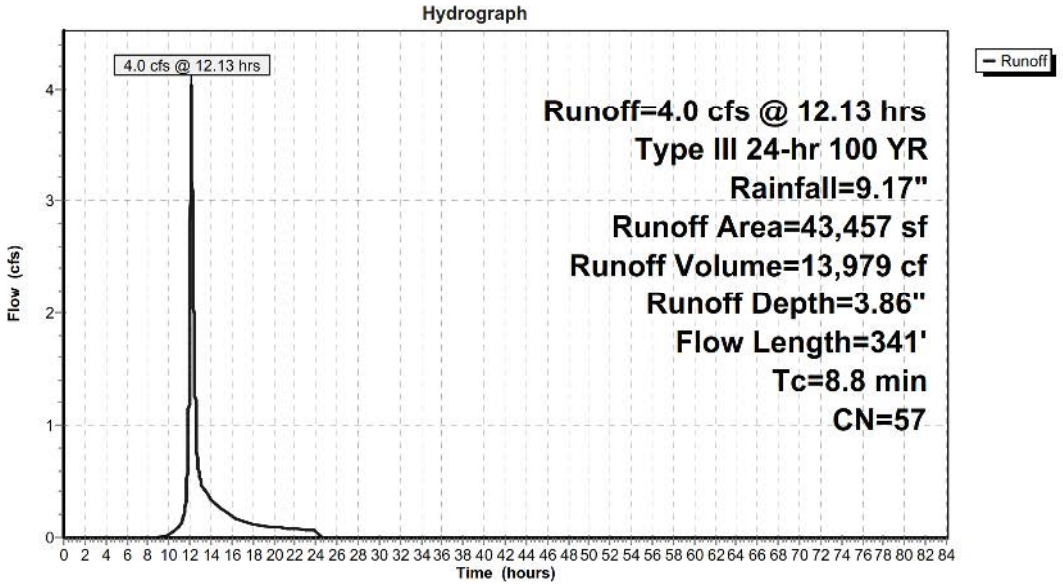
Runoff = 4.0 cfs @ 12.13 hrs, Volume= 13,979 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Type III 24-hr 100 YR Rainfall=9.17"

Area (sf)	CN	Description
32,523	55	Woods, Good, HSG B
10,934	61	>75% Grass cover, Good, HSG B
43,457	57	Weighted Average
43,457		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0730	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.43"
0.1	17	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	163	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	61	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.8	341	Total			

Subcatchment PRWS7B: PRWS7B



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT5A: SPLIT5A

Inflow Area = 30,720 sf,100.00% Impervious, Inflow Depth = 8.93" for 100 YR event
Inflow = 6.6 cfs @ 12.07 hrs, Volume= 22,860 cf
Outflow = 6.6 cfs @ 12.07 hrs, Volume= 22,860 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.1 cfs @ 12.07 hrs, Volume= 22,416 cf
Secondary = 1.5 cfs @ 12.07 hrs, Volume= 444 cf

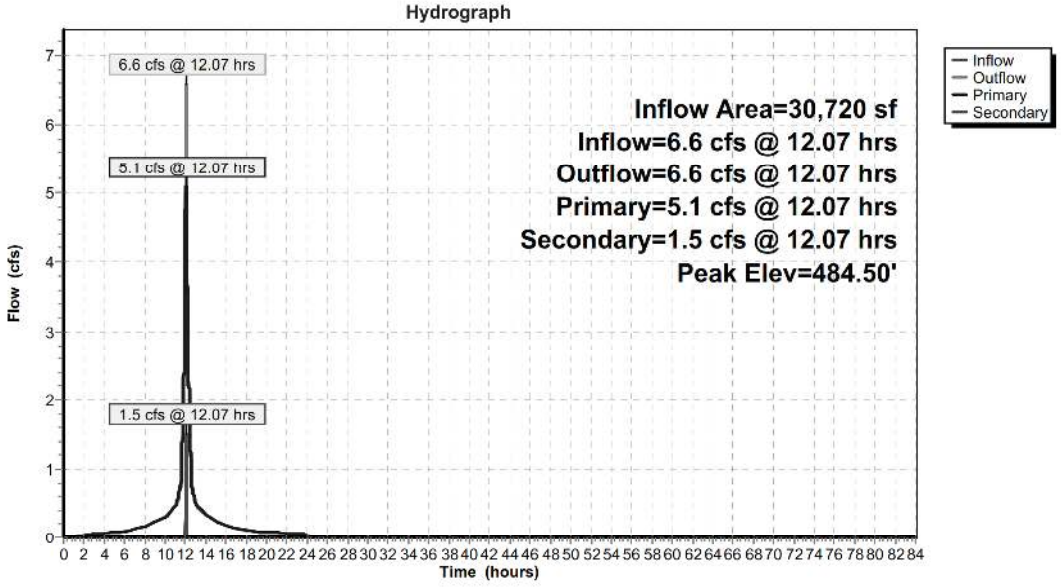
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 484.50' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	481.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 481.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.00'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 480.00' S= 0.0533 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=5.1 cfs @ 12.07 hrs HW=484.50' (Free Discharge)
↳**1=Culvert** (Barrel Controls 5.1 cfs @ 6.47 fps)

Secondary OutFlow Max=1.5 cfs @ 12.07 hrs HW=484.50' (Free Discharge)
↳**2=Culvert** (Inlet Controls 1.5 cfs @ 2.42 fps)

Pond SPLIT5A: SPLIT5A



EAGLE RIDGE-50 TOWNHOUSE DP5-7 *Type III 24-hr 100 YR Rainfall=9.17"*
Prepared by Alfonzetti Engineering, P.C.

Summary for Pond SPLIT5B: SPLIT5B

Inflow Area = 179,396 sf, 43.55% Impervious, Inflow Depth = 6.65" for 100 YR event
Inflow = 18.0 cfs @ 12.26 hrs, Volume= 99,387 cf
Outflow = 18.0 cfs @ 12.26 hrs, Volume= 99,387 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.0 cfs @ 12.26 hrs, Volume= 85,629 cf
Secondary = 9.0 cfs @ 12.26 hrs, Volume= 13,758 cf

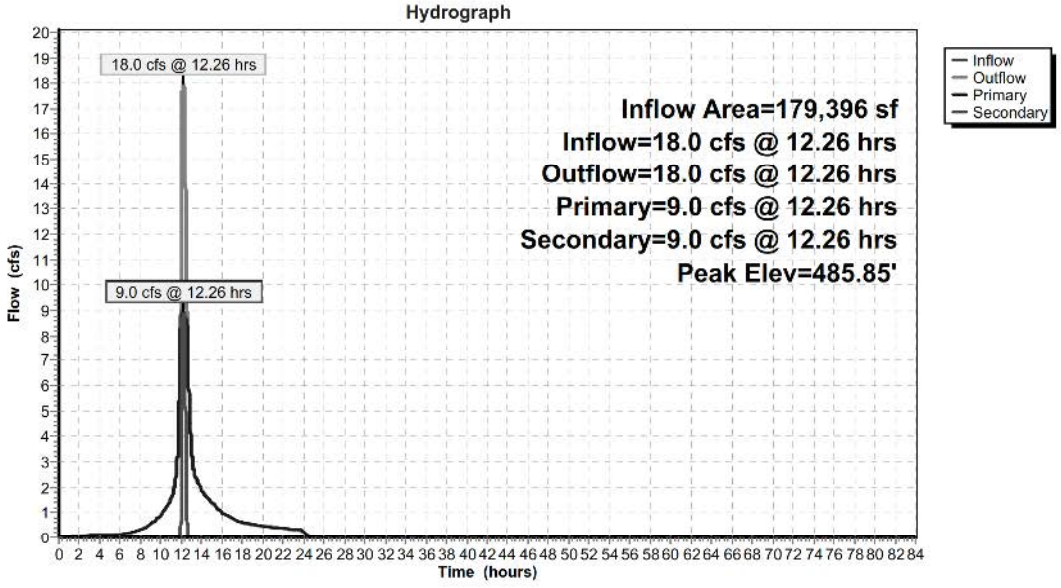
Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.010 hrs
Peak Elev= 485.85' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	477.00'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet Invert= 477.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	484.50'	**24.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Outlet Invert= 478.00' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=9.0 cfs @ 12.26 hrs HW=485.85' (Free Discharge)
↳**1=Culvert** (Barrel Controls 9.0 cfs @ 11.45 fps)

Secondary OutFlow Max=8.9 cfs @ 12.26 hrs HW=485.85' (Free Discharge)
↳**2=Culvert** (Inlet Controls 8.9 cfs @ 3.96 fps)

Pond SPLIT5B: SPLIT5B



Appendix D

Phase IB Archaeological & Cultural Resources

HISTORICAL PERSPECTIVES INC.

Phase IB Archaeological Field Investigation
Eagle Ridge Development
1 North Castle Drive, Armonk, Town of North Castle
Westchester County, New York

Phase IB Archaeological Field Investigation
Eagle Ridge Development
1 North Castle Drive, Armonk, Town of North Castle
Westchester County, New York

Prepared For:

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July 2019

EXECUTIVE SUMMARY

Eagle Ridge is a proposed Armonk development of a boutique hotel with residential housing, and supportive services and parking, and a separate 94-unit townhome complex. Rezoning, subdivision and construction of the 32.5-acre property at 1 North Castle Drive requires local permits and zoning approval prior to implementation. The development parcel, which contains steep slopes, is immediately west of a municipal sports park and north of an International Business Machines Corporation (IBM) corporate complex (Figure 1 and 2). Formerly part of the IBM campus, a small western portion of the project site was previously graded and developed by IBM into a helipad. The local Planning Board has requested the completion of a Phase I cultural resources evaluation of the project site acreage so that the Eagle Ridge site application can move forward.

A Phase IA report completed by HPI in June 2018 concluded that the site was potentially sensitive for both precontact and historic archaeological deposits outside of disturbed portions of the project site. The project site is located near the Wampus River and contains well-drained soils uphill from the water. Further, research found that fourteen precontact sites were previously identified within a one-mile radius. One of these sites, an Early Archaic (LeCroy) site, was found on the IBM property immediately south of the APE. In addition, bedrock outcrops on the APE may have been utilized as rockshelters.

Documentary research also found that the 18th to 19th century Cornell-Birdsall farmhouse was sited in proximity to the north end of the APE although no Cornell-Birdsall related structures were ever mapped in the APE. In the early 20th century, the property was purchased by Cornelius Agnew and became part of his "Wenga Farm." Agnew built multiple farm structures, some of which stood in the northern end of the APE by the 1940s. These buildings were later demolished. Sections of the APE that were relatively level were used as agricultural land with orchards and pastures for livestock.

Archaeological testing was recommended for undisturbed portions of the APE with a slope of less than 12 percent, as well as the locations of rock outcrops that could potentially serve as rockshelters. Archaeological testing was also recommended where the former farm structures stood to establish subsurface conditions.

Phase IB testing was completed between April 29 and May 2, 2019 by a team of four archaeologists under the direction of Sara Mascia, PhD, RPA. A total of 151 Shovel Tests (STs) were hand excavated on 15-meter interval transects and in judgmental locations. Of the STs excavated, none produced precontact material. One projectile point was found on the surface in a disturbed context immediately adjacent to an asphalt road that bisects the site. A test pit placed where it was found confirmed disturbed stratigraphy and encountered no additional precontact material. STs excavated nearby confirmed the horizontal and vertical extent of prior disturbance.

A surface scatter of 20th century material was encountered just east of the recovered projectile point. Shovel tests confirmed disturbance and the lack of any buried deposit.

Since virtually no archaeological resources were encountered during field testing, and sections of the site were found to be disturbed, no additional investigations are warranted.

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I. INTRODUCTION

Eagle Ridge is a proposed Armonk development of a boutique hotel with residential housing, and supportive services and parking, and a separate 94-unit townhome complex. Rezoning, subdivision, and development of the 32.5-acre property at 1 North Castle Drive required local permits and zoning approval prior to implementation. The development parcel, which contains steep slopes, is immediately west of a municipal sports park and north of an International Business Machines Corporation (IBM) corporate complex (Figures 1 and 2). The local Planning Board requested the completion of a Phase I cultural resources evaluation of the project site acreage so that the Eagle Ridge site application could move forward.

The Cultural Resource Standards (NYAC 1994, and New York State Office of Parks, Recreation, and Historic Preservation [OPRHP] 2002, 2005) that guide both the State Historic Preservation Office (SHPO) and Armonk's review follow a logical set of sequential steps, or phases that must be adhered to during the compliance process. The first step in the process, the Phase IA, is a documentary study designed to address two major questions: what is the potential for the project site to have hosted precontact and historic era archaeological resources of significance and, what is the likelihood that such resources have survived the subsurface disturbances concomitant with subsequent use of the site, including past farm-related activities.

A Phase IA study was completed by HPI in 2018. Documentary and cartographic information was reviewed to compare, both horizontally and vertically, the precontact past, the historical past, and to establish disturbance episodes. In particular, research focused on establishing the extent of prior subsurface disturbance caused by 20th century farm-related development and use by IBM, former owners of the site. In the mid-20th century, the majority of the site was covered by densely planted fruit trees, and two farm buildings stood in its northern section, one on either side of an abandoned paved road that hooks through the center of the project site (Photograph 1). A helipad was constructed along the southern border of the property, and a sewer line runs through the southeast corner (Photograph 2). These locations and other sections of the project site were disturbed by road grading and paving, rock and tree removal, soil excavation and mounding, and the recent completion of percolation test trenches (Photograph 3). Despite these observed prior disturbances, the Phase IA report concluded that the project site was potentially sensitive for both precontact and historic archaeological deposits outside of these known locations (HPI 2018).

A high level of precontact archaeological sensitivity was assumed due to the proximity of the site to the Wampus River and the presence of well-drained soils. Further, fourteen precontact sites were previously identified within a one-mile radius, several on similar landforms exhibited in the project site. One site, an Early Archaic (LeCroy) site, was found on the IBM property immediately south of the project site. In addition, bedrock outcrops on the site may have been utilized as rockshelters.

Moderate historic archaeological sensitivity was established through documentary research. The 18th to 19th century Cornell-Birdsall farmhouse once stood west of the project site near its north end, although no structures dating to that period were ever mapped in the project site. In the early 20th century, Cornelius Agnew bought the tract and it became part of his "Wenga Farm." Agnew's farm complex contained multiple outbuildings including several large barns, a silo, a woodworking and paint shop, stables, and garages (Watson 2000). Two of these buildings stood on the northern end of the project site in the 1940s, one on either side of the paved road (USGS 1947), while the center section of the project site had vast orchards. The buildings were gone by 1951 (USGS), and when IBM purchased the property in the 1970s, all the remaining farm-related buildings in the complex were razed.

Archaeological testing was recommended for undisturbed portions of the project site within the Area of Potential Effect (APE), defined as the maximum extent of all proposed subsurface disturbance with development. Testing was recommended for locations with a slope of less than 12-percent, as well as the locations of rock outcrops that could potentially have served as rockshelters. Archaeological testing was also recommended where the former farm structures stood to establish subsurface conditions.

This report provides the results of the Phase IB investigation, the subsurface testing stage of archaeological study.

II. METHODOLOGY

The Phase IB fieldwork consisted of the hand excavation of 40 by 40cm (16in by 16in) shovel tests (STs) to investigate the site for artifacts and/or features that may exist beneath the surface. Fieldwork was designed to ascertain the presence or absence of cultural resources in the APE, the area of proposed disturbance (Figure 2). Determining the extent, integrity, and National Register (NR) eligibility of any existing archaeological resources was beyond the scope of this phase of research. Portions of the APE with bedrock outcrops that did not exhibit any potential rock overhangs that could have been used as rockshelters, existing pavement (e.g., the road, the helipad), areas of extensive disturbance (e.g., push piles), and slopes of 12 percent or greater were not subjected to field investigations.

Each soil stratum excavated during field testing was explored and documented and the color and soil texture of each level was recorded on field forms in order to establish the context and integrity of any recovered artifacts, as well as to further ascertain whether any potential in situ features were present. Soil from all STs was sifted through ¼-inch screen, and all artifacts were collected by strata. Observed modern material was noted on the field forms, but not all was collected. Appropriate field notations, drawings, and photographs were made during field testing, and the results of each ST was documented (see Photographs; Appendix I).

III. RESULTS OF PHASE IB FIELD INVESTIGATION

Phase IB excavations were limited to the testable areas in the APE, a smaller area within the 32.5 acre project site as shown on Figure 2. Field testing was completed between April 29 and May 2, 2019 by a team of four archaeologists under the direction of Sara Mascia, PhD, RPA. A total of 142 Shovel Tests (STs) were hand excavated at a 15-meter interval on a series of 16 parallel transects that covered the sections of the site with elevations of less than 12 percent (note: ST 43 was unable to be completed due to the presence of asphalt). An additional nine STs were placed in judgmental locations for a total of 151 STs (Figure 3). Field testing found that although much of the site had an intact stratigraphic profile, sections of it were definitively disturbed, and bedrock was relatively shallow.

Although the center of the site was gently sloped and once contained orchards, a relatively uniform subsurface stratigraphy was observed in many of the STs. A typical example of a soil profile was found in ST 19, located west and uphill of the paved road, the area that appeared the least disturbed on the site (Figure 3).

ST 119

Level	Horizon	Depth(cm)	Soil Color	Soil Description
1	Humic	0-5	10 YR 3/2	Silty Loam
2	A	5-15	10 YR 4/4	Sandy Loam
3	B	15-28	10 YR 6/6	Sandy Loam
4	C	28-46	2.5 YR 6/4	Coarse Sand

Subsurface stratigraphy encountered to the east of and downhill from the paved road in an area that appeared to be have been artificially terraced, varied considerably. An example of a relatively intact soil profile was observed in several of the STs completed farther to the east, such as ST124 (Photograph 5 and Figure 3), which appeared as follows:

ST 124

Level	Horizon	Depth(cm)	Soil Color	Soil Description
1	Humic	0-6	10 YR 2/1	Silty Loam
2	A	6-20	10 YR 3/3	Sandy Loam
3	B	20-50	10 YR 6/5	Coarse Sand
4	C	50-62	2.5 Y 4/4	Coarse Sand

In contrast, numerous STs to the north and west of ST 124, also east of the road, exhibited stratigraphy that suggested prior disturbance, as demonstrated by the absence of an intact B horizon in the location of mapped CrC (Charlton-Chatfield complex) soil. CrC soils are described as very deep and well drained, typically found on side slopes of broad

ridges and small hills, such as the section of the APE where ST 124 is located (Figure 3). According to the soil description, the typical sequence is 2-8 inches of top soil, 8 to 24 inches of yellowish brown sandy loam subsoil and 24 to 60 inches of dark grayish or brown sandy loam (USDA 1994). However, the fact that the B horizon is altogether missing suggests the landscape was extensively modified. An example of this modified soil profile was observed in ST 86 (Figure 3 and Appendix I).

ST 86

Level	Horizon	Depth(cm)	Soil Color	Soil Description
1	A	0-32	10 YR 4/4	Sandy Loam
2	C	32-40	10 YR 5/4	Loamy Sand

Other STs across the APE encountered rock obstructions at shallow depths (e.g., ST 79; Figure 2 and Appendix I), and some encountered asphalt below an upper fill level near the road where pavement was not visibly evident (e.g., ST 44; Figure 2 and Appendix I). STs in proximity to the road also exhibited a disturbed stratigraphy. For example, ST 45, placed just west of the pavement, had a fill level from the surface down to 48cm below grade (Figure 3 and Appendix I).

Of the 151 STs excavated, none produced precontact artifacts of any type (Appendix I). However, a quartz Madison-like projectile point dating to the Late Woodland Period, ca.1050-350 before present (BP), was found on the surface in a disturbed context immediately adjacent to the asphalt road (Figure 3, Photograph 4). A test pit excavated where the point was found revealed a disturbed stratigraphy with 55cm of fill containing one piece of whiteware, located above the natural C-horizon, glacial till (ST 147; Appendix I). Nearby STs 137, 148, 149, and 150 confirmed the horizontal extent of fill and disturbance, and none contained additional precontact material (Figure 3 and Appendices I and II).

To the east and downhill of the isolated projectile point find, a scattering of 20th century artifacts was observed on the surface near the former location of a mid-20th century farm structure (Figure 3). Material remains included flower pot fragments, a sewer pipe fragment, clear window glass, embossed bottle glass, Borden Milk bottle necks, and a fragment of U.S.Q.M.C. (United States Quarter Masters Corporation) makers-marked whiteware dating to the 1940s (Appendix II). Shovel Test 146 confirmed disturbance with fill from the surface down to a rock impasse at 26cm below surface and the lack of any buried deposit (Appendix I). The area appears to have been disturbed when the farm building was removed.

Two transects were placed at the northern end of the APE where the other mid-20th century farm building once stood, near stone walls and an old farm road (Figure 3). STs in this location also found a disturbed stratigraphy with fill and gravel levels (see STs 138 through 145; Figure 3 and Appendix I). Artifacts from this area were limited to a small number of brick and whiteware fragments, and no evidence of the buildings was encountered. The fact that no demolition debris and minimal architectural remains (brick fragments) suggests the 20th century farm building may have been disassembled and moved, or possibly bulldozed to a location outside the APE boundaries.

Downhill and east of the two transects laid out at the northern end of the property, a large boulder was found with an extensive number of quarry holes, several of which still contained rusted quarry pins (Figure 3 and Photographs 6 and 7). The extent of quarrying suggests that the rock outcrop in this location may have once been far greater than it now appears.

IV. CONCLUSIONS AND RECOMMENDATIONS

The documentary study completed for the Eagle Ridge project in Armonk, Westchester County, found that the project site had sensitivity for both historical period archaeological resources and precontact period cultural resources. Subsequent Phase IB archaeological field testing found no precontact or historical archaeological deposits on any of the testable locations in the APE.

Much of the project site is characterized by steep slopes and bedrock outcrops. In addition, there has been extensive prior disturbance caused by:

- grading and paving for the road that winds through the side;

- the construction of two mid-20th century farm structures at the north end of the APE and then their later demolition;
- planting the property with extensive orchards;
- earth moving to level terraces, as evidenced by large push-piles; and,
- historical quarrying.

The combination of steep rocky soil coupled with this extensive disturbance has rendered much of the site no longer sensitive for archaeological deposits. The areas that could accommodate testing were all examined at a 15-meter (50-foot) interval or less, and the locations of potential rockshelter sites were tested with judgmental STs. Despite this, no cultural material beyond a stray projectile point on the surface at a disturbed location, and a surface scattering of 20th century artifacts was found.

It is probable that the lack of intact precontact resources results from the steep slope between a freshwater source – the Wampus River, and the testable uplands. Those relatively level areas that could have accommodated Native American hunting parties or campsites were located far uphill from fresh water. While the project parcel could have proved to have been good hunting area – as evidenced by isolated projectile point find – no evidence of this was revealed in the archaeological testing.

No additional testing at the Armonk Eagle Ridge project site is necessary due to the lack of recovered intact archaeological resources. Therefore, no further archaeological consideration for the APE is warranted.

V. REFERENCES

Historical Perspectives, Inc.
2018 *Phase IA Cultural Resources Survey, Eagle Ridge Development, 1 North Castle Drive, Armonk, Town of North Castle, Westchester County, New York.* Prepared for Frank Madonna, June 2018.

New York Archaeological Council (NYAC)
1994 *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections.* New York Archaeological Council.

New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)
2005 *Phase I Archaeological Report Format Requirements.*

2002 *Historic Resources Survey Recommended Standards*.

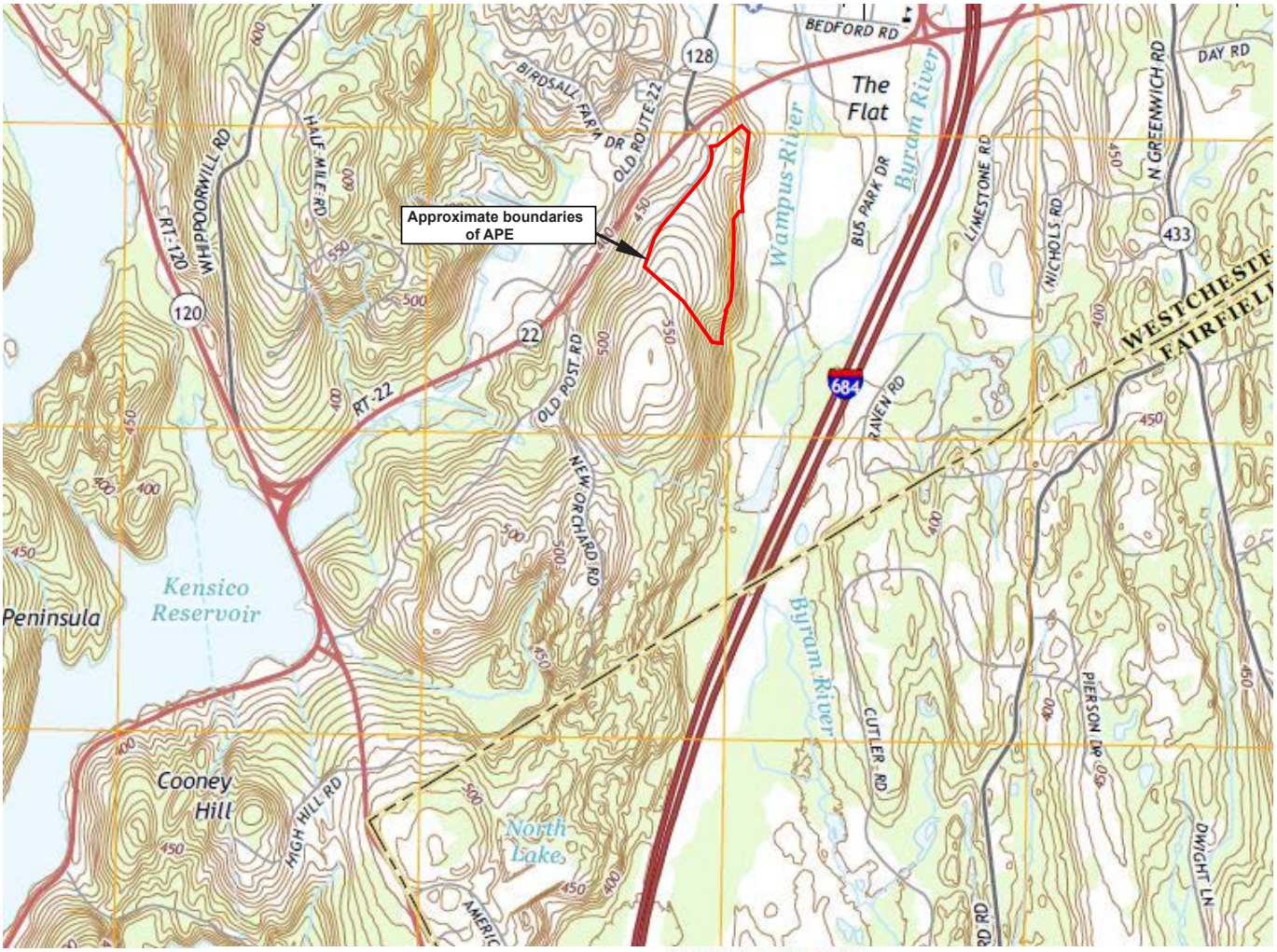
United States Department of Agriculture (USDA)
1994 *Soil Survey of Putnam and Westchester Counties, New York.* United States Department of Agriculture, Soil Conservation Service. Available at https://westchester2025.westchestergov.com/images/stories/rybstudies/Appx6-1_SoilSurveyPutnamWestchCo.pdf. Site accessed 7/18/2019.

United States Geological Survey (USGS)
2015 *Glenville, New York* 7.5 Minute Quadrangle.

1947 *Glenville, Connecticut-New York* 7.5 Minute Quadrangle.

1951 *Glenville, Connecticut-New York* 7.5 Minute Quadrangle.

Watson, Doris Finch
2000 Wenga Farm. *North Castle History.* Volume 27.

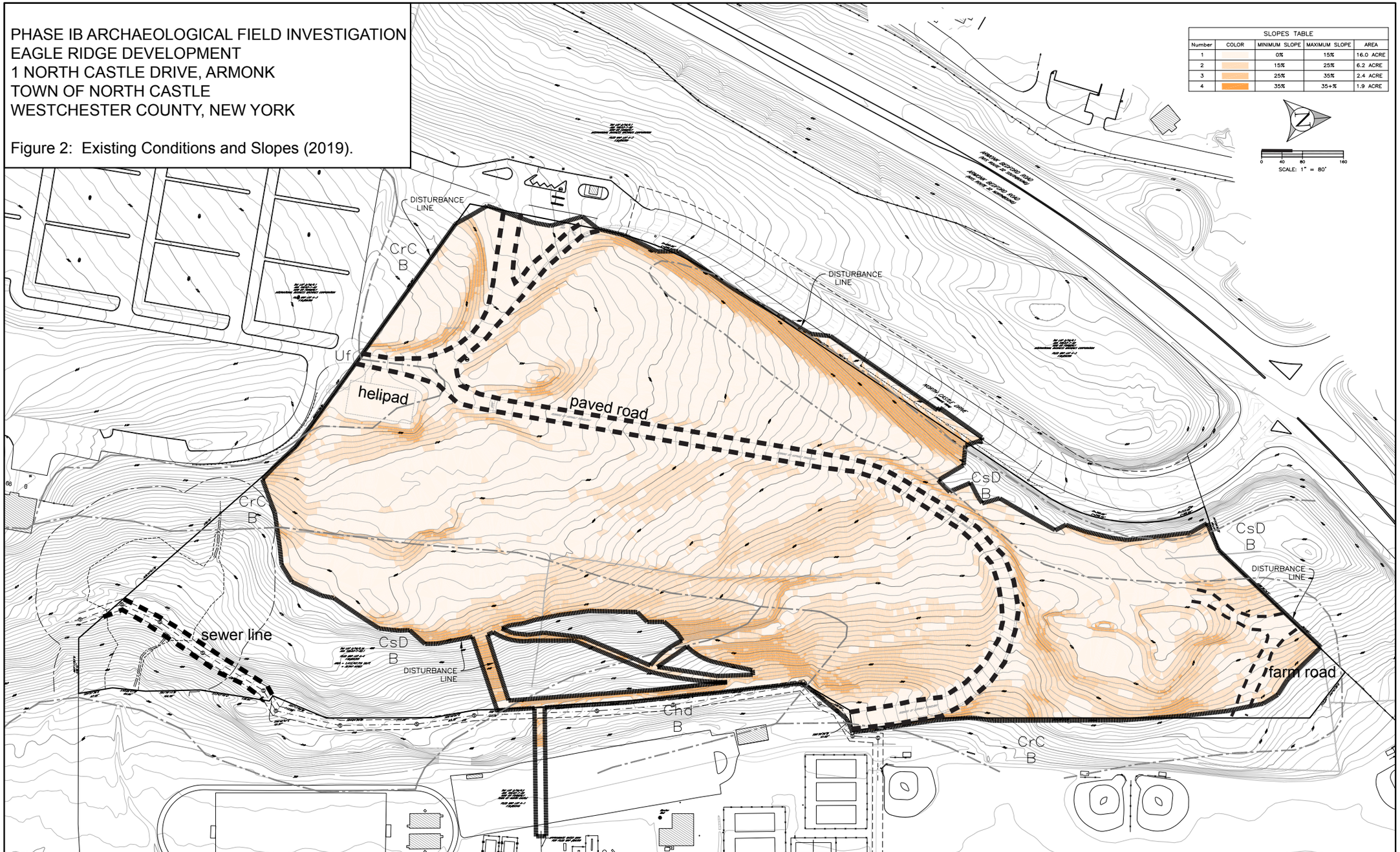


PHASE IB ARCHAEOLOGICAL FIELD INVESTIGATION
EAGLE RIDGE DEVELOPMENT
1 NORTH CASTLE DRIVE, ARMONK
WESTCHESTER COUNTY, NEW YORK

Figure 1: Project area of potential effect on U.S.G.S.
Topographical map Glenville, CT quadrangle (2015)

PHASE IB ARCHAEOLOGICAL FIELD INVESTIGATION
EAGLE RIDGE DEVELOPMENT
1 NORTH CASTLE DRIVE, ARMONK
TOWN OF NORTH CASTLE
WESTCHESTER COUNTY, NEW YORK

Figure 2: Existing Conditions and Slopes (2019).



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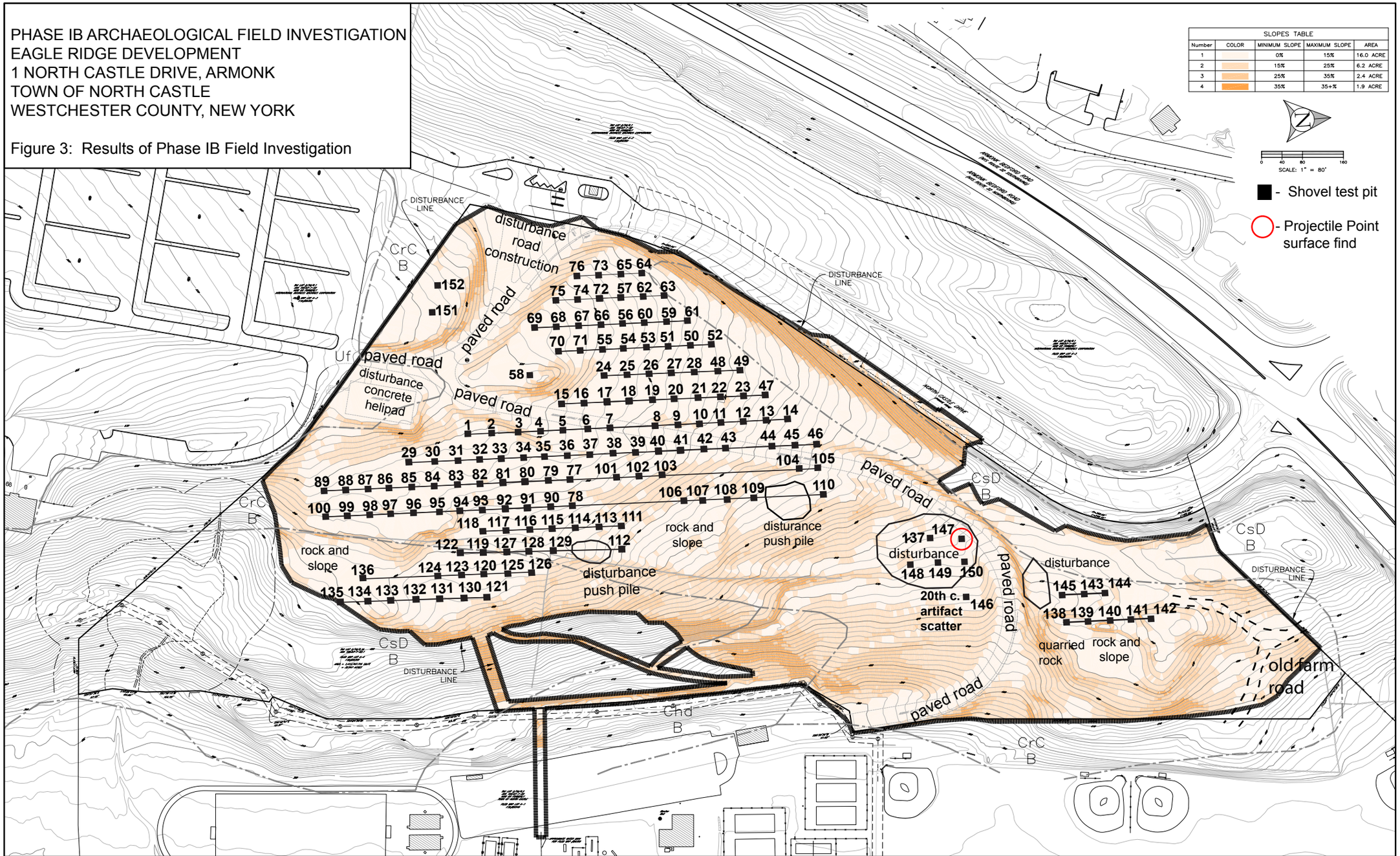
TOWN OF NORTH CASTLE, WESTCHESTER COUNTY, NEW YORK

STEEP SLOPE DISTURBANCE EXHIBIT
FEBRUARY 14, 2019

PHASE IB ARCHAEOLOGICAL FIELD INVESTIGATION
EAGLE RIDGE DEVELOPMENT
1 NORTH CASTLE DRIVE, ARMONK
TOWN OF NORTH CASTLE
WESTCHESTER COUNTY, NEW YORK

Figure 3: Results of Phase IB Field Investigation



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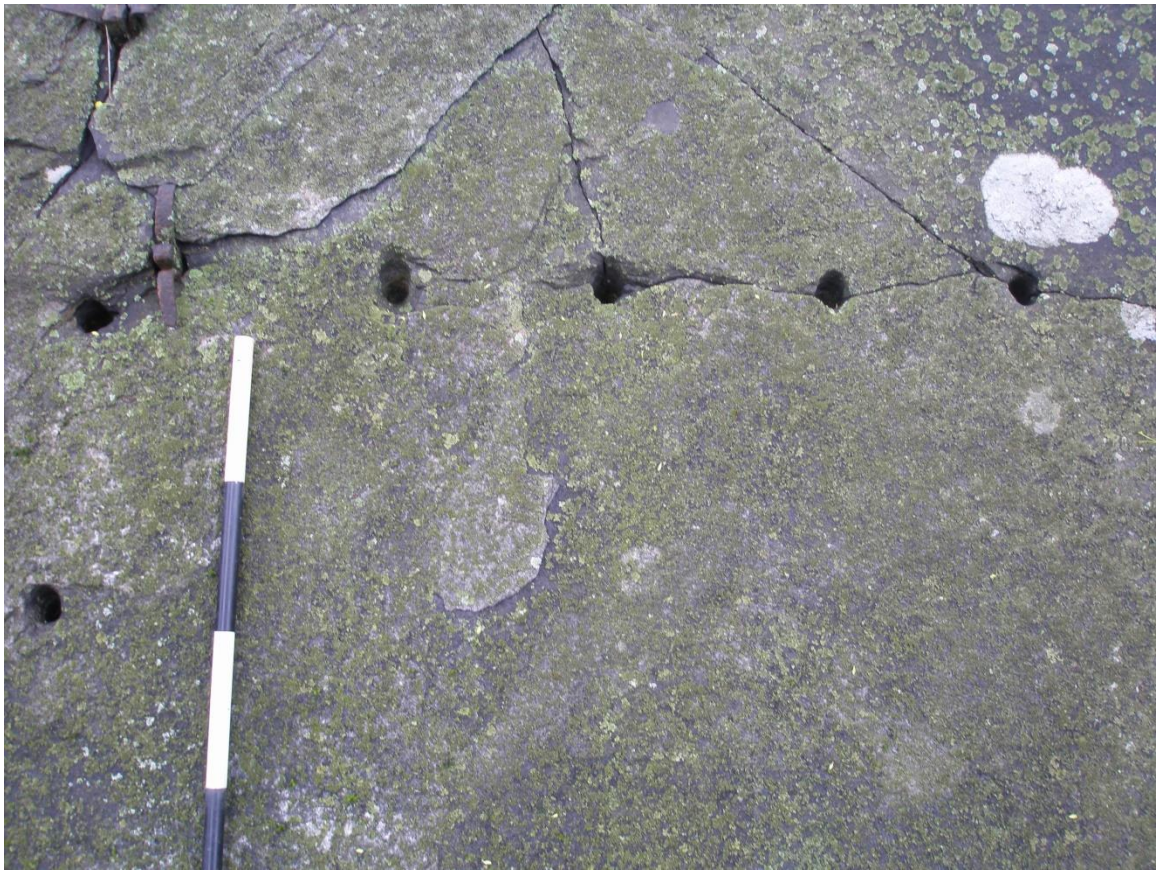
Photograph 1: Facing north from center of site to paved road that runs through the center of the site.

Photograph 2: Facing northeast from paved road to Helipad at south end of site.

Photograph 3: Facing south at center of site, east of paved road, to one of several observed push piles.

Photograph 4: Quartz projectile point found on the surface in a disturbed location adjacent to the paved road. Possibly a Madison point dating to the Late Woodland Period, ca.1050-350 before present (BP).

Photograph 5: Facing north to Shovel Test 124 in southeastern section of Area of Potential Effect.


Photograph 6: Facing west to rock outcrop in northeastern section of Area of Potential Effect, with quarry holes and rusted quarry pin in situ.

Photograph 7: Facing west to rock outcrop with quarry holes in northeastern section of Area of Potential Effect.

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
1	1	A	0-20	10 YR 4/4	SILO	NCM	
1	2	B	20-34	10 YR 5/4	SALO	NCM	
1	3	C	34-40	10 YR 5/8	SA	NCM	Sterile Subsoil
2	1	A	0-16	10 YR 4/4	SILO	NCM	
2	2	B	16-30	10 YR 5/4	SALO	NCM	
2	3	C	30-40	10 YR 5/8	SA	NCM	Sterile Subsoil
3	1	A	0-18	10 YR 4/4	SILO	NCM	Asphalt obstruction
4	1	Fill	0-24	10 YR 4/4	SISA	NCM	Asphalt obstruction
5	1	Fill	0-10	10 YR 3/3	Gravel	NCM	Asphalt obstruction
6	1	Fill	0-30	10 YR 3/3	SILO/Gravel	NCM	Asphalt obstruction
7	1	A	0-14	10 YR 3/3	SILO	NCM	
7	2	Fill	14-25	10 YR 3/4	SA	NCM	Asphalt obstruction
8						NCM	NOT DUG-ASPHPALT
9	1	A	0-25	10 YR 3/4	SILO	NCM	Boulder impasse
10	1	B/C	0-47	10 YR 5/6	SISA	NCM	Sterile Subsoil
11	1	B/C	0-35	10 YR 5/6	SISA	NCM	Boulder impasse
12						NCM	NOT DUG-ASPHPALT
13	1	Humic	0-5	10 YR 3/3	Humic	NCM	
13	2	A	5-20	10 YR 4/4	SILO	NCM	disturbed
13	3	C	20-40	10 YR 5/8	LOSA	NCM	Sterile Subsoil
14	1	Humic	0-7	10 YR 3/3	Humic	NCM	
14	2	A	7-22	10 YR 4/4	SILO	NCM	disturbed
14	3	C	22-32	10 YR 5/8	LOSA	NCM	Sterile Subsoil
15	1	Fill	0-16	10 YR 2/1	GRSA	NCM	Boulder impasse
16	1	A	0-10	10 YR 3/3	SILO	NCM	
16	2	B	10-28	10 YR 5/4	SALO	NCM	Boulder impasse
17	1	Humic	0-5	10 YR 3/2	SILO	NCM	
17	2	A	5-15	10 YR 4/6	SALO	NCM	
17	3	B	15-30	10 YR 5/8	SALO	NCM	Sterile Subsoil
18	1	Fill 1	0-16	10 YR 3/2	SILO	NCM	
18	2	Fill 2	16-30	10 YR 4/4	SALO	Mirror Glass (discarded)	
18	3	C	30-42	10 YR 6/4	SA	NCM	Sterile Subsoil
19	1	Humic	0-5	10 YR 3/2	SILO	NCM	
19	2	A	5-15	10 YR 4/4	SALO	NCM	
19	3	B	15-28	10 YR 6/6	SALO	NCM	
19	4	C	28-46	2.5 YR 6/4	COSA	NCM	Sterile Subsoil
20	1	Humic	0-7	10 YR 3/2	SILO	NCM	
20	2	A	7-22	10 YR 4/4	SALO	NCM	
20	3	B	22-44	10 YR 6/6	SALO	NCM	
20	4	C	44-60	2.5 YR 6/4	COSA	NCM	Sterile Subsoil
21	1	Humic	0-5	10 YR 3/2	SILO	NCM	
21	2	A	5-10	10 YR 4/4	SALO	NCM	

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
21	3	B	10-35	10 YR 5/8	SALO	NCM	
21	4	C	35-50	10 YR 6/4	COSA	NCM	Sterile Subsoil
22	1	A	0-6	10 YR 3/3	SILO	NCM	
22	2	B	6-22	10 YR 4/4	SALO	NCM	
22	3	C	22-38	10 YR 6/6	COSA	NCM	Sterile Subsoil
23	1	Humic	0-5	10 YR 3/2	SILO	NCM	
23	2	A	5-14	10 YR 4/4	SILO	NCM	
23	3	B	14-25	10 YR 5/8	SALO	NCM	
23	4	C	25-30	2.5 Y 4/6	SA	NCM	Sterile Subsoil
24	1	A	0-10	10 YR 3/3	SILO	NCM	
24	2	B	10-28	10 YR 5/4	SALO	NCM	Boulder impasse
25	1	A	0-20	10 YR 3/3	SILO	NCM	
25	2	B	20-35	10 YR 5/4	SALO	NCM	Boulder impasse
26	1	Humic	0-5	10 YR 3/3	SILO	NCM	
26	2	A	5-14	10 YR 5/4	SALO	NCM	
26	3	B	14-35	10 YR 5/8	SALO	NCM	Large rocks
26	4	C	35-50	2.5 Y 4/4	SA	NCM	Sterile Subsoil
27	1	A	0-12	10 YR 3/2	SILO	NCM	
27	2	B	12-24	10 YR 5/4	SALO	NCM	Sterile Subsoil
28	1	Humic	0-5	10 YR 3/3	SILO	NCM	
28	2	A	5-15	10 YR 4/4	SALO	NCM	
28	3	B	15-23	10 YR 5/4	SALO	NCM	Root Obstruction
29	1	A	0-25	10 YR 4/4	SALO	NCM	
29	2	C	25-35	10 YR 5/4	LOSA	NCM	Sterile Subsoil
30	1	A	0-35	10 YR 4/4	SALO	NCM	
30	2	C	35-45	10 YR 5/4	LOSA	NCM	Sterile Subsoil
31	1	A	0-40	10 YR 4/4	SALO	NCM	
31	2	B	40-52	10 YR 5/4	LOSA	NCM	Sterile Subsoil
32	1	A	0-39	10 YR 4/4	SALO	NCM	
32	2	C	39-48	10 YR 5/4	LOSA	NCM	Sterile Subsoil
33	1	A	0-40	10 YR 4/4	SALO	NCM	
33	2	C	40-48	10 YR 5/4	LOSA	NCM	Sterile Subsoil
34	1	A	0-30	10 YR 4/4	SALO	NCM	
34	2	C	30-40	10 YR 5/4	LOSA	NCM	Sterile Subsoil
35	1	A	0-28	10 YR 4/4	SALO	NCM	Boulder impasse
36	1	Humic	0-4	10 YR 3/3	Humic	NCM	
36	2	A	4-27	10 YR 4/6	SALO	NCM	
36	3	C	27-38	10 YR 5/4	LOSA	NCM	Sterile Subsoil
37	1	Fill	0-10	10 YR 5/8	LOSA	NCM	Boulder impasse
38	1	A	0-23	10 YR 4/4	SILO	NCM	
38	2	C	23-30	10 YR 5/4	GRSA	NCM	Sterile Subsoil
39	1	A	0-28	10 YR 4/4	SILO	NCM	
39	2	C	28-35	10 YR 5/4	GRSA	NCM	Sterile Subsoil
40	1	A	0-16	10 YR 4/4	SILO	NCM	

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
40	2	C	16-23	10 YR 5/4	GRSA	NCM	Sterile Subsoil
41	1	A/Fill	0-32	10 YR 4/4	SILO	NCM	Asphalt obstruction
42	1	A/Fill	0-16	10 YR 3/3	LOSA	NCM	Asphalt obstruction
43						NCM	NOT DUG-ASPHPALT
44	1	A	0-21	10 YR 4/4	SILO	NCM	
44	2	Fill	21-30	10 YR 5/4	SA	NCM	Asphalt obstruction
45	1	Fill	0-48	10 YR 4/4	SILO	NCM	Depth
46	1	Humic	0-8	10 YR 3/3	Humic	NCM	
46	2	A	8-25	10 YR 4/4	SILO	NCM	
46	3	C	25-45	10 YR 5/8	LOSA	NCM	Sterile Subsoil
47	1	Humic	0-6	10 YR 3/2	SILO	NCM	
47	2	A	6-24	10 YR 4/6	SALO	NCM	
47	3	B	24-39	10 YR 5/4	SALO	NCM	
47	4	C	39-58	2.5 Y 4/6	COSA	NCM	Sterile Subsoil
48	1	Humic	0-8	10 YR 3/2	SILO	NCM	
48	2	A	8-23	10 YR 4/4	SALO	NCM	
48	3	B	23-39	10 YR 5/8	SALO	NCM	
48	4	C	39-55	10 YR 6/4	COSA	NCM	Sterile Subsoil
49	1	Humic	0-5	10 YR 3/2	Humic	NCM	
49	2	A	5-18	10 YR 4/4	SALO	NCM	
49	3	B	18-34	10 YR 5/8	SALO	NCM	
49	4	C	34-40	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
50	1	Humic	0-5	10 YR 3/2	Humic	NCM	
50	2	A	5-20	10 YR 4/4	SILO	NCM	
50	3	B	20-30	10 YR 5/8	COSA	NCM	
50	4	C	30-40	2.5 Y 4/4	Sand	NCM	Sterile Subsoil
51	1	Humic	0-9	10 YR 3/2	Humic	NCM	
51	2	A	9-25	10 YR 4/4	SILO	NCM	
51	3	B	25-40	10 YR 5/6	SALO	NCM	Boulder Obstruction
52	1	A	0-19	10 YR 4/4	SILO	NCM	
52	2	B	19-42	10 YR 5/8	COSA	NCM	
52	3	C	42-60	2.5 Y 4/4	Sand	NCM	Sterile Subsoil
53	1	A	0-25	10 YR 6/6	COSA	NCM	Boulder Obstruction
54	1	Humic	0-5	10 YR 3/2	SILO	NCM	
54	2	A	5-17	10 YR 5/3	SALO	NCM	
54	3	B	17-32	10 YR 6/4	SALO	NCM	
54	4	C	32-55	5 YR 5/3	Sand	NCM	
55	1	Humic	0-8	10 YR 3/2	Humic	NCM	Sterile Subsoil
55	2	A	8-24	10 YR 5/3	SALO	NCM	
55	3	B	24-35	10 YR 6/6	SALO	NCM	
55	4	C	35-40	2.5 Y 5/4	Sand	NCM	Sterile Subsoil
56	1	Humic	0-5	10 YR 3/2	SILO	NCM	
56	2	A	5-16	10 YR 4/3	SASI	NCM	
56	3	B	16-20	10 YR 5/8	SASI	NCM	Boulder Obstruction

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
57	1	A	0-10	10 YR 4/3	SILO	NCM	
57	2	B	10-41	7.5 YR 6/6	Sand	NCM	
57	3	C	41-59	10 YR 6/1	Sand	NCM	Boulder Obstruction
58	1	A	0-16	10 YR 3/4	SILO	NCM	
58	2	B	16-29	10 YR 4/4	SILO	NCM	
58	3	C	29-36	10 YR 6/6	Sand	NCM	
59	1	Humic	0-3	10 YR 3/2	SILO	NCM	
59	2	A	3-8	10 YR 4/6	SALO	NCM	
59	3	B	8-24	10 YR 5/6	SALO	NCM	Sterile Subsoil
60	1	Humic	0-6	10 YR 3/2	SILO	NCM	
60	2	A	6-22	10 YR 4/6	SASI	NCM	
60	3	B	22-35	10 YR 6/6	COSA	NCM	Boulder Obstruction
61	1	A	0-24	10 YR 4/6	SILO	NCM	
61	2	B	24-35	10 YR 5/6	SALO	NCM	
61	3	C	35-50	10 YR 5/8	SALO	NCM	Sterile Subsoil
62	1	Humic	0-10	10 YR 3/2	SILO	NCM	
62	2	A	10-24	10 YR 4/6	SILO	NCM	
62	3	B	24-42	10 YR 5/6	SALO	NCM	
62	4	C	42-50	10 YR 6/2	SASI	NCM	Sterile Subsoil
63	1	Humic	0-8	10 YR 3/2	SILO	NCM	
63	2	A	8-20	10 YR 4/6	SILO	NCM	
63	3	B	20-36	10 YR 5/6	SALO	NCM	
63	4	C	36-52	2.5 Y 6/4	COSA	NCM	Sterile Subsoil
64	1	Humic	0-3	10 YR 3/2	SILO	NCM	
64	2	A	3-10	10 YR 4/6	SILO	NCM	
64	3	B	10-28	10 YR 5/6	SALO	NCM	
64	4	C	28-32	2.5 YR 5/4	SALO	NCM	Sterile Subsoil
65	1	Humic	0-8	10 YR 3/2	SILO	NCM	
65	2	A	8-19	10 YR 4/6	SILO	NCM	
65	3	B	19-40	10 YR 5/6	SISA	NCM	
65	4	C	40-58	2.5 YR 4/4	SISA	NCM	Sterile Subsoil
66	1	Fill 1	0-8	10 YR 4/3	SALO	NCM	offset 1m north
66	2	Fill 2	8-23	10 YR 5/8	SASI	3 Red Brick frags	
66	3	Fill 3	23-38	10 YR 6/6	SASI	NCM	Disturbed
67	1	Humic	0-5	10 YR 3/2	SILO	NCM	
67	2	A	5-14	10 YR 4/4	SILO	NCM	
67	3	B	14-20	10 YR 5/6	SALO	NCM	Root Obstruction
68	1	Humic	0-8	10 YR 3/2	Loam	NCM	
68	2	A	8-18	10 YR 4/4	Loam	NCM	
68	3	B	18-36	10 YR 5/4	SILO	NCM	
68	4	C	36-45	10 YR 5/8	SALO	NCM	Sterile Subsoil
69	1	Humic	0-10	10 YR 3/2	SILO	NCM	
69	2	A	10-22	10 YR 4/4	SILO	NCM	
69	3	B	22-38	10 YR 6/6	SASI	NCM	Boulder Obstruction

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
70	1	Humic	0-5	10 YR 3/2	SILO	NCM	
70	2	A	5-15	10 YR 4/3	SILO	NCM	Boulder Obstruction
71	1	A	0-12	10 YR 3/2	SILO	NCM	
71	2	B	12-33	10 YR 4/6	SILO	NCM	
71	3	C	33-51	10 YR 6/4	COSA	NCM	Sterile Subsoil
72	1	Humic	0-5	10 YR 4/3	SILO	NCM	
72	2	A	5-13	10 YR 5/4	SILO	NCM	
72	3	B	13-35	10 YR 5/8	SILO	NCM	Boulder Obstruction
73	1	Humic	0-3	10 YR 3/2	SILO	NCM	
73	2	A	3-15	10 YR 4/6	SILO	NCM	
73	3	B	15-35	10 YR 5/6	SISA	NCM	
73	4	C	35-50	2.5 Y 4/4	SISA	NCM	Sterile Subsoil
74	1	Humic	0-10	10 YR 4/3	CLLO	NCM	
74	2	A	10-20	10 YR 4/6	SILO	NCM	
74	3	B	20-40	10 YR 5/4	SALO	NCM	
74	4	C	40-45	10 YR 5/8	SILO	NCM	Sterile Subsoil
75	1	Humic	0-6	10 YR 3/2	SILO	NCM	
75	2	A	6-25	10 YR 4/4	SILO	NCM	Root Obstruction
76	1	Humic	0-10	10 YR 3/2	SILO	NCM	
76	2	A	10-30	10 YR 4/6	SILO	NCM	
76	3	B	30-44	10 YR 5/6	SISA	NCM	Sterile Subsoil
77	1	A	0-20	10 YR 4/4	SALO	NCM	
77	2	C	20-30	10 YR 5/4	LOSA	NCM	Boulder Obstruction
78	1	Humic	0-5	10 YR 3/2	SILO	NCM	
78	2	A	5-16	10 YR 4/3	SALO	NCM	
78	3	B	16-29	10 YR 5/4	SALO	NCM	
78	4	C	29-36	10 YR 6/6	COSA	NCM	Sterile Subsoil
79	1	A	0-20	10 YR 4/4	SALO	NCM	
79	2	C	20-23	10 YR 5/4	LOSA	NCM	Boulder Obstruction
80	1	A	0-25	10 YR 4/4	SALO	NCM	
80	2	C	25-33	10 YR 5/4	LOSA	NCM	Sterile Subsoil
81	1	A	0-20	10 YR 4/4	SALO	NCM	
81	2	C	20-35	10 YR 5/4	LOSA	NCM	Sterile Subsoil
82	1	A	0-24	10 YR 4/4	SALO	NCM	
82	2	C	24-33	10 YR 5/8	LOSA	NCM	Sterile Subsoil
83	1	A	0-23	10 YR 4/4	SALO	NCM	
83	2	C	23-31	10 YR 5/4	LOSA	NCM	Sterile Subsoil
84	1	A	0-18	10 YR 4/4	SALO	NCM	Boulder Obstruction
85	1	Humic	0-8	10 YR 3/3	Humic	NCM	
85	2	A	8-28	10 YR 4/4	SALO	NCM	
85	3	C	28-36	10 YR 5/4	LOSA	NCM	Sterile Subsoil
86	1	A	0-32	10 YR 4/4	SALO	NCM	
86	2	C	32-40	10 YR 5/4	LOSA	NCM	Sterile Subsoil

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
87	1	A	0-17	10 YR 4/4	SALO	NCM	
87	2	C	17-25	10 YR 5/4	LOSA	NCM	Sterile Subsoil
88	1	Humic	0-10	10 YR 3/3	Humic	NCM	
88	2	A	10-40	10 YR 4/4	SALO	NCM	
88	3	C	40-50	10 YR 5/4	LOSA	NCM	Sterile Subsoil
89	1	Humic	0-8	10 YR 3/3	Humic	NCM	
89	2	A	8-25	10 YR 4/4	SALO	NCM	Sterile Subsoil
90	1	A	0-10	10 YR 3/2	SILO	NCM	
90	2	B	10-25	10 YR 4/4	SALO	NCM	Boulder Obstruction
91	1	Humic	0-3	10 YR 3/2	SILO	NCM	
91	2	A	3-13	10 YR 4/4	SALO	NCM	
91	3	B	13-28	10 YR 5/8	SALO	NCM	
91	4	C	28-50	10 YR 6/6	COSA	NCM	Sterile Subsoil
92	1	Humic	0-9	10 YR 3/2	SILO	NCM	
92	2	A	9-23	10 YR 4/3	SALO	NCM	
92	3	B	23-35	10 YR 5/8	COSA	NCM	
92	4	C	35-50	10 YR 6/6	Sand	NCM	Sterile Subsoil
93	1	Humic	0-5	10 YR 3/2	SILO	NCM	
93	2	Fill 1	5-24	10 YR 4/3	SALO	NCM	
93	3	Fill 2	24-40	10 YR 5/5	COSA	1 Iron Nail	
93	4	C	40-60	10 YR 6/6	Sand	NCM	Sterile Subsoil
94	1	Humic	0-8	10 YR 3/2	SILO	NCM	
94	2	A	8-26	10 YR 4/4	SILO	NCM	
94	3	B	26-38	10 YR 5/4	SALO	NCM	
94	4	C	38-53	10 YR 5/8	SALO	NCM	
95	1	Humic	0-9	10 YR 3/2	SILO	NCM	
95	2	A	9-21	10 YR 4/4	SALO	NCM	
95	3	B	21-31	10 YR 5/4	SALO	NCM	
95	4	C	31-50	10 YR 6/4	COSA	NCM	Sterile Subsoil
95	1	Humic	0-5	10 YR 3/2	SILO	NCM	
96	2	A	5-27	10 YR 4/4	SILO	NCM	
96	3	B	27-38	10 YR 5/4	SALO	NCM	
96	4	C	38-50	10 YR 6/6	Clay	NCM	Sterile Subsoil
97	1	Humic	0-6	10 YR 3/2	SILO	NCM	
97	2	A	6-22	10 YR 4/4	SILO	NCM	
97	3	B	22-40	10 YR 5/4	SALO	NCM	
97	4	C	40-58	10 YR 6/6	Clay	NCM	Sterile Subsoil
98	1	Humic	0-5	10 YR 3/2	SILO	NCM	
98	2	A	5-20	10 YR 4/4	SALO	NCM	
98	3	B	20-57	10 YR 5/8	SALO	NCM	Boulder impasse
99	1	Humic	0-9	10 YR 3/2	SILO	NCM	
99	2	A	9-25	10 YR 4/4	SALO	NCM	
99	3	B	25-38	10 YR 5/4	SALO	NCM	
99	4	C	38-54	10 YR 5/8	COSA	NCM	Sterile Subsoil

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
100	1	Humic	0-5	10 YR 3/2	SILO	NCM	
100	2	A	5-13	10 YR 4/4	SILO	NCM	
100	3	B	13-35	10 YR 5/8	SALO	NCM	
100	4	C	35-67	10 YR 6/6	COSA	NCM	Sterile Subsoil
101	1	A	0-21	10 YR 4/4	SALO	NCM	
101	2	C	21-30	10 YR 5/4	LOSA	NCM	Sterile Subsoil
102	1	A	0-23	10 YR 4/4	SALO	NCM	
102	2	C	23-33	10 YR 5/4	LOSA	NCM	Boulder impasse
103	1	Humic	0-10	10 YR 3/3	Humic	NCM	
103	2	A	10-35	10 YR 4/4	SALO	NCM	Boulder impasse
104	1	A	0-20	10 YR 4/4	SALO	NCM	
104	2	C/Fill	20-28	10 YR 5/4	SAGR	NCM	Sterile Subsoil
105	1	A	0-25	10 YR 4/4	SALO	NCM	
105	2	C	25-37	10 YR 5/4	Sand	NCM	Sterile Subsoil
106	1	A	0-15	10 YR 4/3	SALO	NCM	
106	2	B	15-35	10 YR 5/8	SALO	NCM	
106	3	C	35-51	10 YR 6/6	COSA	NCM	Sterile Subsoil
107	1	Humic	0-3	10 YR 3/2	SILO	NCM	
107	2	A	3-13	10 YR 4/4	SILO	NCM	
107	3	B	13-30	10 YR 5/8	SALO	NCM	
107	4	C	30-45	10 YR 6/6	COSA	NCM	Sterile Subsoil
108	1	A	0-15	10 YR 4/6	SALO	NCM	
108	2	B	15-32	10 YR 5/8	COSA	NCM	Boulder impasse
109	1	A	0-16	10 YR 4/3	SALO	NCM	
109	2	B	16-36	10 YR 5/8	SALO	NCM	
109	3	C	36-58	10 YR 6/6	COSA	NCM	Sterile Subsoil
110	1	A	0-20	10 YR 4/4	SALO	NCM	
110	2	Fill	20-30	10 YR 5/4	SAGR	NCM	Sterile Subsoil
111	1	Humic	0-5	10 YR 2/1	SILO	NCM	
111	2	A	5-20	10 YR 3/3	SALO	NCM	
111	3	B	20-38	10 YR 5/8	SALO	NCM	
111	4	C	38-50	2.5 YR 4/6	COSA	NCM	Photo Taken
112	1	Humic	0-5	10 YR 2/1	SILO	NCM	
112	2	A	5-60	10 YR 3/3	SILO	NCM	Sterile Subsoil
113	1	Humic	0-9	10 YR 2/1	SILO	NCM	
113	2	A	9-19	10 YR 3/3	SALO	NCM	
113	3	B	19-46	10 YR 5/8	SALO	NCM	
113	4	C	46-60	2.5 YR 4/6	COSA	NCM	Sterile Subsoil
114	1	Humic	0-3	10 YR 2/1	SILO	NCM	
114	2	A	3-15	10 YR 3/3	SILO	NCM	
114	3	B	15-33	10 YR 5/4	SALO	NCM	
114	4	C	33-45	2.5 YR 4/6	COSA	NCM	Sterile Subsoil
115	1	A/Fill	0-57	10 YR 4/3	COSA	NCM	Sterile Subsoil

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
116	1	Humic	0-5	10 YR 2/1	SILO	NCM	
116	2	Fill1	5-24	10 YR 3/3	SILO	NCM	Boulder impasse
117	1	Fill2	0-59	10 YR 3/3	SALO	NCM	On Pushpile
118	1	Humic	0-5	10 YR 2/1	SILO	NCM	
118	2	A	5-16	10 YR 3/3	SILO	NCM	
118	3	B	16-45	10 YR 4/4	SALO	NCM	Sterile Subsoil
119	1	Humic	0-6	10 YR 2/1	SILO	NCM	
119	2	A	6-21	10 YR 3/4	SALO	NCM	
119	3	B	21-33	10 YR 5/8	SALO	NCM	
119	4	C	33-50	10 YR 6/6	COSA	NCM	Sterile Subsoil
120	1	Humic	0-6	10 YR 2/1	SILO	NCM	
120	2	A	6-19	10 YR 3/3	SALO	NCM	
120	3	B	19-35	10 YR 5/8	COSA	NCM	
120	4	C	35-53	2.5 YR 4/6	COSA	NCM	Sterile Subsoil
121	1	Humic	0-7	10 YR 2/1	SILO	NCM	
121	2	A	7-14	10 YR 3/3	SALO	NCM	
121	3	B	14-30	10 YR 5/8	SALO	NCM	
121	4	C	30-50	2.5 YR 4/6	Sand	NCM	Sterile Subsoil
122	1	Humic	0-7	10 YR 2/1	SILO	NCM	
122	2	A	7-20	10 YR 3/3	SALO	NCM	
122	3	B	20-35	10 YR 5/6	SALO	NCM	
122	4	C	35-50	10 YR 6/6	SALO	NCM	Boulder impasse
123	1	Humic	0-6	10 YR 2/1	SILO	NCM	
123	2	A	6-17	10 YR 3/3	SALO	NCM	
123	3	B	17-40	10 YR 5/8	SALO	NCM	
123	4	C	40-45	2/5 YR 4/4	COSA	NCM	Boulder impasse
124	1	Humic	0-6	10 YR 2/1	SILO	NCM	
124	2	A	6-20	10 YR 3/3	SALO	NCM	
124	3	B	20-50	10 YR 6/5	COSA	NCM	
124	4	C	50-62	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
125	1	Humic	0-3	10 YR 2/1	SILO	NCM	
125	2	A	3-12	10 YR 3/3	SALO	NCM	
125	3	B	12-27	10 YR 5/8	SALO	NCM	
125	4	C	27-46	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
126	1	Humic	0-6	10 YR 2/1	SILO	NCM	
126	2	A	6-19	10 YR 3/3	SALO	NCM	
126	3	B	19-29	10 YR 5/8	SALO	NCM	
126	4	C	29-40	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
127	1	Humic	0-10	10 YR 2/1	SILO	NCM	
127	2	A	10-20	10 YR 3/4	SALO	NCM	
127	3	B	20-35	10 YR 5/8	SALO	NCM	
127	4	C	35-47	10 YR 6/6	Sand	NCM	Sterile Subsoil

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
128	1	Humic	0-6	10 YR 2/1	SILO	NCM	
128	2	A	6-20	10 YR 3/4	SALO	NCM	
128	3	B	20-39	10 YR 5/8	SALO	NCM	
128	4	C	39-59	10 YR 6/6	COSA	NCM	Sterile Subsoil
129	1	Humic	0-5	10 YR 2/1	SILO	NCM	
129	2	A	5-20	10 YR 3/3	SILO	NCM	
129	3	B	20-29	10 YR 5/4	SALO	NCM	
129	4	C	29-50	10 YR 6/6	Sand	NCM	Sterile Subsoil
130	1	Fill	0-14	10 YR 2/2	SALO	NCM	
130	2	Fill	14-35	7.5 YR 4/4	SALO	NCM	Fill - disturbed
131	1	Humic	0-3	10 YR 2/1	SILO	NCM	
131	2	A	3-14	10 YR 3/4	SALO	NCM	
131	3	B	14-40	10 YR 5/8	SALO	NCM	
131	4	C	40-50	2.5 Y 4/4	COSA	NCM	Photo Taken
132	1	Humic	0-9	10 YR 2/1	SILO	NCM	
132	2	A	9-25	10 YR 3/4	SALO	NCM	
132	3	B	25-35	10 YR 5/8	SALO	NCM	
132	4	C	35-53	2.5 Y 4/4	FISA	NCM	Sterile Subsoil
133	1	Humic	0-5	10 YR 2/1	SILO	NCM	
133	2	A	5-14	10 YR 3/4	SALO	NCM	
133	3	B	14-32	10 YR 5/8	SALO	NCM	
133	4	C	32-38	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
134	1	Humic	0-9	10 YR 2/1	SILO	NCM	offset 2m east
134	2	A	9-25	10 YR 3/3	SALO	NCM	
134	3	B	25-35	10 YR 5/8	SALO	NCM	
134	4	C	35-52	2.5 Y 4/4	COSA	NCM	Sterile Subsoil
135	1	Humic	0-5	10 YR 2/1	SILO	NCM	
135	2	A	5-15	10 YR 4/3	SALO	NCM	
135	3	B	15-35	10 YR 5/8	CLLO	NCM	
135	4	C	35-50	2/5 Y 4/4	CLLO	NCM	Sterile Subsoil
136	1	Humic	0-8	10 YR 2/1	SILO	NCM	
136	2	A	8-20	10 YR 4/3	SALO	NCM	
136	3	B	20-30	10 YR 5/8	SALO	NCM	
136	4	C	30-45	2.5 Y 4/4	COSA	NCM	Boulder impasse
137	1	Fill 1	0-38	10 YR 4/4	SILO	NCM	
137	2	Fill 2	38-59	10 YR 6/6	SILO	NCM	Fill - disturbed
138	1	Fill 1	0-31	10 YR 4/4	SILO	NCM	
138	2	Fill 2	31-55	10 YR 6/6	SALO	NCM	Fill - disturbed
139	1	Humic	0-5	10 YR 3/2	SILO	NCM	
139	2	A	5-15	10 YR 4/4	SALO	NCM	
139	3	B	15-30	10 YR 5/8	SALO	NCM	
139	4	C	30-53	10 YR 6/6	COSA	NCM	Entirely gravel (fill or till)
140	1	Fill	0-50	10 YR 4/4	SALO	1 Whiteware	

ST No.	Level	Horizon	Depth cmbs	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termination
141	1	Fill 1	0-47	10 YR 4/4	SILO	NCM	
141	2	Fill 2	47-53	10 YR 6/6	SICLLO	NCM	Fill
142	1	Fill	0-53	10 YR 4/4	GRSALO	Brick and Glass discarded	Fill
143	1	A	0-27	10 YR 4/4	SALO	NCM	Root Obstruction
144	1	Fill	0-27	10 YR 4/4	GRSALO	NCM	Boulder impasse
145	1	Fill	0-40	10 YR 4/4	GRSALO	NCM	Fill
146	1	Fill	0-26	10 YR 5/8	SALO	NCM	Surface 20th c. scatter, clam shell. Boulder impasse
147	1	Fill	0-55	10 YR 4/4	SALO	1 ceramic whiteware	Surface - quartz point
147	2	C	55-60	10 YR 5/4	Sand	NCM	Depth
148	1	Fill	0-30	10 YR 4/4	SALO	1 - brick	
148	2	C	30-39	10 YR 5/4	Sand	NCM	Boulder impasse
149	1	Humic	0-22	10 YR 2/1	SILO	NCM	Boulder impasse
150	1	Humic	0-28	10 YR 2/1	SILO	NCM	Boulder impasse
151	1	Fill	0-25	10 YR 4/4	GRSALO	NCM	Fill
152	1	Fill	0-44	10 YR 4/4	GRSALO	NCM	Fill

Unit	Level	No.	Functional Group	Class	Material	Type	Object	Part	Description
ST 66	8-23cm	3	Architectural	Brick	Brick		Brick	Fragment	Historic
ST 93	24-40cm	1	Architectural	Metal	Metal		Nail	Fragment	Historic
ST 140	50cm	1	Food Related	Ceramic	Earthenware	Whiteware	Plate	Fragment	Historic
ST 146	Surface	3	Unaffiliated	Ceramic	Earthenware	Redware	Flowerpot	Fragment	
ST 146	Surface	3	Food Related	Ceramic	Earthenware	Blue Painted	Plate	Fragment	
ST 146	Surface	18	Food Related	Ceramic	Earthenware	Whiteware	Plate	Fragment	
ST 146	Surface	1	Unaffiliated	Ceramic	Stoneware		Sewer Pipe	Fragment	
ST 146	Surface	1	Unaffiliated	Glass	Clear		Ornamental	Fragment	
ST 146	Surface	1	Architectural	Brick	Brick			Fragment	
ST 146	Surface	8	Unaffiliated	Glass	Olive		Vessel	Fragment	
ST 146	Surface	2	Unaffiliated	Glass	Green		Vessel	Fragment	
ST 146	Surface	3	Architectural	Glass	Clear		Window	Fragment	
ST 146	Surface	2	Unaffiliated	Glass	Amber		Vessel	Fragment	
ST 146	Surface	4	Unaffiliated	Glass	Blue	Tinted	Vessel	Fragment	1 has 'T L' embossed on it
ST 146	Surface	5	Unaffiliated	Glass	Clear	Bottle necks	Vessel	Fragment	Borden Milk Bottles
ST 146	Surface	15	Unaffiliated	Glass	Clear		Vessel	Fragment	
ST 146	Surface	6	Unaffiliated	Glass	Clear	Embossed glass	Vessel	Fragment	Various embossed words and designs. 1 maybe Owens Illinois Glass Company.
ST 146	Surface	1	Unaffiliated	Glass	Milk Glass		Vessel	Fragment	
ST 146	Surface	1	Food Related	Ceramic	Decorated	Pattern	Plate	Fragment	
ST 146	Surface	1	Food Related	Ceramic	Maker's Mark	Whiteware	Plate	Fragment	U.S.Q.M.C.' United States Quarter Masters Corp. , 1940s
ST 146	Surface	3	Food Related	Ceramic	Gold trimmed	Whiteware	Vessel	Fragment	1 is a spout
ST 146	Surface	3	Food Related	Ceramic	Handle	Embossed glass	Vessel	Fragment	Blue decoration
ST 146	Surface	3	Food Related	Ceramic	blue decorated		Vessel	Fragment	
ST 146	Surface	6	Food Related	Shell	Clam			Fragment	
ST 147	Surface	1	Unaffiliated		Quartz		Point	Fragment	Precontact
ST 147	0-55cm	1	Food Related	Ceramic	Earthenware	Whiteware	Plate	Fragment	Historic
ST148	0-30cm	1	Architectural	Brick	Brick			Fragment	Historic
Disturbed area	Surface	1	Unaffiliated	Glass	Clear	Decorated		Fragment	
Disturbed area	Surface	2	Food Related	Glass	Green		Vessel	Fragment	Buffalo' Embossed
Disturbed area	Surface	1	Food Related	Ceramic		Whiteware	Plate	Fragment	
Disturbed area	Surface	3	Food Related	Glass	tinted		Vessel	Fragment	
Disturbed area	Surface	1	Food Related	Porcelin	Decorated		Plate	Fragment	
Disturbed area	Surface	4	Food Related	Ceramic	Decorated		Plate	Fragment	Blue transferware

Appendix E

Wastewater Report

ALFONZETTI ENGINEERING, P.C.
1100 Route 52, Carmel, N.Y. 10512

(845) 228-9800 Info@AlfonzettiEng.com

PROJECT: Eagle Ridge
3 North Castle Drive
Town of North Castle, NY

SCOPE: Eagle Ridge
Wastewater Report

DATE: November 15, 2018
Revised: April 30, 2020

Existing Facilities and Capacity:

The subject site is part of Sewer District Number 2. Sewer District Number 2 (SD2) is located in downtown Armonk and extends into the Route 128 corridor. The district includes five (5) sewer pump stations along with collection lines and manholes. All flow is tributary to the wastewater treatment plant located on Business Park Drive. The plant was originally built in 1983 to treat approximately 380,000 gallons per day (gpd). The plant was upgraded to treat 450,000 gpd then subsequently upgraded again to treat 500,000 gpd.

Based on a 1998 Sewer Agreement between International Business Machines (IBM) and the Town of North Castle; IBM has a reserve wastewater treatment capacity of 135,000 gpd. Upon selling the subject site to the applicant IBM transferred 35,000 gpd of their reserve to the applicant, to use for the development of the subject property.

ALFONZETTI ENGINEERING, P.C.
1100 Route 52, Carmel, N.Y. 10512

(845) 228-9800 Info@AlfonzettiEng.com

PROJECT: Eagle Ridge
3 North Castle Drive
Town of North Castle, NY

SCOPE: Eagle Ridge
Wastewater Report

DATE: November 15, 2018
Revised: April 21, 2020

Existing Facilities and Capacity:

The subject site is part of Sewer District Number 2. Sewer District Number 2 (SD2) is located in downtown Armonk and extends into the Route 128 corridor. The district includes five (5) sewer pump stations along with collection lines and manholes. All flow is tributary to the wastewater treatment plant located on Business Park Drive. The plant was originally built in 1983 to treat approximately 380,000 gallons per day (gpd). The plant was upgraded to treat 450,000 gpd then subsequently upgraded again to treat 500,000 gpd.

Based on a 1998 Sewer Agreement between International Business Machines (IBM) and the Town of North Castle; IBM has a reserve wastewater treatment capacity of 135,000 gpd. Upon selling the subject site to the applicant IBM transferred 35,000 gpd of their reserve to the applicant, to use for the development of the subject property.

Anticipated Flows:

The proposed development will consist of the following:

- 50 Two Bedroom Age Restricted Townhouses
- 115 Hotel Rooms with
  - Restaurant/Café
  - Lounge/Bar
  - Banquet Hall/Meeting Room
  - Swimming Pool
- 59 Condominiums
  - 20 One Bedroom Apartments
  - 39 Two Bedroom Apartments

The anticipated wastewater flow for the development is as follows:

Use	Units	gpd/unit* (gpd)	Total (gpd)
Townhouses (3 bedroom)	50	125 **	6,250
Total Townhouses	50		**6,250**
Condominiums			
1 bedroom	20	110	2,200
2 bedroom	39	220	8,580
Total Apartments	59		**10,780**
Hotel			
115 Guest rooms	115	110	**12,650**
Amenities			
Restaurant/Café	135	35	4,725
Lounge/Bar	45	20	900
Banquet Room/Boardroom/Meeting room	100	10	1,000
Sub-Total Amenities			6,625
20% Water Saving Devices			1,325
Total Amenities			**5,300**
Total Hotel:			**17,950**
Grand Total:			**34,980**

*Flow Rates taken from *New York State Design Standards for Intermediate Sized Wastewater Treatment Systems, March 5, 2014,* by New York State Department of Environmental Conservation.

** Actual water consumption at two (2) similar developments, was found to be between 63 gallons per day/unit and 136 gallons per day/unit. The flow rate of 125 gallons per unit/day has been accepted by the Town for a recently approved age restricted project.

Disposal and Capacity:

The wastewater from the proposed development is proposed to be collected through sanitary sewer pipes and manholes and will be conveyed to an existing sanitary sewer located in an easement along the eastern property line

The existing sanitary sewer runs along the eastern property line through the Town Park under the Wampus River and terminates at the Wastewater Treatment Plant on Business Park Drive.

Sewer District #2 Capacity and Improvements:

The existing treatment plant has been upgraded to treat 500,000 gpd.

As shown above, the estimated wastewater generated from the development will be 34,980 gpd. As described above the capacity transferred to this development from IBM's reserve is 35,000 gpd. Therefore, the development is within the capacity allocated to this parcel.

Cumulative Impacts:

Cumulative impacts from the following developments are being considered herein:

Senior Housing	16-unit age restricted residential building (age 55 and older) *
Wampus Mills	6-lot residential, single family subdivision*
Mariani Gardens	five 4-bedroom units, sixteen 3-bedroom units, six 2-bedroom units, sixteen 1-bedroom units, (96 bedrooms)
Airport Campus	100,000 sf office space, 125-room hotel, 151-unit multi-family building, 22 townhouses
470 Main Street	six 1-bedroom units, ten 2-bedroom units, (26 bedrooms)
Lumber Yard	36 units

* An additional 16 single family homes (8 homes per project) were added to Sewer District No. 2 with the development of these 2 projects.

Anticipated Flow from developments considered:

Project/Development	Units	gpd/unit* (gpd)	Total (gpd)
Senior Housing			
Proposed 16 units	16	125	2,000
Existing single family	8	300	2,400
Total Senior Housing			4,400
Wampus Mills			
Proposed single family	6	300	1,800
Existing single family	8	300	2,400
Total Wampus Mills			4,200
Mariani Gardens (45 Bedford Road)			
Proposed 4-bedroom	5	440	2,200
Proposed 3-bedroom	16	330	5,280
Proposed 2-bedroom	6	220	1,320
Proposed 1-bedroom	16	110	1,760
Total Mariani Gardens			10,560
Airport Campus			
Proposed office space	100,000	0.1	10,000
Proposed hotel rooms	125	110	13,750
Proposed hotel amenities (assumed)	-	-	28,400
Proposed apartment building (assume 2-bedroom)	151	220	33,220
Proposed townhouses (assume 4-bedroom)	22	440	9,680
Total Airport Campus			95,050
470 Main Street			
Proposed 2-bedroom	10	220	2,200
Proposed 1-bedroom	6	110	660
Total 470 Main Street			2,860
Lumber yard			
Proposed 36 units (assume 2 bedroom)	36	220	7,920
Total Lumber Yard			7,920

*Flow Rates taken from *New York State Design Standards For Intermediate Sized Wastewater Treatment Systems, March 5, 2014,* by New York State Department of Environmental Conservation.

The Senior Housing project and the Wampus Mills subdivision are both currently under construction. The estimated wastewater flow from these two projects is anticipated to be 8,600 gpd. This includes the existing 16 single family houses along Old Mount Kisco Road. These two projects have already been accounted for in the existing treatment plant capacity.

According to the Full Environmental Assessment Form (FEAF) submitted for Mariani Gardens, the estimated increase of wastewater flow will be 7,000 gpd above the amount currently approved for the Mariani site. Therefore, the additional flow to the treatment plant is 7,000 gpd for the Mariani Gardens proposed project.

The Airport Campus project will generate an estimated 95,050 gpd of wastewater. This project is not tributary to SD#2 Wastewater Treatment Plant and therefore, will not increase the wastewater flow to the treatment plant.

470 Main Street and the Lumber Yard projects will generate an estimated 10,780 gpd of wastewater. Although these projects are not under construction, they have been approved and their respective wastewater flows have been included in the existing capacity of the treatment plant.

An upgrade to the wastewater treatment plant will be needed to treat the anticipated increase in wastewater flow from the Mariani Gardens development.

Mitigation:

No mitigation is needed, since the wastewater generated from the Eagle Ridge Development is within the allocated amount, and is already included within the treatment plant's capacity.

ALFONZETTI ENGINEERING, P.C.
Ralph Alfonzetti, P.E.

Appendix F

Traffic Study

EAGLE RIDGE

ATTACHMENT A

UPDATED ANALYSIS

TABLE NO. 2-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		YEAR 2018 EXISTING						YEAR 2022 NO-BUILD						YEAR 2022 BUILD					
			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM		
			LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
1	NYS ROUTE 22 OLD ROUTE 22 / OLD POST ROAD SIGNALIZED																			
	NYS ROUTE 22	NB L	D	42.5	0.46	D	46.4	0.46	D	42.6	0.47	D	47.6	0.49	D	42.6	0.47	D	47.6	0.49
		NB T	A	9.4	0.37	A	8.6	0.33	A	9.7	0.39	A	9.2	0.38	A	9.8	0.40	A	9.3	0.39
		NB R	A	1.8	0.10	A	0.0	0.01	A	2.0	0.11	A	0.0	0.01	A	2.0	0.11	A	0.0	0.01
		NB APPROACH	**B**	**11.6**	**----**	**B**	**12.5**	**----**	**B**	**11.9**	**----**	**B**	**12.8**	**----**	**B**	**11.9**	**----**	**B**	**12.8**	**----**
	NYS ROUTE 22	SB L	D	42.7	0.58	D	43.9	0.13	D	43.1	0.59	D	44.4	0.14	D	43.1	0.59	D	44.4	0.14
		SB T	A	7.5	0.32	B	11.8	0.45	A	7.9	0.37	B	12.3	0.48	A	8.0	0.38	B	12.4	0.49
		SB R	A	0.0	0.02	A	0.0	0.02	A	0.0	0.02	A	0.0	0.02	A	0.0	0.02	A	0.0	0.02
		SB APPROACH	**B**	**12.5**	**----**	**B**	**11.9**	**----**	**B**	**12.5**	**----**	**B**	**12.5**	**----**	**B**	**12.5**	**----**	**B**	**12.6**	**----**
	OLD ROUTE 22	SEB L-T	D	35.5	0.06	D	41.6	0.31	D	35.6	0.06	D	41.8	0.32	D	35.6	0.06	D	41.8	0.32
		SEB R	C	26.7	0.20	C	26.7	0.32	C	26.8	0.21	C	26.8	0.34	C	26.8	0.21	C	26.8	0.34
		SEB APPROACH	**C**	**28.5**	**----**	**C**	**30.9**	**----**	**C**	**28.5**	**----**	**C**	**31.0**	**----**	**C**	**28.5**	**----**	**C**	**31.0**	**----**
	OLD POST ROAD	NWB L-T	D	35.4	0.03	D	46.3	0.47	D	35.6	0.03	D	46.9	0.49	D	35.6	0.03	D	46.9	0.49
		NWB R	A	4.2	0.04	C	20.7	0.34	A	4.2	0.04	C	24.0	0.36	A	4.2	0.04	C	24.9	0.37
		NWB APPROACH	**B**	**13.4**	**----**	**C**	**30.7**	**----**	**B**	**13.4**	**----**	**C**	**32.9**	**----**	**B**	**13.4**	**----**	**C**	**33.5**	**----**
		OVERALL	**B**	**12.6**	**----**	**B**	**15.4**	**----**	**B**	**12.8**	**----**	**B**	**15.9**	**----**	**B**	**12.7**	**----**	**B**	**15.9**	**----**
2	NYS ROUTE 22 NYS ROUTE 128 / NORTH CASTLE DRIVE (IBM) SIGNALIZED																			
	NYS ROUTE 22	NEB L	E	56.2	0.71	D	53.9	0.78	E	57.6	0.73	E	56.9	0.82	E	59.7	0.74	E	58.5	0.83
		NEB T	C	26.1	0.39	B	10.6	0.29	C	27.5	0.42	B	11.3	0.32	C	28.8	0.44	B	18.2	0.39
		NEB R	A	5.5	0.21	A	0.0	0.01	A	5.5	0.22	A	0.0	0.01	A	5.4	0.24	A	0.1	0.05
		NEB APPROACH	**C**	**29.4**	**----**	**C**	**23.3**	**----**	**C**	**30.6**	**----**	**C**	**24.7**	**----**	**C**	**31.4**	**----**	**C**	**29.2**	**----**
	NYS ROUTE 22	SWB L	D	51.5	0.83	D	52.0	0.07	D	52.4	0.84	D	53.6	0.08	D	53.0	0.84	E	58.4	0.44
		SWB T	C	20.3	0.45	C	28.0	0.52	C	22.0	0.51	C	30.5	0.56	C	22.2	0.50	C	31.6	0.57
		SWB R	A	3.9	0.21	A	6.0	0.18	A	4.0	0.22	A	6.0	0.19	A	4.0	0.22	A	6.2	0.20
		SWB APPROACH	**C**	**27.3**	**----**	**C**	**25.1**	**----**	**C**	**28.3**	**----**	**C**	**27.2**	**----**	**C**	**29.1**	**----**	**C**	**30.0**	**----**
	NYS ROUTE 128	SB L-T	D	43.7	0.53	D	38.1	0.48	D	44.3	0.55	D	38.9	0.50	D	44.7	0.55	D	38.1	0.48
		SB R	A	8.3	0.44	A	6.7	0.37	A	8.2	0.47	A	6.6	0.38	A	8.0	0.47	A	6.3	0.37
		SB APPROACH	**C**	**24.0**	**----**	**C**	**21.2**	**----**	**C**	**23.6**	**----**	**C**	**21.3**	**----**	**C**	**23.8**	**----**	**C**	**21.0**	**----**
	NORTH CASTLE DRIVE (IBM)	NB L	C	34.3	0.07	D	39.6	0.48	C	34.2	0.07	D	41.2	0.50	D	37.9	0.22	D	41.9	0.54
		NB T	C	32.7	0.01	C	30.2	0.06	C	32.3	0.01	C	30.6	0.06	C	32.6	0.02	C	30.2	0.07
		NB R	A	0.1	0.03	A	6.7	0.49	A	0.1	0.03	A	6.6	0.50	A	5.3	0.17	A	6.4	0.52
		NB APPROACH	**C**	**21.3**	**----**	**B**	**17.3**	**----**	**C**	**21.2**	**----**	**B**	**17.7**	**----**	**B**	**18.7**	**----**	**B**	**17.8**	**----**
		OVERALL	**C**	**27.5**	**----**	**C**	**22.5**	**----**	**C**	**28.3**	**----**	**C**	**23.8**	**----**	**C**	**28.7**	**----**	**C**	**26.3**	**----**

TABLE NO. 2-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		YEAR 2018 EXISTING						YEAR 2022 NO-BUILD						YEAR 2022 BUILD					
			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM		
			LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
3	NYS ROUTE 22 MAPLE AVENUE / BUSINESS PARK DRIVE SIGNALIZED																			
	NYS ROUTE 22	EB L	E	60.2	0.34	E	69.1	0.26	E	63.6	0.38	E	71.0	0.31	E	63.6	0.38	E	71.1	0.31
		EB T-R	C	31.6	0.55	D	50.5	0.88	C	33.0	0.54	E	55.5	0.93	C	34.2	0.58	E	57.3	0.94
		EB APPROACH	**C**	**33.6**	**----**	**D**	**51.0**	**----**	**D**	**35.1**	**----**	**E**	**55.9**	**----**	**D**	**36.1**	**----**	**E**	**57.6**	**----**
	NYS ROUTE 22	WB L	E	59.2	0.64	E	70.8	0.61	E	64.9	0.70	E	74.4	0.65	E	64.9	0.70	E	75.1	0.65
		WB T	C	34.3	0.79	C	27.4	0.40	D	37.4	0.82	C	30.0	0.44	D	38.5	0.84	C	30.6	0.47
		WB R	B	13.1	0.48	A	4.0	0.36	B	15.1	0.49	A	4.0	0.40	B	15.5	0.50	A	4.9	0.40
		WB APPROACH	**C**	**32.3**	**----**	**C**	**25.4**	**----**	**D**	**35.5**	**----**	**C**	**27.1**	**----**	**D**	**36.3**	**----**	**C**	**27.8**	**----**
	BUSINESS PARK DRIVE	NB L-T	E	58.4	0.50	E	78.5	0.79	E	62.0	0.55	F	85.8	0.84	E	62.0	0.55	F	87.4	0.85
		NB R	A	1.5	0.21	B	11.7	0.57	A	1.7	0.22	B	12.3	0.58	A	1.7	0.22	B	12.5	0.59
		NB APPROACH	**D**	**38.0**	**----**	**D**	**41.6**	**----**	**D**	**40.5**	**----**	**D**	**45.2**	**----**	**D**	**40.5**	**----**	**D**	**46.0**	**----**
	MAPLE AVENUE	SB L	E	56.9	0.71	E	68.0	0.83	E	61.4	0.77	E	73.8	0.86	E	61.4	0.77	E	75.3	0.87
		SB T-R	C	33.6	0.38	C	28.2	0.21	C	33.8	0.41	C	28.5	0.23	C	33.8	0.41	C	28.4	0.23
		SB APPROACH	**D**	**48.5**	**----**	**E**	**59.7**	**----**	**D**	**51.5**	**----**	**E**	**64.2**	**----**	**D**	**51.5**	**----**	**E**	**65.3**	**----**
		OVERALL	**C**	**35.0**	**----**	**D**	**41.7**	**----**	**D**	**37.8**	**----**	**D**	**45.3**	**----**	**D**	**38.5**	**----**	**D**	**46.3**	**----**
4	NYS ROUTE 128 (MAIN STREET) & KENT PLACE/BEDFORD ROAD UNSIGNALIZED																			
	NYS ROUTE 128 (MAIN STREET)	NB L-T-R	A	8.1	0.024	A	8.1	0.043	A	8.2	0.026	A	8.2	0.045	A	8.2	0.026	A	8.2	0.046
	NYS ROUTE 128 (MAIN STREET)	SB L-T-R	A	8.0	0.049	A	8.3	0.037	A	8.0	0.052	A	8.4	0.044	A	8.0	0.053	A	8.4	0.044
	KENT PLACE	EB L-T-R	B	13.7	0.040	C	17.2	0.145	B	14.4	0.043	C	18.8	0.167	B	14.4	0.044	C	19.0	0.168
	BEDFORD ROAD	WB L-T-R	C	18.4	0.285	C	24.5	0.395	C	20.3	0.333	D	29.2	0.465	C	20.5	0.336	D	29.7	0.470
5	MAPLE AVENUE & BEDFORD ROAD SIGNALIZED																			
	BEDFORD ROAD	EB L-T-R	C	21.3	0.61	B	13.9	0.53	C	24.2	0.66	B	14.3	0.55	C	24.2	0.66	B	14.3	0.55
		EB APPROACH	**C**	**21.3**	**----**	**B**	**13.9**	**----**	**C**	**24.2**	**----**	**B**	**14.3**	**----**	**C**	**24.2**	**----**	**B**	**14.3**	**----**
	BEDFORD ROAD	WB L-T-R	C	24.4	0.45	B	19.1	0.27	C	26.8	0.52	B	19.9	0.30	C	26.8	0.52	B	19.9	0.30
		WB APPROACH	**C**	**24.4**	**----**	**B**	**19.1**	**----**	**C**	**26.8**	**----**	**B**	**19.9**	**----**	**C**	**26.8**	**----**	**B**	**19.9**	**----**
	MAPLE AVENUE	NB L	B	14.6	0.31	B	12.9	0.26	B	15.7	0.34	B	13.4	0.30	B	15.7	0.34	B	13.4	0.30
		NB T-R	B	17.0	0.56	B	14.3	0.39	B	18.6	0.60	B	14.6	0.41	B	18.6	0.60	B	14.6	0.41
		NB APPROACH	**B**	**16.3**	**----**	**B**	**13.9**	**----**	**B**	**17.8**	**----**	**B**	**14.2**	**----**	**B**	**17.8**	**----**	**B**	**14.2**	**----**
	MAPLE AVENUE	SB L-T-R	C	24.5	0.45	C	22.3	0.41	C	25.7	0.47	C	22.7	0.44	C	25.7	0.47	C	22.7	0.44
		SB APPROACH	**C**	**24.5**	**----**	**C**	**22.3**	**----**	**C**	**25.7**	**----**	**C**	**22.7**	**----**	**C**	**25.7**	**----**	**C**	**22.7**	**----**
		OVERALL	**C**	**20.0**	**----**	**B**	**16.4**	**----**	**C**	**22.0**	**----**	**B**	**16.9**	**----**	**C**	**22.0**	**----**	**B**	**16.9**	**----**
6	NYS ROUTE 128 (MAIN STREET) & WHIPPOORWILL ROAD/MAPLE AVENUE SIGNALIZED																			
	WHIPPOORWILL ROAD	EB L-T-R	B	11.0	0.31	B	12.0	0.33	B	12.0	0.31	B	13.0	0.34	B	12.1	0.31	B	13.1	0.34
		EB APPROACH	**B**	**11.0**	**----**	**B**	**12.0**	**----**	**B**	**12.0**	**----**	**B**	**13.0**	**----**	**B**	**12.1**	**----**	**B**	**13.1**	**----**
	MAPLE AVENUE	WB L-T-R	B	19.3	0.52	C	22.1	0.69	C	21.2	0.55	C	24.9	0.72	C	21.3	0.55	C	25.0	0.73
		WB APPROACH	**B**	**19.3**	**----**	**C**	**22.1**	**----**	**C**	**21.2**	**----**	**C**	**24.9**	**----**	**C**	**21.3**	**----**	**C**	**25.0**	**----**
	NYS ROUTE 128 (MAIN STREET)	NB L-T-R	A	9.5	0.30	B	18.3	0.65	A	9.6	0.32	B	19.1	0.67	A	9.6	0.33	B	19.1	0.67
		NB APPROACH	**A**	**9.5**	**----**	**B**	**18.3**	**----**	**A**	**9.6**	**----**	**B**	**19.1**	**----**	**A**	**9.6**	**----**	**B**	**19.1**	**----**
	NYS ROUTE 128 (MAIN STREET)	SB L-T-R	B	14.8	0.64	B	16.9	0.57	B	16.2	0.68	B	17.9	0.60	B	16.2	0.69	B	18.0	0.61
		SB APPROACH	**B**	**14.8**	**----**	**B**	**16.9**	**----**	**B**	**16.2**	**----**	**B**	**17.9**	**----**	**B**	**16.2**	**----**	**B**	**18.0**	**----**
		OVERALL	**B**	**14.1**	**----**	**B**	**18.1**	**----**	**B**	**15.3**	**----**	**B**	**19.5**	**----**	**B**	**15.3**	**----**	**B**	**19.6**	**----**

TABLE NO. 2-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		YEAR 2018 EXISTING						YEAR 2022 NO-BUILD						YEAR 2022 BUILD					
			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM		
			LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
7	NYS ROUTE 22 & NYS ROUTE 120 (NORTH)																			
	SIGNALIZED																			
	NYS ROUTE 22	NB L	D	48.1	0.60	F	146.1	1.21	D	49.6	0.62	F	190.3	1.32	D	49.9	0.62	F	194.5	1.33
		NB T	B	13.3	0.28	A	9.2	0.29	B	13.1	0.29	A	9.9	0.33	B	13.1	0.29	B	10.3	0.34
		NB APPROACH	**C**	**22.4**	**----**	**E**	**79.4**	**----**	**C**	**22.6**	**----**	**F**	**98.7**	**----**	**C**	**22.6**	**----**	**F**	**100.2**	**----**
	NYS ROUTE 22	SB T	D	39.0	0.70	D	41.4	0.71	D	41.7	0.77	D	42.7	0.74	D	41.7	0.77	D	43.9	0.75
		SB R	A	0.2	0.14	A	0.8	0.40	A	0.2	0.15	A	0.8	0.42	A	0.2	0.15	A	0.9	0.42
		SB APPROACH	**C**	**29.7**	**----**	**C**	**21.6**	**----**	**C**	**32.2**	**----**	**C**	**22.5**	**----**	**C**	**31.9**	**----**	**C**	**23.1**	**----**
	NYS ROUTE 120	SEB L	E	60.0	0.92	D	48.1	0.69	E	75.3	0.99	D	49.8	0.71	F	80.3	1.01	D	50.4	0.73
		SEB R	A	1.1	0.47	A	0.2	0.15	A	1.2	0.50	A	0.2	0.16	A	1.2	0.50	A	0.2	0.16
		SEB APPROACH	**C**	**26.1**	**----**	**C**	**25.8**	**----**	**C**	**32.4**	**----**	**C**	**26.8**	**----**	**C**	**34.7**	**----**	**C**	**27.8**	**----**
		OVERALL	**C**	**26.3**	**----**	**D**	**46.8**	**----**	**C**	**30.0**	**----**	**E**	**56.3**	**----**	**C**	**30.9**	**----**	**E**	**57.2**	**----**
8	NYS ROUTE 22 & NYS ROUTE 120 (SOUTH)																			
	SIGNALIZED																			
	NYS ROUTE 22	NB T	C	26.4	0.59	C	28.0	0.65	C	29.3	0.63	C	29.6	0.67	C	29.5	0.63	C	29.8	0.67
		NB R	A	8.9	0.19	A	1.9	0.03	B	11.7	0.23	A	1.8	0.03	B	11.8	0.23	A	1.8	0.03
		NB APPROACH	**C**	**22.4**	**----**	**C**	**26.7**	**----**	**C**	**25.0**	**----**	**C**	**28.2**	**----**	**C**	**25.2**	**----**	**C**	**28.4**	**----**
	NYS ROUTE 22	SB L	C	24.9	0.70	C	30.8	0.40	C	25.0	0.72	C	33.3	0.45	C	25.0	0.72	C	33.6	0.45
		SB T	A	5.1	0.29	B	10.6	0.37	A	4.9	0.29	B	11.6	0.39	A	4.9	0.30	B	11.6	0.40
		SB APPROACH	**B**	**15.6**	**----**	**B**	**15.8**	**----**	**B**	**15.9**	**----**	**B**	**17.3**	**----**	**B**	**15.9**	**----**	**B**	**17.4**	**----**
	NYS ROUTE 120	WB L-R	C	30.3	0.16	C	31.7	0.68	C	33.4	0.19	C	33.4	0.71	C	33.6	0.19	C	33.7	0.71
		WB APPROACH	**C**	**30.3**	**----**	**C**	**31.7**	**----**	**C**	**33.4**	**----**	**C**	**33.4**	**----**	**C**	**33.6**	**----**	**C**	**33.7**	**----**
		OVERALL	**B**	**18.0**	**----**	**C**	**22.2**	**----**	**B**	**19.0**	**----**	**C**	**23.7**	**----**	**B**	**19.0**	**----**	**C**	**23.9**	**----**
9	KING STREET & OLD POST ROAD																			
	UNSIGNALIZED																			
	OLD POST ROAD	WB T-R	A	9.4	0.040	C	15.6	0.167	A	9.6	0.043	C	17.8	0.200	A	9.6	0.043	C	17.9	0.201
10	NYS ROUTE 22 & I-684 SB ON/OFF RAMP																			
	SIGNALIZED																			
	NYS ROUTE 22	EB T	A	6.8	0.23	A	3.7	0.47	A	7.2	0.25	A	4.1	0.50	A	7.3	0.27	A	4.2	0.51
		EB R	A	0.2	0.16	A	0.3	0.19	A	0.3	0.18	A	0.3	0.20	A	0.3	0.19	A	0.3	0.21
		EB APPROACH	**A**	**4.7**	**----**	**A**	**3.1**	**----**	**A**	**5.0**	**----**	**A**	**3.5**	**----**	**A**	**5.0**	**----**	**A**	**3.5**	**----**
	NYS ROUTE 22	WB T	A	7.7	0.37	A	2.9	0.30	A	8.3	0.40	A	3.1	0.32	A	8.3	0.40	A	3.1	0.34
		WB R	A	0.3	0.18	A	0.1	0.08	A	0.3	0.20	A	0.1	0.09	A	0.3	0.20	A	0.1	0.09
		WB APPROACH	**A**	**5.9**	**----**	**A**	**2.5**	**----**	**A**	**6.3**	**----**	**A**	**2.7**	**----**	**A**	**6.3**	**----**	**A**	**2.8**	**----**
	I-684 SB OFF RAMP	SB L (NYS 22 EB)	D	47.6	0.77	D	46.7	0.40	D	46.9	0.77	D	47.0	0.42	D	46.9	0.77	D	47.0	0.42
		SB R (NYS 22 WB)	A	0.9	0.49	A	0.2	0.14	A	1.1	0.52	A	0.2	0.15	A	1.1	0.53	A	0.2	0.16
		SB APPROACH	**B**	**13.1**	**----**	**A**	**9.9**	**----**	**B**	**12.8**	**----**	**B**	**10.1**	**----**	**B**	**12.7**	**----**	**A**	**9.4**	**----**
		OVERALL	**A**	**8.4**	**----**	**A**	**3.6**	**----**	**A**	**8.5**	**----**	**A**	**3.9**	**----**	**A**	**8.4**	**----**	**A**	**3.9**	**----**
11	NYS ROUTE 22 & I-684 NB ON/OFF RAMP																			
	SIGNALIZED																			
	NYS ROUTE 22	EB L	E	58.3	0.52	D	48.3	0.82	E	58.4	0.55	D	47.0	0.83	E	58.4	0.59	D	46.8	0.83
		EB T	A	0.2	0.25	A	0.2	0.33	A	0.2	0.27	A	0.3	0.36	A	0.2	0.27	A	0.3	0.36
		EB APPROACH	**A**	**8.3**	**----**	**B**	**18.9**	**----**	**A**	**8.7**	**----**	**B**	**18.5**	**----**	**A**	**9.7**	**----**	**B**	**18.6**	**----**
	NYS ROUTE 22	WB T	A	2.9	0.27	B	10.7	0.30	A	3.2	0.30	B	12.0	0.33	A	3.4	0.30	B	12.4	0.33
		WB R	A	2.5	0.06	B	11.1	0.26	A	2.6	0.07	B	12.4	0.28	A	2.8	0.07	B	12.7	0.28
		WB APPROACH	**A**	**2.9**	**----**	**B**	**10.8**	**----**	**A**	**3.1**	**----**	**B**	**12.1**	**----**	**A**	**3.4**	**----**	**B**	**12.5**	**----**
	I-684 NB OFF RAMP	SB R (NYS 22 WB)	A	0.3	0.22	A	0.4	0.24	A	0.3	0.23	A	0.4	0.25	A	0.4	0.24	A	0.4	0.27
		SB APPROACH	**A**	**0.3**	**----**	**A**	**0.4**	**----**	**A**	**0.3**	**----**	**A**	**0.4**	**----**	**A**	**0.4**	**----**	**A**	**0.4**	**----**
		OVERALL	**A**	**4.9**	**----**	**B**	**14.4**	**----**	**A**	**5.3**	**----**	**B**	**14.6**	**----**	**A**	**5.8**	**----**	**B**	**14.7**	**----**

TABLE NO. 2-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION	YEAR 2018 EXISTING						YEAR 2022 NO-BUILD						YEAR 2022 BUILD					
		WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM			WEEKDAY AM			WEEKDAY PM		
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
12	NEW CASTLE DRIVE & PROPOSED SITE DRIVEWAY																		
	UNSIGNALIZED																		
	NEW CASTLE DRIVE SB L-T	----	----	----	----	----	----	----	----	----	----	----	----	A	7.3	0.030	A	8.7	0.087
	PROPOSED SITE DRIVEWAY WB L-R	----	----	----	----	----	----	----	----	----	----	----	----	A	8.7	0.076	B	10.3	0.089
42	I-684 NB OFF-RAMP TO NYS ROUTE 22 NB																		
	UNSIGNALIZED																		
	I-684 NB OFF-RAMP NB R	B	14.3	0.323	F	123.1	1.138	C	15.2	0.354	F	195.7	1.322	C	15.6	0.362	F	206.0	1.346

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.

TABLE NO. 3-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		STORAGE LENGTH (FT.)	YEAR 2018 EXISTING				YEAR 2022 NO-BUILD				YEAR 2022 BUILD			
				WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM	
				50%	95%	50%	95%	50%	95%	50%	95%	50%	95%	50%	95%
1	NYS ROUTE 22 OLD ROUTE 22 / OLD POST ROAD SIGNALIZED														
	NYS ROUTE 22	NB L	350'	38'	95'	46'	97'	40'	99'	48'	100'	40'	99'	48'	100'
		NB T	500'+	60'	188'	95'	153'	65'	203'	112'	182'	67'	207'	117'	188'
		NB R	230'	0'	18'	0'	0'	0'	20'	0'	0'	0'	20'	0'	0'
	NYS ROUTE 22	SB L	315'	58'	132'	7'	26'	61'	136'	8'	28'	61'	136'	8'	28'
		SB T	500'+	53'	171'	149'	243'	63'	201'	163'	268'	65'	208'	167'	275'
		SB R	155'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
	OLD ROUTE 22	SEB L-T	150'	5'	26'	26'	64'	5'	26'	28'	65'	5'	26'	28'	65'
		SEB R	150'	23'	51'	56'	102'	23'	53'	59'	105'	23'	53'	59'	105'
	OLD POST ROAD	NWB L-T	500'+	2'	13'	44'	94'	2'	13'	46'	98'	2'	13'	46'	98'
		NWB R	125'	0'	7'	38'	87'	0'	7'	48'	100'	0'	7'	50'	102'
2	NYS ROUTE 22 NYS ROUTE 128 / NORTH CASTLE DRIVE (IBM) SIGNALIZED														
	NYS ROUTE 22	NEB L	680'	113'	191'	164'	271'	123'	201'	189'	308'	124'	201'	195'	318'
		NEB T	500'+	125'	197'	87'	180'	139'	211'	103'	209'	142'	212'	157'	246'
		NEB R	350'	0'	44'	0'	0'	0'	44'	0'	0'	0'	47'	0'	0'
	NYS ROUTE 22	SWB L	400'	229'	404'	4'	20'	242'	436'	4'	21'	270'	485'	42'	92'
		SWB T	500'+	162'	275'	174'	288'	191'	323'	199'	313'	196'	324'	209'	324'
		SWB R	250'	0'	43'	0'	42'	0'	45'	0'	43'	0'	45'	0'	45'
	NYS ROUTE 128	SB L-T	500'+	91'	158'	89'	169'	100'	166'	96'	175'	101'	168'	100'	177'
		SB R	250'	0'	57'	0'	55'	0'	59'	0'	56'	0'	59'	0'	55'
	NORTH CASTLE DRIVE (IBM)	NB L	0'	6	23'	66'	135'	7'	23'	73'	142'	20'	50'	84'	159'
		NB T	500'+	2'	9'	14'	39'	2'	9'	14'	39'	4'	16'	16'	42'
		NB R	500'	0'	0'	0'	66'	0'	0'	0'	67'	0'	21'	0'	69'

TABLE NO. 3-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		STORAGE LENGTH (FT.)	YEAR 2018 EXISTING				YEAR 2022 NO-BUILD				YEAR 2022 BUILD			
				WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM	
				50%	95%	50%	95%	50%	95%	50%	95%	50%	95%	50%	95%
3	NYS ROUTE 22 MAPLE AVENUE / BUSINESS PARK DRIVE SIGNALIZED														
	NYS ROUTE 22	EB L	600'	32'	79'	27'	64'	35'	86'	33'	73'	35'	86'	33'	73'
		EB T-R	500'+	172'	283'	485'	665'	196'	317'	567'	764'	218'	348'	596'	809'
	NYS ROUTE 22	WB L	300'	125'	235'	112'	188'	133'	268'	119'	196'	133'	268'	119'	196'
		WB T	500'+	384'	643'	212'	292'	457'	803'	238'	315'	475'	835'	264'	347'
		WB R	225'	71'	202'	0'	61'	91'	239'	0'	64'	94'	243'	9'	77'
	BUSINESS PARK DRIVE	NB L-T	425'	83'	162'	184'	330'	90'	173'	198'	352'	90'	173'	198'	352'
		NB R	125'	0'	0'	0'	85'	0'	0'	2'	89'	0'	0'	3'	90'
	MAPLE AVENUE	SB L	300'	169'	282'	286'	415'	193'	317'	308'	464'	193'	317'	308'	464'
		SB T-R	470'	63'	134'	36'	86'	70'	145'	40'	92'	70'	145'	40'	92'
4	NYS ROUTE 128 (MAIN STREET) & KENT PLACE/BEDFORD ROAD UNSIGNALIZED														
	NYS ROUTE 128 (MAIN STREET)	NB L-T-R	430'	--	3'	--	3'	--	3'	--	3'	--	3'	--	3'
	NYS ROUTE 128 (MAIN STREET)	SB L-T-R	500'	--	5'	--	3'	--	5'	--	3'	--	5'	--	3'
	KENT PLACE	EB L-T-R	500'+	--	3'	--	13'	--	3'	--	15'	--	3'	--	15'
	BEDFORD ROAD	WB L-T-R	500'	--	30'	--	45'	--	35'	--	58'	--	35'	--	60'
5	MAPLE AVENUE & BEDFORD ROAD SIGNALIZED														
	BEDFORD ROAD	EB L-T-R	260'	23'	89'	5'	60'	32'	109'	7'	65'	32'	109'	7'	65'
	BEDFORD ROAD	WB L-T-R	360'	49'	119'	30'	77'	60'	144'	34'	88'	60'	144'	34'	88'
	MAPLE AVENUE	NB L	120'	27'	82'	22'	74'	30'	87'	25'	84'	30'	87'	25'	84'
		NB T-R	470'	72'	202'	60'	171'	83'	221'	64'	184'	83'	221'	64'	184'
	MAPLE AVENUE	SB L-T-R	500'+	52'	132'	54'	141'	57'	139'	58'	151'	57'	139'	58'	151'
6	NYS ROUTE 128 (MAIN STREET) & WHIPPOORWILL ROAD/MAPLE AVENUE SIGNALIZED														
	WHIPPOORWILL ROAD	EB L-T-R	500'+	12'	54'	23'	80'	14'	62'	27'	89'	14'	62'	27'	89'
	MAPLE AVENUE	WB L-T-R	190'	33'	105'	68'	193'	39'	123'	78'	219'	39'	123'	79'	221'
	NYS ROUTE 128 (MAIN STREET)	NB L-T-R	500'	24'	76'	72'	208'	27'	82'	86'	231'	28'	83'	88'	233'
	NYS ROUTE 128 (MAIN STREET)	SB L-T-R	355'	60'	180'	54'	164'	73'	204'	66'	183'	73'	205'	67'	185'

TABLE NO. 3-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		STORAGE LENGTH (FT.)	YEAR 2018 EXISTING				YEAR 2022 NO-BUILD				YEAR 2022 BUILD			
				WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM	
				50%	95%	50%	95%	50%	95%	50%	95%	50%	95%	50%	95%
7	NYS ROUTE 22 & NYS ROUTE 120 (NORTH)														
	SIGNALIZED														
	NYS ROUTE 22	NB L	250'	104'	181'	548'	915'	116'	190'	648'	989'	117'	190'	666'	989'
		NB T	500'+	86'	115'	87'	148'	92'	122'	110'	175'	93'	124'	117'	179'
	NYS ROUTE 22	SB T	500'+	201'	290'	205'	299'	241'	342'	227'	323'	245'	348'	235'	330'
		SB R	700'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
	NYS ROUTE 120	SEB L	200'	321'	620'	167'	269'	374'	664'	187'	287'	401'	677'	200'	303'
		SEB R	500'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
8	NYS ROUTE 22 & NYS ROUTE 120 (SOUTH)														
	SIGNALIZED														
	NYS ROUTE 22	NB T	500'+	88'	153'	115'	191'	103'	173'	127'	216'	105'	175'	131'	221'
		NB R	200'	22'	62'	0'	7'	35'	83'	0'	8'	35'	84'	0'	8'
	NYS ROUTE 22	SB L	215'	131'	206'	48'	95'	160'	245'	57'	112'	161'	247'	58'	114'
		SB T	500'+	48'	67'	85'	146'	52'	72'	96'	167'	53'	73'	98'	170'
	NYS ROUTE 120	WB L-R	500'+	15'	49'	132'	237'	18'	55'	151'	271'	19'	56'	152'	274'
9	KING STREET & OLD POST ROAD														
	UNSIGNALIZED														
	OLD POST ROAD	WB T-R	500'+	--	3'	--	15'	--	3'	--	18'	--	3'	--	18'
10	NYS ROUTE 22 & I-684 SB ON/OFF RAMP														
	SIGNALIZED														
	NYS ROUTE 22	EB T	500'+	54'	94'	110'	168'	62'	104'	127'	196'	66'	111'	132'	203'
		EB R	500'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
	NYS ROUTE 22	WB T	500'+	101'	163'	58'	91'	114'	181'	65'	102'	116'	186'	67'	106'
		WB R	1000'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
	I-684 SB OFF RAMP	SB L (NYS 22 EB)	200'	173'	244'	36'	74'	180'	253'	40'	80'	180'	253'	40'	80'
		SB R (NYS 22 WB)	500'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
11	NYS ROUTE 22 & I-684 NB ON/OFF RAMP														
	SIGNALIZED														
	NYS ROUTE 22	EB L	400'	52'	84'	276'	319'	59'	91'	294'	340'	68'	102'	302'	346'
		EB T	500'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
	NYS ROUTE 22	WB T	400'	56'	85'	109'	168'	64'	97'	127'	190'	68'	103'	132'	195'
		WB R	200'	9'	20'	82'	148'	10'	22'	93'	164'	10'	23'	94'	166'
	I-684 NB OFF RAMP	SB R (NYS 22 WB)	500'+	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'

TABLE NO. 3-R

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION	STORAGE LENGTH (FT.)	YEAR 2018 EXISTING				YEAR 2022 NO-BUILD				YEAR 2022 BUILD			
			WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM		WEEKDAY AM		WEEKDAY PM	
			50%	95%	50%	95%	50%	95%	50%	95%	50%	95%	50%	95%
12	NEW CASTLE DRIVE & PROPOSED SITE DRIVEWAY													
	UNSIGNALIZED													
	NEW CASTLE DRIVE SB L-T	345'	--	--	--	--	--	--	--	--	--	3'	--	8'
	PROPOSED SITE DRIVEWAY WB L-R		--	--	--	--	--	--	--	--	--	5'	--	8'
42	I-684 NB OFF-RAMP TO NYS ROUTE 22 NB													
	UNSIGNALIZED													
	I-684 NB OFF-RAMP NB R	1000'	--	35'	--	403'	--	40'	--	535'	--	40'	--	548'

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 18-4

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

For approach-based and intersection wide assessments, LOS is defined solely by control delay.

LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 19-1

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

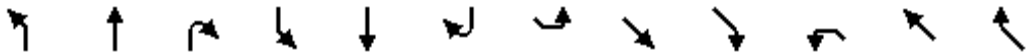
Exhibit 20-2

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

CAPACITY ANALYSIS

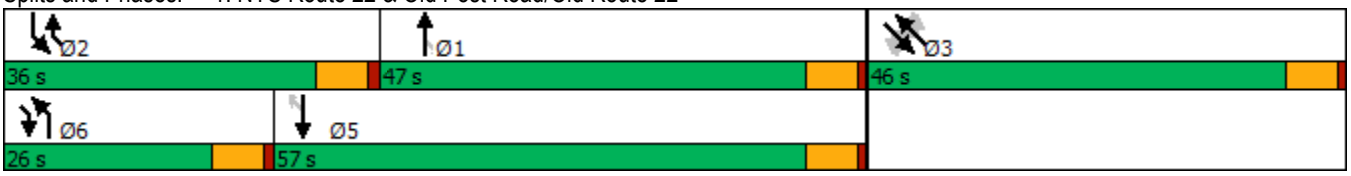
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	88	767	104	136	770	21	9	5	53	3	2	12
Future Volume (vph)	88	767	104	136	770	21	9	5	53	3	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969			0.971	
Satd. Flow (prot)	1770	3406	1599	1711	3438	1538	0	1662	1501	0	1320	1380
Flt Permitted	0.950			0.950				0.966			0.941	
Satd. Flow (perm)	1770	3406	1599	1711	3438	1538	0	1653	1501	0	1279	1361
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						25
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)							4					4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	1%	2%	5%	5%	11%	0%	4%	33%	50%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	91	791	107	140	794	22	9	5	55	3	2	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	791	107	140	794	22	0	14	55	0	5	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.5	47.8	47.8	10.8	54.6	54.6		10.3	13.9		10.3	14.2
Actuated g/C Ratio	0.11	0.63	0.63	0.14	0.72	0.72		0.13	0.18		0.13	0.19
v/c Ratio	0.46	0.37	0.10	0.58	0.32	0.02		0.06	0.20		0.03	0.04
Control Delay	42.5	9.4	1.8	42.7	7.5	0.0		35.5	26.7		35.4	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	42.5	9.4	1.8	42.7	7.5	0.0		35.5	26.7		35.4	4.2
LOS	D	A	A	D	A	A		D	C		D	A
Approach Delay		11.6			12.5			28.5			13.4	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	38	60	0	58	53	0		5	23		2	0
Queue Length 95th (ft)	95	188	18	132	171	0		26	51		13	7
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	475	2133	1049	689	2458	1121		888	509		687	630
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.19	0.37	0.10	0.20	0.32	0.02		0.02	0.11		0.01	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 76.3			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	12	3	9	127	23	189	176	480	132	372	726	167
Future Volume (vph)	12	3	9	127	23	189	176	480	132	372	726	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.959		0.950			0.950		
Satd. Flow (prot)	1357	1429	1455	0	1927	1495	1662	3471	1553	1787	3539	1553
Flt Permitted	0.605				0.757		0.950			0.950		
Satd. Flow (perm)	864	1429	1455	0	1521	1495	1662	3471	1553	1787	3539	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			195			136			172
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	33%	33%	11%	4%	4%	8%	5%	4%	4%	1%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	12	3	9	131	24	195	181	495	136	384	748	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	3	9	0	155	195	181	495	136	384	748	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

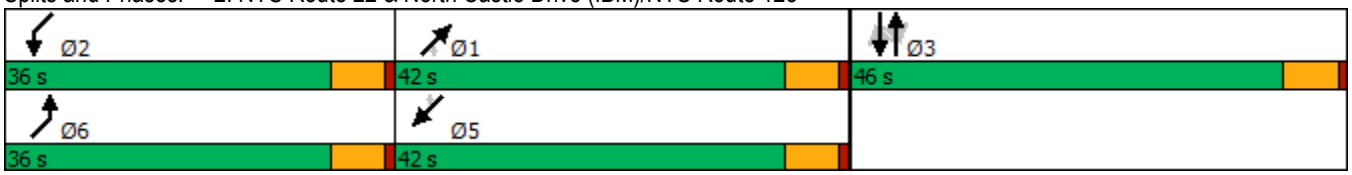
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	19.0	19.0	19.0		19.0	19.0	15.3	36.4	36.4	25.8	46.9	46.9
Actuated g/C Ratio	0.19	0.19	0.19		0.19	0.19	0.15	0.37	0.37	0.26	0.47	0.47
v/c Ratio	0.07	0.01	0.03		0.53	0.44	0.71	0.39	0.21	0.83	0.45	0.21
Control Delay	34.3	32.7	0.1		43.7	8.3	56.2	26.1	5.5	51.5	20.3	3.9
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	32.7	0.1		43.7	8.3	56.2	26.1	5.5	51.5	20.3	3.9
LOS	C	C	A		D	A	E	C	A	D	C	A
Approach Delay		21.3			24.0			29.4			27.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	6	2	0		91	0	113	125	0	229	162	0
Queue Length 95th (ft)	23	9	0		158	57	191	197	44	#404	275	43
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	351	580	638		618	723	506	1269	654	544	1669	823
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.01		0.25	0.27	0.36	0.39	0.21	0.71	0.45	0.21

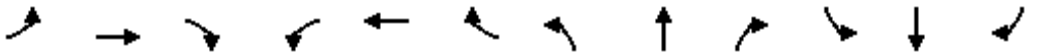
Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 99.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

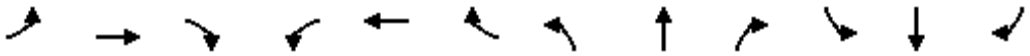
Queue shown is maximum after two cycles.

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	438	135	168	1129	352	67	43	62	225	59	69
Future Volume (vph)	43	438	135	168	1129	352	67	43	62	225	59	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.965				0.850			0.850		0.919	
Flt Protected	0.950			0.950				0.970		0.950		
Satd. Flow (prot)	1419	3299	0	1728	3539	1509	0	1821	1583	1703	1643	0
Flt Permitted	0.950			0.950				0.970		0.950		
Satd. Flow (perm)	1419	3299	0	1728	3539	1509	0	1815	1583	1703	1643	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				218			124		38	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	23%	7%	1%	1%	2%	7%	2%	0%	2%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	45	461	142	177	1188	371	71	45	65	237	62	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	603	0	177	1188	371	0	116	65	237	135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												



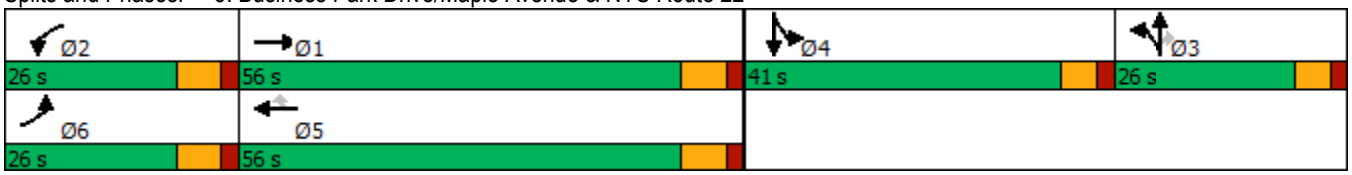
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	10.4	36.5		17.7	47.3	47.3		14.1	14.1	21.6	21.6	
Actuated g/C Ratio	0.09	0.33		0.16	0.43	0.43		0.13	0.13	0.19	0.19	
v/c Ratio	0.34	0.55		0.64	0.79	0.48		0.50	0.21	0.71	0.38	
Control Delay	60.2	31.6		59.2	34.3	13.1		58.4	1.5	56.9	33.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	60.2	31.6		59.2	34.3	13.1		58.4	1.5	56.9	33.6	
LOS	E	C		E	C	B		E	A	E	C	
Approach Delay		33.6			32.3			38.0			48.5	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	32	172		125	384	71		83	0	169	63	
Queue Length 95th (ft)	79	283		235	#643	202		162	0	282	134	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	282	1608		343	1708	841		361	414	580	584	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.16	0.38		0.52	0.70	0.44		0.32	0.16	0.41	0.23	

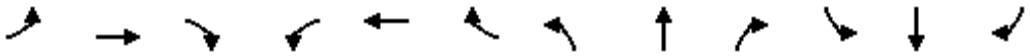
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 110.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 35.0		Intersection LOS: C	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	38	16	44	26	167	65	58	307	16
Future Volume (vph)	1	5	10	38	16	44	26	167	65	58	307	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.913			0.939			0.966			0.994	
Flt Protected		0.997			0.981			0.995			0.992	
Satd. Flow (prot)	0	1549	0	0	1370	0	0	1521	0	0	1590	0
Flt Permitted		0.997			0.981			0.995			0.992	
Satd. Flow (perm)	0	1549	0	0	1370	0	0	1521	0	0	1590	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	12					12				12		12
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	16%	6%	16%	4%	8%	12%	3%	6%	19%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	5	11	41	17	48	28	182	71	63	334	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	106	0	0	281	0	0	414	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

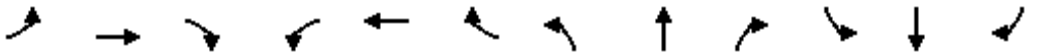
Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	5	10	38	16	44	26	167	65	58	307	16
Future Vol, veh/h	1	5	10	38	16	44	26	167	65	58	307	16
Conflicting Peds, #/hr	12	0	0	0	0	12	0	0	0	12	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	16	6	16	4	8	12	3	6	19
Mvmt Flow	1	5	11	41	17	48	28	182	71	63	334	17

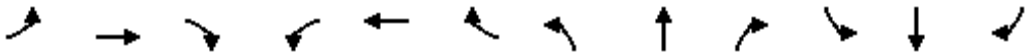
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	799	802	355	763	775	242	363	0	0	265	0	0
Stage 1	481	481	-	286	286	-	-	-	-	-	-	-
Stage 2	318	321	-	477	489	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.46	6.76	6.46	4.14	-	-	4.13	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.644	4.054	3.444	2.236	-	-	2.227	-	-
Pot Cap-1 Maneuver	293	306	687	292	311	758	1185	-	-	1293	-	-
Stage 1	555	542	-	681	657	-	-	-	-	-	-	-
Stage 2	685	644	-	529	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	239	274	680	262	278	743	1173	-	-	1280	-	-
Mov Cap-2 Maneuver	239	274	-	262	278	-	-	-	-	-	-	-
Stage 1	534	504	-	655	632	-	-	-	-	-	-	-
Stage 2	600	620	-	484	491	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	18.4	0.8	1.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	431	374	1280	-	-
HCM Lane V/C Ratio	0.024	-	-	0.04	0.285	0.049	-	-
HCM Control Delay (s)	8.1	0	-	13.7	18.4	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.2	0.2	-	-



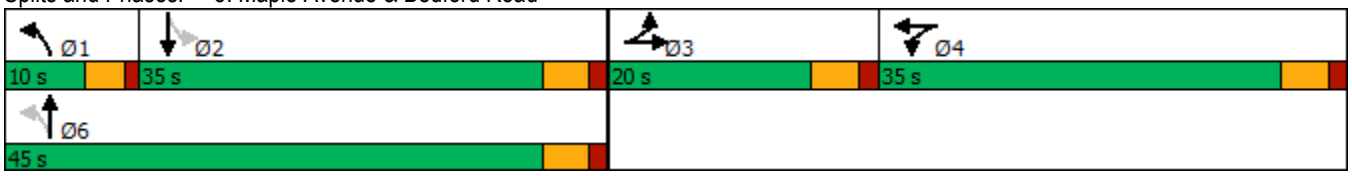
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	42	118	93	38	23	122	175	141	18	142	3
Future Volume (vph)	3	42	118	93	38	23	122	175	141	18	142	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00							
Frt		0.902			0.980			0.933			0.998	
Flt Protected		0.999			0.971		0.950				0.994	
Satd. Flow (prot)	0	1729	0	0	1884	0	1668	1522	0	0	1923	0
Flt Permitted		0.999			0.971		0.495				0.928	
Satd. Flow (perm)	0	1729	0	0	1882	0	869	1522	0	0	1795	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		112			9			48			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	5%	10%	4%	2%	4%	17%	28%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	49	137	108	44	27	142	203	164	21	165	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	179	0	142	367	0	0	189	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												

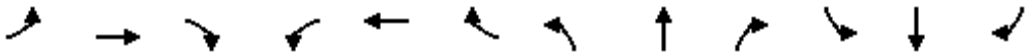


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		7.2			12.4		25.3	24.3			14.0	
Actuated g/C Ratio		0.12			0.21		0.43	0.41			0.24	
v/c Ratio		0.61			0.45		0.31	0.56			0.45	
Control Delay		21.3			24.4		14.6	17.0			24.5	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		21.3			24.4		14.6	17.0			24.5	
LOS		C			C		B	B			C	
Approach Delay		21.3			24.4			16.3			24.5	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		23			49		27	72			52	
Queue Length 95th (ft)		89			119		82	202			132	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		533			986		454	1072			936	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.35			0.18		0.31	0.34			0.20	

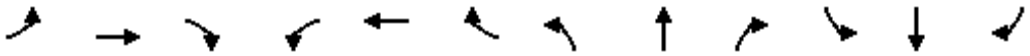
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 59.4			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 20.0		Intersection LOS: C	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	57	49	41	34	105	19	132	32	103	279	4
Future Volume (vph)	14	57	49	41	34	105	19	132	32	103	279	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.945			0.921			0.976			0.999	
Flt Protected		0.994			0.989			0.995			0.987	
Satd. Flow (prot)	0	1506	0	0	1532	0	0	1474	0	0	1612	0
Flt Permitted		0.945			0.894			0.941			0.859	
Satd. Flow (perm)	0	1432	0	0	1384	0	0	1394	0	0	1401	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		49										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)			1	1					3	3		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	10%	6%	0%	3%	1%	16%	13%	3%	5%	6%	50%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	15	60	52	43	36	111	20	139	34	108	294	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	190	0	0	193	0	0	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		11.1			11.1			19.0			19.0	
Actuated g/C Ratio		0.27			0.27			0.46			0.46	
v/c Ratio		0.31			0.52			0.30			0.64	
Control Delay		11.0			19.3			9.5			14.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.0			19.3			9.5			14.8	
LOS		B			B			A			B	
Approach Delay		11.0			19.3			9.5			14.8	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)		12			33			24			60	
Queue Length 95th (ft)		54			105			76			180	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		1098			1050			1272			1278	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.12			0.18			0.15			0.32	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 41.7			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	166	468	628	198	491	665
Future Volume (vph)	166	468	628	198	491	665
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1478	3209	3303	1478	1604	1436
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1478	3209	3303	1478	1604	1436
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				202		436
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	5%	2%	2%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	169	478	641	202	501	679
Shared Lane Traffic (%)						
Lane Group Flow (vph)	169	478	641	202	501	679
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

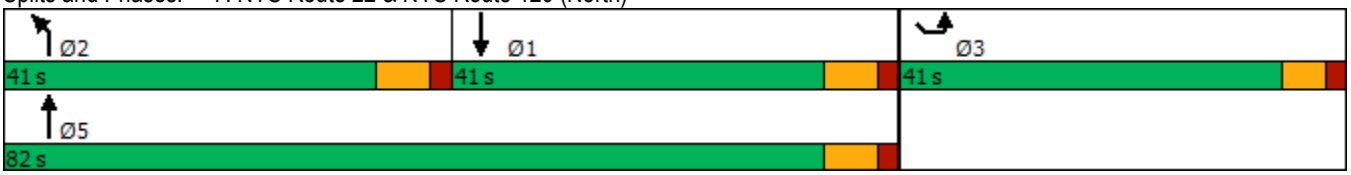
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	20.1	56.0	28.9	104.4	35.3	104.4
Actuated g/C Ratio	0.19	0.54	0.28	1.00	0.34	1.00
v/c Ratio	0.60	0.28	0.70	0.14	0.92	0.47
Control Delay	48.1	13.3	39.0	0.2	60.0	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	13.3	39.0	0.2	60.0	1.1
LOS	D	B	D	A	E	A
Approach Delay		22.4	29.7		26.1	
Approach LOS		C	C		C	
Queue Length 50th (ft)	104	86	201	0	321	0
Queue Length 95th (ft)	181	115	290	0	#620	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	485	2324	1084	1478	542	1436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.21	0.59	0.14	0.92	0.47

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 104.4			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

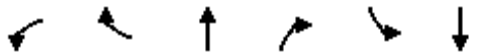
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



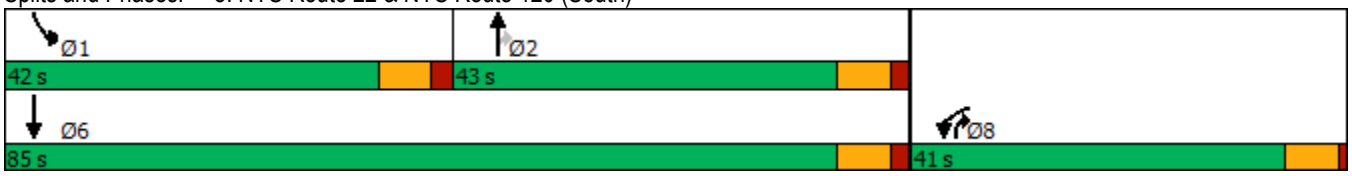
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	0	450	136	683	610
Future Volume (vph)	40	0	450	136	683	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1707	0	3304	1478	3368	3405
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1707	0	3304	1478	3368	3405
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				33		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	3%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	42	0	474	143	719	642
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	0	474	143	719	642
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

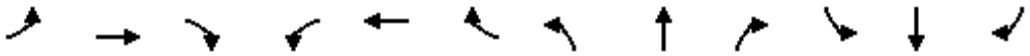


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.1		16.4	33.6	20.6	44.1
Actuated g/C Ratio	0.15		0.24	0.50	0.31	0.65
v/c Ratio	0.16		0.59	0.19	0.70	0.29
Control Delay	30.3		26.4	8.9	24.9	5.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	30.3		26.4	8.9	24.9	5.1
LOS	C		C	A	C	A
Approach Delay	30.3		22.4			15.6
Approach LOS	C		C			B
Queue Length 50th (ft)	15		88	22	131	48
Queue Length 95th (ft)	49		153	62	206	67
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	899		1791	1297	1775	3380
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.05		0.26	0.11	0.41	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 67.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	24	6	1	178	38	0	0	0
Future Volume (vph)	0	0	0	0	24	6	1	178	38	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.972			0.976				
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1835	0	0	1745	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1835	0	0	1745	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	16%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	27	7	1	202	43	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	34	0	0	246	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	24	6	1	178	38	0	0	0
Future Vol, veh/h	0	0	0	0	24	6	1	178	38	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	4	0	0	16	3	0	0	0
Mvmt Flow	0	0	0	0	27	7	1	202	43	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	226	224	0	0	0
Stage 1	-	226	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	713	846	-	-	-
Stage 1	0	759	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	846	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	9.4	
HCM LOS	A	

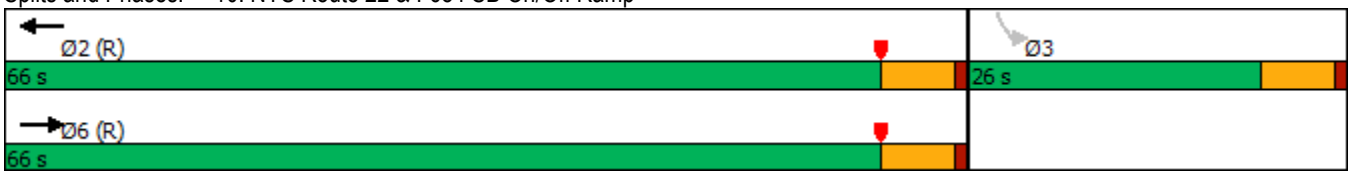
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	846
HCM Lane V/C Ratio	-	-	-	0.04
HCM Control Delay (s)	-	-	-	9.4
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

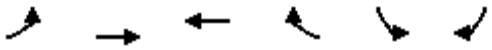
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	495	230	0	813	269	296	0	836	0	0
Future Volume (vph)	0	495	230	0	813	269	296	0	836	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			242			270			419		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	10%	0%	4%	4%	0%	3%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	521	242	0	856	283	312	0	880	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	521	242	0	856	283	312	0	880	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		61.8	92.0		61.8	92.0	18.2		92.0		
Actuated g/C Ratio		0.67	1.00		0.67	1.00	0.20		1.00		
v/c Ratio		0.23	0.16		0.37	0.18	0.77		0.49		
Control Delay		6.8	0.2		7.7	0.3	47.6		0.9		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		6.8	0.2		7.7	0.3	47.6		0.9		
LOS		A	A		A	A	D		A		
Approach Delay		4.7			5.9			13.1			
Approach LOS		A			A			B			
Queue Length 50th (ft)		54	0		101	0	173		0		
Queue Length 95th (ft)		94	0		163	0	244		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2280	1468		2367	1553	466		1812		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.23	0.16		0.36	0.18	0.67		0.49		

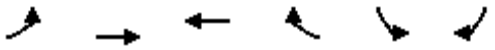
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





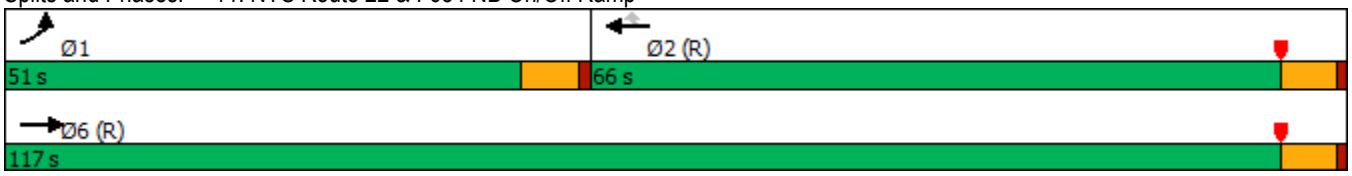
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	135	834	747	73	0	335
Future Volume (vph)	135	834	747	73	0	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3273	3406	3471	1509	0	1580
Flt Permitted	0.950					
Satd. Flow (perm)	3273	3406	3471	1509	0	1580
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						554
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	6%	4%	7%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	139	860	770	75	0	345
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	860	770	75	0	345
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	9.5	117.0	95.5	95.5		117.0
Actuated g/C Ratio	0.08	1.00	0.82	0.82		1.00
v/c Ratio	0.52	0.25	0.27	0.06		0.22
Control Delay	58.3	0.2	2.9	2.5		0.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	58.3	0.2	2.9	2.5		0.3
LOS	E	A	A	A		A
Approach Delay		8.3	2.9		0.3	
Approach LOS		A	A		A	
Queue Length 50th (ft)	52	0	56	9		0
Queue Length 95th (ft)	84	0	85	20		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1258	3406	2832	1231		1580
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.11	0.25	0.27	0.06		0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 4.9		Intersection LOS: A	
Intersection Capacity Utilization 34.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	791	0	0	1082	0	178
Future Volume (vph)	791	0	0	1082	0	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	815	0	0	1115	0	184
Shared Lane Traffic (%)						
Lane Group Flow (vph)	815	0	0	1115	0	184
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	791	0	0	1082	0	178
Future Vol, veh/h	791	0	0	1082	0	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	815	0	0	1115	0	184

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	408
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	568
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	568
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

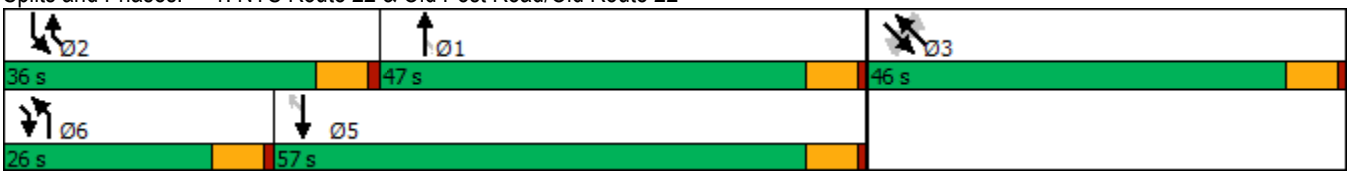
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	568	-	-
HCM Lane V/C Ratio	0.323	-	-
HCM Control Delay (s)	14.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	1.4	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	738	7	13	952	23	46	4	127	73	9	128
Future Volume (vph)	85	738	7	13	952	23	46	4	127	73	9	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.957	
Satd. Flow (prot)	1805	3574	1417	1517	3574	1615	0	1756	1546	0	1818	1583
Flt Permitted	0.950			0.950				0.683			0.713	
Satd. Flow (perm)	1803	3574	1417	1517	3574	1581	0	1254	1546	0	1355	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						45
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	14%	15%	1%	0%	0%	0%	1%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	87	753	7	13	971	23	47	4	130	74	9	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	753	7	13	971	23	0	51	130	0	83	131
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.0	55.0	55.0	5.6	51.6	51.6		11.2	22.4		11.2	19.0
Actuated g/C Ratio	0.10	0.64	0.64	0.07	0.60	0.60		0.13	0.26		0.13	0.22
v/c Ratio	0.46	0.33	0.01	0.13	0.45	0.02		0.31	0.32		0.47	0.34
Control Delay	46.4	8.6	0.0	43.9	11.8	0.0		41.6	26.7		46.3	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	46.4	8.6	0.0	43.9	11.8	0.0		41.6	26.7		46.3	20.7
LOS	D	A	A	D	B	A		D	C		D	C
Approach Delay		12.5			11.9			30.9			30.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	46	95	0	7	149	0		26	56		44	38
Queue Length 95th (ft)	97	153	0	26	243	0		64	102		94	87
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	424	2281	950	534	2140	977		589	603		636	825
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.21	0.33	0.01	0.02	0.45	0.02		0.09	0.22		0.13	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 86.1			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 57.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22



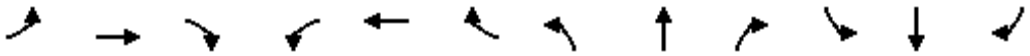
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	123	28	295	162	2	192	270	633	9	7	673	115
Future Volume (vph)	123	28	295	162	2	192	270	633	9	7	673	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.953		0.950			0.950		
Satd. Flow (prot)	1770	1900	1615	0	1953	1615	1711	3574	1324	1805	3539	1599
Flt Permitted	0.593				0.708		0.950			0.950		
Satd. Flow (perm)	1105	1900	1615	0	1451	1615	1709	3574	1324	1805	3539	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			298			194			79			116
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	22%	0%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	124	28	298	164	2	194	273	639	9	7	680	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	28	298	0	166	194	273	639	9	7	680	116
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.3	23.3	23.3		23.3	23.3	20.1	60.8	60.8	5.1	36.7	36.7
Actuated g/C Ratio	0.24	0.24	0.24		0.24	0.24	0.20	0.62	0.62	0.05	0.37	0.37
v/c Ratio	0.48	0.06	0.49		0.48	0.37	0.78	0.29	0.01	0.07	0.52	0.18
Control Delay	39.6	30.2	6.7		38.1	6.7	53.9	10.6	0.0	52.0	28.0	6.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	30.2	6.7		38.1	6.7	53.9	10.6	0.0	52.0	28.0	6.0
LOS	D	C	A		D	A	D	B	A	D	C	A
Approach Delay		17.3			21.2			23.3			25.1	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	66	14	0		89	0	164	87	0	4	174	0
Queue Length 95th (ft)	135	39	66		169	55	271	180	0	20	288	42
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	457	786	843		601	782	531	2209	848	560	1319	656
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.04	0.35		0.28	0.25	0.51	0.29	0.01	0.01	0.52	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 98.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	996	64	122	611	315	140	59	246	313	38	44
Future Volume (vph)	30	996	64	122	611	315	140	59	246	313	38	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.991				0.850			0.850		0.920	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1694	3544	0	1662	3539	1615	0	1807	1615	1787	1712	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1694	3544	0	1662	3539	1615	0	1804	1615	1787	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				328			256		37	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	0%	5%	2%	0%	1%	3%	0%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	31	1038	67	127	636	328	146	61	256	326	40	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	1105	0	127	636	328	0	207	256	326	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												



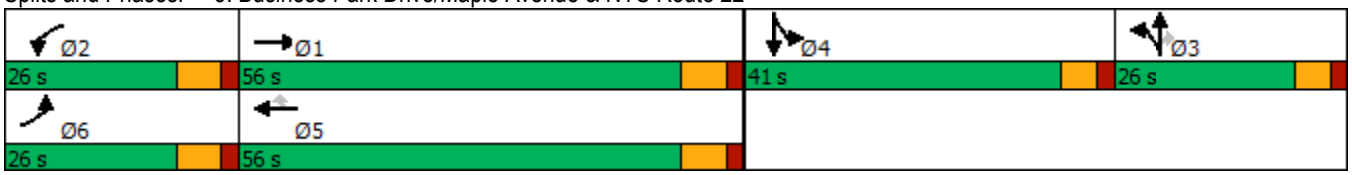
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.2	46.1		16.3	59.2	59.2		19.0	19.0	29.0	29.0	
Actuated g/C Ratio	0.07	0.35		0.12	0.45	0.45		0.15	0.15	0.22	0.22	
v/c Ratio	0.26	0.88		0.61	0.40	0.36		0.79	0.57	0.83	0.21	
Control Delay	69.1	50.5		70.8	27.4	4.0		78.5	11.7	68.0	28.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	69.1	50.5		70.8	27.4	4.0		78.5	11.7	68.0	28.2	
LOS	E	D		E	C	A		E	B	E	C	
Approach Delay		51.0			25.4			41.6			59.7	
Approach LOS		D			C			D			E	
Queue Length 50th (ft)	27	485		112	212	0		184	0	286	36	
Queue Length 95th (ft)	64	#665		188	292	61		#330	85	415	86	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	279	1421		274	1615	915		297	479	505	510	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.11	0.78		0.46	0.39	0.36		0.70	0.53	0.65	0.17	

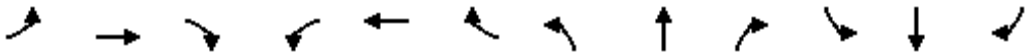
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 131			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 41.7		Intersection LOS: D	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	27	38	31	48	51	322	50	41	273	31
Future Volume (vph)	7	15	27	38	31	48	51	322	50	41	273	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.924			0.945			0.984			0.988	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1561	0	0	1582	0	0	1660	0	0	1662	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1561	0	0	1582	0	0	1660	0	0	1662	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	20			1		21			1	21		20
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	1%	2%	2%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	15	28	39	32	49	52	329	51	42	279	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	120	0	0	432	0	0	353	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

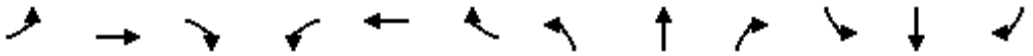
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	15	27	38	31	48	51	322	50	41	273	31
Future Vol, veh/h	7	15	27	38	31	48	51	322	50	41	273	31
Conflicting Peds, #/hr	20	0	0	1	0	21	0	0	1	21	0	20
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	2	1	2	2	1	0
Mvmt Flow	7	15	28	39	32	49	52	329	51	42	279	32

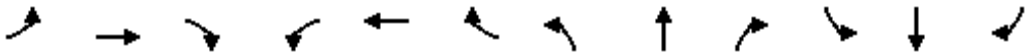
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	919	904	316	882	895	397	331	0	0	401	0	0
Stage 1	399	399	-	480	480	-	-	-	-	-	-	-
Stage 2	520	505	-	402	415	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.3	6.7	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	241	265	723	256	269	650	1228	-	-	1158	-	-
Stage 1	617	592	-	556	543	-	-	-	-	-	-	-
Stage 2	527	529	-	615	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	178	231	710	212	235	627	1208	-	-	1138	-	-
Mov Cap-2 Maneuver	178	231	-	212	235	-	-	-	-	-	-	-
Stage 1	573	556	-	516	504	-	-	-	-	-	-	-
Stage 2	423	491	-	549	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	24.5	1	1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1208	-	-	344	302	1138	-	-
HCM Lane V/C Ratio	0.043	-	-	0.145	0.395	0.037	-	-
HCM Control Delay (s)	8.1	0	-	17.2	24.5	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.8	0.1	-	-



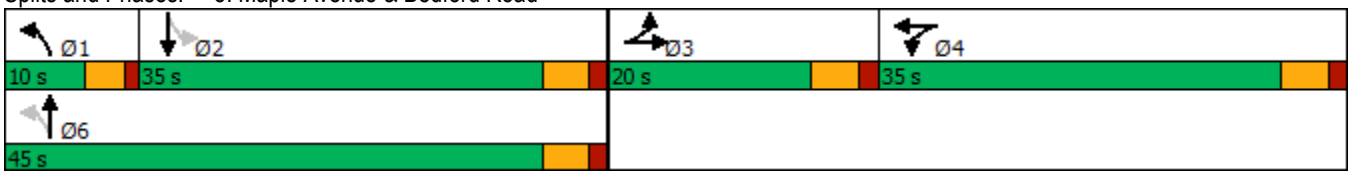
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	10	140	75	22	19	120	262	22	7	180	6
Future Volume (vph)	7	10	140	75	22	19	120	262	22	7	180	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97			1.00							
Frt		0.880			0.978			0.988			0.996	
Flt Protected		0.998			0.969		0.950				0.998	
Satd. Flow (prot)	0	1780	0	0	1978	0	1702	1747	0	0	2046	0
Flt Permitted		0.998			0.969		0.476				0.981	
Satd. Flow (perm)	0	1780	0	0	1971	0	853	1747	0	0	2011	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		151			10			5			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	1%	5%	29%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	11	151	81	24	20	129	282	24	8	194	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	125	0	129	306	0	0	208	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												

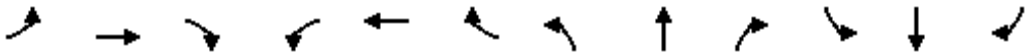


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		5.5			12.2		24.9	23.8			13.3	
Actuated g/C Ratio		0.10			0.23		0.47	0.45			0.25	
v/c Ratio		0.53			0.27		0.26	0.39			0.41	
Control Delay		13.9			19.1		12.9	14.3			22.3	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		13.9			19.1		12.9	14.3			22.3	
LOS		B			B		B	B			C	
Approach Delay		13.9			19.1			13.9			22.3	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		5			30		22	60			54	
Queue Length 95th (ft)		60			77		74	171			141	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		636			1182		501	1350			1199	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.27			0.11		0.26	0.23			0.17	

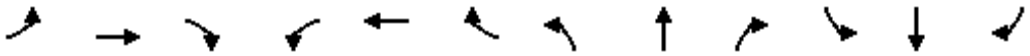
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 52.9			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	72	51	69	76	178	29	295	49	74	214	6
Future Volume (vph)	40	72	51	69	76	178	29	295	49	74	214	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			1.00			1.00	
Frt		0.958			0.926			0.982			0.997	
Flt Protected		0.988			0.989			0.996			0.988	
Satd. Flow (prot)	0	1618	0	0	1528	0	0	1644	0	0	1672	0
Flt Permitted		0.853			0.892			0.956			0.839	
Satd. Flow (perm)	0	1396	0	0	1377	0	0	1577	0	0	1417	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		32										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)	3		2	2		3	4		7	7		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	0%	0%	1%	0%	1%	0%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	42	75	53	72	79	185	30	307	51	77	223	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	336	0	0	388	0	0	306	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		16.5			16.5			17.7			17.7	
Actuated g/C Ratio		0.35			0.35			0.38			0.38	
v/c Ratio		0.33			0.69			0.65			0.57	
Control Delay		12.0			22.1			18.3			16.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.0			22.1			18.3			16.9	
LOS		B			C			B			B	
Approach Delay		12.0			22.1			18.3			16.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		23			68			72			54	
Queue Length 95th (ft)		80			193			208			164	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		993			970			1329			1195	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.17			0.35			0.29			0.26	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 46.5			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	611	581	589	563	249	217
Future Volume (vph)	611	581	589	563	249	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				599		231
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	650	618	627	599	265	231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	650	618	627	599	265	231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.4	70.0	28.6	107.9	24.8	107.9
Actuated g/C Ratio	0.32	0.65	0.27	1.00	0.23	1.00
v/c Ratio	1.21	0.29	0.71	0.40	0.69	0.15
Control Delay	146.1	9.2	41.4	0.8	48.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.1	9.2	41.4	0.8	48.1	0.2
LOS	F	A	D	A	D	A
Approach Delay		79.4	21.6		25.8	
Approach LOS		E	C		C	
Queue Length 50th (ft)	~548	87	205	0	167	0
Queue Length 95th (ft)	#915	148	299	0	269	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	536	2343	1062	1507	552	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.26	0.59	0.40	0.48	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 107.9			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 46.8		Intersection LOS: D	
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

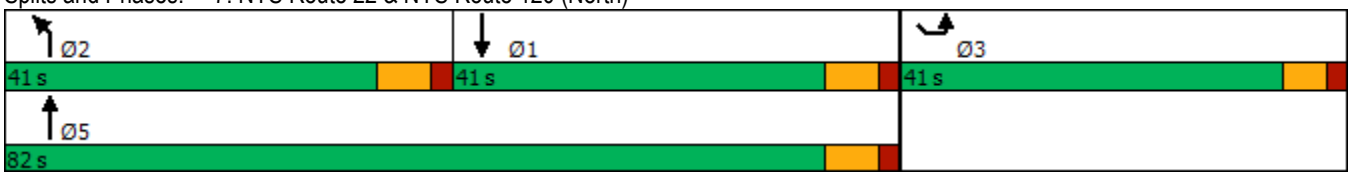
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

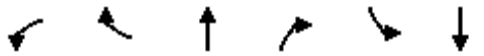
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



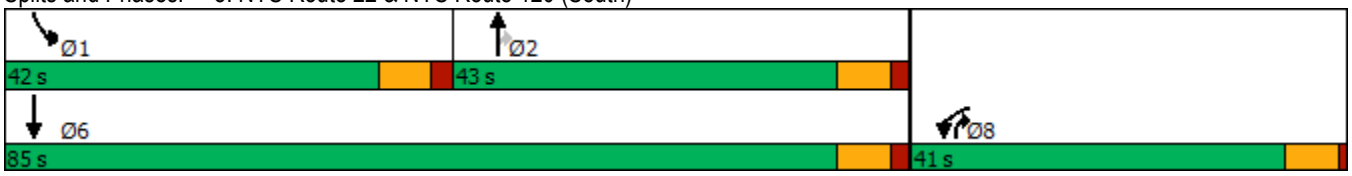
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	277	15	491	25	205	601
Future Volume (vph)	277	15	491	25	205	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.993			0.850		
Flt Protected	0.955				0.950	
Satd. Flow (prot)	1856	0	3403	1464	3335	3472
Flt Permitted	0.955				0.950	
Satd. Flow (perm)	1856	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	2			29		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	326	18	578	29	241	707
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	578	29	241	707
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

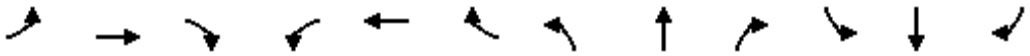


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	19.6		19.0	45.8	13.1	39.4
Actuated g/C Ratio	0.27		0.26	0.63	0.18	0.54
v/c Ratio	0.68		0.65	0.03	0.40	0.37
Control Delay	31.7		28.0	1.9	30.8	10.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	31.7		28.0	1.9	30.8	10.6
LOS	C		C	A	C	B
Approach Delay	31.7		26.7			15.8
Approach LOS	C		C			B
Queue Length 50th (ft)	132		115	0	48	85
Queue Length 95th (ft)	237		191	7	95	146
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	924		1742	1263	1659	3362
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.37		0.33	0.02	0.15	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 72.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	48	7	2	679	28	0	0	0
Future Volume (vph)	0	0	0	0	48	7	2	679	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.982			0.995				
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1848	0	0	2000	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1848	0	0	2000	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	59	9	2	838	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	68	0	0	875	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	48	7	2	679	28	0	0	0
Future Vol, veh/h	0	0	0	0	48	7	2	679	28	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	59	9	2	838	35	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	860	856	0	0	0
Stage 1	-	860	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	370	406	-	-	-
Stage 1	0	470	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	406	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	15.6	
HCM LOS	C	

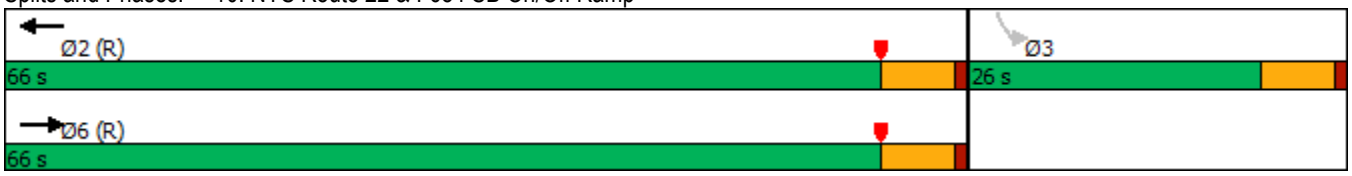
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	406
HCM Lane V/C Ratio	-	-	-	0.167
HCM Control Delay (s)	-	-	-	15.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.6

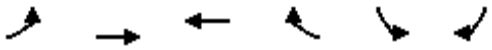
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	1280	275	0	826	118	59	0	222	0	0
Future Volume (vph)	0	1280	275	0	826	118	59	0	222	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			192			116			407		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1391	299	0	898	128	64	0	241	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1391	299	0	898	128	64	0	241	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		76.0	92.0		76.0	92.0	7.3		92.0		
Actuated g/C Ratio		0.83	1.00		0.83	1.00	0.08		1.00		
v/c Ratio		0.47	0.19		0.30	0.08	0.40		0.14		
Control Delay		3.7	0.3		2.9	0.1	46.7		0.2		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		3.7	0.3		2.9	0.1	46.7		0.2		
LOS		A	A		A	A	D		A		
Approach Delay		3.1			2.5			9.9			
Approach LOS		A			A			A			
Queue Length 50th (ft)		110	0		58	0	36		0		
Queue Length 95th (ft)		168	0		91	0	74		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2982	1599		2953	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.47	0.19		0.30	0.08	0.14		0.14		

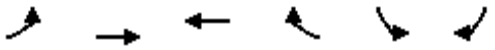
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 3.6		Intersection LOS: A	
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





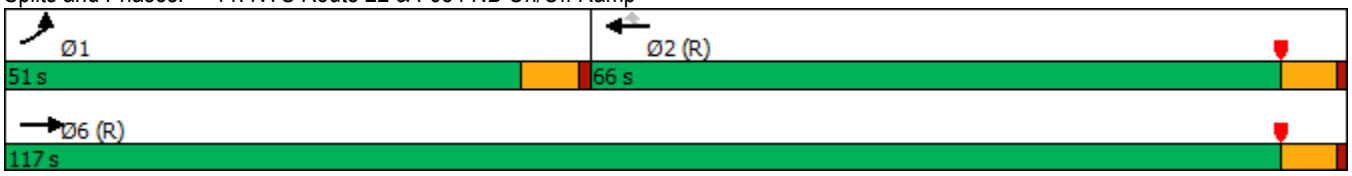
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	678	1066	597	240	0	347
Future Volume (vph)	678	1066	597	240	0	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						582
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	753	1184	663	267	0	386
Shared Lane Traffic (%)						
Lane Group Flow (vph)	753	1184	663	267	0	386
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	30.9	117.0	74.1	74.1		117.0
Actuated g/C Ratio	0.26	1.00	0.63	0.63		1.00
v/c Ratio	0.82	0.33	0.30	0.26		0.24
Control Delay	48.3	0.2	10.7	11.1		0.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	48.3	0.2	10.7	11.1		0.4
LOS	D	A	B	B		A
Approach Delay		18.9	10.8		0.4	
Approach LOS		B	B		A	
Queue Length 50th (ft)	276	0	109	82		0
Queue Length 95th (ft)	319	0	168	148		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2241	1022		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.56	0.33	0.30	0.26		0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 45.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1339	0	0	944	0	405
Future Volume (vph)	1339	0	0	944	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1380	0	0	973	0	418
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1380	0	0	973	0	418
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	18.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑		↱
Traffic Vol, veh/h	1339	0	0	944	0	405
Future Vol, veh/h	1339	0	0	944	0	405
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1380	0	0	973	0	418

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	690
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 367
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 367
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	123.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	367	-	-
HCM Lane V/C Ratio	1.138	-	-
HCM Control Delay (s)	123.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	16.1	-	-

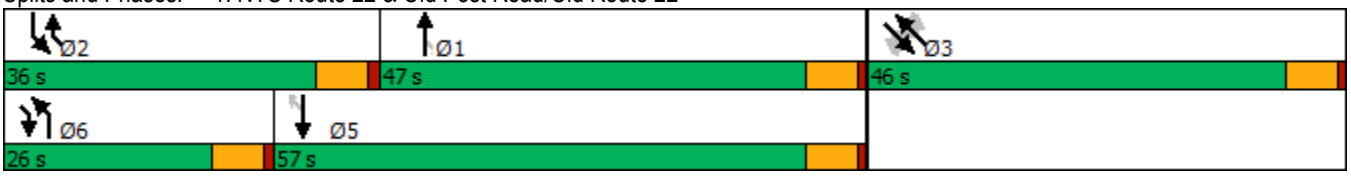
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	92	809	108	141	871	22	9	5	55	3	2	12
Future Volume (vph)	92	809	108	141	871	22	9	5	55	3	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969			0.971	
Satd. Flow (prot)	1770	3406	1599	1711	3438	1538	0	1662	1501	0	1320	1380
Flt Permitted	0.950			0.950				0.966			0.941	
Satd. Flow (perm)	1770	3406	1599	1711	3438	1538	0	1653	1501	0	1279	1361
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						25
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)							4					4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	1%	2%	5%	5%	11%	0%	4%	33%	50%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	95	834	111	145	898	23	9	5	57	3	2	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	834	111	145	898	23	0	14	57	0	5	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.7	47.9	47.9	11.0	54.6	54.6		10.3	14.1		10.3	14.4
Actuated g/C Ratio	0.11	0.63	0.63	0.14	0.71	0.71		0.13	0.18		0.13	0.19
v/c Ratio	0.47	0.39	0.11	0.59	0.37	0.02		0.06	0.21		0.03	0.04
Control Delay	42.6	9.7	2.0	43.1	7.9	0.0		35.6	26.8		35.6	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	42.6	9.7	2.0	43.1	7.9	0.0		35.6	26.8		35.6	4.2
LOS	D	A	A	D	A	A		D	C		D	A
Approach Delay		11.9			12.5			28.5			13.4	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	40	65	0	61	63	0		5	23		2	0
Queue Length 95th (ft)	99	203	20	136	201	0		26	53		13	7
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	474	2128	1046	687	2452	1119		886	508		685	628
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.20	0.39	0.11	0.21	0.37	0.02		0.02	0.11		0.01	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 76.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	12	3	9	135	24	213	185	508	137	387	809	175
Future Volume (vph)	12	3	9	135	24	213	185	508	137	387	809	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.959		0.950			0.950		
Satd. Flow (prot)	1357	1429	1455	0	1927	1495	1662	3471	1553	1787	3539	1553
Flt Permitted	0.582				0.757		0.950			0.950		
Satd. Flow (perm)	831	1429	1455	0	1521	1495	1662	3471	1553	1787	3539	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			220			141			180
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	33%	33%	11%	4%	4%	8%	5%	4%	4%	1%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	12	3	9	139	25	220	191	524	141	399	834	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	3	9	0	164	220	191	524	141	399	834	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

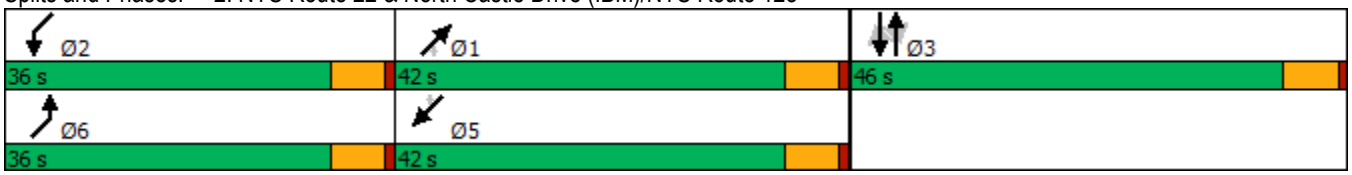
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	19.9	19.9	19.9		19.9	19.9	16.1	36.3	36.3	27.1	47.4	47.4
Actuated g/C Ratio	0.20	0.20	0.20		0.20	0.20	0.16	0.36	0.36	0.27	0.47	0.47
v/c Ratio	0.07	0.01	0.03		0.55	0.47	0.73	0.42	0.22	0.84	0.51	0.22
Control Delay	34.2	32.3	0.1		44.3	8.2	57.6	27.5	5.5	52.4	22.0	4.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	32.3	0.1		44.3	8.2	57.6	27.5	5.5	52.4	22.0	4.0
LOS	C	C	A		D	A	E	C	A	D	C	A
Approach Delay		21.2			23.6			30.6			28.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	7	2	0		100	0	123	139	0	242	191	0
Queue Length 95th (ft)	23	9	0		166	59	201	211	44	#436	323	45
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	330	568	625		604	726	495	1241	646	532	1651	821
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.01		0.27	0.30	0.39	0.42	0.22	0.75	0.51	0.22

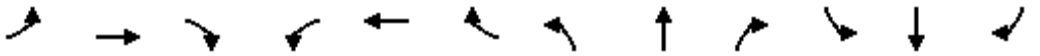
Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 101.5			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	467	140	175	1222	368	70	45	64	250	61	79
Future Volume (vph)	46	467	140	175	1222	368	70	45	64	250	61	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.965				0.850			0.850		0.915	
Flt Protected	0.950			0.950				0.970		0.950		
Satd. Flow (prot)	1419	3298	0	1728	3539	1509	0	1821	1583	1703	1631	0
Flt Permitted	0.950			0.950				0.970		0.950		
Satd. Flow (perm)	1419	3298	0	1728	3539	1509	0	1815	1583	1703	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				210			124		41	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	23%	7%	1%	1%	2%	7%	2%	0%	2%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	492	147	184	1286	387	74	47	67	263	64	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	639	0	184	1286	387	0	121	67	263	147	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												

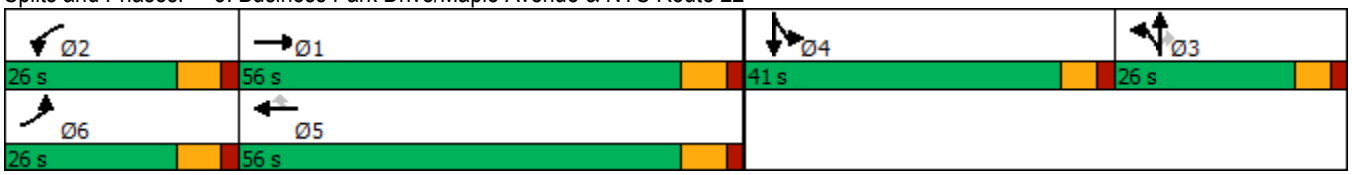
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	10.7	41.7		18.1	52.2	52.2		14.3	14.3	23.7	23.7	
Actuated g/C Ratio	0.09	0.35		0.15	0.44	0.44		0.12	0.12	0.20	0.20	
v/c Ratio	0.38	0.54		0.70	0.82	0.49		0.55	0.22	0.77	0.41	
Control Delay	63.6	33.0		64.9	37.4	15.1		62.0	1.7	61.4	33.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	63.6	33.0		64.9	37.4	15.1		62.0	1.7	61.4	33.8	
LOS	E	C		E	D	B		E	A	E	C	
Approach Delay		35.1			35.5			40.5			51.5	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	35	196		133	457	91		90	0	193	70	
Queue Length 95th (ft)	86	317		#268	#803	239		173	0	317	145	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	257	1470		313	1560	782		330	389	530	535	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.19	0.43		0.59	0.82	0.49		0.37	0.17	0.50	0.27	

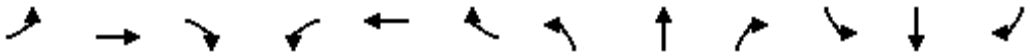
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 118.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 37.8		Intersection LOS: D	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	41	17	50	27	177	68	61	337	17
Future Volume (vph)	1	5	10	41	17	50	27	177	68	61	337	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.913			0.938			0.966			0.995	
Flt Protected		0.997			0.981			0.995			0.993	
Satd. Flow (prot)	0	1549	0	0	1368	0	0	1521	0	0	1593	0
Flt Permitted		0.997			0.981			0.995			0.993	
Satd. Flow (perm)	0	1549	0	0	1368	0	0	1521	0	0	1593	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	12					12				12		12
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	16%	6%	16%	4%	8%	12%	3%	6%	19%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	5	11	45	18	54	29	192	74	66	366	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	117	0	0	295	0	0	450	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

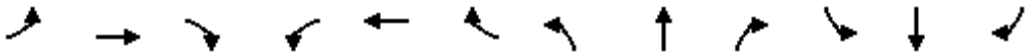
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	5	10	41	17	50	27	177	68	61	337	17
Future Vol, veh/h	1	5	10	41	17	50	27	177	68	61	337	17
Conflicting Peds, #/hr	12	0	0	0	0	12	0	0	0	12	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	16	6	16	4	8	12	3	6	19
Mvmt Flow	1	5	11	45	18	54	29	192	74	66	366	18

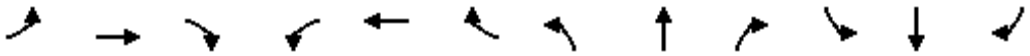
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	854	855	387	814	827	253	396	0	0	278	0	0
Stage 1	519	519	-	299	299	-	-	-	-	-	-	-
Stage 2	335	336	-	515	528	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.46	6.76	6.46	4.14	-	-	4.13	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.644	4.054	3.444	2.236	-	-	2.227	-	-
Pot Cap-1 Maneuver	268	284	658	268	289	747	1152	-	-	1279	-	-
Stage 1	528	521	-	670	648	-	-	-	-	-	-	-
Stage 2	671	634	-	503	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	213	252	651	238	257	732	1140	-	-	1266	-	-
Mov Cap-2 Maneuver	213	252	-	238	257	-	-	-	-	-	-	-
Stage 1	507	482	-	643	622	-	-	-	-	-	-	-
Stage 2	579	609	-	457	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	20.3	0.8	1.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	401	352	1266	-	-
HCM Lane V/C Ratio	0.026	-	-	0.043	0.333	0.052	-	-
HCM Control Delay (s)	8.2	0	-	14.4	20.3	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.4	0.2	-	-



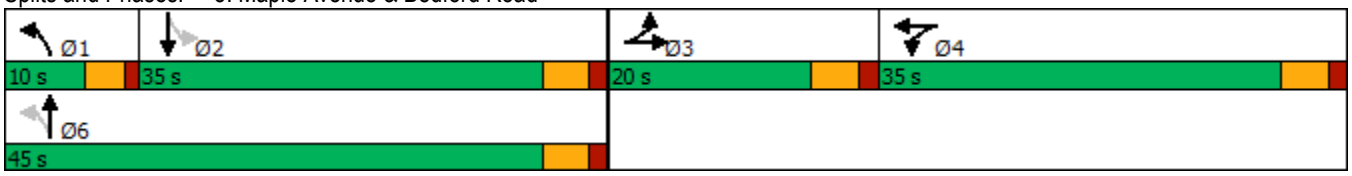
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	45	137	106	45	29	127	182	150	20	148	3
Future Volume (vph)	6	45	137	106	45	29	127	182	150	20	148	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00							
Frt		0.902			0.978			0.932			0.998	
Flt Protected		0.998			0.971		0.950				0.994	
Satd. Flow (prot)	0	1729	0	0	1880	0	1668	1519	0	0	1921	0
Flt Permitted		0.998			0.971		0.481				0.922	
Satd. Flow (perm)	0	1729	0	0	1878	0	845	1519	0	0	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		114			10			49			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	5%	10%	4%	2%	4%	17%	28%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	52	159	123	52	34	148	212	174	23	172	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	218	0	0	209	0	148	386	0	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												

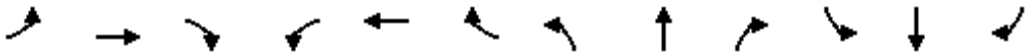


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		8.2			12.9		25.9	24.9			14.5	
Actuated g/C Ratio		0.13			0.21		0.42	0.40			0.24	
v/c Ratio		0.66			0.52		0.34	0.60			0.47	
Control Delay		24.2			26.8		15.7	18.6			25.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		24.2			26.8		15.7	18.6			25.7	
LOS		C			C		B	B			C	
Approach Delay		24.2			26.8			17.8			25.7	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		32			60		30	83			57	
Queue Length 95th (ft)		109			144		87	221			139	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		522			955		438	1039			901	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.42			0.22		0.34	0.37			0.22	

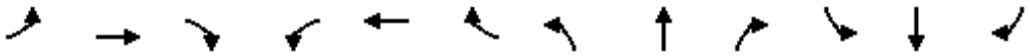
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 61.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	51	43	35	117	20	144	33	108	309	4
Future Volume (vph)	15	59	51	43	35	117	20	144	33	108	309	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.945			0.919			0.977			0.999	
Flt Protected		0.994			0.989			0.995			0.987	
Satd. Flow (prot)	0	1506	0	0	1529	0	0	1475	0	0	1612	0
Flt Permitted		0.942			0.897			0.939			0.858	
Satd. Flow (perm)	0	1427	0	0	1386	0	0	1392	0	0	1400	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		49										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)			1	1					3	3		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	10%	6%	0%	3%	1%	16%	13%	3%	5%	6%	50%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	62	54	45	37	123	21	152	35	114	325	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	205	0	0	208	0	0	443	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		11.8			11.8			20.4			20.4	
Actuated g/C Ratio		0.27			0.27			0.46			0.46	
v/c Ratio		0.31			0.55			0.32			0.68	
Control Delay		12.0			21.2			9.6			16.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.0			21.2			9.6			16.2	
LOS		B			C			A			B	
Approach Delay		12.0			21.2			9.6			16.2	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)		14			39			27			73	
Queue Length 95th (ft)		62			123			82			204	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		1052			1009			1236			1243	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.20			0.17			0.36	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 44			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	175	497	716	213	512	705
Future Volume (vph)	175	497	716	213	512	705
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1478	3209	3303	1478	1604	1436
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1478	3209	3303	1478	1604	1436
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				217		443
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	5%	2%	2%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	179	507	731	217	522	719
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	507	731	217	522	719
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	21.0	59.0	30.9	107.3	35.3	107.3
Actuated g/C Ratio	0.20	0.55	0.29	1.00	0.33	1.00
v/c Ratio	0.62	0.29	0.77	0.15	0.99	0.50
Control Delay	49.6	13.1	41.7	0.2	75.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	13.1	41.7	0.2	75.3	1.2
LOS	D	B	D	A	E	A
Approach Delay		22.6	32.2		32.4	
Approach LOS		C	C		C	
Queue Length 50th (ft)	116	92	241	0	~374	0
Queue Length 95th (ft)	190	122	342	0	#664	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	471	2259	1054	1478	526	1436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.22	0.69	0.15	0.99	0.50

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 107.3			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

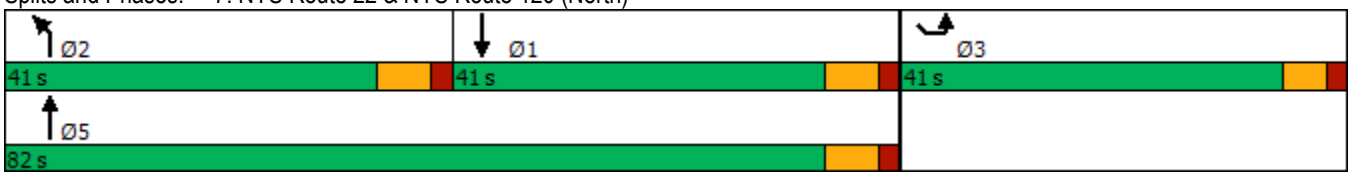
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)

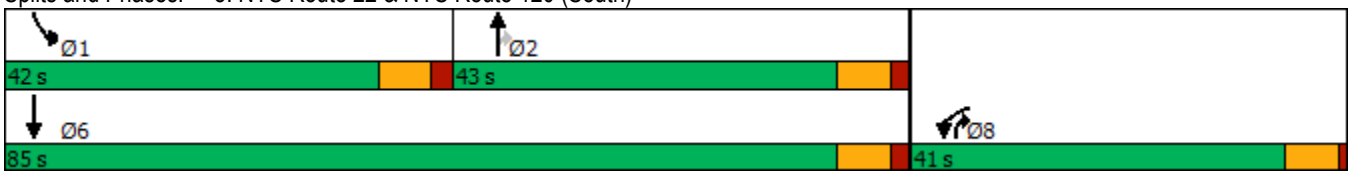


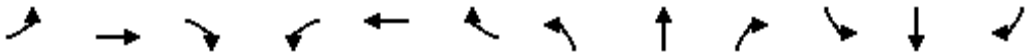
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	44	0	469	154	779	641
Future Volume (vph)	44	0	469	154	779	641
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1707	0	3304	1478	3368	3405
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1707	0	3304	1478	3368	3405
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				20		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	3%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	46	0	494	162	820	675
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	494	162	820	675
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.2		17.3	34.6	24.7	49.0
Actuated g/C Ratio	0.14		0.24	0.48	0.34	0.68
v/c Ratio	0.19		0.63	0.23	0.72	0.29
Control Delay	33.4		29.3	11.7	25.0	4.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	33.4		29.3	11.7	25.0	4.9
LOS	C		C	B	C	A
Approach Delay	33.4		25.0			15.9
Approach LOS	C		C			B
Queue Length 50th (ft)	18		103	35	160	52
Queue Length 95th (ft)	55		173	83	245	72
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	838		1668	1226	1653	3337
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.05		0.30	0.13	0.50	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 72.5			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	25	6	3	196	40	0	0	0
Future Volume (vph)	0	0	0	0	25	6	3	196	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.973			0.978				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1836	0	0	1747	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1836	0	0	1747	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	16%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	28	7	3	223	45	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	35	0	0	271	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	25	6	3	196	40	0	0	0
Future Vol, veh/h	0	0	0	0	25	6	3	196	40	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	4	0	0	16	3	0	0	0
Mvmt Flow	0	0	0	0	28	7	3	223	45	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	252	246	0	0	0
Stage 1	-	252	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	695	825	-	-	-
Stage 1	0	745	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	825	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	9.6	
HCM LOS	A	

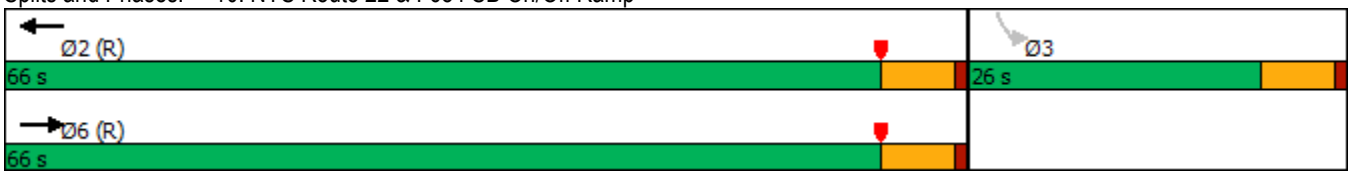
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	825
HCM Lane V/C Ratio	-	-	-	0.043
HCM Control Delay (s)	-	-	-	9.6
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

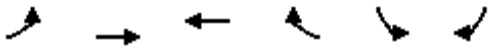
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	535	246	0	869	291	309	0	896	0	0
Future Volume (vph)	0	535	246	0	869	291	309	0	896	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			259			273			403		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	10%	0%	4%	4%	0%	3%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	563	259	0	915	306	325	0	943	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	563	259	0	915	306	325	0	943	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		61.1	92.0		61.1	92.0	18.9		92.0		
Actuated g/C Ratio		0.66	1.00		0.66	1.00	0.21		1.00		
v/c Ratio		0.25	0.18		0.40	0.20	0.77		0.52		
Control Delay		7.2	0.3		8.3	0.3	46.9		1.1		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		7.2	0.3		8.3	0.3	46.9		1.1		
LOS		A	A		A	A	D		A		
Approach Delay		5.0			6.3			12.8			
Approach LOS		A			A			B			
Queue Length 50th (ft)		62	0		114	0	180		0		
Queue Length 95th (ft)		104	0		181	0	253		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2265	1468		2351	1553	472		1812		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.25	0.18		0.39	0.20	0.69		0.52		

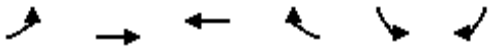
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





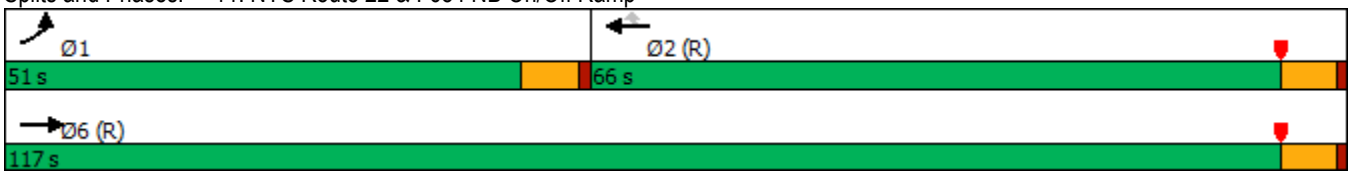
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	151	879	809	80	0	350
Future Volume (vph)	151	879	809	80	0	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3273	3406	3471	1509	0	1580
Flt Permitted	0.950					
Satd. Flow (perm)	3273	3406	3471	1509	0	1580
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						540
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	6%	4%	7%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	156	906	834	82	0	361
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	906	834	82	0	361
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.1	117.0	94.9	94.9		117.0
Actuated g/C Ratio	0.09	1.00	0.81	0.81		1.00
v/c Ratio	0.55	0.27	0.30	0.07		0.23
Control Delay	58.4	0.2	3.2	2.6		0.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	58.4	0.2	3.2	2.6		0.3
LOS	E	A	A	A		A
Approach Delay		8.7	3.1		0.3	
Approach LOS		A	A		A	
Queue Length 50th (ft)	59	0	64	10		0
Queue Length 95th (ft)	91	0	97	22		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1258	3406	2814	1223		1580
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.12	0.27	0.30	0.07		0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	844	0	0	1159	0	187
Future Volume (vph)	844	0	0	1159	0	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	870	0	0	1195	0	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	870	0	0	1195	0	193
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	844	0	0	1159	0	187
Future Vol, veh/h	844	0	0	1159	0	187
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	870	0	0	1195	0	193

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	435
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	545
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	545
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

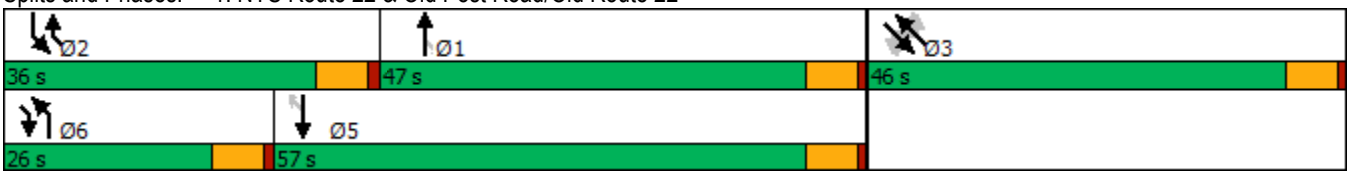
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	545	-	-
HCM Lane V/C Ratio	0.354	-	-
HCM Control Delay (s)	15.2	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	1.6	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	88	837	7	14	1008	24	48	4	132	76	9	133
Future Volume (vph)	88	837	7	14	1008	24	48	4	132	76	9	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.957	
Satd. Flow (prot)	1805	3574	1417	1517	3574	1615	0	1756	1546	0	1818	1583
Flt Permitted	0.950			0.950				0.680			0.710	
Satd. Flow (perm)	1804	3574	1417	1517	3574	1581	0	1249	1546	0	1349	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						29
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	14%	15%	1%	0%	0%	0%	1%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	90	854	7	14	1029	24	49	4	135	78	9	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	854	7	14	1029	24	0	53	135	0	87	136
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.9	54.9	54.9	5.7	51.7	51.7		11.5	22.4		11.5	19.3
Actuated g/C Ratio	0.10	0.64	0.64	0.07	0.60	0.60		0.13	0.26		0.13	0.22
v/c Ratio	0.49	0.38	0.01	0.14	0.48	0.02		0.32	0.34		0.49	0.36
Control Delay	47.6	9.2	0.0	44.4	12.3	0.0		41.8	26.8		46.9	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	47.6	9.2	0.0	44.4	12.3	0.0		41.8	26.8		46.9	24.0
LOS	D	A	A	D	B	A		D	C		D	C
Approach Delay		12.8			12.5			31.0			32.9	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	48	112	0	8	163	0		28	59		46	48
Queue Length 95th (ft)	100	182	0	28	268	0		65	105		98	100
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	424	2272	947	534	2141	977		586	606		633	820
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.21	0.38	0.01	0.03	0.48	0.02		0.09	0.22		0.14	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 86.3			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22

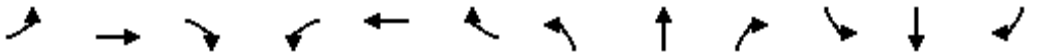


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	129	29	307	169	2	204	301	707	9	7	714	123
Future Volume (vph)	129	29	307	169	2	204	301	707	9	7	714	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.953		0.950			0.950		
Satd. Flow (prot)	1770	1900	1615	0	1953	1615	1711	3574	1324	1805	3539	1599
Flt Permitted	0.577				0.707		0.950			0.950		
Satd. Flow (perm)	1075	1900	1615	0	1449	1615	1709	3574	1324	1805	3539	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			310			206			79			124
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	22%	0%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	130	29	310	171	2	206	304	714	9	7	721	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	29	310	0	173	206	304	714	9	7	721	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

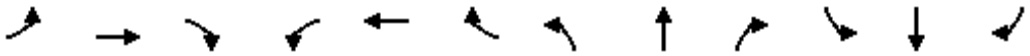
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	24.5	24.5	24.5		24.5	24.5	22.1	62.7	62.7	5.2	36.7	36.7
Actuated g/C Ratio	0.24	0.24	0.24		0.24	0.24	0.22	0.62	0.62	0.05	0.36	0.36
v/c Ratio	0.50	0.06	0.50		0.50	0.38	0.82	0.32	0.01	0.08	0.56	0.19
Control Delay	41.2	30.6	6.6		38.9	6.6	56.9	11.3	0.0	53.6	30.5	6.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	30.6	6.6		38.9	6.6	56.9	11.3	0.0	53.6	30.5	6.0
LOS	D	C	A		D	A	E	B	A	D	C	A
Approach Delay		17.7			21.3			24.7			27.2	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	73	14	0		96	0	189	103	0	4	199	0
Queue Length 95th (ft)	142	39	67		175	56	308	209	0	21	313	43
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	431	762	833		581	771	514	2207	847	543	1277	644
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.04	0.37		0.30	0.27	0.59	0.32	0.01	0.01	0.56	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 101.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1082	67	127	649	345	146	61	256	331	40	49
Future Volume (vph)	35	1082	67	127	649	345	146	61	256	331	40	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.991				0.850			0.850		0.918	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1694	3544	0	1662	3539	1615	0	1807	1615	1787	1708	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1694	3544	0	1662	3539	1615	0	1804	1615	1787	1708	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				359			264		39	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	0%	5%	2%	0%	1%	3%	0%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	1127	70	132	676	359	152	64	267	345	42	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	1197	0	132	676	359	0	216	267	345	93	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												



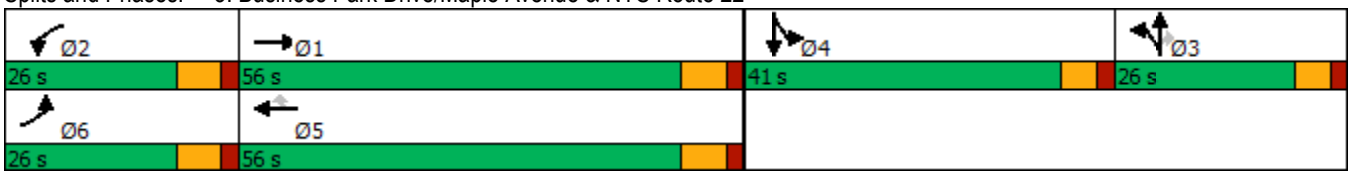
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.6	50.1		16.9	60.2	60.2		19.6	19.6	30.7	30.7	
Actuated g/C Ratio	0.07	0.36		0.12	0.44	0.44		0.14	0.14	0.22	0.22	
v/c Ratio	0.31	0.93		0.65	0.44	0.40		0.84	0.58	0.86	0.23	
Control Delay	71.0	55.5		74.4	30.0	4.0		85.8	12.3	73.8	28.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	71.0	55.5		74.4	30.0	4.0		85.8	12.3	73.8	28.5	
LOS	E	E		E	C	A		F	B	E	C	
Approach Delay		55.9			27.1			45.2			64.2	
Approach LOS		E			C			D			E	
Queue Length 50th (ft)	33	567		119	238	0		198	2	308	40	
Queue Length 95th (ft)	73	#764		196	315	64		#352	89	#464	92	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	261	1333		256	1549	908		279	472	473	481	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.14	0.90		0.52	0.44	0.40		0.77	0.57	0.73	0.19	

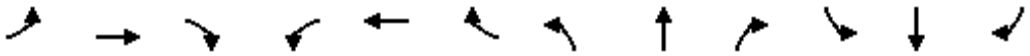
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 137.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 45.3		Intersection LOS: D	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	16	28	41	32	51	53	353	57	47	288	32
Future Volume (vph)	7	16	28	41	32	51	53	353	57	47	288	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925			0.945			0.983			0.988	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1563	0	0	1582	0	0	1659	0	0	1662	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1563	0	0	1582	0	0	1659	0	0	1662	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	20			1		21			1	21		20
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	1%	2%	2%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	16	29	42	33	52	54	360	58	48	294	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	127	0	0	472	0	0	375	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.4

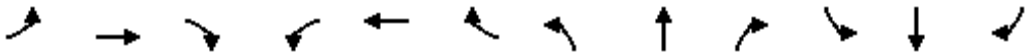
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	16	28	41	32	51	53	353	57	47	288	32
Future Vol, veh/h	7	16	28	41	32	51	53	353	57	47	288	32
Conflicting Peds, #/hr	20	0	0	1	0	21	0	0	1	21	0	20
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	2	1	2	2	1	0
Mvmt Flow	7	16	29	42	33	52	54	360	58	48	294	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	988	974	332	948	961	431	347	0	0	439	0	0
Stage 1	427	427	-	518	518	-	-	-	-	-	-	-
Stage 2	561	547	-	430	443	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.3	6.7	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	216	240	708	230	245	621	1212	-	-	1121	-	-
Stage 1	595	575	-	529	521	-	-	-	-	-	-	-
Stage 2	500	505	-	593	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	154	206	696	187	211	599	1192	-	-	1101	-	-
Mov Cap-2 Maneuver	154	206	-	187	211	-	-	-	-	-	-	-
Stage 1	550	535	-	489	481	-	-	-	-	-	-	-
Stage 2	393	467	-	522	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	29.2	0.9	1.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	312	272	1101	-	-
HCM Lane V/C Ratio	0.045	-	-	0.167	0.465	0.044	-	-
HCM Control Delay (s)	8.2	0	-	18.8	29.2	8.4	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.3	0.1	-	-

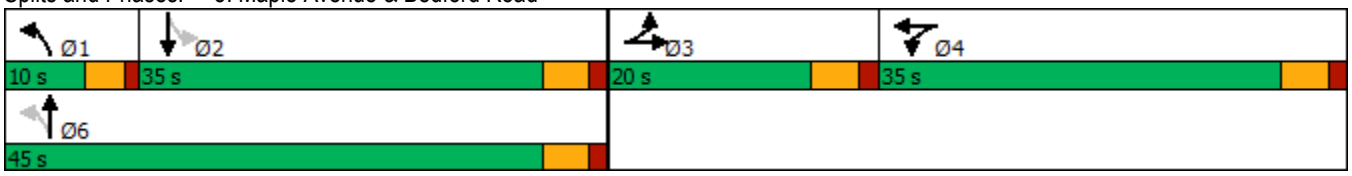
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	149	83	25	22	137	272	32	11	187	8
Future Volume (vph)	7	15	149	83	25	22	137	272	32	11	187	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97			1.00							
Frt		0.883			0.977			0.984			0.995	
Flt Protected		0.998			0.969		0.950				0.997	
Satd. Flow (prot)	0	1787	0	0	1976	0	1702	1738	0	0	2033	0
Flt Permitted		0.998			0.969		0.462				0.971	
Satd. Flow (perm)	0	1787	0	0	1969	0	827	1738	0	0	1980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		160			11			7			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	1%	5%	29%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	16	160	89	27	24	147	292	34	12	201	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	184	0	0	140	0	147	326	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		5.7			12.3		25.2	24.2			13.6	
Actuated g/C Ratio		0.11			0.23		0.47	0.45			0.25	
v/c Ratio		0.55			0.30		0.30	0.41			0.44	
Control Delay		14.3			19.9		13.4	14.6			22.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		14.3			19.9		13.4	14.6			22.7	
LOS		B			B		B	B			C	
Approach Delay		14.3			19.9			14.2			22.7	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		7			34		25	64			58	
Queue Length 95th (ft)		65			88		84	184			151	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		641			1174		493	1334			1172	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.29			0.12		0.30	0.24			0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 53.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	75	53	72	79	187	30	326	51	83	231	6
Future Volume (vph)	42	75	53	72	79	187	30	326	51	83	231	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			1.00			1.00	
Frt		0.958			0.925			0.983			0.998	
Flt Protected		0.988			0.989			0.996			0.987	
Satd. Flow (prot)	0	1618	0	0	1526	0	0	1645	0	0	1672	0
Flt Permitted		0.860			0.890			0.957			0.817	
Satd. Flow (perm)	0	1407	0	0	1372	0	0	1580	0	0	1382	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		32										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)	3		2	2		3	4		7	7		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	0%	0%	1%	0%	1%	0%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	78	55	75	82	195	31	340	53	86	241	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	352	0	0	424	0	0	333	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		17.6			17.6			19.8			19.8	
Actuated g/C Ratio		0.35			0.35			0.40			0.40	
v/c Ratio		0.34			0.72			0.67			0.60	
Control Delay		13.0			24.9			19.1			17.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.0			24.9			19.1			17.9	
LOS		B			C			B			B	
Approach Delay		13.0			24.9			19.1			17.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		27			78			86			66	
Queue Length 95th (ft)		89			219			231			183	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		948			914			1285			1124	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.19			0.39			0.33			0.30	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 49.7			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 80.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	648	667	629	588	265	228
Future Volume (vph)	648	667	629	588	265	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				626		243
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	689	710	669	626	282	243
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	710	669	626	282	243
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.3	71.5	30.1	110.6	26.0	110.6
Actuated g/C Ratio	0.31	0.65	0.27	1.00	0.24	1.00
v/c Ratio	1.32	0.33	0.74	0.42	0.71	0.16
Control Delay	190.3	9.9	42.7	0.8	49.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	190.3	9.9	42.7	0.8	49.8	0.2
LOS	F	A	D	A	D	A
Approach Delay		98.7	22.5		26.8	
Approach LOS		F	C		C	
Queue Length 50th (ft)	~648	110	227	0	187	0
Queue Length 95th (ft)	#989	175	323	0	287	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	522	2281	1034	1507	537	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.31	0.65	0.42	0.53	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 110.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 56.3		Intersection LOS: E	
Intersection Capacity Utilization 84.6%		ICU Level of Service E	
Analysis Period (min) 15			

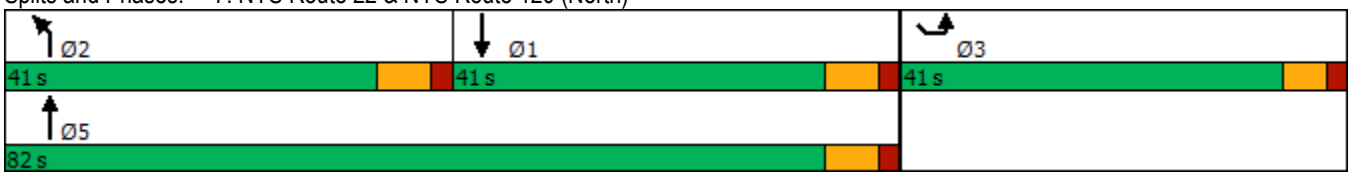
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

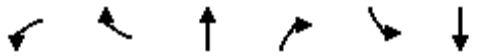
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



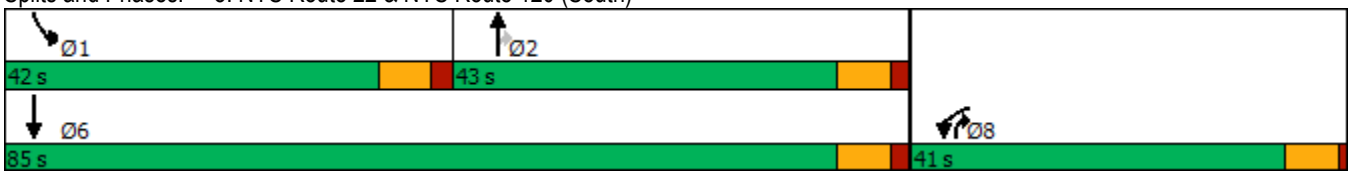
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	301	16	517	28	226	630
Future Volume (vph)	301	16	517	28	226	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.993			0.850		
Flt Protected	0.955				0.950	
Satd. Flow (prot)	1856	0	3403	1464	3335	3472
Flt Permitted	0.955				0.950	
Satd. Flow (perm)	1856	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	2			33		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	354	19	608	33	266	741
Shared Lane Traffic (%)						
Lane Group Flow (vph)	373	0	608	33	266	741
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

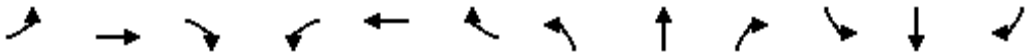


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	21.6		20.5	49.4	13.7	41.4
Actuated g/C Ratio	0.28		0.27	0.65	0.18	0.54
v/c Ratio	0.71		0.67	0.03	0.45	0.39
Control Delay	33.4		29.6	1.8	33.3	11.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	33.4		29.6	1.8	33.3	11.6
LOS	C		C	A	C	B
Approach Delay	33.4		28.2			17.3
Approach LOS	C		C			B
Queue Length 50th (ft)	151		127	0	57	96
Queue Length 95th (ft)	271		216	8	112	167
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	880		1657	1230	1579	3271
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.42		0.37	0.03	0.17	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 76.5			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	50	7	15	776	29	0	0	0
Future Volume (vph)	0	0	0	0	50	7	15	776	29	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.983			0.995				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1850	0	0	1998	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1850	0	0	1998	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	62	9	19	958	36	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	71	0	0	1013	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	50	7	15	776	29	0	0	0
Future Vol, veh/h	0	0	0	0	50	7	15	776	29	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	62	9	19	958	36	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	1014	976	0	0	0
Stage 1	-	1014	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	314	352	-	-	-
Stage 1	0	416	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	352	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	17.8	
HCM LOS	C	

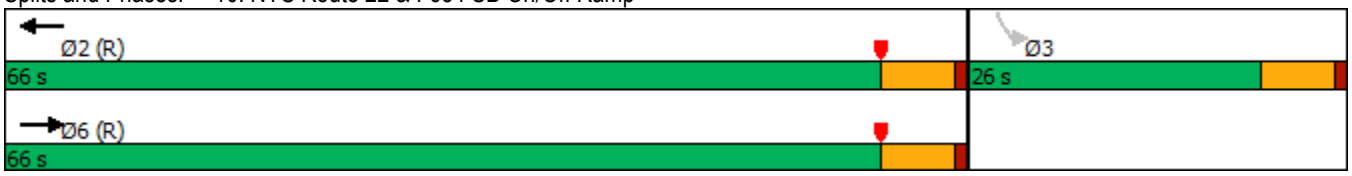
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	352
HCM Lane V/C Ratio	-	-	-	0.2
HCM Control Delay (s)	-	-	-	17.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.7

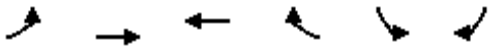
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	1379	289	0	878	128	65	0	243	0	0
Future Volume (vph)	0	1379	289	0	878	128	65	0	243	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			187			119			392		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1499	314	0	954	139	71	0	264	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1499	314	0	954	139	71	0	264	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		75.7	92.0		75.7	92.0	7.6		92.0		
Actuated g/C Ratio		0.82	1.00		0.82	1.00	0.08		1.00		
v/c Ratio		0.50	0.20		0.32	0.09	0.42		0.15		
Control Delay		4.1	0.3		3.1	0.1	47.0		0.2		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		4.1	0.3		3.1	0.1	47.0		0.2		
LOS		A	A		A	A	D		A		
Approach Delay		3.5			2.7			10.1			
Approach LOS		A			A			B			
Queue Length 50th (ft)		127	0		65	0	40		0		
Queue Length 95th (ft)		196	0		102	0	80		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2971	1599		2942	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.50	0.20		0.32	0.09	0.16		0.15		

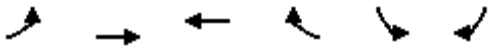
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





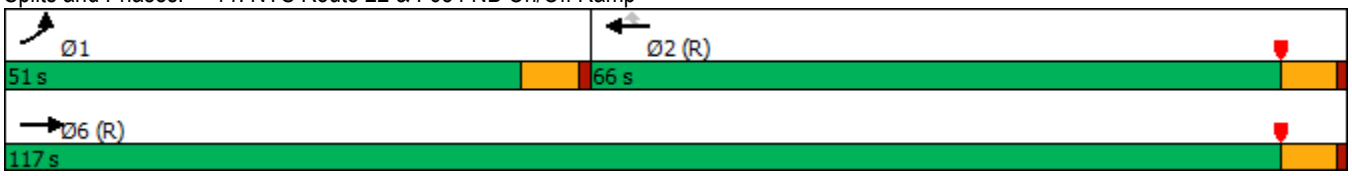
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	732	1145	638	252	0	368
Future Volume (vph)	732	1145	638	252	0	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						569
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	813	1272	709	280	0	409
Shared Lane Traffic (%)						
Lane Group Flow (vph)	813	1272	709	280	0	409
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	33.1	117.0	71.9	71.9		117.0
Actuated g/C Ratio	0.28	1.00	0.61	0.61		1.00
v/c Ratio	0.83	0.36	0.33	0.28		0.25
Control Delay	47.0	0.3	12.0	12.4		0.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	47.0	0.3	12.0	12.4		0.4
LOS	D	A	B	B		A
Approach Delay		18.5	12.1		0.4	
Approach LOS		B	B		A	
Queue Length 50th (ft)	294	0	127	93		0
Queue Length 95th (ft)	340	0	190	164		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2176	992		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.61	0.36	0.33	0.28		0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 48.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1445	0	0	1006	0	432
Future Volume (vph)	1445	0	0	1006	0	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1490	0	0	1037	0	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1490	0	0	1037	0	445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	29.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑		↱
Traffic Vol, veh/h	1445	0	0	1006	0	432
Future Vol, veh/h	1445	0	0	1006	0	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1490	0	0	1037	0	445

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	745
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 337
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 337
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	195.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	337	-	-
HCM Lane V/C Ratio	1.322	-	-
HCM Control Delay (s)	195.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	21.4	-	-

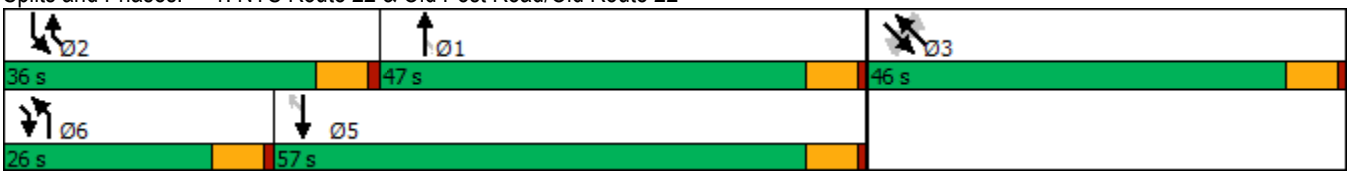
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	92	822	108	141	893	22	9	5	55	3	2	12
Future Volume (vph)	92	822	108	141	893	22	9	5	55	3	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969			0.971	
Satd. Flow (prot)	1770	3406	1599	1711	3438	1538	0	1662	1501	0	1320	1380
Flt Permitted	0.950			0.950				0.966			0.941	
Satd. Flow (perm)	1770	3406	1599	1711	3438	1538	0	1653	1501	0	1279	1361
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						25
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)							4					4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	1%	2%	5%	5%	11%	0%	4%	33%	50%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	95	847	111	145	921	23	9	5	57	3	2	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	847	111	145	921	23	0	14	57	0	5	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.7	47.9	47.9	11.0	54.6	54.6		10.3	14.1		10.3	14.4
Actuated g/C Ratio	0.11	0.63	0.63	0.14	0.71	0.71		0.13	0.18		0.13	0.19
v/c Ratio	0.47	0.40	0.11	0.59	0.38	0.02		0.06	0.21		0.03	0.04
Control Delay	42.6	9.8	2.0	43.1	8.0	0.0		35.6	26.8		35.6	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	42.6	9.8	2.0	43.1	8.0	0.0		35.6	26.8		35.6	4.2
LOS	D	A	A	D	A	A		D	C		D	A
Approach Delay		11.9			12.5			28.5			13.4	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	40	67	0	61	65	0		5	23		2	0
Queue Length 95th (ft)	99	207	20	136	208	0		26	53		13	7
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	474	2128	1046	687	2452	1119		886	508		685	628
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.20	0.40	0.11	0.21	0.38	0.02		0.02	0.11		0.01	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 76.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	7	57	135	26	213	185	508	150	415	809	175
Future Volume (vph)	35	7	57	135	26	213	185	508	150	415	809	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.960		0.950			0.950		
Satd. Flow (prot)	1357	1429	1455	0	1929	1495	1662	3471	1553	1787	3539	1553
Flt Permitted	0.573				0.756		0.950			0.950		
Satd. Flow (perm)	819	1429	1455	0	1519	1495	1662	3471	1553	1787	3539	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			220			155			180
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	33%	33%	11%	4%	4%	8%	5%	4%	4%	1%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	7	59	139	27	220	191	524	155	428	834	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	7	59	0	166	220	191	524	155	428	834	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

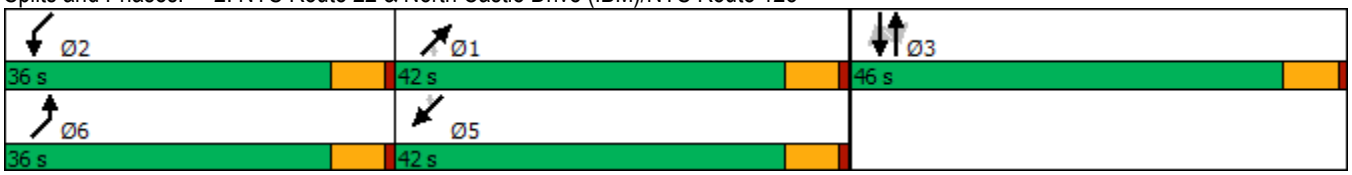
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.8	20.8	20.8		20.8	20.8	16.3	36.1	36.1	29.7	49.5	49.5
Actuated g/C Ratio	0.20	0.20	0.20		0.20	0.20	0.16	0.34	0.34	0.28	0.47	0.47
v/c Ratio	0.22	0.02	0.17		0.55	0.47	0.74	0.44	0.24	0.84	0.50	0.22
Control Delay	37.9	32.6	5.3		44.7	8.0	59.7	28.8	5.4	53.0	22.2	4.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	32.6	5.3		44.7	8.0	59.7	28.8	5.4	53.0	22.2	4.0
LOS	D	C	A		D	A	E	C	A	D	C	A
Approach Delay		18.7			23.8			31.4			29.1	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	20	4	0		101	0	124	142	0	270	196	0
Queue Length 95th (ft)	50	16	21		168	59	201	212	47	#485	324	45
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	313	547	606		582	708	477	1197	637	513	1674	829
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.01	0.10		0.29	0.31	0.40	0.44	0.24	0.83	0.50	0.22

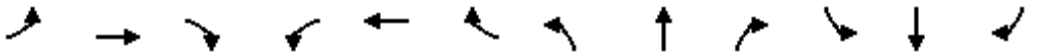
Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 104.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

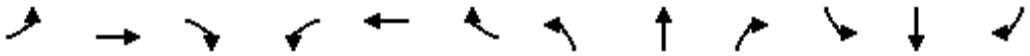
Queue shown is maximum after two cycles.

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	515	140	175	1251	368	70	45	64	250	61	79
Future Volume (vph)	46	515	140	175	1251	368	70	45	64	250	61	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.968				0.850			0.850		0.915	
Flt Protected	0.950			0.950				0.970		0.950		
Satd. Flow (prot)	1419	3305	0	1728	3539	1509	0	1821	1583	1703	1631	0
Flt Permitted	0.950			0.950				0.970		0.950		
Satd. Flow (perm)	1419	3305	0	1728	3539	1509	0	1815	1583	1703	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				205			124		41	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	23%	7%	1%	1%	2%	7%	2%	0%	2%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	542	147	184	1317	387	74	47	67	263	64	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	689	0	184	1317	387	0	121	67	263	147	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												



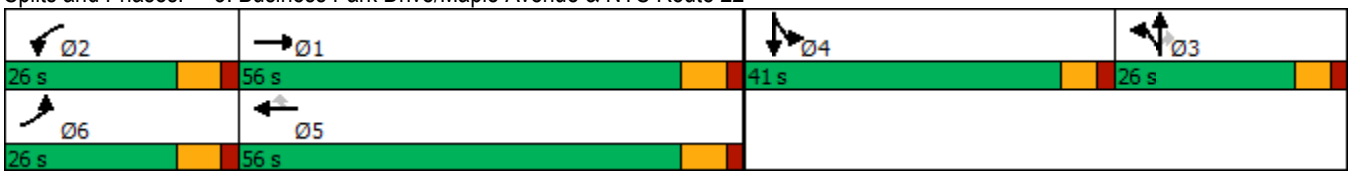
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	10.7	41.7		18.1	52.2	52.2		14.3	14.3	23.7	23.7	
Actuated g/C Ratio	0.09	0.35		0.15	0.44	0.44		0.12	0.12	0.20	0.20	
v/c Ratio	0.38	0.58		0.70	0.84	0.50		0.55	0.22	0.77	0.41	
Control Delay	63.6	34.2		64.9	38.5	15.5		62.0	1.7	61.4	33.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	63.6	34.2		64.9	38.5	15.5		62.0	1.7	61.4	33.8	
LOS	E	C		E	D	B		E	A	E	C	
Approach Delay		36.1			36.3			40.5			51.5	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	35	218		133	475	94		90	0	193	70	
Queue Length 95th (ft)	86	348		#268	#835	243		173	0	317	145	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	257	1471		313	1560	779		330	389	530	535	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.19	0.47		0.59	0.84	0.50		0.37	0.17	0.50	0.27	

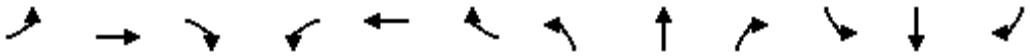
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 118.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	41	17	50	27	180	68	61	339	17
Future Volume (vph)	1	5	10	41	17	50	27	180	68	61	339	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.913			0.938			0.967			0.995	
Flt Protected		0.997			0.981			0.995			0.993	
Satd. Flow (prot)	0	1549	0	0	1368	0	0	1523	0	0	1593	0
Flt Permitted		0.997			0.981			0.995			0.993	
Satd. Flow (perm)	0	1549	0	0	1368	0	0	1523	0	0	1593	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	12					12				12		12
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	16%	6%	16%	4%	8%	12%	3%	6%	19%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	5	11	45	18	54	29	196	74	66	368	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	117	0	0	299	0	0	452	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			

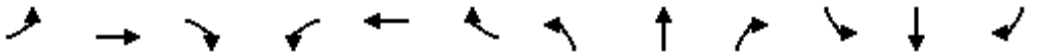
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	5	10	41	17	50	27	180	68	61	339	17
Future Vol, veh/h	1	5	10	41	17	50	27	180	68	61	339	17
Conflicting Peds, #/hr	12	0	0	0	0	12	0	0	0	12	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	16	6	16	4	8	12	3	6	19
Mvmt Flow	1	5	11	45	18	54	29	196	74	66	368	18

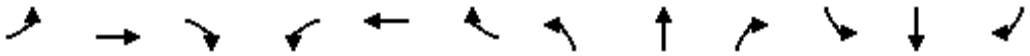
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	860	861	389	820	833	257	398	0	0	282	0	0
Stage 1	521	521	-	303	303	-	-	-	-	-	-	-
Stage 2	339	340	-	517	530	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.46	6.76	6.46	4.14	-	-	4.13	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.46	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.644	4.054	3.444	2.236	-	-	2.227	-	-
Pot Cap-1 Maneuver	265	282	657	266	286	743	1150	-	-	1275	-	-
Stage 1	527	520	-	666	645	-	-	-	-	-	-	-
Stage 2	667	631	-	502	505	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	211	250	650	236	254	728	1139	-	-	1262	-	-
Mov Cap-2 Maneuver	211	250	-	236	254	-	-	-	-	-	-	-
Stage 1	506	480	-	639	619	-	-	-	-	-	-	-
Stage 2	575	606	-	455	467	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	20.5	0.8	1.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1139	-	-	399	349	1262	-	-
HCM Lane V/C Ratio	0.026	-	-	0.044	0.336	0.053	-	-
HCM Control Delay (s)	8.2	0	-	14.4	20.5	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.4	0.2	-	-



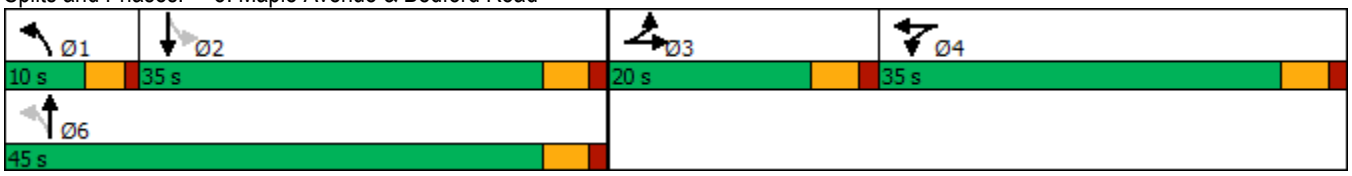
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	45	137	106	45	29	127	182	150	20	148	3
Future Volume (vph)	6	45	137	106	45	29	127	182	150	20	148	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00							
Frt		0.902			0.978			0.932			0.998	
Flt Protected		0.998			0.971		0.950				0.994	
Satd. Flow (prot)	0	1729	0	0	1880	0	1668	1519	0	0	1921	0
Flt Permitted		0.998			0.971		0.481				0.922	
Satd. Flow (perm)	0	1729	0	0	1878	0	845	1519	0	0	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		114			10			49			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	5%	10%	4%	2%	4%	17%	28%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	52	159	123	52	34	148	212	174	23	172	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	218	0	0	209	0	148	386	0	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												

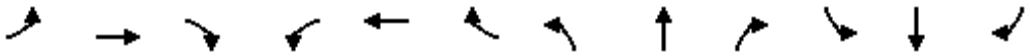


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		8.2			12.9		25.9	24.9			14.5	
Actuated g/C Ratio		0.13			0.21		0.42	0.40			0.24	
v/c Ratio		0.66			0.52		0.34	0.60			0.47	
Control Delay		24.2			26.8		15.7	18.6			25.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		24.2			26.8		15.7	18.6			25.7	
LOS		C			C		B	B			C	
Approach Delay		24.2			26.8			17.8			25.7	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		32			60		30	83			57	
Queue Length 95th (ft)		109			144		87	221			139	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		522			955		438	1039			901	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.42			0.22		0.34	0.37			0.22	

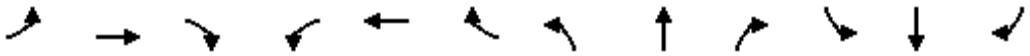
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 61.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	51	43	35	117	20	148	33	108	311	4
Future Volume (vph)	15	59	51	43	35	117	20	148	33	108	311	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.945			0.919			0.978			0.999	
Flt Protected		0.994			0.989			0.995			0.987	
Satd. Flow (prot)	0	1506	0	0	1529	0	0	1477	0	0	1612	0
Flt Permitted		0.943			0.897			0.940			0.857	
Satd. Flow (perm)	0	1429	0	0	1386	0	0	1395	0	0	1398	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		49										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)			1	1					3	3		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	10%	6%	0%	3%	1%	16%	13%	3%	5%	6%	50%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	62	54	45	37	123	21	156	35	114	327	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	205	0	0	212	0	0	445	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		11.9			11.9			20.5			20.5	
Actuated g/C Ratio		0.27			0.27			0.46			0.46	
v/c Ratio		0.31			0.55			0.33			0.69	
Control Delay		12.1			21.3			9.6			16.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.1			21.3			9.6			16.2	
LOS		B			C			A			B	
Approach Delay		12.1			21.3			9.6			16.2	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)		14			39			28			73	
Queue Length 95th (ft)		62			123			83			205	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		1052			1007			1236			1239	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.20			0.17			0.36	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 44.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	175	503	727	224	518	705
Future Volume (vph)	175	503	727	224	518	705
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1478	3209	3303	1478	1604	1436
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1478	3209	3303	1478	1604	1436
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				229		438
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	5%	2%	2%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	179	513	742	229	529	719
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	513	742	229	529	719
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	21.1	59.5	31.4	107.8	35.2	107.8
Actuated g/C Ratio	0.20	0.55	0.29	1.00	0.33	1.00
v/c Ratio	0.62	0.29	0.77	0.15	1.01	0.50
Control Delay	49.9	13.1	41.7	0.2	80.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	13.1	41.7	0.2	80.3	1.2
LOS	D	B	D	A	F	A
Approach Delay		22.6	31.9		34.7	
Approach LOS		C	C		C	
Queue Length 50th (ft)	117	93	245	0	~401	0
Queue Length 95th (ft)	190	124	348	0	#677	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	469	2245	1048	1478	523	1436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.23	0.71	0.15	1.01	0.50

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 107.8			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 30.9		Intersection LOS: C	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

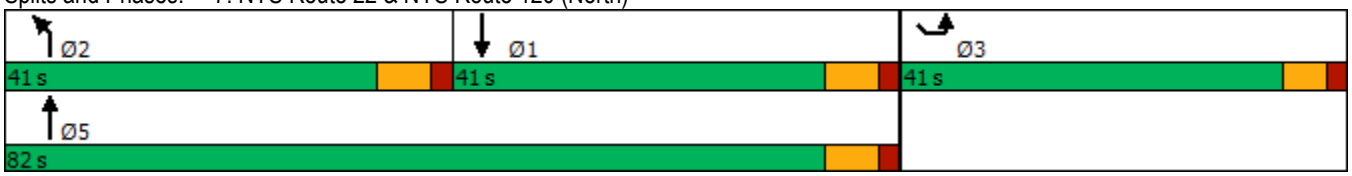
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

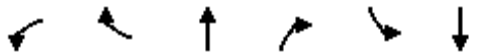
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



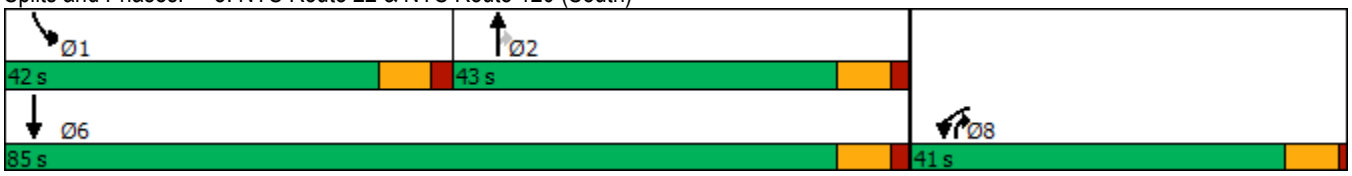
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	44	0	473	154	783	649
Future Volume (vph)	44	0	473	154	783	649
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1707	0	3304	1478	3368	3405
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1707	0	3304	1478	3368	3405
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				19		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	3%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	46	0	498	162	824	683
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	498	162	824	683
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

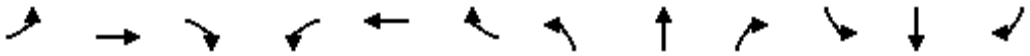


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.2		17.4	34.7	24.9	49.4
Actuated g/C Ratio	0.14		0.24	0.48	0.34	0.68
v/c Ratio	0.19		0.63	0.23	0.72	0.30
Control Delay	33.6		29.5	11.8	25.0	4.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	33.6		29.5	11.8	25.0	4.9
LOS	C		C	B	C	A
Approach Delay	33.6		25.2			15.9
Approach LOS	C		C			B
Queue Length 50th (ft)	19		105	35	161	53
Queue Length 95th (ft)	56		175	84	247	73
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	833		1659	1222	1644	3333
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.06		0.30	0.13	0.50	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 72.8			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	25	6	3	198	40	0	0	0
Future Volume (vph)	0	0	0	0	25	6	3	198	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.973			0.978				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1836	0	0	1746	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1836	0	0	1746	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	16%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	28	7	3	225	45	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	35	0	0	273	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	25	6	3	198	40	0	0	0
Future Vol, veh/h	0	0	0	0	25	6	3	198	40	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	4	0	0	16	3	0	0	0
Mvmt Flow	0	0	0	0	28	7	3	225	45	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	254	248	0	0	0
Stage 1	-	254	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	693	824	-	-	-
Stage 1	0	744	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	824	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	9.6	
HCM LOS	A	

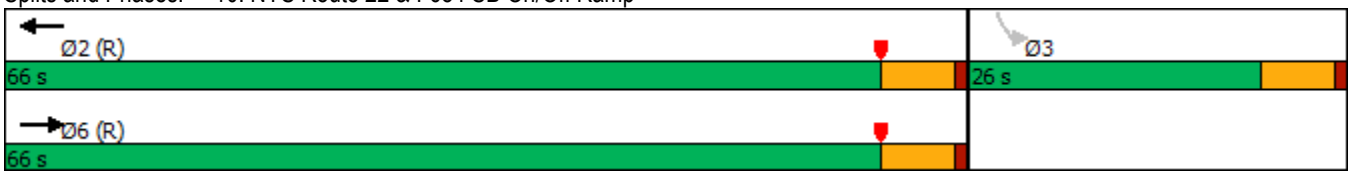
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	824
HCM Lane V/C Ratio	-	-	-	0.043
HCM Control Delay (s)	-	-	-	9.6
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

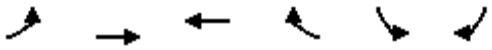
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	564	265	0	884	291	309	0	910	0	0
Future Volume (vph)	0	564	265	0	884	291	309	0	910	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3343	1468	0	3471	1553	2046	0	1812	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			279			269			398		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	10%	0%	4%	4%	0%	3%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	594	279	0	931	306	325	0	958	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	594	279	0	931	306	325	0	958	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		61.1	92.0		61.1	92.0	18.9		92.0		
Actuated g/C Ratio		0.66	1.00		0.66	1.00	0.21		1.00		
v/c Ratio		0.27	0.19		0.40	0.20	0.77		0.53		
Control Delay		7.3	0.3		8.3	0.3	46.9		1.1		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		7.3	0.3		8.3	0.3	46.9		1.1		
LOS		A	A		A	A	D		A		
Approach Delay		5.0			6.3			12.7			
Approach LOS		A			A			B			
Queue Length 50th (ft)		66	0		116	0	180		0		
Queue Length 95th (ft)		111	0		186	0	253		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2265	1468		2351	1553	472		1812		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.26	0.19		0.40	0.20	0.69		0.53		

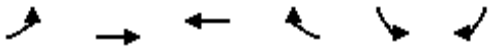
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





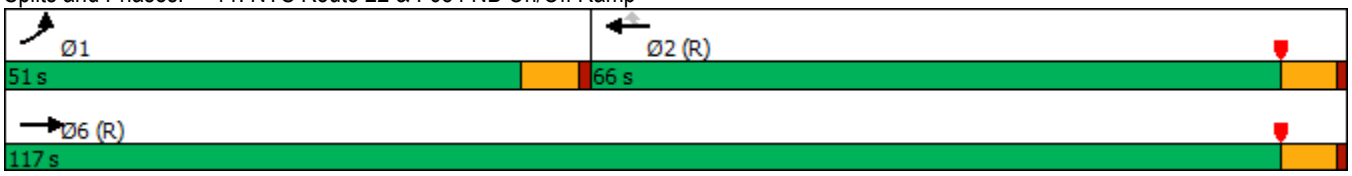
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	174	887	813	80	0	361
Future Volume (vph)	174	887	813	80	0	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3273	3406	3471	1509	0	1580
Flt Permitted	0.950					
Satd. Flow (perm)	3273	3406	3471	1509	0	1580
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						540
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	6%	4%	7%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	179	914	838	82	0	372
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	914	838	82	0	372
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.9	117.0	94.1	94.1		117.0
Actuated g/C Ratio	0.09	1.00	0.80	0.80		1.00
v/c Ratio	0.59	0.27	0.30	0.07		0.24
Control Delay	58.4	0.2	3.4	2.8		0.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	58.4	0.2	3.4	2.8		0.4
LOS	E	A	A	A		A
Approach Delay		9.7	3.4		0.4	
Approach LOS		A	A		A	
Queue Length 50th (ft)	68	0	68	10		0
Queue Length 95th (ft)	102	0	103	23		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1258	3406	2790	1213		1580
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.14	0.27	0.30	0.07		0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	74	24	0	44	548
Future Volume (vph)	0	74	24	0	44	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.996
Satd. Flow (prot)	1611	0	3539	0	0	1855
Flt Permitted						0.996
Satd. Flow (perm)	1611	0	3539	0	0	1855
Link Speed (mph)	30		30			30
Link Distance (ft)	235		679			299
Travel Time (s)	5.3		15.4			6.8
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	80	26	0	48	596
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	0	26	0	0	644
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	74	24	0	44	548
Future Vol, veh/h	0	74	24	0	44	548
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	80	26	0	48	596

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	718	13	0	0	26	0
Stage 1	26	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	379	1064	-	-	1587	-
Stage 1	993	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	362	1064	-	-	1587	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	474	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1064	1587	-
HCM Lane V/C Ratio	-	-	0.076	0.03	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	873	0	0	1174	0	187
Future Volume (vph)	873	0	0	1174	0	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	900	0	0	1210	0	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	900	0	0	1210	0	193
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	873	0	0	1174	0	187
Future Vol, veh/h	873	0	0	1174	0	187
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	900	0	0	1210	0	193

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	450
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	532
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	532
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.6
HCM LOS			C

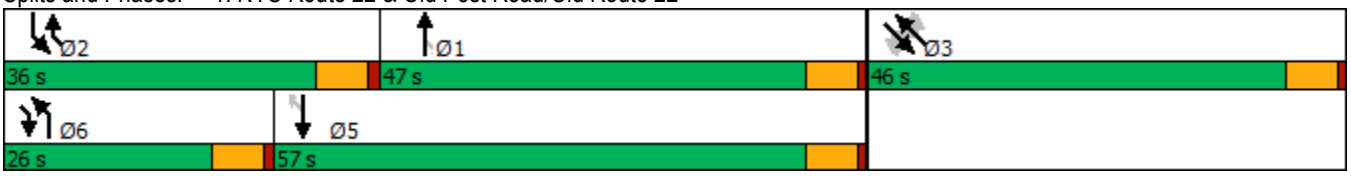
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	532	-	-
HCM Lane V/C Ratio	0.362	-	-
HCM Control Delay (s)	15.6	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	1.6	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	88	862	7	14	1026	24	48	4	132	76	9	133
Future Volume (vph)	88	862	7	14	1026	24	48	4	132	76	9	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		230	315		155	0		150	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	86			86			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.957	
Satd. Flow (prot)	1805	3574	1417	1517	3574	1615	0	1756	1546	0	1818	1583
Flt Permitted	0.950			0.950				0.680			0.710	
Satd. Flow (perm)	1804	3574	1417	1517	3574	1581	0	1249	1546	0	1349	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			127			76						25
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2626			1235			276			807	
Travel Time (s)		32.6			15.3			6.3			18.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	14%	15%	1%	0%	0%	0%	1%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	90	880	7	14	1047	24	49	4	135	78	9	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	880	7	14	1047	24	0	53	135	0	87	136
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	1	1	2	1	1	1	2	2	1	2	2
Detector Template							Left			Left		
Leading Detector (ft)	83	0	0	83	0	0	20	83	83	20	83	83
Trailing Detector (ft)	-5	0	0	-5	0	0	0	-5	-5	0	-5	-5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	pm+ov
Protected Phases	6	1		2	5			3	6		3	2
Permitted Phases			1			5	3		3	3		3
Detector Phase	6	1	1	2	5	5	3	3	6	3	3	2
Switch Phase												

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	2.0	10.0	10.0	5.0
Minimum Split (s)	20.0	47.0	47.0	26.0	56.0	56.0	33.0	33.0	20.0	33.0	33.0	26.0
Total Split (s)	26.0	47.0	47.0	36.0	57.0	57.0	46.0	46.0	26.0	46.0	46.0	36.0
Total Split (%)	20.2%	36.4%	36.4%	27.9%	44.2%	44.2%	35.7%	35.7%	20.2%	35.7%	35.7%	27.9%
Maximum Green (s)	20.0	41.0	41.0	30.0	51.0	51.0	40.0	40.0	20.0	40.0	40.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.9	54.9	54.9	5.7	51.7	51.7		11.5	22.4		11.5	19.3
Actuated g/C Ratio	0.10	0.64	0.64	0.07	0.60	0.60		0.13	0.26		0.13	0.22
v/c Ratio	0.49	0.39	0.01	0.14	0.49	0.02		0.32	0.34		0.49	0.37
Control Delay	47.6	9.3	0.0	44.4	12.4	0.0		41.8	26.8		46.9	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	47.6	9.3	0.0	44.4	12.4	0.0		41.8	26.8		46.9	24.9
LOS	D	A	A	D	B	A		D	C		D	C
Approach Delay		12.8			12.6			31.0			33.5	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	48	117	0	8	167	0		28	59		46	50
Queue Length 95th (ft)	100	188	0	28	275	0		65	105		98	102
Internal Link Dist (ft)		2546			1155			196			727	
Turn Bay Length (ft)	350		230	315		155			150			125
Base Capacity (vph)	424	2272	947	534	2141	977		586	606		633	818
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.21	0.39	0.01	0.03	0.49	0.02		0.09	0.22		0.14	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 129			
Actuated Cycle Length: 86.3			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: NYS Route 22 & Old Post Road/Old Route 22

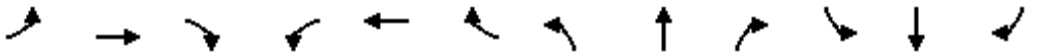


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	146	32	346	169	6	204	301	707	35	63	714	123
Future Volume (vph)	146	32	346	169	6	204	301	707	35	63	714	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	11	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		250	680		250	400		250
Storage Lanes	1		1	0		1	1		1	1		1
Taper Length (ft)	25			25			86			86		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.954		0.950			0.950		
Satd. Flow (prot)	1770	1900	1615	0	1956	1615	1711	3574	1324	1805	3539	1599
Flt Permitted	0.582				0.710		0.950			0.950		
Satd. Flow (perm)	1084	1900	1615	0	1456	1615	1709	3574	1324	1805	3539	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			349			206			79			124
Link Speed (mph)		30			30			55			55	
Link Distance (ft)		298			237			1202			815	
Travel Time (s)		6.8			5.4			14.9			10.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	22%	0%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	147	32	349	171	6	206	304	714	35	64	721	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	32	349	0	177	206	304	714	35	64	721	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	0.88	1.00	1.04	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	2	1	1	2	1	1
Detector Template				Left								
Leading Detector (ft)	6	6	6	20	43	6	83	6	6	83	6	6
Trailing Detector (ft)	0	0	0	0	0	0	-5	0	0	-5	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			3		6	1		2	5	
Permitted Phases	3		3	3		3			1			5
Detector Phase	3	3	3	3	3	3	6	1	1	2	5	5
Switch Phase												

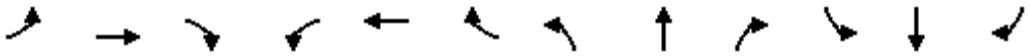
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	2.0	10.0	10.0	2.0	10.0	10.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	36.0	42.0	42.0	36.0	42.0	42.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%	37.1%	29.0%	33.9%	33.9%	29.0%	33.9%	33.9%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	30.0	36.0	36.0	30.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	6.0	6.0	6.0	6.0	6.0	6.0	2.0	6.0	6.0	2.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	4.0
Time Before Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	10.0	10.0	10.0	10.0	10.0	10.0	0.0	10.0	10.0	0.0	10.0	10.0
Recall Mode	Min	Min	Min	Min	Min	Min	None	Max	Max	None	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.0	26.0	26.0		26.0	26.0	22.2	53.4	53.4	8.3	36.7	36.7
Actuated g/C Ratio	0.25	0.25	0.25		0.25	0.25	0.22	0.52	0.52	0.08	0.36	0.36
v/c Ratio	0.54	0.07	0.52		0.48	0.37	0.83	0.39	0.05	0.44	0.57	0.20
Control Delay	41.9	30.2	6.4		38.1	6.3	58.5	18.2	0.1	58.4	31.6	6.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	30.2	6.4		38.1	6.3	58.5	18.2	0.1	58.4	31.6	6.2
LOS	D	C	A		D	A	E	B	A	E	C	A
Approach Delay		17.8			21.0			29.2			30.0	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	84	16	0		100	0	195	157	0	42	209	0
Queue Length 95th (ft)	159	42	69		177	55	318	246	0	92	324	45
Internal Link Dist (ft)		218			157			1122			735	
Turn Bay Length (ft)			225			250	680		250	400		250
Base Capacity (vph)	427	749	848		574	762	506	1848	722	534	1257	635
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.04	0.41		0.31	0.27	0.60	0.39	0.05	0.12	0.57	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 124			
Actuated Cycle Length: 103.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: NYS Route 22 & North Castle Drive (IBM)/NYS Route 128



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1121	67	127	705	345	146	61	256	331	40	49
Future Volume (vph)	35	1121	67	127	705	345	146	61	256	331	40	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.992				0.850			0.850		0.918	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1694	3548	0	1662	3539	1615	0	1807	1615	1787	1708	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1694	3548	0	1662	3539	1615	0	1804	1615	1787	1708	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				342			263		39	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	0%	5%	2%	0%	1%	3%	0%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	1168	70	132	734	359	152	64	267	345	42	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	1238	0	132	734	359	0	216	267	345	93	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	50	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		3	3		4	4	
Permitted Phases						5			3			
Detector Phase	6	1		2	5	5	3	3	3	4	4	
Switch Phase												



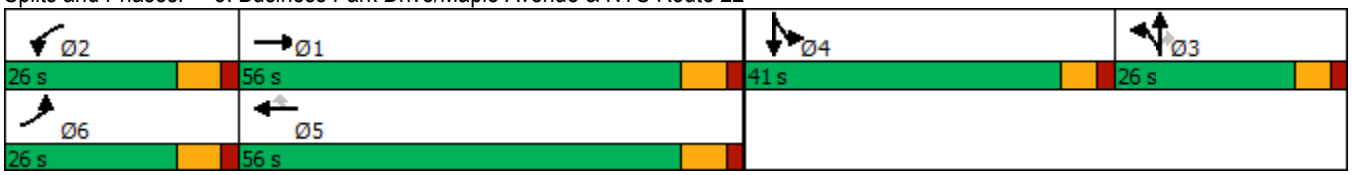
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	22.0		10.0	22.0	22.0	16.0	16.0	16.0	16.0	16.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	19.0	49.0		19.0	49.0	49.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.6	51.4		16.9	61.4	61.4		19.6	19.6	30.7	30.7	
Actuated g/C Ratio	0.07	0.37		0.12	0.44	0.44		0.14	0.14	0.22	0.22	
v/c Ratio	0.31	0.94		0.65	0.47	0.40		0.85	0.59	0.87	0.23	
Control Delay	71.1	57.3		75.1	30.6	4.9		87.4	12.5	75.3	28.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	71.1	57.3		75.1	30.6	4.9		87.4	12.5	75.3	28.4	
LOS	E	E		E	C	A		F	B	E	C	
Approach Delay		57.6			27.8			46.0			65.3	
Approach LOS		E			C			D			E	
Queue Length 50th (ft)	33	596		119	264	9		198	3	308	40	
Queue Length 95th (ft)	73	#809		196	347	77		#352	90	#464	92	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	258	1316		253	1566	905		275	469	467	475	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.14	0.94		0.52	0.47	0.40		0.79	0.57	0.74	0.20	

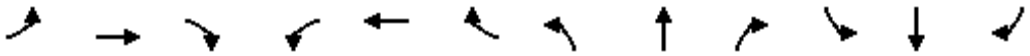
Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 138.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 46.3		Intersection LOS: D	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Business Park Drive/Maple Avenue & NYS Route 22





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	16	28	41	32	51	53	356	57	47	292	32
Future Volume (vph)	7	16	28	41	32	51	53	356	57	47	292	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			1%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925			0.945			0.984			0.988	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1563	0	0	1582	0	0	1660	0	0	1662	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1563	0	0	1582	0	0	1660	0	0	1662	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		231			878			1228			584	
Travel Time (s)		5.3			20.0			27.9			13.3	
Confl. Peds. (#/hr)	20			1		21			1	21		20
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	1%	2%	2%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	16	29	42	33	52	54	363	58	48	298	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	127	0	0	475	0	0	379	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			

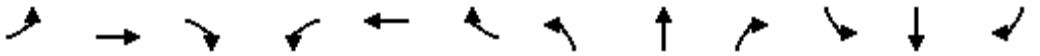
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	16	28	41	32	51	53	356	57	47	292	32
Future Vol, veh/h	7	16	28	41	32	51	53	356	57	47	292	32
Conflicting Peds, #/hr	20	0	0	1	0	21	0	0	1	21	0	20
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	1	-	-	-1	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	2	1	2	2	1	0
Mvmt Flow	7	16	29	42	33	52	54	363	58	48	298	33

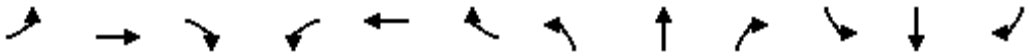
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	995	981	336	955	968	434	351	0	0	442	0	0
Stage 1	431	431	-	521	521	-	-	-	-	-	-	-
Stage 2	564	550	-	434	447	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.3	7.3	6.7	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	213	238	704	228	242	619	1208	-	-	1118	-	-
Stage 1	592	572	-	527	520	-	-	-	-	-	-	-
Stage 2	498	504	-	590	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	152	204	692	185	208	598	1188	-	-	1098	-	-
Mov Cap-2 Maneuver	152	204	-	185	208	-	-	-	-	-	-	-
Stage 1	547	532	-	487	480	-	-	-	-	-	-	-
Stage 2	391	466	-	518	524	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	29.7	0.9	1.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1188	-	-	309	269	1098	-	-
HCM Lane V/C Ratio	0.046	-	-	0.168	0.47	0.044	-	-
HCM Control Delay (s)	8.2	0	-	19	29.7	8.4	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.4	0.1	-	-



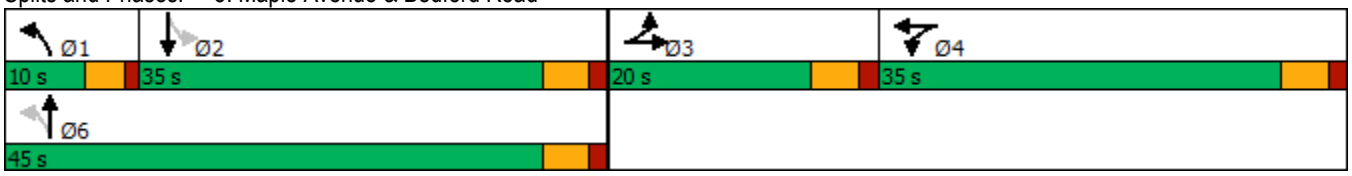
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	149	83	25	22	137	272	32	11	187	8
Future Volume (vph)	7	15	149	83	25	22	137	272	32	11	187	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	10	10	10	15	15	15
Grade (%)		-1%			-1%			-2%			-1%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			86			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97			1.00							
Frt		0.883			0.977			0.984			0.995	
Flt Protected		0.998			0.969		0.950				0.997	
Satd. Flow (prot)	0	1787	0	0	1976	0	1702	1738	0	0	2033	0
Flt Permitted		0.998			0.969		0.462				0.971	
Satd. Flow (perm)	0	1787	0	0	1969	0	827	1738	0	0	1980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		160			11			7			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		878			570			575			384	
Travel Time (s)		20.0			13.0			13.1			8.7	
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	1%	5%	29%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	16	160	89	27	24	147	292	34	12	201	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	184	0	0	140	0	147	326	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	3		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		2	2	
Switch Phase												

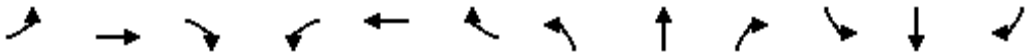


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Minimum Gap (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				1	1							
Act Effct Green (s)		5.7			12.3		25.2	24.2			13.6	
Actuated g/C Ratio		0.11			0.23		0.47	0.45			0.25	
v/c Ratio		0.55			0.30		0.30	0.41			0.44	
Control Delay		14.3			19.9		13.4	14.6			22.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		14.3			19.9		13.4	14.6			22.7	
LOS		B			B		B	B			C	
Approach Delay		14.3			19.9			14.2			22.7	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		7			34		25	64			58	
Queue Length 95th (ft)		65			88		84	184			151	
Internal Link Dist (ft)		798			490			495			304	
Turn Bay Length (ft)							120					
Base Capacity (vph)		641			1174		493	1334			1172	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.29			0.12		0.30	0.24			0.19	

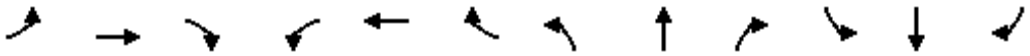
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 53.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Maple Avenue & Bedford Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	75	53	72	79	187	30	329	51	83	235	6
Future Volume (vph)	42	75	53	72	79	187	30	329	51	83	235	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		-6%			1%			1%			-3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			1.00			1.00	
Frt		0.958			0.925			0.983			0.998	
Flt Protected		0.988			0.989			0.996			0.987	
Satd. Flow (prot)	0	1618	0	0	1526	0	0	1645	0	0	1672	0
Flt Permitted		0.861			0.890			0.957			0.818	
Satd. Flow (perm)	0	1409	0	0	1372	0	0	1581	0	0	1384	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		32										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		410			373			584			389	
Travel Time (s)		9.3			8.5			13.3			8.8	
Confl. Peds. (#/hr)	3		2	2		3	4		7	7		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	0%	0%	1%	0%	1%	0%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	78	55	75	82	195	31	343	53	86	245	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	352	0	0	427	0	0	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15	1.15	1.12	1.12	1.12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.5	25.5		25.5	25.5		24.5	24.5		24.5	24.5	
Total Split (s)	35.5	35.5		35.5	35.5		45.5	45.5		45.5	45.5	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%		56.2%	56.2%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	1	1		1	1		3	3		3	3	
Act Effct Green (s)		17.7			17.7			20.0			20.0	
Actuated g/C Ratio		0.35			0.35			0.40			0.40	
v/c Ratio		0.34			0.73			0.67			0.61	
Control Delay		13.1			25.0			19.1			18.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.1			25.0			19.1			18.0	
LOS		B			C			B			B	
Approach Delay		13.1			25.0			19.1			18.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		27			79			88			67	
Queue Length 95th (ft)		89			221			233			185	
Internal Link Dist (ft)		330			293			504			309	
Turn Bay Length (ft)												
Base Capacity (vph)		947			912			1283			1123	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.19			0.39			0.33			0.30	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 81			
Actuated Cycle Length: 49.9			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: NYS Route 128 (Main Street) & Whippoorwill Road/Maple Avenue

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	648	680	638	597	278	228
Future Volume (vph)	648	680	638	597	278	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				635		243
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	689	723	679	635	296	243
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	723	679	635	296	243
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.3	71.4	30.1	111.4	26.9	111.4
Actuated g/C Ratio	0.31	0.64	0.27	1.00	0.24	1.00
v/c Ratio	1.33	0.34	0.75	0.42	0.73	0.16
Control Delay	194.5	10.3	43.9	0.9	50.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	194.5	10.3	43.9	0.9	50.4	0.2
LOS	F	B	D	A	D	A
Approach Delay		100.2	23.1		27.8	
Approach LOS		F	C		C	
Queue Length 50th (ft)	~666	117	235	0	200	0
Queue Length 95th (ft)	#989	179	330	0	303	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	518	2264	1026	1507	533	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.33	0.32	0.66	0.42	0.56	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 111.4			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.33			
Intersection Signal Delay: 57.2		Intersection LOS: E	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

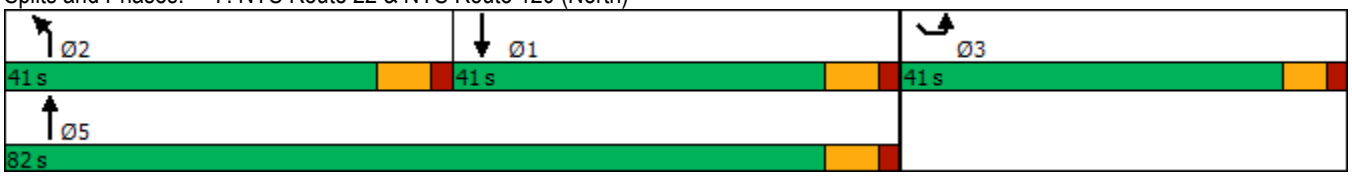
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

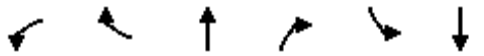
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



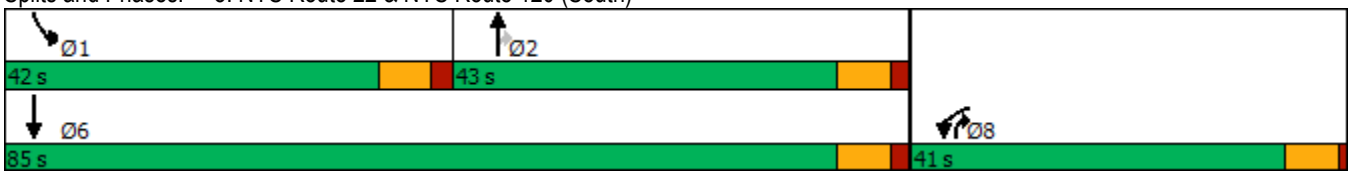
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	301	16	525	28	229	636
Future Volume (vph)	301	16	525	28	229	636
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.993			0.850		
Flt Protected	0.955				0.950	
Satd. Flow (prot)	1856	0	3403	1464	3335	3472
Flt Permitted	0.955				0.950	
Satd. Flow (perm)	1856	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	2			33		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	354	19	618	33	269	748
Shared Lane Traffic (%)						
Lane Group Flow (vph)	373	0	618	33	269	748
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

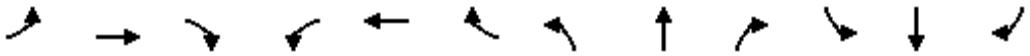


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	21.7		20.8	49.8	13.7	41.8
Actuated g/C Ratio	0.28		0.27	0.65	0.18	0.54
v/c Ratio	0.71		0.67	0.03	0.45	0.40
Control Delay	33.7		29.8	1.8	33.6	11.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	33.7		29.8	1.8	33.6	11.6
LOS	C		C	A	C	B
Approach Delay	33.7		28.4			17.4
Approach LOS	C		C			B
Queue Length 50th (ft)	152		131	0	58	98
Queue Length 95th (ft)	274		221	8	114	170
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	874		1646	1228	1568	3261
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.43		0.38	0.03	0.17	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 77			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	50	7	15	780	29	0	0	0
Future Volume (vph)	0	0	0	0	50	7	15	780	29	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.983			0.995				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1850	0	0	1998	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1850	0	0	1998	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	62	9	19	963	36	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	71	0	0	1018	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	50	7	15	780	29	0	0	0
Future Vol, veh/h	0	0	0	0	50	7	15	780	29	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	62	9	19	963	36	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	1019	981	0	0	0
Stage 1	-	1019	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	312	350	-	-	-
Stage 1	0	414	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	350	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	17.9	
HCM LOS	C	

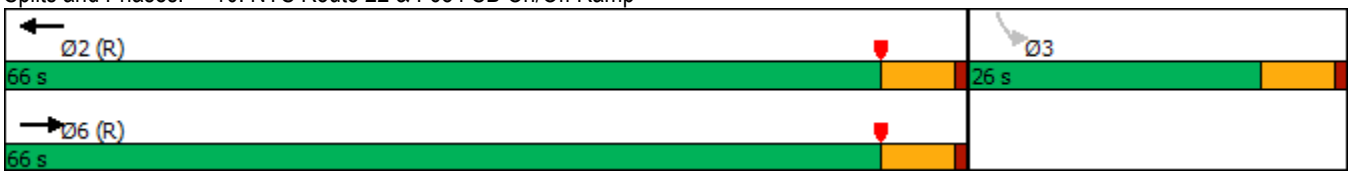
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	350
HCM Lane V/C Ratio	-	-	-	0.201
HCM Control Delay (s)	-	-	-	17.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.7

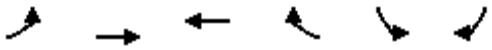
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	1404	304	0	908	128	65	0	268	0	0
Future Volume (vph)	0	1404	304	0	908	128	65	0	268	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			193			115			384		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1526	330	0	987	139	71	0	291	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1526	330	0	987	139	71	0	291	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		75.7	92.0		75.7	92.0	7.6		92.0		
Actuated g/C Ratio		0.82	1.00		0.82	1.00	0.08		1.00		
v/c Ratio		0.51	0.21		0.34	0.09	0.42		0.16		
Control Delay		4.2	0.3		3.1	0.1	47.0		0.2		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		4.2	0.3		3.1	0.1	47.0		0.2		
LOS		A	A		A	A	D		A		
Approach Delay		3.5			2.8			9.4			
Approach LOS		A			A			A			
Queue Length 50th (ft)		132	0		67	0	40		0		
Queue Length 95th (ft)		203	0		106	0	80		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2971	1599		2942	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.51	0.21		0.34	0.09	0.16		0.16		

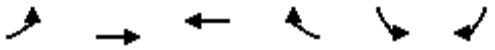
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 50.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





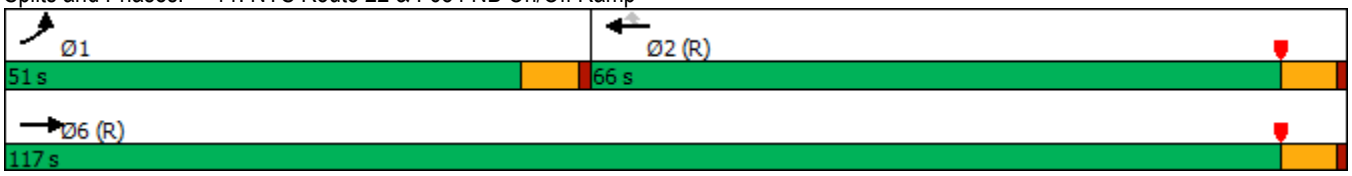
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	750	1151	646	252	0	389
Future Volume (vph)	750	1151	646	252	0	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						567
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	833	1279	718	280	0	432
Shared Lane Traffic (%)						
Lane Group Flow (vph)	833	1279	718	280	0	432
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						

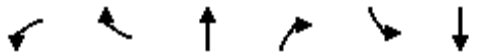


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	33.7	117.0	71.3	71.3		117.0
Actuated g/C Ratio	0.29	1.00	0.61	0.61		1.00
v/c Ratio	0.83	0.36	0.33	0.28		0.27
Control Delay	46.8	0.3	12.4	12.7		0.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	46.8	0.3	12.4	12.7		0.4
LOS	D	A	B	B		A
Approach Delay		18.6	12.5		0.4	
Approach LOS		B	B		A	
Queue Length 50th (ft)	302	0	132	94		0
Queue Length 95th (ft)	346	0	195	166		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2156	984		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.62	0.36	0.33	0.28		0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	61	464	0	85	18
Future Volume (vph)	0	61	464	0	85	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.961
Satd. Flow (prot)	1611	0	3539	0	0	1790
Flt Permitted						0.961
Satd. Flow (perm)	1611	0	3539	0	0	1790
Link Speed (mph)	30		30			30
Link Distance (ft)	235		679			299
Travel Time (s)	5.3		15.4			6.8
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	66	504	0	92	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	504	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	61	464	0	85	18
Future Vol, veh/h	0	61	464	0	85	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	66	504	0	92	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	708	252	0	0	504	0
Stage 1	504	-	-	-	-	-
Stage 2	204	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	385	748	-	-	1059	-
Stage 1	573	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	351	748	-	-	1059	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	7.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	748	1059	-
HCM Lane V/C Ratio	-	-	0.089	0.087	-
HCM Control Delay (s)	-	-	10.3	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.3	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1469	0	0	1035	0	432
Future Volume (vph)	1469	0	0	1035	0	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1514	0	0	1067	0	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1514	0	0	1067	0	445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	30.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑		↱
Traffic Vol, veh/h	1469	0	0	1035	0	432
Future Vol, veh/h	1469	0	0	1035	0	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1514	0	0	1067	0	445

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	757
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 331
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 331
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	206
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	331	-	-
HCM Lane V/C Ratio	1.346	-	-
HCM Control Delay (s)	206	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	21.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

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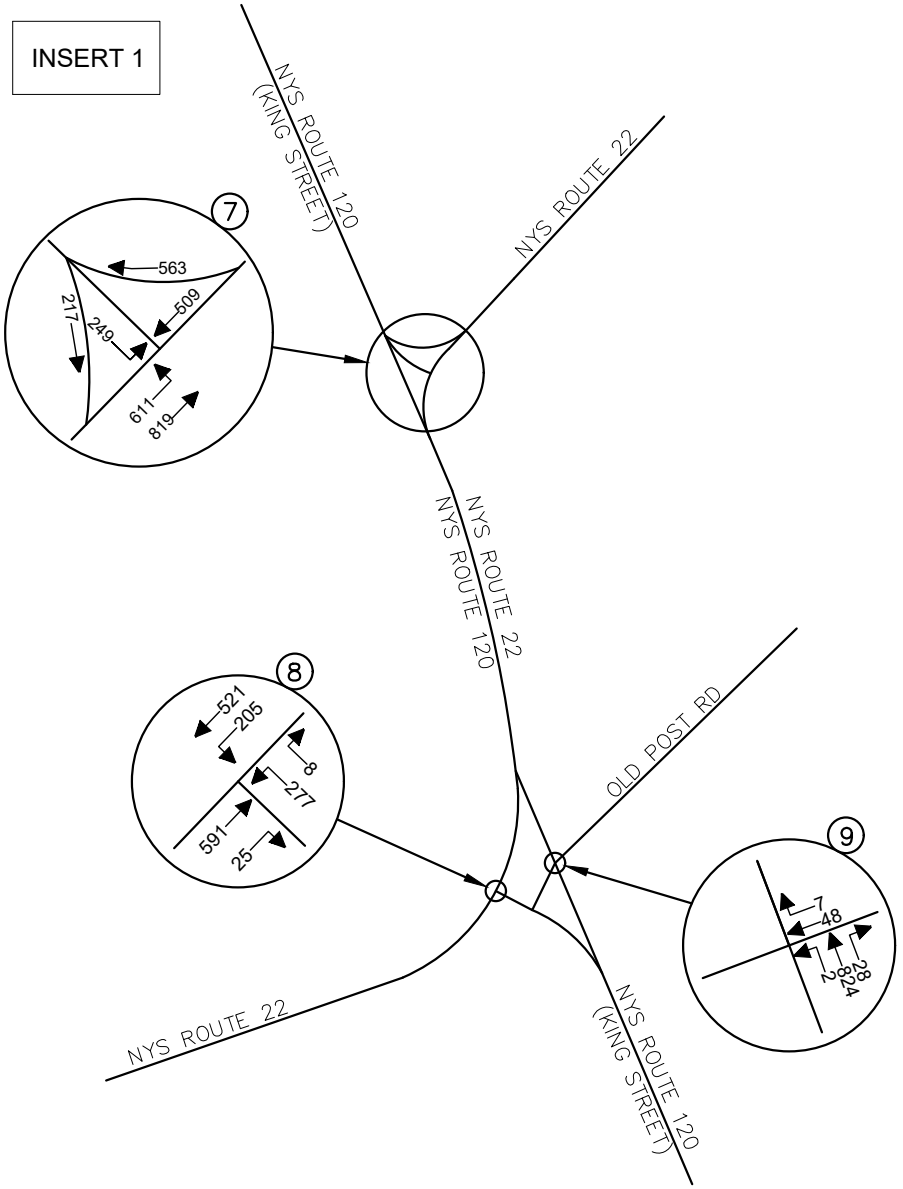
ATTACHMENT B

SENSITIVITY ANALYSIS

INSERT 1



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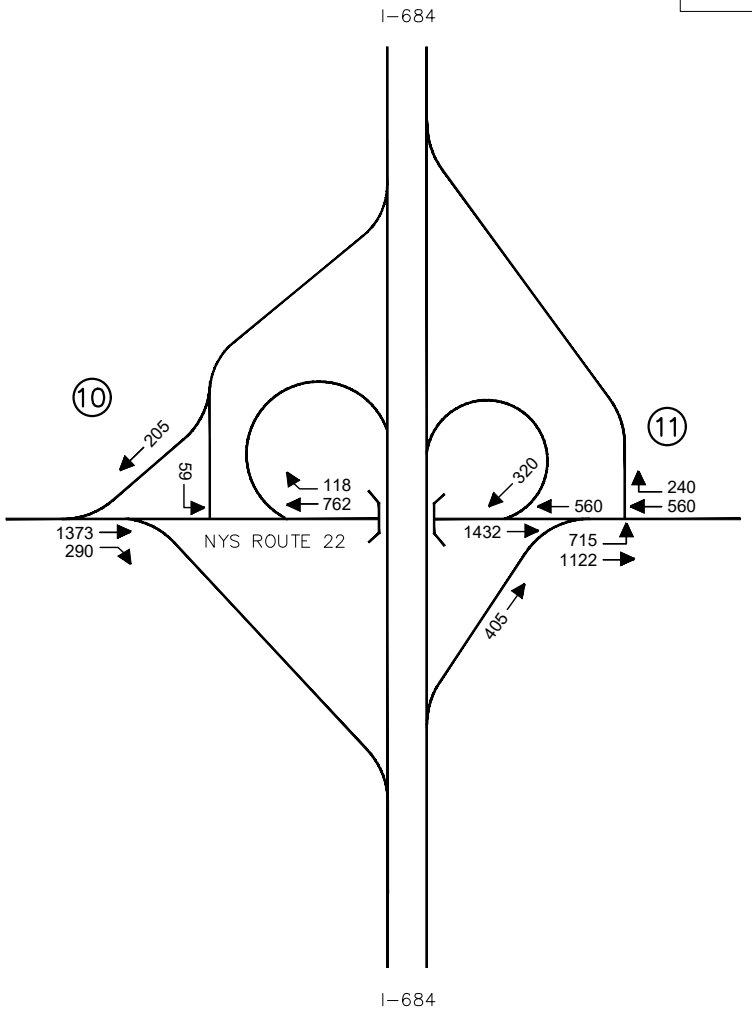

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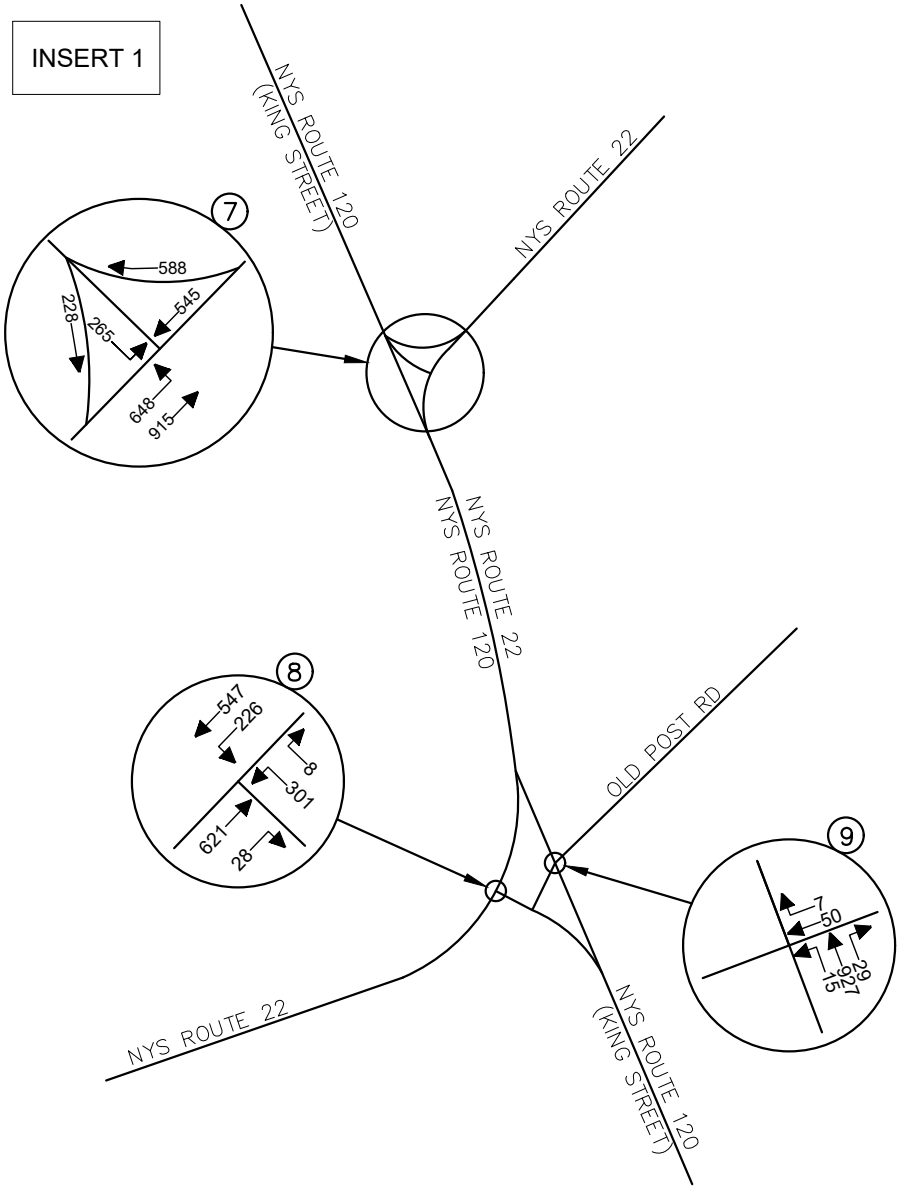
N.T.S.	11/13/2019	N.S.T.	R.P.R.

PROJECT NUMBER: 17005657B
DRAWING NAME: 191113_NT_FIGURES - SENSITIVITY ANALYSIS

SHEET TITLE:
SENSITIVITY ANALYSIS
YEAR 2017 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
FIGURE NO. 3A-S

INSERT 1



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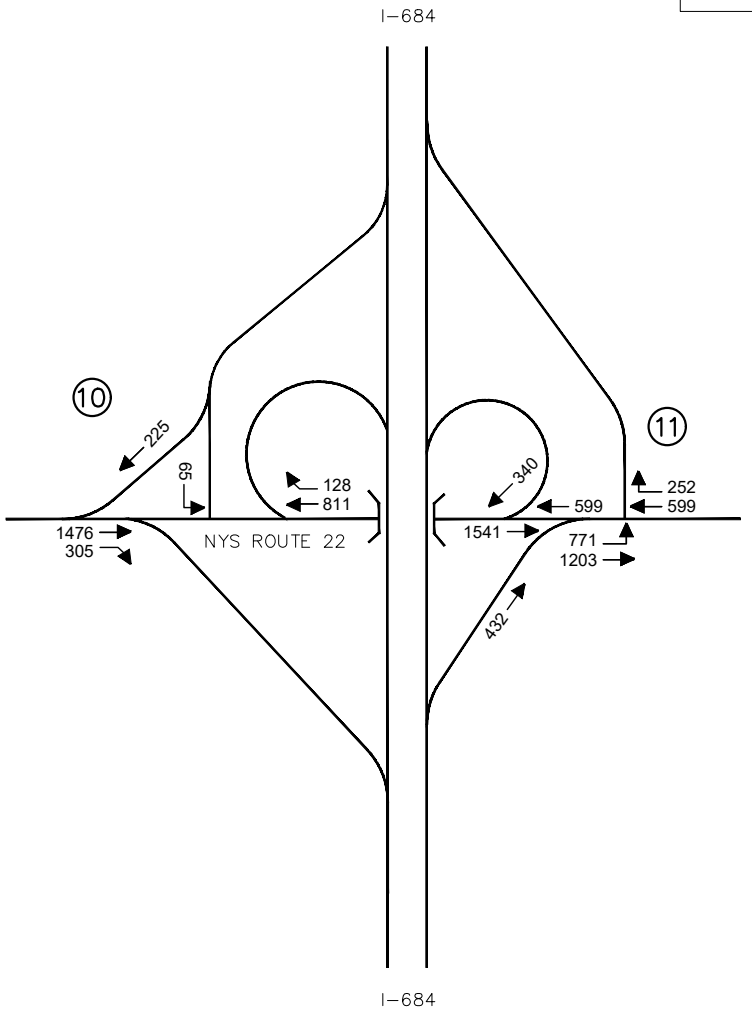

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PROJECT NUMBER: 17005657B
DRAWING NAME: 191113_NT_FIGURES - SENSITIVITY ANALYSIS

SHEET TITLE:
SENSITIVITY ANALYSIS
YEAR 2022 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
FIGURE NO. 9A- S

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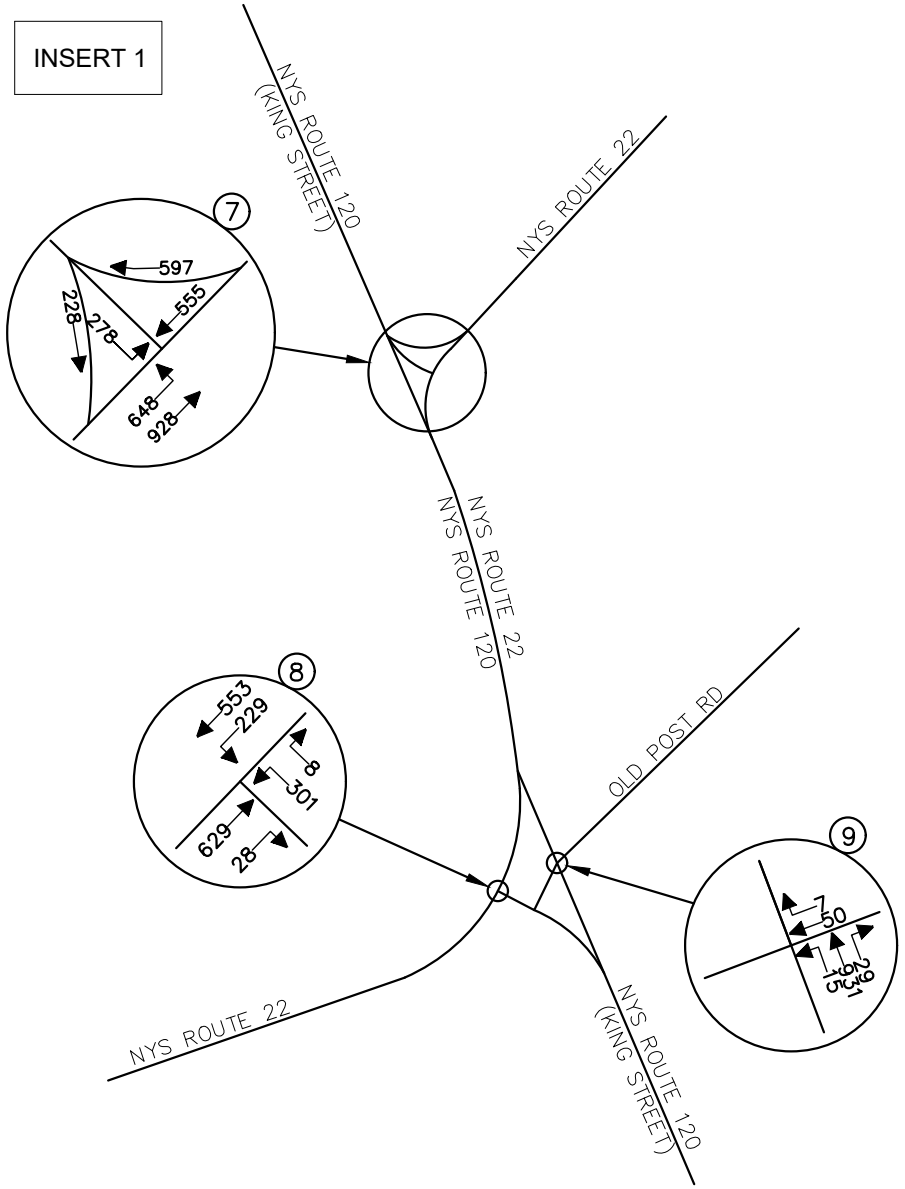

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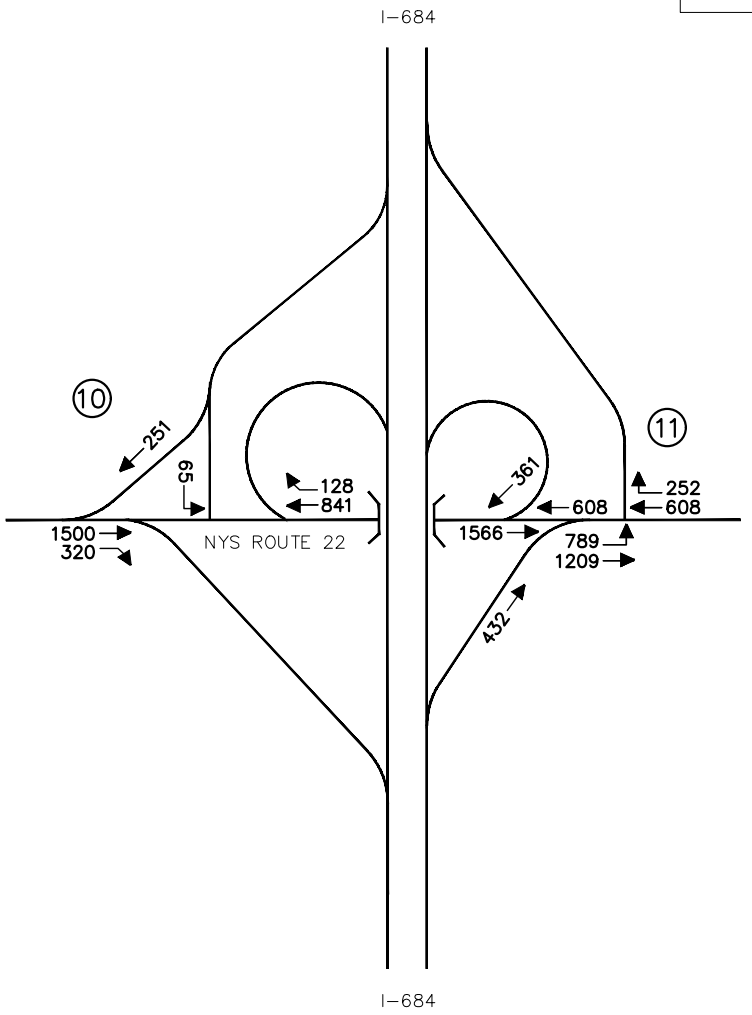

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PROJECT NUMBER: 17005657B
DRAWING NAME: 191113_NT_FIGURES - SENSITIVITY ANALYSIS

SHEET TITLE:
SENSITIVITY ANALYSIS
YEAR 2022 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
FIGURE NO. 15A-S

TABLE NO. 2-S

SENSITIVITY ANALYSIS

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		YEAR 2018 EXISTING			YEAR 2022 NO-BUILD			YEAR 2022 BUILD		
			WEEKDAY PM			WEEKDAY PM			WEEKDAY PM		
			LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
7	NYS ROUTE 22 & NYS ROUTE 120 (NORTH)										
	SIGNALIZED										
	NYS ROUTE 22	NB L	F	131.8	1.18	F	173.1	1.28	F	178.8	1.30
		NB T	B	10.4	0.41	B	11.3	0.46	B	11.7	0.47
		NB APPROACH	**E**	**62.3**	**----**	**E**	**78.4**	**----**	**F**	**80.4**	**----**
	NYS ROUTE 22	SB T	D	40.1	0.65	D	41.2	0.68	D	42.0	0.69
		SB R	A	0.8	0.40	A	0.8	0.42	A	0.9	0.42
		SB APPROACH	**B**	**19.4**	**----**	**C**	**20.2**	**----**	**C**	**20.7**	**----**
	NYS ROUTE 120	SEB L	D	46.6	0.68	D	48.2	0.70	D	49.1	0.72
		SEB R	A	0.2	0.15	A	0.2	0.16	A	0.2	0.16
		SEB APPROACH	**C**	**25.0**	**----**	**C**	**26.0**	**----**	**C**	**27.1**	**----**
		OVERALL	**D**	**40.9**	**----**	**D**	**49.6**	**----**	**D**	**50.8**	**----**
8	NYS ROUTE 22 & NYS ROUTE 120 (SOUTH)										
	SIGNALIZED										
	NYS ROUTE 22	NB T	C	28.6	0.69	C	30.2	0.71	C	30.3	0.72
		NB R	A	1.8	0.03	A	1.7	0.03	A	1.7	0.03
		NB APPROACH	**C**	**27.5**	**----**	**C**	**29.0**	**----**	**C**	**29.1**	**----**
	NYS ROUTE 22	SB L	C	33.3	0.42	D	36.0	0.47	D	36.3	0.47
		SB T	A	9.9	0.31	B	10.6	0.33	B	10.6	0.33
		SB APPROACH	**B**	**16.5**	**----**	**B**	**18.0**	**----**	**B**	**18.1**	**----**
	NYS ROUTE 120	WB L-R	C	34.2	0.69	D	36.3	0.72	D	36.6	0.72
		WB APPROACH	**C**	**34.2**	**----**	**D**	**36.3**	**----**	**D**	**36.6**	**----**
		OVERALL	**C**	**23.8**	**----**	**C**	**25.4**	**----**	**C**	**25.5**	**----**
9	KING STREET & OLD POST ROAD										
	UNSIGNALIZED										
	OLD POST ROAD	WB T-R	C	18.8	0.207	C	22.0	0.250	C	22.1	0.251
10	NYS ROUTE 22 & I-684 SB ON/OFF RAMP										
	SIGNALIZED										
	NYS ROUTE 22	EB T	A	4.0	0.50	A	4.4	0.54	A	4.5	0.55
		EB R	A	0.3	0.20	A	0.3	0.21	A	0.3	0.22
		EB APPROACH	**A**	**3.3**	**----**	**A**	**3.7**	**----**	**A**	**3.8**	**----**
	NYS ROUTE 22	WB T	A	2.8	0.28	A	3.0	0.30	A	3.0	0.31
		WB R	A	0.1	0.08	A	0.1	0.09	A	0.1	0.09
		WB APPROACH	**A**	**2.4**	**----**	**A**	**2.6**	**----**	**A**	**2.6**	**----**
	I-684 SB OFF RAMP	SB L (NYS 22 EB)	D	46.7	0.40	D	47.0	0.42	D	47.0	0.42
		SB R (NYS 22 WB)	A	0.1	0.13	A	0.2	0.14	A	0.2	0.15
		SB APPROACH	**B**	**10.5**	**----**	**B**	**10.7**	**----**	**A**	**9.9**	**----**
		OVERALL	**A**	**3.7**	**----**	**A**	**4.0**	**----**	**A**	**4.0**	**----**
11	NYS ROUTE 22 & I-684 NB ON/OFF RAMP										
	SIGNALIZED										
	NYS ROUTE 22	EB L	D	47.7	0.83	D	46.4	0.84	D	46.2	0.84
		EB T	A	0.3	0.35	A	0.3	0.37	A	0.3	0.38
		EB APPROACH	**B**	**18.7**	**----**	**B**	**18.3**	**----**	**B**	**18.4**	**----**
	NYS ROUTE 22	WB T	B	11.2	0.28	B	12.6	0.31	B	13.0	0.32
		WB R	B	11.8	0.27	B	13.1	0.29	B	13.5	0.29
		WB APPROACH	**B**	**11.4**	**----**	**B**	**12.7**	**----**	**B**	**13.1**	**----**
	I-684 NB OFF RAMP	SB R (NYS 22 WB)	A	0.3	0.22	A	0.3	0.23	A	0.4	0.25
		SB APPROACH	**A**	**0.3**	**----**	**A**	**0.3**	**----**	**A**	**0.4**	**----**
		OVERALL	**B**	**14.7**	**----**	**B**	**14.9**	**----**	**B**	**15.0**	**----**
42	I-684 NB OFF-RAMP TO NYS ROUTE 22 NB										
	UNSIGNALIZED										
	I-684 NB OFF-RAMP	NB R	F	157.5	1.224	F	241.8	1.427	F	254.2	1.455

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.

TABLE NO. 3-S

SENSITIVITY ANALYSIS

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION		STORAGE LENGTH (FT.)	YEAR 2018 EXISTING		YEAR 2022 NO-BUILD		YEAR 2022 BUILD	
				WEEKDAY PM		WEEKDAY PM		WEEKDAY PM	
				50%	95%	50%	95%	50%	95%
7	NYS ROUTE 22 & NYS ROUTE 120 (NORTH)								
	SIGNALIZED								
	NYS ROUTE 22	NB L	250'	524'	915'	608'	989'	614'	989'
		NB T	500'+	134'	223'	163'	261'	172'	266'
	NYS ROUTE 22	SB T	500'+	170'	254'	188'	276'	195'	281'
		SB R	700'	0'	0'	0'	0'	0'	0'
	NYS ROUTE 120	SEB L	200'	162'	269'	179'	287'	188'	303'
		SEB R	500'+	0'	0'	0'	0'	0'	0'
8	NYS ROUTE 22 & NYS ROUTE 120 (SOUTH)								
	SIGNALIZED								
	NYS ROUTE 22	NB T	500'+	146'	235'	165'	262'	168'	266'
		NB R	200'	0'	7'	0'	7'	0'	7'
	NYS ROUTE 22	SB L	215'	52'	103'	61'	118'	63'	119'
		SB T	500'+	73'	124'	83'	140'	84'	142'
	NYS ROUTE 120	WB L-R	500'+	136'	252'	158'	284'	159'	287'
9	KING STREET & OLD POST ROAD								
	UNSIGNALIZED								
	OLD POST ROAD	WB T-R	500'+	--	20'	--	25'	--	25'
10	NYS ROUTE 22 & I-684 SB ON/OFF RAMP								
	SIGNALIZED								
	NYS ROUTE 22	EB T	500'+	124'	189'	143'	221'	147'	228'
		EB R	500'+	0'	0'	0'	0'	0'	0'
	NYS ROUTE 22	WB T	500'+	52'	83'	58'	92'	61'	96'
		WB R	1000'+	0'	0'	0'	0'	0'	0'
	I-684 SB OFF RAMP	SB L (NYS 22 EB)	200'	36'	74'	40'	80'	40'	80'
		SB R (NYS 22 WB)	500'+	0'	0'	0'	0'	0'	0'
11	NYS ROUTE 22 & I-684 NB ON/OFF RAMP								
	SIGNALIZED								
	NYS ROUTE 22	EB L	400'	290'	334'	309'	356'	317'	362'
		EB T	500'+	0'	0'	0'	0'	0'	0'
	NYS ROUTE 22	WB T	400'	105'	161'	122'	182'	127'	188'
		WB R	200'	85'	153'	96'	169'	98'	172'
	I-684 NB OFF RAMP	SB R (NYS 22 WB)	500'+	0'	0'	0'	0'	0'	0'
42	I-684 NB OFF-RAMP TO NYS ROUTE 22 NB								
	UNSIGNALIZED								
	I-684 NB OFF-RAMP	NB R	1000'	--	455'	--	593'	--	608'

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 18-4

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

For approach-based and intersection wide assessments, LOS is defined solely by control delay.

LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 19-1

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 20-2

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

CAPACITY ANALYSIS

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	611	819	509	563	249	217
Future Volume (vph)	611	819	509	563	249	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				599		231
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	650	871	541	599	265	231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	650	871	541	599	265	231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.4	67.5	26.0	105.0	24.3	105.0
Actuated g/C Ratio	0.33	0.64	0.25	1.00	0.23	1.00
v/c Ratio	1.18	0.41	0.65	0.40	0.68	0.15
Control Delay	131.8	10.4	40.1	0.8	46.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	131.8	10.4	40.1	0.8	46.6	0.2
LOS	F	B	D	A	D	A
Approach Delay		62.3	19.4		25.0	
Approach LOS		E	B		C	
Queue Length 50th (ft)	~524	134	170	0	162	0
Queue Length 95th (ft)	#915	223	254	0	269	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	552	2411	1093	1507	568	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.36	0.49	0.40	0.47	0.15

Intersection Summary	
Area Type:	Other
Cycle Length: 123	
Actuated Cycle Length: 105	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 40.9	Intersection LOS: D
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

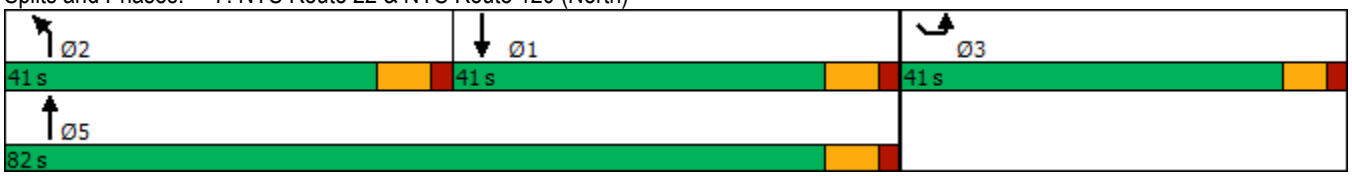
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)

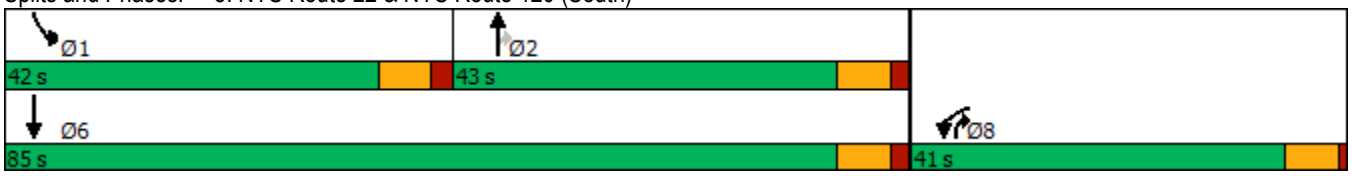


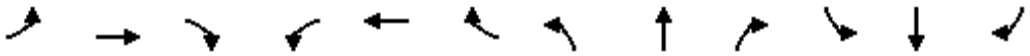
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	277	8	591	25	205	521
Future Volume (vph)	277	8	591	25	205	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.996			0.850		
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1859	0	3403	1464	3335	3472
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1859	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	1			29		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	326	9	695	29	241	613
Shared Lane Traffic (%)						
Lane Group Flow (vph)	335	0	695	29	241	613
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	20.1		22.6	50.0	13.3	43.1
Actuated g/C Ratio	0.26		0.29	0.65	0.17	0.56
v/c Ratio	0.69		0.69	0.03	0.42	0.31
Control Delay	34.2		28.6	1.8	33.3	9.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	34.2		28.6	1.8	33.3	9.9
LOS	C		C	A	C	A
Approach Delay	34.2		27.5			16.5
Approach LOS	C		C			B
Queue Length 50th (ft)	136		146	0	52	73
Queue Length 95th (ft)	252		235	7	103	124
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	875		1648	1262	1570	3280
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.38		0.42	0.02	0.15	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 76.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	48	7	2	824	28	0	0	0
Future Volume (vph)	0	0	0	0	48	7	2	824	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.982			0.996				
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1848	0	0	2002	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1848	0	0	2002	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	59	9	2	1017	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	68	0	0	1054	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	48	7	2	824	28	0	0	0
Future Vol, veh/h	0	0	0	0	48	7	2	824	28	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	59	9	2	1017	35	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	1039	1035	0	0	0
Stage 1	-	1039	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	305	328	-	-	-
Stage 1	0	407	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	328	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	18.8	
HCM LOS	C	

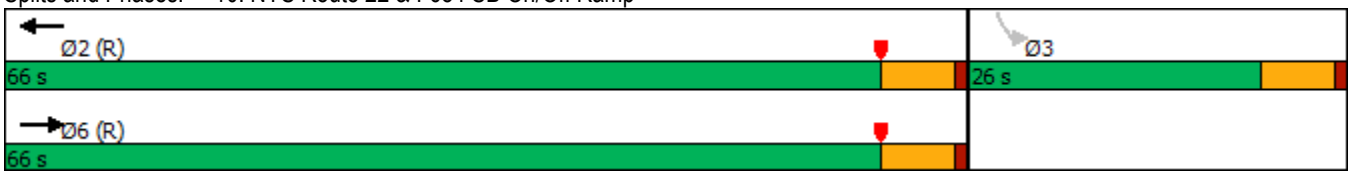
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	328
HCM Lane V/C Ratio	-	-	-	0.207
HCM Control Delay (s)	-	-	-	18.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.8

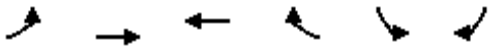
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	1373	290	0	762	118	59	0	205	0	0
Future Volume (vph)	0	1373	290	0	762	118	59	0	205	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			188			126			428		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1492	315	0	828	128	64	0	223	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1492	315	0	828	128	64	0	223	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		76.0	92.0		76.0	92.0	7.3		92.0		
Actuated g/C Ratio		0.83	1.00		0.83	1.00	0.08		1.00		
v/c Ratio		0.50	0.20		0.28	0.08	0.40		0.13		
Control Delay		4.0	0.3		2.8	0.1	46.7		0.1		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		4.0	0.3		2.8	0.1	46.7		0.1		
LOS		A	A		A	A	D		A		
Approach Delay		3.3			2.4			10.5			
Approach LOS		A			A			B			
Queue Length 50th (ft)		124	0		52	0	36		0		
Queue Length 95th (ft)		189	0		83	0	74		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2982	1599		2953	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.50	0.20		0.28	0.08	0.14		0.13		

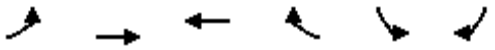
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 3.7		Intersection LOS: A	
Intersection Capacity Utilization 49.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





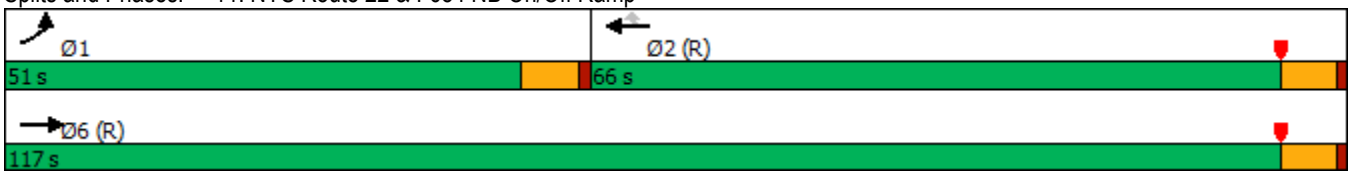
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	715	1122	560	240	0	320
Future Volume (vph)	715	1122	560	240	0	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						595
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	794	1247	622	267	0	356
Shared Lane Traffic (%)						
Lane Group Flow (vph)	794	1247	622	267	0	356
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	32.3	117.0	72.7	72.7		117.0
Actuated g/C Ratio	0.28	1.00	0.62	0.62		1.00
v/c Ratio	0.83	0.35	0.28	0.27		0.22
Control Delay	47.7	0.3	11.2	11.8		0.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	47.7	0.3	11.2	11.8		0.3
LOS	D	A	B	B		A
Approach Delay		18.7	11.4		0.3	
Approach LOS		B	B		A	
Queue Length 50th (ft)	290	0	105	85		0
Queue Length 95th (ft)	334	0	161	153		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2199	1003		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.60	0.35	0.28	0.27		0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1432	0	0	880	0	405
Future Volume (vph)	1432	0	0	880	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1476	0	0	907	0	418
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1476	0	0	907	0	418
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	23.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑		↱
Traffic Vol, veh/h	1432	0	0	880	0	405
Future Vol, veh/h	1432	0	0	880	0	405
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1476	0	0	907	0	418

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	738
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 341
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 341
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	157.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	341	-	-
HCM Lane V/C Ratio	1.224	-	-
HCM Control Delay (s)	157.5	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	18.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	648	915	545	588	265	228
Future Volume (vph)	648	915	545	588	265	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				626		243
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	689	973	580	626	282	243
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	973	580	626	282	243
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.4	68.9	27.4	107.6	25.6	107.6
Actuated g/C Ratio	0.32	0.64	0.25	1.00	0.24	1.00
v/c Ratio	1.28	0.46	0.68	0.42	0.70	0.16
Control Delay	173.1	11.3	41.2	0.8	48.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	173.1	11.3	41.2	0.8	48.2	0.2
LOS	F	B	D	A	D	A
Approach Delay		78.4	20.2		26.0	
Approach LOS		E	C		C	
Queue Length 50th (ft)	~608	163	188	0	179	0
Queue Length 95th (ft)	#989	261	276	0	287	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	538	2351	1066	1507	554	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.28	0.41	0.54	0.42	0.51	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 107.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 49.6		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

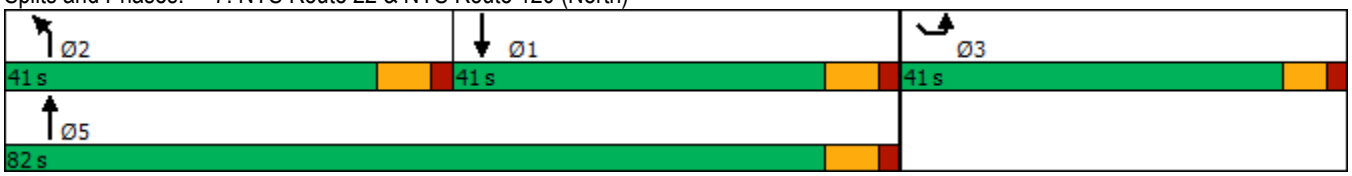
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)

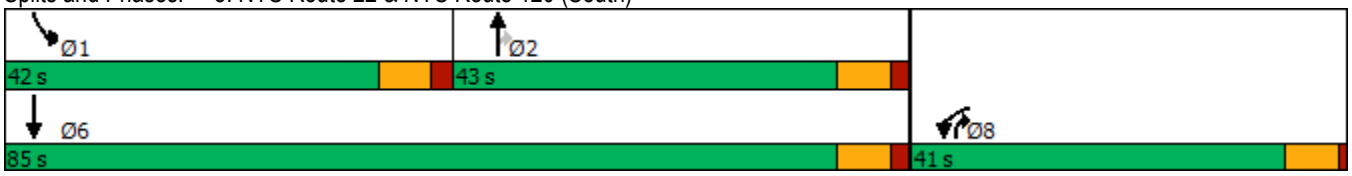


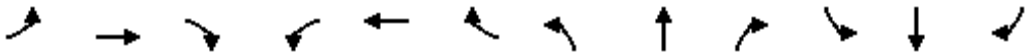
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	301	8	621	28	226	547
Future Volume (vph)	301	8	621	28	226	547
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.997			0.850		
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1861	0	3403	1464	3335	3472
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1861	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	1			33		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	354	9	731	33	266	644
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	731	33	266	644
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	22.1		24.4	53.8	13.9	45.6
Actuated g/C Ratio	0.27		0.30	0.66	0.17	0.56
v/c Ratio	0.72		0.71	0.03	0.47	0.33
Control Delay	36.3		30.2	1.7	36.0	10.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	36.3		30.2	1.7	36.0	10.6
LOS	D		C	A	D	B
Approach Delay	36.3		29.0			18.0
Approach LOS	D		C			B
Queue Length 50th (ft)	158		165	0	61	83
Queue Length 95th (ft)	284		262	7	118	140
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	831		1563	1231	1490	3191
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.44		0.47	0.03	0.18	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 81.2			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	50	7	15	927	29	0	0	0
Future Volume (vph)	0	0	0	0	50	7	15	927	29	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.983			0.996				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1850	0	0	2000	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1850	0	0	2000	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	62	9	19	1144	36	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	71	0	0	1199	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	50	7	15	927	29	0	0	0
Future Vol, veh/h	0	0	0	0	50	7	15	927	29	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	62	9	19	1144	36	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	1200	1162	0	0	0
Stage 1	-	1200	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	256	282	-	-	-
Stage 1	0	357	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	282	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	22	
HCM LOS	C	

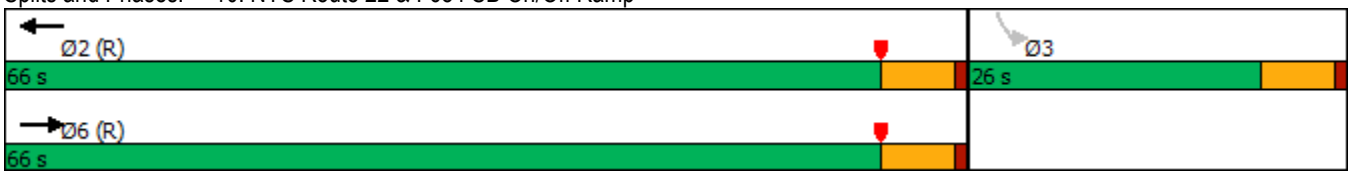
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	282
HCM Lane V/C Ratio	-	-	-	0.25
HCM Control Delay (s)	-	-	-	22
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1

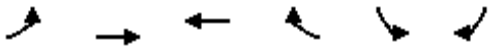
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	1476	305	0	811	128	65	0	225	0	0
Future Volume (vph)	0	1476	305	0	811	128	65	0	225	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			185			129			412		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1604	332	0	882	139	71	0	245	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1604	332	0	882	139	71	0	245	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		75.7	92.0		75.7	92.0	7.6		92.0		
Actuated g/C Ratio		0.82	1.00		0.82	1.00	0.08		1.00		
v/c Ratio		0.54	0.21		0.30	0.09	0.42		0.14		
Control Delay		4.4	0.3		3.0	0.1	47.0		0.2		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		4.4	0.3		3.0	0.1	47.0		0.2		
LOS		A	A		A	A	D		A		
Approach Delay		3.7			2.6			10.7			
Approach LOS		A			A			B			
Queue Length 50th (ft)		143	0		58	0	40		0		
Queue Length 95th (ft)		221	0		92	0	80		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2971	1599		2942	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.54	0.21		0.30	0.09	0.16		0.14		

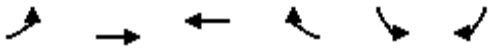
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 4.0		Intersection LOS: A	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





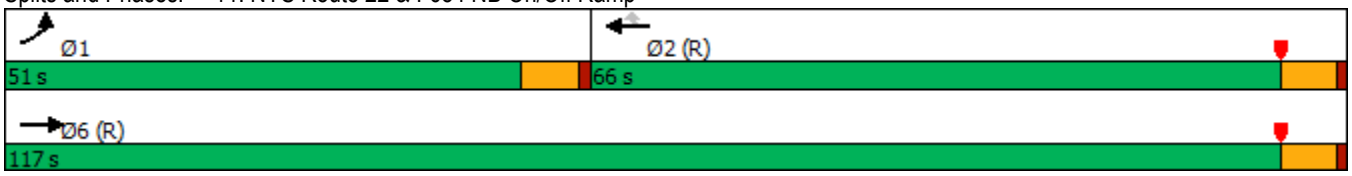
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	771	1203	599	252	0	340
Future Volume (vph)	771	1203	599	252	0	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						581
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	857	1337	666	280	0	378
Shared Lane Traffic (%)						
Lane Group Flow (vph)	857	1337	666	280	0	378
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.5	117.0	70.5	70.5		117.0
Actuated g/C Ratio	0.29	1.00	0.60	0.60		1.00
v/c Ratio	0.84	0.37	0.31	0.29		0.23
Control Delay	46.4	0.3	12.6	13.1		0.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	46.4	0.3	12.6	13.1		0.3
LOS	D	A	B	B		A
Approach Delay		18.3	12.7		0.3	
Approach LOS		B	B		A	
Queue Length 50th (ft)	309	0	122	96		0
Queue Length 95th (ft)	356	0	182	169		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2132	972		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.64	0.37	0.31	0.29		0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	629	0	0	773	0	934
Future Volume (vph)	629	0	0	773	0	934
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3539	0	0	3539	0	1611
Flt Permitted						
Satd. Flow (perm)	3539	0	0	3539	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	488			402	404	
Travel Time (s)	11.1			9.1	9.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	684	0	0	840	0	1015
Shared Lane Traffic (%)						
Lane Group Flow (vph)	684	0	0	840	0	1015
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	22			22	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	0	0	0	254	309	971
Future Volume (vph)	0	0	0	254	309	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	-8%	
Storage Length (ft)	0	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt					0.898	
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	1740	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	1740	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	300			334	246	
Travel Time (s)	6.8			7.6	5.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	0	0	0	276	336	1055
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	276	1391	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.95	0.95
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1541	0	0	939	0	432
Future Volume (vph)	1541	0	0	939	0	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1589	0	0	968	0	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1589	0	0	968	0	445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	35.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑		↱
Traffic Vol, veh/h	1541	0	0	939	0	432
Future Vol, veh/h	1541	0	0	939	0	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1589	0	0	968	0	445

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	795
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 312
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 312
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	241.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	312	-	-
HCM Lane V/C Ratio	1.427	-	-
HCM Control Delay (s)	241.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	23.7	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	648	928	555	597	278	228
Future Volume (vph)	648	928	555	597	278	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		0%	0%		0%	
Storage Length (ft)	250			500	250	0
Storage Lanes	1			1	1	1
Taper Length (ft)	86				86	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	3336	3336	1507	1685	1507
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	3336	3336	1507	1685	1507
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				635		243
Link Speed (mph)		55	55		30	
Link Distance (ft)		770	1056		861	
Travel Time (s)		9.5	13.1		19.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	689	987	590	635	296	243
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	987	590	635	296	243
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		10	15		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	2	0
Detector Template						
Leading Detector (ft)	35	104	104	0	104	0
Trailing Detector (ft)	-5	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	Free
Protected Phases	2	5	1		3	
Permitted Phases				Free		Free
Detector Phase	2	5	1		3	
Switch Phase						

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Minimum Initial (s)	12.0	12.0	12.0		10.0	
Minimum Split (s)	36.0	36.0	36.0		26.0	
Total Split (s)	41.0	82.0	41.0		41.0	
Total Split (%)	33.3%	66.7%	33.3%		33.3%	
Maximum Green (s)	34.0	75.0	34.0		35.0	
Yellow Time (s)	5.0	5.0	5.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	7.0	7.0	7.0		6.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	6.0	6.0	6.0		6.0	
Minimum Gap (s)	4.0	4.0	4.0		4.0	
Time Before Reduce (s)	20.0	20.0	20.0		20.0	
Time To Reduce (s)	8.0	8.0	8.0		5.0	
Recall Mode	None	Min	Min		None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.3	69.1	27.7	108.6	26.4	108.6
Actuated g/C Ratio	0.32	0.64	0.26	1.00	0.24	1.00
v/c Ratio	1.30	0.47	0.69	0.42	0.72	0.16
Control Delay	178.8	11.7	42.0	0.9	49.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	178.8	11.7	42.0	0.9	49.1	0.2
LOS	F	B	D	A	D	A
Approach Delay		80.4	20.7		27.1	
Approach LOS		F	C		C	
Queue Length 50th (ft)	~614	172	195	0	188	0
Queue Length 95th (ft)	#989	266	281	0	303	0
Internal Link Dist (ft)		690	976		781	
Turn Bay Length (ft)	250			500	250	
Base Capacity (vph)	532	2327	1055	1507	548	1507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.30	0.42	0.56	0.42	0.54	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 123			
Actuated Cycle Length: 108.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay: 50.8		Intersection LOS: D	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

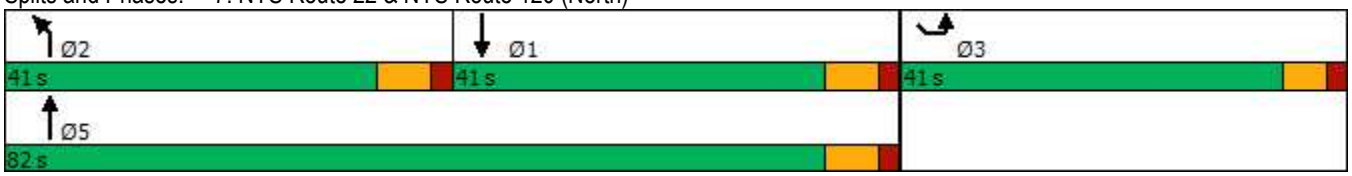
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

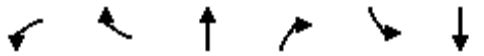
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: NYS Route 22 & NYS Route 120 (North)



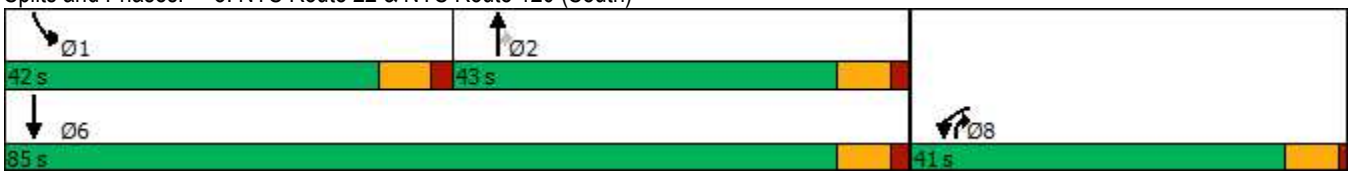
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	301	8	629	28	229	553
Future Volume (vph)	301	8	629	28	229	553
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	11	11
Grade (%)	-8%		-2%			-1%
Storage Length (ft)	0	0		200	215	
Storage Lanes	1	0		1	2	
Taper Length (ft)	25				86	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	0.95
Ped Bike Factor						
Frt	0.997			0.850		
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1861	0	3403	1464	3335	3472
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1861	0	3403	1464	3335	3472
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	1			33		
Link Speed (mph)	30		50			50
Link Distance (ft)	334		905			488
Travel Time (s)	7.6		12.3			6.7
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	4%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	354	9	740	33	269	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	740	33	269	651
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		22			22
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.95	0.95	1.08	1.08	1.04	1.04
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Detector Phase	8		2	8	1	6
Switch Phase						

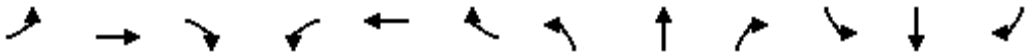


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0		12.0	10.0	12.0	12.0
Minimum Split (s)	26.0		36.0	26.0	36.0	36.0
Total Split (s)	41.0		43.0	41.0	42.0	85.0
Total Split (%)	32.5%		34.1%	32.5%	33.3%	67.5%
Maximum Green (s)	35.0		36.0	35.0	35.0	78.0
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		7.0	6.0	7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Min	None	Min	Min
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	22.2		24.7	54.2	13.9	45.9
Actuated g/C Ratio	0.27		0.30	0.66	0.17	0.56
v/c Ratio	0.72		0.72	0.03	0.47	0.33
Control Delay	36.6		30.3	1.7	36.3	10.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	36.6		30.3	1.7	36.3	10.6
LOS	D		C	A	D	B
Approach Delay	36.6		29.1			18.1
Approach LOS	D		C			B
Queue Length 50th (ft)	159		168	0	63	84
Queue Length 95th (ft)	287		266	7	119	142
Internal Link Dist (ft)	254		825			408
Turn Bay Length (ft)				200	215	
Base Capacity (vph)	827		1555	1229	1481	3181
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.44		0.48	0.03	0.18	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 126			
Actuated Cycle Length: 81.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: NYS Route 22 & NYS Route 120 (South)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	50	7	15	931	29	0	0	0
Future Volume (vph)	0	0	0	0	50	7	15	931	29	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	13	12	12	12	12
Grade (%)		0%			-5%			-7%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.983			0.996				
Flt Protected								0.999				
Satd. Flow (prot)	0	0	0	0	1850	0	0	2000	0	0	0	0
Flt Permitted								0.999				
Satd. Flow (perm)	0	0	0	0	1850	0	0	2000	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		63			297			300			404	
Travel Time (s)		1.4			6.8			6.8			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	62	9	19	1149	36	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	71	0	0	1204	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.97	0.97	0.97	0.96	0.92	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	50	7	15	931	29	0	0	0
Future Vol, veh/h	0	0	0	0	50	7	15	931	29	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	4	0	0	1	4	0	0	0
Mvmt Flow	0	0	0	0	62	9	19	1149	36	0	0	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	-	1205	1167	0	0	0
Stage 1	-	1205	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	5.54	5.7	4.1	-	-
Critical Hdwy Stg 1	-	4.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.036	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	255	280	-	-	-
Stage 1	0	356	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	280	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	22.1	
HCM LOS	C	

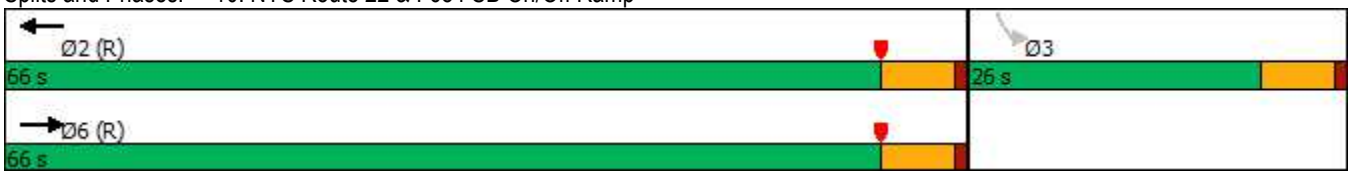
Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	-	280
HCM Lane V/C Ratio	-	-	-	0.251
HCM Control Delay (s)	-	-	-	22.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1

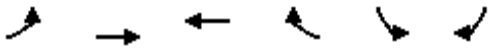
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↱		↑↑	↱	↰		↱		
Traffic Volume (vph)	0	1500	320	0	841	128	65	0	251	0	0
Future Volume (vph)	0	1500	320	0	841	128	65	0	251	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	16	16	16	12	12
Grade (%)		0%			0%			0%		0%	
Storage Length (ft)	0		275	0		0		200	0	0	0
Storage Lanes	0		1	0		1		1	1	0	0
Taper Length (ft)	25			25				25		25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor											
Frt			0.850			0.850			0.850		
Flt Protected							0.950				
Satd. Flow (prot)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Flt Permitted							0.950				
Satd. Flow (perm)	0	3610	1599	0	3574	1583	2046	0	1777	0	0
Right Turn on Red			Yes			Yes			Yes		
Satd. Flow (RTOR)			190			124			403		
Link Speed (mph)		55			55			30		30	
Link Distance (ft)		796			930			572		532	
Travel Time (s)		9.9			11.5			13.0		12.1	
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	0%	1%	2%	0%	2%	3%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	0	1630	348	0	914	139	71	0	273	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1630	348	0	914	139	71	0	273	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)		0			0			16		0	
Link Offset(ft)		0			0			0		0	
Crosswalk Width(ft)		16			16			16		16	
Two way Left Turn Lane											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	15	9	15	9
Number of Detectors		3	1		3	1	1		1		
Detector Template							Left				
Leading Detector (ft)		199	0		199	0	20		0		
Trailing Detector (ft)		-5	0		-5	0	0		0		
Turn Type		NA	Free		NA	Free	Perm		Free		
Protected Phases		6			2						
Permitted Phases			Free			Free	3		Free		
Detector Phase		6			2		3				
Switch Phase											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Minimum Initial (s)		10.0			10.0		3.0				
Minimum Split (s)		56.0			56.0		21.0				
Total Split (s)		66.0			66.0		26.0				
Total Split (%)		71.7%			71.7%		28.3%				
Maximum Green (s)		60.0			60.0		20.0				
Yellow Time (s)		5.0			5.0		5.0				
All-Red Time (s)		1.0			1.0		1.0				
Lost Time Adjust (s)		0.0			0.0		0.0				
Total Lost Time (s)		6.0			6.0		6.0				
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)		2.0			2.0		2.0				
Minimum Gap (s)		0.2			0.2		0.2				
Time Before Reduce (s)		0.0			0.0		0.0				
Time To Reduce (s)		0.0			0.0		0.0				
Recall Mode		C-Min			C-Min		None				
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effct Green (s)		75.7	92.0		75.7	92.0	7.6		92.0		
Actuated g/C Ratio		0.82	1.00		0.82	1.00	0.08		1.00		
v/c Ratio		0.55	0.22		0.31	0.09	0.42		0.15		
Control Delay		4.5	0.3		3.0	0.1	47.0		0.2		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		4.5	0.3		3.0	0.1	47.0		0.2		
LOS		A	A		A	A	D		A		
Approach Delay		3.8			2.6			9.9			
Approach LOS		A			A			A			
Queue Length 50th (ft)		147	0		61	0	40		0		
Queue Length 95th (ft)		228	0		96	0	80		0		
Internal Link Dist (ft)		716			850			492		452	
Turn Bay Length (ft)			275				200				
Base Capacity (vph)		2971	1599		2942	1583	444		1777		
Starvation Cap Reductn		0	0		0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0		0		
Storage Cap Reductn		0	0		0	0	0		0		
Reduced v/c Ratio		0.55	0.22		0.31	0.09	0.16		0.15		

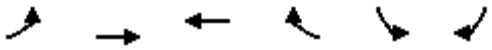
Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 92			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 4.0		Intersection LOS: A	
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: NYS Route 22 & I-684 SB On/Off Ramp





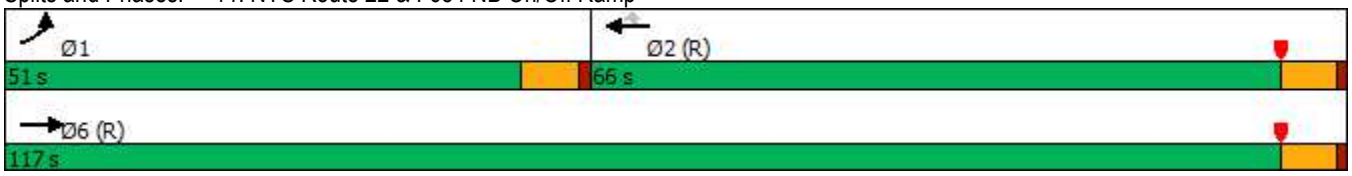
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	789	1209	608	252	0	361
Future Volume (vph)	789	1209	608	252	0	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	400			400	1	0
Storage Lanes	2			1	0	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3467	3574	3539	1615	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3467	3574	3539	1615	0	1611
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						578
Link Speed (mph)		55	55		30	
Link Distance (ft)		287	1186		622	
Travel Time (s)		3.6	14.7		14.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	877	1343	676	280	0	401
Shared Lane Traffic (%)						
Lane Group Flow (vph)	877	1343	676	280	0	401
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2	2		1
Detector Template						
Leading Detector (ft)	83	83	83	83		0
Trailing Detector (ft)	-5	-5	-5	-5		0
Turn Type	Prot	NA	NA	Perm		Free
Protected Phases	1	6	2			
Permitted Phases				2		Free
Detector Phase	1	6	2	2		
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0	10.0		
Minimum Split (s)	41.0	56.0	56.0	56.0		
Total Split (s)	51.0	117.0	66.0	66.0		
Total Split (%)	43.6%	100.0%	56.4%	56.4%		
Maximum Green (s)	45.0	111.0	60.0	60.0		
Yellow Time (s)	5.0	5.0	5.0	5.0		
All-Red Time (s)	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0		
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	2.0	0.2	2.0	2.0		
Minimum Gap (s)	2.0	0.2	2.0	2.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0		
Recall Mode	None	C-Max	C-Min	C-Min		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	35.2	117.0	69.8	69.8		117.0
Actuated g/C Ratio	0.30	1.00	0.60	0.60		1.00
v/c Ratio	0.84	0.38	0.32	0.29		0.25
Control Delay	46.2	0.3	13.0	13.5		0.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	46.2	0.3	13.0	13.5		0.4
LOS	D	A	B	B		A
Approach Delay		18.4	13.1		0.4	
Approach LOS		B	B		A	
Queue Length 50th (ft)	317	0	127	98		0
Queue Length 95th (ft)	362	0	188	172		0
Internal Link Dist (ft)		207	1106		542	
Turn Bay Length (ft)	400			400		
Base Capacity (vph)	1333	3574	2112	964		1611
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.66	0.38	0.32	0.29		0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: NYS Route 22 & I-684 NB On/Off Ramp



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1566	0	0	969	0	432
Future Volume (vph)	1566	0	0	969	0	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3406	0	0	4988	0	1481
Flt Permitted						
Satd. Flow (perm)	3406	0	0	4988	0	1481
Link Speed (mph)	55			55	30	
Link Distance (ft)	930			287	816	
Travel Time (s)	11.5			3.6	18.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	4%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1614	0	0	999	0	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1614	0	0	999	0	445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	37

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1566	0	0	969	0	432
Future Vol, veh/h	1566	0	0	969	0	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	4	0	11
Mvmt Flow	1614	0	0	999	0	445

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	807
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.41
Pot Cap-1 Maneuver	-	0	0	-	0	~ 306
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	~ 306
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	254.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	306	-	-
HCM Lane V/C Ratio	1.455	-	-
HCM Control Delay (s)	254.2	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	24.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

EAGLE RIDGE

ATTACHMENT C

TRIP GENERATION
DEIS DEVELOPMENT PLAN
FEIS DEVELOPMENT PLAN

TABLE A

HOURLY TRIP GENERATION RATES
AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

EAGLE BAY

PREVIOUSLY PROPOSED DEIS DEVELOPMENT PLAN (TIS - FEBRUARY 27, 2019)	**ENTRY VOLUME**	**EXIT VOLUME**	**TOTAL VOLUME**
HOTEL - 91 ROOMS APARTMENTS - 70 UNITS TOWNHOUSES - 94 UNITS			
WEEKDAY PEAK AM HOUR	44	74	118
WEEKDAY PEAK PM HOUR	85	61	146

FEIS DEVELOPMENT PLAN	**ENTRY VOLUME**	**EXIT VOLUME**	**TOTAL VOLUME**
HOTEL - 115 ROOMS CONDOMINIUMS - 59 UNITS TOWNHOUSES - 50 UNITS			
WEEKDAY PEAK AM HOUR	44	60	104
WEEKDAY PEAK PM HOUR	74	56	130

THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE)
TRIP GENERATION HANDBOOK - 10TH EDITION
(1) ITE LAND USE 310 - HOTEL
(2) ITE LAND USE 220 - MULIFAMILY HOUSING
(3) ITE LAND USE 220 - MULTIFAMILY HOUSING

TABLE NO. 1

HOURLY TRIP GENERATION RATES &
ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

DEIS DEVELOPMENT PLAN

EAGLE RIDGE	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
HOTEL/CONFERENCE CENTER (1) (91 ROOMS)						
WEEKDAY PEAK AM HOUR	0.28	26	0.19	17	0.47	43
WEEKDAY PEAK PM HOUR	0.31	28	0.29	26	0.60	54
APARTMENTS (2) (70 DWELLING UNITS)						
WEEKDAY PEAK AM HOUR	0.11	8	0.35	24	0.46	32
WEEKDAY PEAK PM HOUR	0.35	24	0.21	15	0.56	39
TOWNHOUSES (3) (94 DWELLING UNITS)						
WEEKDAY PEAK AM HOUR	0.11	10	0.35	33	0.46	43
WEEKDAY PEAK PM HOUR	0.35	33	0.21	20	0.56	53
TOTAL TRIPS						
WEEKDAY PEAK AM HOUR	**------**	**44**	**------**	**74**	**------**	**118**
WEEKDAY PEAK PM HOUR	**------**	**85**	**------**	**61**	**------**	**146**

THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE)
TRIP GENERATION HANDBOOK - 10TH EDITION
(1) ITE LAND USE 310 - HOTEL
(2) ITE LAND USE 220 - MULIFAMILY HOUSING
(3) ITE LAND USE 220 - MULTIFAMILY HOUSING

TABLE NO. 1-R

HOURLY TRIP GENERATION RATES &
ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

FEIS DEVELOPMENT PLAN

EAGLE RIDGE	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
HOTEL/CONFERENCE CENTER (1) (115 ROOMS)						
WEEKDAY PEAK AM HOUR	0.28	32	0.19	22	0.47	54
WEEKDAY PEAK PM HOUR	0.31	36	0.29	33	0.60	69
CONDOMINIUMS (2) (59 DWELLING UNITS)						
WEEKDAY PEAK AM HOUR	0.11	6	0.35	21	0.46	27
WEEKDAY PEAK PM HOUR	0.35	21	0.21	12	0.56	33
TOWNHOUSES (3) (50 DWELLING UNITS)						
WEEKDAY PEAK AM HOUR	0.11	6	0.35	17	0.46	23
WEEKDAY PEAK PM HOUR	0.35	17	0.21	11	0.56	28
TOTAL TRIPS						
WEEKDAY PEAK AM HOUR	**------**	**44**	**------**	**60**	**------**	**104**
WEEKDAY PEAK PM HOUR	**------**	**74**	**------**	**56**	**------**	**130**

THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE)
TRIP GENERATION HANDBOOK - 10TH EDITION
(1) ITE LAND USE 310 - HOTEL
(2) ITE LAND USE 220 - MULIFAMILY HOUSING
(3) ITE LAND USE 220 - MULTIFAMILY HOUSING

MASER CONSULTING

Engineers Planners Surveyors Landscape Architects Environmental Scientists

Parking Study

Eagle Ridge

Town of North Castle, Westchester County, New York

September 25, 2020

Prepared For

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APPENDICES

A. INTRODUCTION

As requested, we have completed a parking evaluation for the currently proposed "FEIS Plan" for a 115-room hotel, 59 condominiums, and 50 age restricted townhouses (55 and older). This parking evaluation compares the required parking based on the Town Parking Code and current industry standards as contained in the Institute of Transportation Engineers (ITE) *Parking Generation Manual, 5th Edition, January 2019*.

B. PARKING PROVIDED

As outlined in the FEIS, the "FEIS Plan" provides 215 parking spaces (171 at grade off-street parking spaces and 44 additional spaces provided in a garage) for the proposed 115 room hotel, 112 parking spaces (68 at grade off-street parking spaces and 44 additional spaces provided in a garage) for the 59 condominium units, and 200 parking spaces (2-car garage and 2 driveway off-street parking spaces) for the proposed 50 age restricted (55 and older) townhouses as shown on Table No. 1 below:

Table No. 1

"FEIS PLAN"	Parking Provided
115 Room Hotel	215 spaces
59 Condominium Units	112 spaces
50 Townhouse Units	200 spaces

C. TOWN PARKING CODE

Based on the Town Parking Code as contained in Chapter 355.Zoning – Article 1X. Off-Street Parking and Loading – 355-57 Schedule of Off-Street Parking Requirements, the "FEIS Plan" would require the following as shown on Table No. 2 below:

Table No. 2

"FEIS PLAN"	Required Parking Based on Town Code	Parking Provided
115 Room Hotel (1)	140 spaces (4)	215 spaces
59 Condominium Units (2)	130 spaces (5)	112 spaces
50 Townhouse Units (3)	110 spaces (5)	200 spaces

(1) 115 Room Hotel = 72,800 s.f. with 20% considered unrentable space (14,560 s.f.)
(2) 59 Condominium Units = 39 2BR and 20 1BR
(3) 50 Townhouse Units = 50 2BR
(4) 1 space for each guest sleeping room and in addition 1 for each 600 square feet of nonrentable floor space
(5) 2 spaces for each dwelling unit, plus ½ for each bedroom in excess of 2, plus 10% visitor parking.

D. ITE PARKING GENERATION

Based on current industry standards and parking information contained in the ITE *Parking Generation Manual, 5th Edition, January 2019*, the "FEIS Plan" would require the following as shown on Table No. 3 below:

Table No. 3

"FEIS PLAN"	Required Parking Based on Town Code	**Required Parking Based on ITE Rates**	Parking Provided
115 Room Hotel (1)	140 spaces (4)	**114 spaces (6)**	215 spaces
59 Condominium Units (2)	130 spaces (5)	**90 spaces (7)**	112 spaces
50 Townhouse Units (3)	110 spaces (5)	**76 spaces (7)**	200 spaces

(6) ITE Land Use 310 – 85th Percentile Peak Parking Rate = 0.99/Room
(7) ITE Land Use 220 – 85th Percentile Peak Parking Rate = 1.52/Unit

A copy of the ITE Peak Parking Demand is contained in Appendix A.

E. PEAK PARKING DEMAND

As shown on Table No. 2, the 115 room Hotel and 50 Townhouses will meet the required parking based on the "higher" Town Code rates, with the 59 Condominiums short by some 18 spaces. As shown on Table No. 3 based on ITE Peak Parking Generation Rates, all three components of the site will meet current industry standards.

F. TIME OF DAY DISTRIBUTION FOR PARKING DEMAND

In addition to the peak parking demands outlined above, we have provided the time of day distribution of parking demand for a typical weekday based on ITE Hourly Distributions as summarized on the following Tables below.

Table No. 4
Time of Day Distribution for Parking Demand

Time of Day	% Peak Parking Demand	Parking Demand (215 spaced provided)
12:00 – 4:00 AM	96%	110
5:00 AM	-	-
6:00 AM	91%	104
7:00 AM	89%	101
8:00 AM	90%	102
9:00 AM	100%	114
10:00 AM	98%	112
11:00 AM	89%	101
12:00 PM	85%	97
1:00 PM	75%	85
2:00 PM	81%	92
3:00 PM	70%	80
4:00 PM	74%	84
5:00 PM	65%	74
6:00 PM	73%	83
7:00 PM	78%	89
8:00 PM	93%	106
9:00 PM	96%	109
10:00 PM	95%	108
11:00 PM	95%	108

Table No. 5
Time of Day Distribution for Parking Demand

Time of Day	% Peak Parking Demand	Parking Demand (112 spaces provided)
12:00 – 4:00 AM	100%	90
5:00 AM	97%	87
6:00 AM	90%	81
7:00 AM	77%	69
8:00 AM	56%	50
9:00 AM	45%	40
10:00 AM	40%	36
11:00 AM	37%	33
12:00 PM	36%	32
1:00 PM	36%	32
2:00 PM	37%	33
3:00 PM	43%	39
4:00 PM	45%	40
5:00 PM	55%	49
6:00 PM	66%	59
7:00 PM	73%	65
8:00 PM	77%	69
9:00 PM	86%	77
10:00 PM	92%	83
11:00 PM	97%	87

Table No. 6
Time of Day Distribution for Parking Demand

Time of Day	% Peak Parking Demand	Parking Demand (200 spaces provided)
12:00 – 4:00 AM	100%	110
5:00 AM	97%	107
6:00 AM	90%	99
7:00 AM	77%	85
8:00 AM	56%	62
9:00 AM	45%	50
10:00 AM	40%	44
11:00 AM	37%	41
12:00 PM	36%	40
1:00 PM	36%	40
2:00 PM	37%	41
3:00 PM	43%	47
4:00 PM	45%	50
5:00 PM	55%	61
6:00 PM	66%	73
7:00 PM	73%	80
8:00 PM	77%	85
9:00 PM	86%	95
10:00 PM	92%	101
11:00 PM	97%	107

G. SUMMARY AND CONCLUSION

As shown on the Tables above, utilizing current industry standards (ITE Peak Parking Generation Rates), the "FEIS Plan" will provide adequate parking for all three components of the site throughout the day.

EAGLE RIDGE

APPENDIX A

ITE PARKING GENERATION DATA

Land Use: 310 Hotel

Description

A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. It typically provides a swimming pool or another recreational facility such as a fitness room. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320), and resort hotel (Land Use 330) are related uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand (1) on a weekday (four study sites) and a Saturday (five study sites) in a general urban/suburban setting and (2) on a weekday (one study site) and a Saturday (one study site) in a dense multi-use urban setting.

	Percent of Peak Parking Demand			
	General Urban/Suburban		Dense Multi–Use Urban	
Hour Beginning	Weekday	Saturday	Weekday	Saturday
12:00–4:00 a.m.	96	74	93	100
5:00 a.m.	–	–	–	–
6:00 a.m.	91	62	97	95
7:00 a.m.	89	62	100	95
8:00 a.m.	90	72	93	89
9:00 a.m.	100	74	72	85
10:00 a.m.	98	76	69	74
11:00 a.m.	89	77	65	61
12:00 p.m.	85	79	78	47
1:00 p.m.	75	78	78	42
2:00 p.m.	81	67	63	41
3:00 p.m.	70	64	59	43
4:00 p.m.	74	67	58	48
5:00 p.m.	65	73	52	53
6:00 p.m.	73	83	63	64
7:00 p.m.	78	92	74	67
8:00 p.m.	93	97	78	78
9:00 p.m.	96	100	72	81
10:00 p.m.	95	91	84	93
11:00 p.m.	95	83	92	98

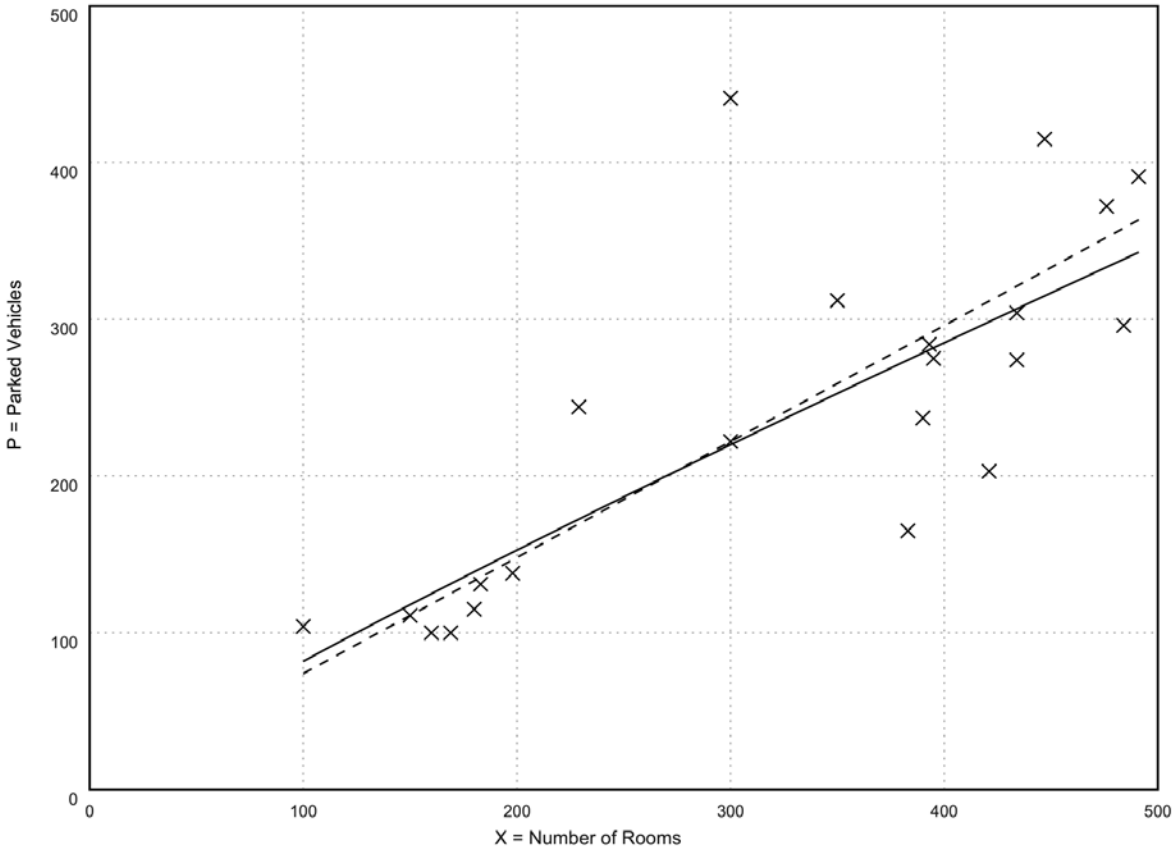
Hotel
(310)

Peak Period Parking Demand vs: Rooms
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Peak Period of Parking Demand: 11:00 p.m. - 8:00 a.m.
Number of Studies: 22
Avg. Num. of Rooms: 321

Peak Period Parking Demand per Room

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.74	0.43 - 1.47	0.64 / 0.99	0.65 - 0.83	0.22 (30%)

Data Plot and Equation



Fitted Curve Equation: Ln(P) = 0.90 Ln(X) + 0.26

R^2= 0.72

Land Use: 220 Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and with one or two levels (floors) of residence. Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), and affordable housing (Land Use 223) are related land uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand (1) on a weekday (10 study sites) and a Saturday (11 study sites) in a general urban/suburban setting and (2) on a weekday (three study sites) and a Saturday (three study sites) in a dense multi-use urban setting.

	Percent of Peak Parking Demand			
	General Urban/Suburban		Dense Multi-Use Urban	
Hour Beginning	Weekday	Saturday	Weekday	Saturday
12:00–4:00 a.m.	100	93	86	100
5:00 a.m.	97	100	100	94
6:00 a.m.	90	98	94	91
7:00 a.m.	77	96	81	85
8:00 a.m.	56	92	58	79
9:00 a.m.	45	80	56	76
10:00 a.m.	40	78	53	71
11:00 a.m.	37	71	58	74
12:00 p.m.	36	68	56	68
1:00 p.m.	36	66	53	68
2:00 p.m.	37	65	47	68
3:00 p.m.	43	68	56	56
4:00 p.m.	45	70	53	59
5:00 p.m.	55	73	61	53
6:00 p.m.	66	77	81	50
7:00 p.m.	73	81	67	56
8:00 p.m.	77	82	61	65
9:00 p.m.	86	86	64	74
10:00 p.m.	92	87	75	85
11:00 p.m.	97	92	86	91

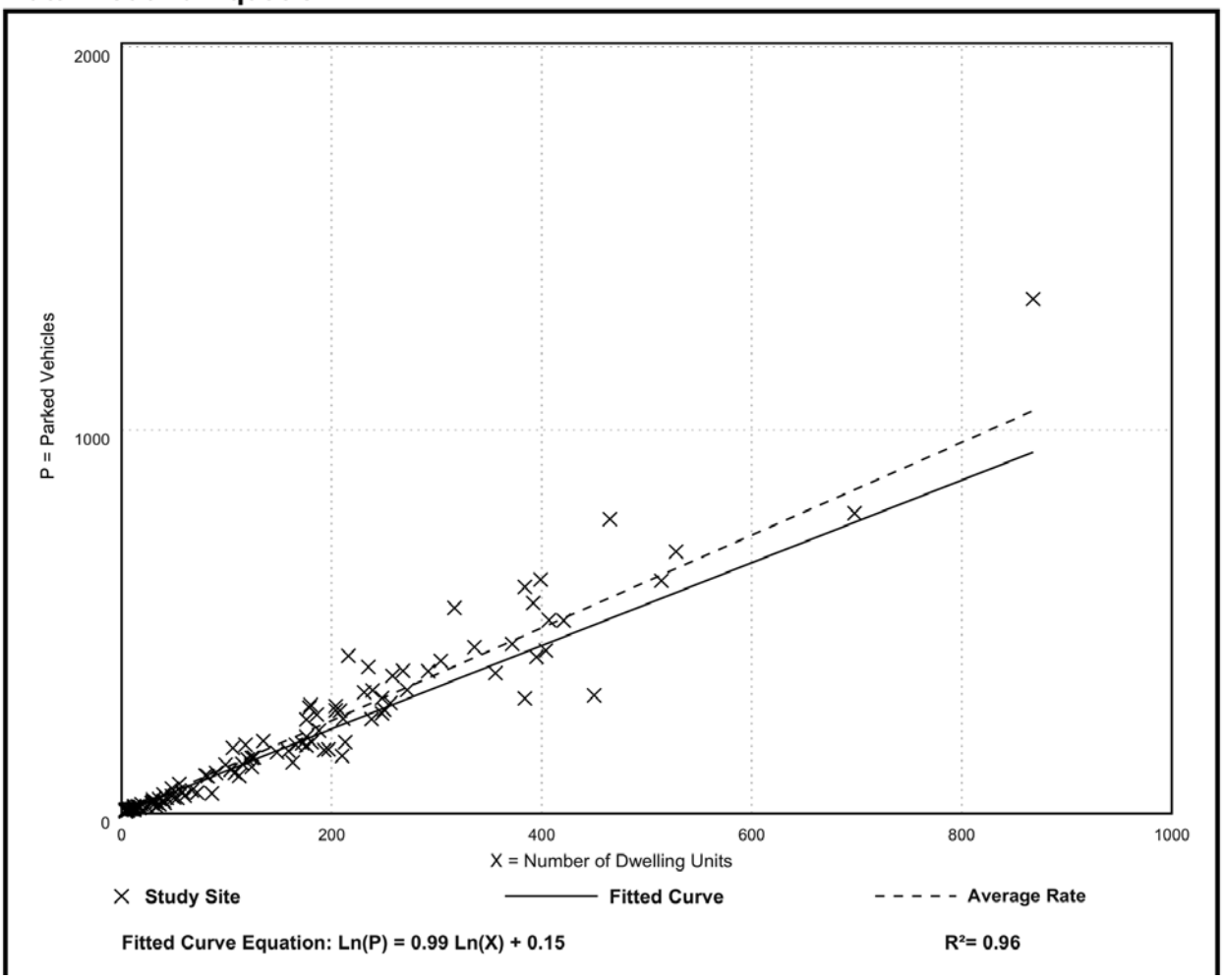
Multifamily Housing (Low-Rise)
(220)

Peak Period Parking Demand vs: Dwelling Units
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban (no nearby rail transit)
Peak Period of Parking Demand: 11:00 p.m. - 6:00 a.m.
Number of Studies: 119
Avg. Num. of Dwelling Units: 156

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.21	0.58 - 2.50	1.03 / 1.52	1.16 - 1.26	0.27 (22%)

Data Plot and Equation



EAGLE RIDGE

ATTACHMENT D

PARKING STUDY

EAGLE RIDGE

ATTACHMENT E

NYS ROUTE 22 HOURLY TRAFFIC VOLUMES

NYS ROUTE 22

(EAST OF MAPLE AVENUE/BUSINESS PARK DRIVE)

NYSDOT AADT [1]

Time		WEEDAY AVERAGE		
		EB	WB	TOTAL
12:00 AM	1:00 AM	58	24	82
1:00 AM	2:00 AM	26	14	40
2:00 AM	3:00 AM	18	9	27
3:00 AM	4:00 AM	14	14	28
4:00 AM	5:00 AM	30	55	85
5:00 AM	6:00 AM	73	202	275
6:00 AM	7:00 AM	203	638	841
7:00 AM	8:00 AM	674	1500	2174
8:00 AM	9:00 AM	735	1628	2363
9:00 AM	10:00 AM	654	1311	1965
10:00 AM	11:00 AM	600	745	1345
11:00 AM	12:00 PM	664	698	1362
12:00 PM	1:00 PM	690	697	1387
1:00 PM	2:00 PM	709	670	1379
2:00 PM	3:00 PM	870	720	1590
3:00 PM	4:00 PM	1054	851	1905
4:00 PM	5:00 PM	1301	866	2167
5:00 PM	6:00 PM	1637	927	2564
6:00 PM	7:00 PM	1309	743	2052
7:00 PM	8:00 PM	829	408	1237
8:00 PM	9:00 PM	482	236	718
9:00 PM	10:00 PM	341	160	501
10:00 PM	11:00 PM	210	107	317
11:00 PM	12:00 AM	125	59	184
		13306	13282	26588

(1) NYS ROUTE 22 STATION 870190, 2017 AADT's

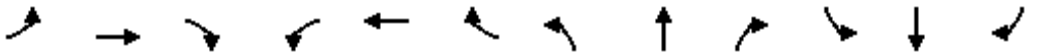
COUNT_ID	870190_10162017	COUNT_ID	870190_10162017	COUNT_ID	870190_10162017
REGION	8	REGION	8	REGION	8
REGION_CODE	8	REGION_CODE	8	REGION_CODE	8
COUNTY_CODE	7	COUNTY_CODE	7	COUNTY_CODE	7
STATION	190	STATION	190	STATION	190
RCSTA	870190	RCSTA	870190	RCSTA	870190
FUNCTIONAL_CLASS	14	FUNCTIONAL_CLASS	14	FUNCTIONAL_CLASS	14
FACTOR_GROUP	30	FACTOR_GROUP	30	FACTOR_GROUP	30
LATITUDE	41.1232	LATITUDE	41.1232	LATITUDE	41.1232
LONGITUDE	-73.70946	LONGITUDE	-73.70946	LONGITUDE	-73.70946
SPECIFIC_RECORDER_PLACEMENT	280' E of Business Park Dr	SPECIFIC_RECORDER_PLACEMENT	360' E of Maple Ave	SPECIFIC_RECORDER_PLACEMENT	360' E of Maple Ave
CHANNEL_NOTES	EB travel lane / EB passing lane	CHANNEL_NOTES	WB travel lane / WB Passing lane	CHANNEL_NOTES	
DATA_TYPE	Volume Statistics	DATA_TYPE	Volume Statistics	DATA_TYPE	Volume Statistics
VEHICLE_AXLE_CODE	1	VEHICLE_AXLE_CODE	1	VEHICLE_AXLE_CODE	1
YEAR	2017	YEAR	2017	YEAR	2017
MONTH	10	MONTH	10	MONTH	10
DAY_OF_FIRST_DATA	16	DAY_OF_FIRST_DATA	16	DAY_OF_FIRST_DATA	16
FEDERAL_DIRECTION	Eastbound	FEDERAL_DIRECTION	Westbound	FEDERAL_DIRECTION	Combined Total
FULL_COUNT		FULL_COUNT		FULL_COUNT	Y
AVG_WKDAY_INTERVAL_1	58	AVG_WKDAY_INTERVAL_1	24	AVG_WKDAY_INTERVAL_1	82
AVG_WKDAY_INTERVAL_2	26	AVG_WKDAY_INTERVAL_2	14	AVG_WKDAY_INTERVAL_2	40
AVG_WKDAY_INTERVAL_3	18	AVG_WKDAY_INTERVAL_3	9	AVG_WKDAY_INTERVAL_3	27
AVG_WKDAY_INTERVAL_4	14	AVG_WKDAY_INTERVAL_4	14	AVG_WKDAY_INTERVAL_4	28
AVG_WKDAY_INTERVAL_5	30	AVG_WKDAY_INTERVAL_5	55	AVG_WKDAY_INTERVAL_5	85
AVG_WKDAY_INTERVAL_6	73	AVG_WKDAY_INTERVAL_6	202	AVG_WKDAY_INTERVAL_6	275
AVG_WKDAY_INTERVAL_7	203	AVG_WKDAY_INTERVAL_7	638	AVG_WKDAY_INTERVAL_7	841
AVG_WKDAY_INTERVAL_8	674	AVG_WKDAY_INTERVAL_8	1500	AVG_WKDAY_INTERVAL_8	2174
AVG_WKDAY_INTERVAL_9	735	AVG_WKDAY_INTERVAL_9	1628	AVG_WKDAY_INTERVAL_9	2363
AVG_WKDAY_INTERVAL_10	654	AVG_WKDAY_INTERVAL_10	1311	AVG_WKDAY_INTERVAL_10	1965
AVG_WKDAY_INTERVAL_11	600	AVG_WKDAY_INTERVAL_11	745	AVG_WKDAY_INTERVAL_11	1345
AVG_WKDAY_INTERVAL_12	664	AVG_WKDAY_INTERVAL_12	698	AVG_WKDAY_INTERVAL_12	1362
AVG_WKDAY_INTERVAL_13	690	AVG_WKDAY_INTERVAL_13	697	AVG_WKDAY_INTERVAL_13	1387
AVG_WKDAY_INTERVAL_14	709	AVG_WKDAY_INTERVAL_14	670	AVG_WKDAY_INTERVAL_14	1379
AVG_WKDAY_INTERVAL_15	870	AVG_WKDAY_INTERVAL_15	720	AVG_WKDAY_INTERVAL_15	1590
AVG_WKDAY_INTERVAL_16	1054	AVG_WKDAY_INTERVAL_16	851	AVG_WKDAY_INTERVAL_16	1905
AVG_WKDAY_INTERVAL_17	1301	AVG_WKDAY_INTERVAL_17	866	AVG_WKDAY_INTERVAL_17	2167
AVG_WKDAY_INTERVAL_18	1637	AVG_WKDAY_INTERVAL_18	927	AVG_WKDAY_INTERVAL_18	2564
AVG_WKDAY_INTERVAL_19	1309	AVG_WKDAY_INTERVAL_19	743	AVG_WKDAY_INTERVAL_19	2052
AVG_WKDAY_INTERVAL_20	829	AVG_WKDAY_INTERVAL_20	408	AVG_WKDAY_INTERVAL_20	1237
AVG_WKDAY_INTERVAL_21	482	AVG_WKDAY_INTERVAL_21	236	AVG_WKDAY_INTERVAL_21	718
AVG_WKDAY_INTERVAL_22	341	AVG_WKDAY_INTERVAL_22	160	AVG_WKDAY_INTERVAL_22	501
AVG_WKDAY_INTERVAL_23	210	AVG_WKDAY_INTERVAL_23	107	AVG_WKDAY_INTERVAL_23	317
AVG_WKDAY_INTERVAL_24	125	AVG_WKDAY_INTERVAL_24	59	AVG_WKDAY_INTERVAL_24	184
AVG_WKDAY_DAILY_TRAFFIC	13306	AVG_WKDAY_DAILY_TRAFFIC	13282	AVG_WKDAY_DAILY_TRAFFIC	26588
SEASONAL_FACTOR	1	SEASONAL_FACTOR	1	SEASONAL_FACTOR	1
AXLE_FACTOR	1	AXLE_FACTOR	1	AXLE_FACTOR	1
AADT	12343	AADT	12321	AADT	24664
HIGH_HOUR_VALUE	1637	HIGH_HOUR_VALUE	1637	HIGH_HOUR_VALUE	2564
HIGH_HOUR_INTERVAL	18	HIGH_HOUR_INTERVAL	18	HIGH_HOUR_INTERVAL	18
K_FACTOR		K_FACTOR		K_FACTOR	10
D_FACTOR		D_FACTOR		D_FACTOR	64
FLAG_FIELD		FLAG_FIELD		FLAG_FIELD	
BATCH_ID	256641	BATCH_ID	256641	BATCH_ID	256641

EAGLE RIDGE

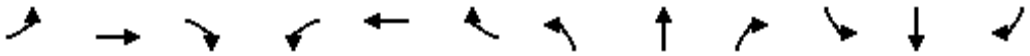
ATTACHMENT F

POTENTIAL
TRAFFIC OPERATION IMPROVEMENTS

NYS ROUTE 22
MAPLE AVENUE / BUSINESS PARK DRIVE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	515	140	175	1251	368	70	45	64	250	61	79
Future Volume (vph)	46	515	140	175	1251	368	70	45	64	250	61	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.968				0.850			0.850		0.938	
Flt Protected	0.950			0.950				0.970		0.950	0.987	
Satd. Flow (prot)	1419	3305	0	1728	3539	1509	0	1760	1531	1564	1518	0
Flt Permitted	0.950			0.950				0.970		0.950	0.987	
Satd. Flow (perm)	1419	3305	0	1728	3539	1509	0	1755	1531	1564	1518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				203			110		22	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	23%	7%	1%	1%	2%	7%	2%	0%	2%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	542	147	184	1317	387	74	47	67	263	64	83
Shared Lane Traffic (%)										21%		
Lane Group Flow (vph)	48	689	0	184	1317	387	0	121	67	208	202	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	20	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		8	8		4	4	
Permitted Phases						5			8			
Detector Phase	6	1		2	5	5	8	8	8	4	4	
Switch Phase												



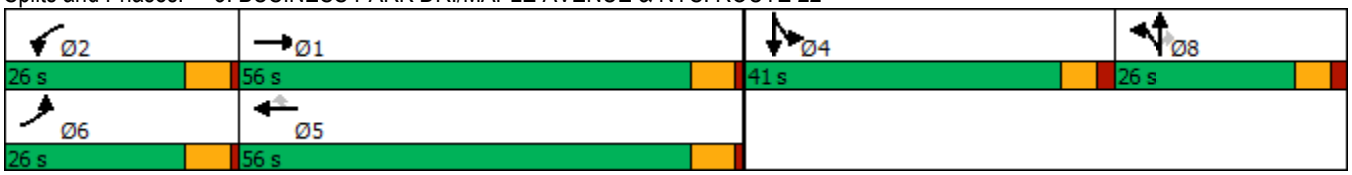
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	Min	Min		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.6	42.8		16.5	50.7	50.7		12.7	12.7	19.9	19.9	
Actuated g/C Ratio	0.07	0.37		0.14	0.44	0.44		0.11	0.11	0.17	0.17	
v/c Ratio	0.46	0.56		0.75	0.85	0.50		0.63	0.25	0.78	0.73	
Control Delay	68.8	32.4		69.0	38.0	15.0		66.5	4.0	66.6	56.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	68.8	32.4		69.0	38.0	15.0		66.5	4.0	66.6	56.6	
LOS	E	C		E	D	B		E	A	E	E	
Approach Delay		34.8			36.3			44.2			61.6	
Approach LOS		C			D			D			E	
Queue Length 50th (ft)	35	207		130	451	90		87	0	155	133	
Queue Length 95th (ft)	83	338		#263	#795	236		169	9	269	243	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	247	1455		301	1543	772		307	357	477	478	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.19	0.47		0.61	0.85	0.50		0.39	0.19	0.44	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 116.2			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.6		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

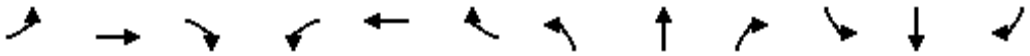
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: BUSINESS PARK DR./MAPLE AVENUE & NYS. ROUTE 22



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1121	67	127	705	345	146	61	256	331	40	49
Future Volume (vph)	35	1121	67	127	705	345	146	61	256	331	40	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	600		0	300		225	0		0	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	86			86			25			86		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor								1.00			1.00	
Frt		0.992				0.850			0.850		0.965	
Flt Protected	0.950			0.950				0.966		0.950	0.972	
Satd. Flow (prot)	1694	3548	0	1662	3539	1615	0	1746	1561	1641	1613	0
Flt Permitted	0.950			0.950				0.966		0.950	0.972	
Satd. Flow (perm)	1694	3548	0	1662	3539	1615	0	1744	1561	1641	1613	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				338			265		10	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		561			541			577			575	
Travel Time (s)		7.0			6.7			13.1			13.1	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	0%	5%	2%	0%	1%	3%	0%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	1168	70	132	734	359	152	64	267	345	42	51
Shared Lane Traffic (%)										36%		
Lane Group Flow (vph)	36	1238	0	132	734	359	0	216	267	221	217	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left			Left		
Leading Detector (ft)	83	83		83	83	40	20	83	83	83	83	
Trailing Detector (ft)	-5	-5		-5	-5	0	0	-5	-5	0	0	
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	6	1		2	5		8	8		4	4	
Permitted Phases						5			8			
Detector Phase	6	1		2	5	5	8	8	8	4	4	
Switch Phase												



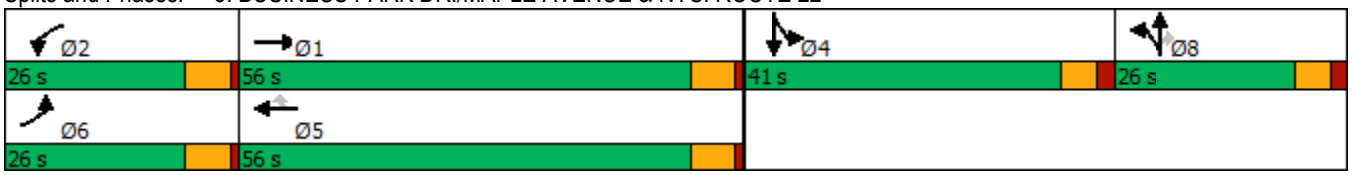
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	Min	Min		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	7.4	50.4		14.4	57.4	57.4		19.2	19.2	21.9	21.9	
Actuated g/C Ratio	0.06	0.39		0.11	0.44	0.44		0.15	0.15	0.17	0.17	
v/c Ratio	0.38	0.90		0.72	0.47	0.40		0.84	0.59	0.80	0.78	
Control Delay	73.4	48.5		78.9	28.1	4.9		82.5	12.1	74.0	68.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	73.4	48.5		78.9	28.1	4.9		82.5	12.1	74.0	68.8	
LOS	E	D		E	C	A		F	B	E	E	
Approach Delay		49.2			26.8			43.6			71.4	
Approach LOS		D			C			D			E	
Queue Length 50th (ft)	30	517		109	227	10		179	2	191	178	
Queue Length 95th (ft)	72	#795		193	336	79		#360	89	298	284	
Internal Link Dist (ft)		481			461			497			495	
Turn Bay Length (ft)	600			300		225				300		
Base Capacity (vph)	262	1377		257	1562	901		270	465	445	445	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.14	0.90		0.51	0.47	0.40		0.80	0.57	0.50	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 149			
Actuated Cycle Length: 130.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 43.2		Intersection LOS: D	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

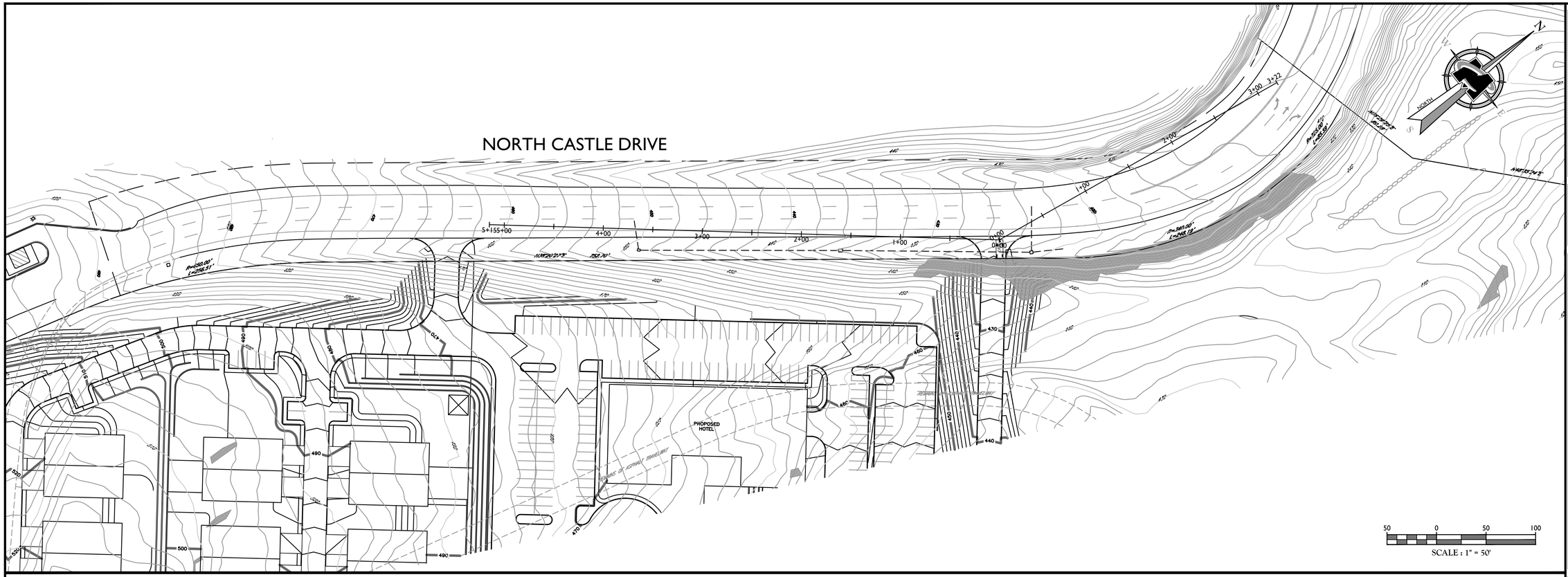
Splits and Phases: 3: BUSINESS PARK DR./MAPLE AVENUE & NYS. ROUTE 22

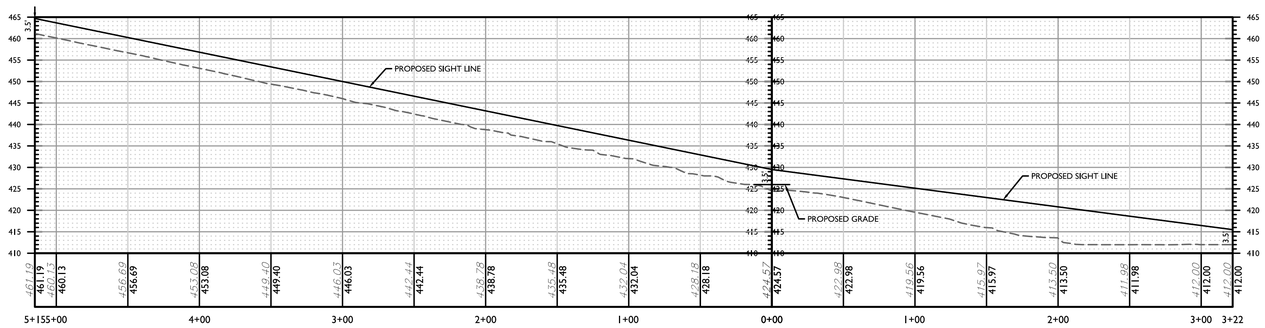


EAGLE RIDGE

ATTACHMENT G

SIGHT DISTANCE PLANS





PROFILE OF NORTHERN DRIVEWAY - LOOKING LEFT
1" = 30' HORIZ. / 1" = 10' VERT.

PROFILE OF NORTHERN DRIVEWAY - LOOKING RIGHT
1" = 30' HORIZ. / 1" = 10' VERT.

SIGHT DISTANCE SUMMARY TABLE - NORTHERN DRIVEWAY

ROADWAY 85% SPEED 35 MPH	AASHTO SIGHT DISTANCES		AVAILABLE SIGHT DISTANCE (FT)	
	STOPPING SIGHT DISTANCE (FT)	INTERSECTION SIGHT DISTANCE (FT)	DIRECTION	EXISTING
LEFT TURN FROM SITE ACCESS	282	390	LOOKING LEFT	515+
			LOOKING RIGHT	322
RIGHT TURN FROM SITE ACCESS	282	335	LOOKING LEFT	515+
LEFT TURN FROM MAJOR ROAD	282	285	LEFT TURN ENTRY	515+

NOTES:

(1) BASED ON THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), 7TH EDITION 2018 FOR THE OBSERVED 85TH PERCENTILE SPEED.

SCALE : 1" = 50'

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REV	DATE	DRAWN BY	DESCRIPTION

PRELIMINARY

PRELIMINARY SIGHT DISTANCES PLAN
FOR
HOTEL TOWNHOUSE DEVELOPMENT

NORTH CASTLE DRIVE/ ROUTE 22

TOWN OF NORTH CASTLE
WESTCHESTER COUNTY
NEW YORK

WESTCHESTER OFFICE
400 Columbus Avenue
Suite 180E
Valhalla, NY 10595
Phone: 914.347.7500
Fax: 914.347.7266

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	9/25/2020	J.F.M.	A.P.R.

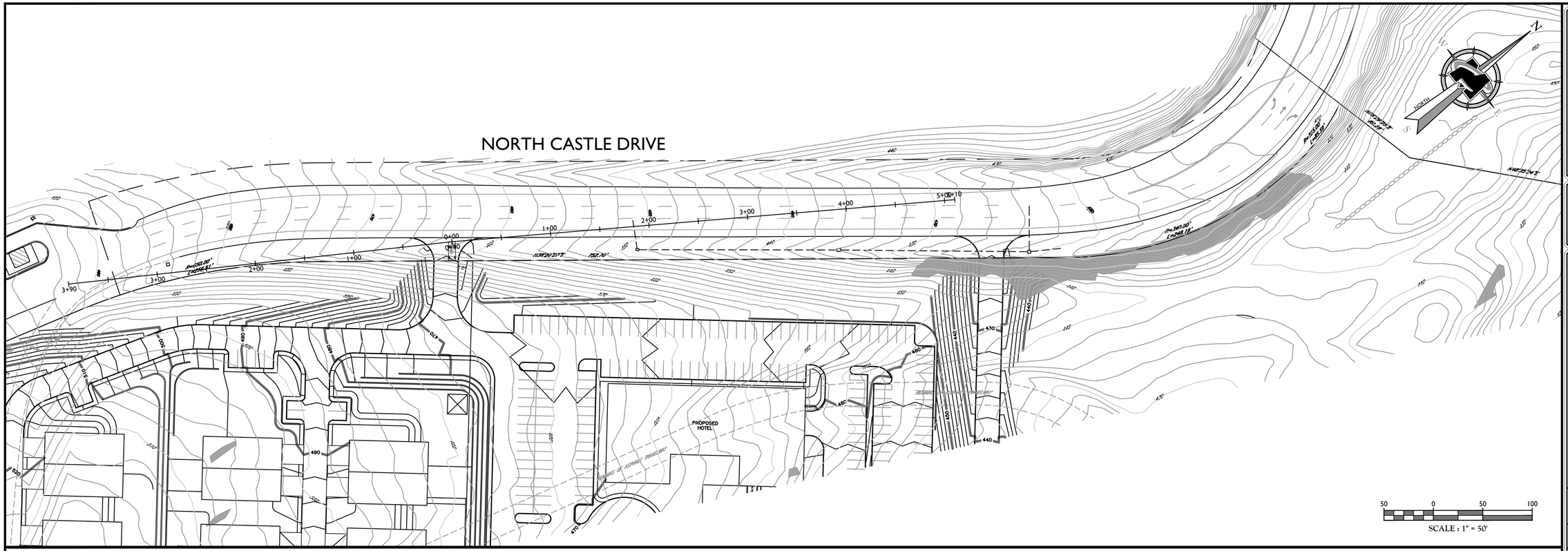
PROJECT NUMBER: 17005657B
DRAWING NAME: R-SGHT

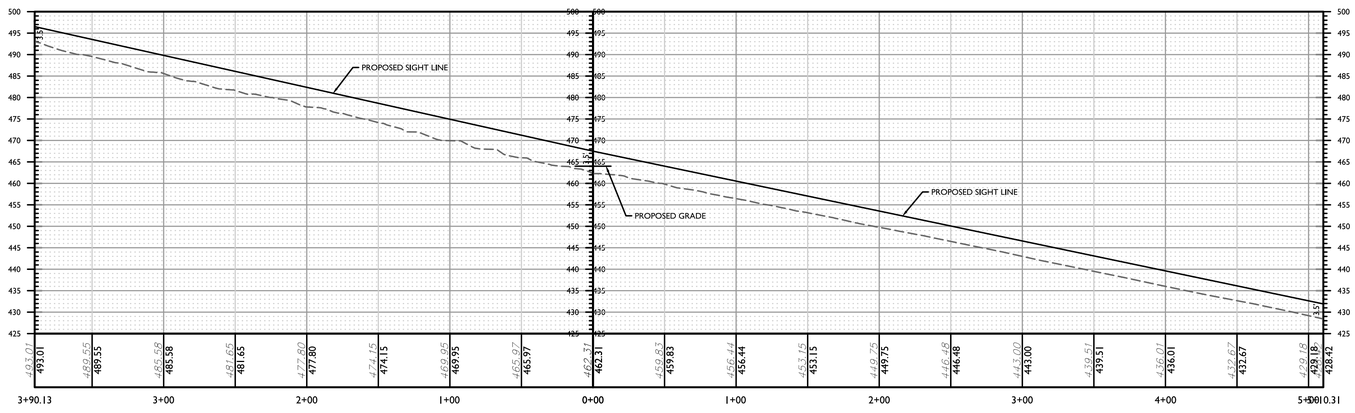
SHEET TITLE:
SIGHT DISTANCES PLAN (NORTHERN DRIVEWAY)

SHEET NUMBER:
1 of 3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2017\17005657B\Transportation\R-SGHT.dwg By: JMLICCIN





PROFILE OF SOUTHERN DRIVEWAY - LOOKING LEFT
1" = 30' HORIZ. / 1" = 10' VERT.

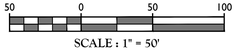
PROFILE OF SOUTHERN DRIVEWAY - LOOKING RIGHT
1" = 30' HORIZ. / 1" = 10' VERT.

SIGHT DISTANCE SUMMARY TABLE - SOUTHERN DRIVEWAY

ROADWAY 85% SPEED	35 MPH	AASHTO SIGHT DISTANCES		AVAILABLE SIGHT DISTANCE (FT)	
		STOPPING SIGHT DISTANCE (FT)	INTERSECTION SIGHT DISTANCE (FT)	DIRECTION	EXISTING
LEFT TURN FROM SITE ACCESS		282	390	LOOKING LEFT	390
				LOOKING RIGHT	510
RIGHT TURN FROM SITE ACCESS		282	335	LOOKING LEFT	390
LEFT TURN FROM MAJOR ROAD		282	285	LEFT TURN ENTRY	390+

NOTES:

(1) BASED ON THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), 7TH EDITION 2018 FOR THE OBSERVED 85TH PERCENTILE SPEED.



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REV	DATE	DRAWN BY	DESCRIPTION

PRELIMINARY

PRELIMINARY SIGHT DISTANCES PLAN
FOR
HOTEL
TOWNHOUSE
DEVELOPMENT

NORTH CASTLE DRIVE/
ROUTE 22

TOWN OF NORTH CASTLE
WESTCHESTER COUNTY
NEW YORK

WESTCHESTER OFFICE
400 Columbus Avenue
Suite 180E
Valhalla, NY 10595
Phone: 914.347.7500
Fax: 914.347.7266

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	9/25/2020	J.F.M.	A.P.R.

PROJECT NUMBER: 17005657B
DRAWING NAME: R-SGHT

SHEET TITLE:
SIGHT DISTANCES PLAN (SOUTHERN DRIVEWAY)

SHEET NUMBER:
2 of 3

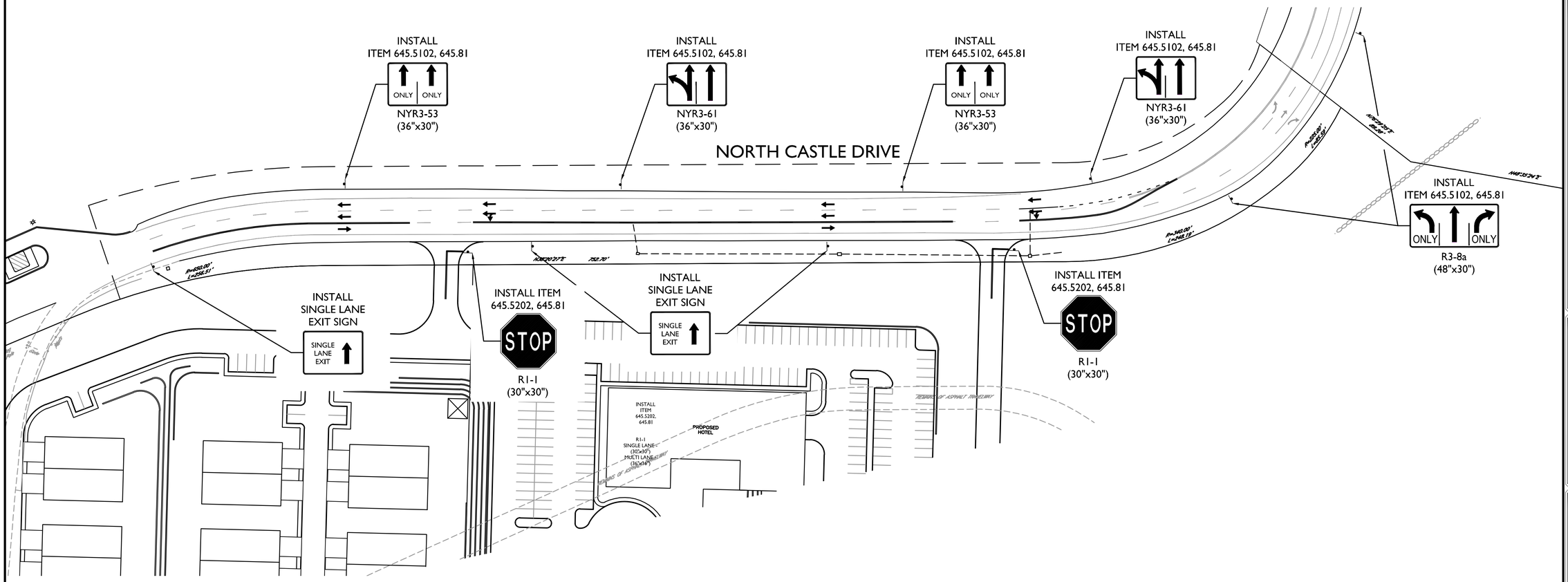
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2017\17005657B\Transportation\R-SGHT.dwg(R-SGHT (2)) By: JMLCCN

EAGLE RIDGE

ATTACHMENT H

NORTH CASTLE DRIVE
SIGNING AND STRIPING PLAN



50 0 50 100

SCALE : 1" = 50'

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

PRELIMINARY

PRELIMINARY SIGNING AND STRIPING PLAN

FOR

HOTEL TOWNHOUSE DEVELOPMENT

NORTH CASTLE DRIVE/ ROUTE 22

TOWN OF NORTH CASTLE
WESTCHESTER COUNTY
NEW YORK

WESTCHESTER OFFICE
400 Columbus Avenue
Suite 180E
Valhalla, NY 10595
Phone: 914.347.7500
Fax: 914.347.7266

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	9/28/2020	J.F.M.	A.P.R.

PROJECT NUMBER:	DRAWING NAME:
17005657B	R-TSSP

SHEET TITLE:
SIGNING AND STRIPING PLAN

SHEET NUMBER:
3 of 3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2021\17005657B\Transportation\R_TSSP.dwg By: JMLUCCHI

SPEED DATA NORTH CASTLE DRIVE				
	SPEED (MPH)		SPEED (MPH)	
	SB	85th %	NB	85th %
	25.2		27.7	
	28.3		25.8	
	28.3		26.9	
	28.5		33.1	
	29.3		25.9	
	30.2		25.4	
	30.2		28.3	
	30.4		30.2	32.4
	30.5		33.1	
	30.8		31.2	
	31.1			
	31.1			
	31.3	31.3		
	31.6			
	32.4			
AVERAGE SPEED	29.9		28.8	

SPEED MEASURMENTS CONDUCTED

MASER CONSULTING 9/22/2020 FOR AM SB

MASER CONSULTING 9/23/2020 FOR PM NB

Appendix G

Tax Assessment Calculations

May 2, 2020

EAGLE RIDGE

TOWNHOUSES 55+

Unit Type	Pacel Count Breakdown						Eq Rate
	Bedrooms/Baths	Total	Unit SF	Total SF	FMV/Unit	Total FMV	2.38%
Market	2 BR/2.5 BA/2 cg	50	2,800	140,000	$ 1,400,000	$ 70,000,000	1,666,000

	2020	PROJECTED TAX IMPACT
EQ RATE	2.38%	
ASSESSED VALUE	1,666,000	
Town	171.840285	$ 286,000
County	134.191722	$ 224,000
School	700.6908	$ 1,167,000
Fire District #2	18.34592	$ 31,000
Ambulance District #2	2.24096	$ 4,000
Lighting District #2	2.738407	$ 5,000
Totals	**1030.048094**	**$ 1,717,000**

HOTEL

	2020	PROJECTED TAX IMPACT
EQ RATE	2.38%	
ASSESSED VALUE	571,200	
FMV	$ 24,000,000	
Town	171.840285	$ 98,000
County	134.191722	$ 77,000
School	700.6908	$ 400,000
Fire District #2	18.34592	$ 10,000
Ambulance District #2	2.24096	$ 1,000
Lighting District #2	2.738407	$ 2,000
Totals	**1030.048094**	**$ 588,000**

EAGLE RIDGE
TAX ASSESSING ANALYSIS
MAY 2, 2020

Condo Valuation

Unit Type	Pacel Count Breakdown						Average Monthly
	Bedrooms/Baths	Total	Unit SF	Total SF	Monthy Rent	Annual Rent	Rent Per SF
Market	2 BR/2.5 BA	30	1,500	45,000	$ 4,250	$ 1,530,000	34
AFFH	2 BR/2.5 BA	9	1,500	13,500	$ 1,687	$ 182,196	13
Market	1 BR/1.5 BA	18	1,100	19,800	$ 3,200	$ 691,200	35
AFFH	1 BR/1.5 BA	2	1,100	2,200	$ 1,384	$ 33,216	15
Common Area			7,000	7,000			
	Totals	**59**		**87,500**		**$ 2,436,612**	**98**

		Market			AFFH		
		2 BR/2.5 BA	1 BR/1.5 BA		2 BR/2.5 BA	1 BR/1.5 BA	TOTALS
Monthy Income		$ 4,250	$ 3,200		$ 1,687	$ 1,384	
Potential Gross Income		$ 1,530,000	$ 691,200		$ 182,196	$ 33,216	$ 2,436,612
Less: V & C (5%)		$ 76,500	$ 34,560		$ 9,110	$ 1,661	$ 121,831
Effective Gross Income		$ 1,453,500	$ 656,640		$ 173,086	$ 31,555	$ 2,314,781
							$ -
Operating Expense Ratio (20%)		$ 290,700	$ 131,328		$ 34,617	$ 6,311	$ 462,956
							$ -
Net Operating Income		$ 1,162,800	$ 525,312		$ 138,469	$ 25,244	$ 1,851,825
							$ -
Loaded Cap Rate (8.00%)		$ 14,535,000	$ 6,566,400		$ 1,730,862	$ 315,552	$ 23,147,814
2020 Eq Rate		2.38%	2.38%		2.38%	2.38%	2.38%
Implied Assessed Value		**345,933**	**156,280**		**41,195**	**7,510**	**550,918**
Town	171.840285	$ 59,000	$ 27,000		$ 7,000	$ 1,000	
County	134.191722	$ 46,000	$ 21,000		$ 6,000	$ 1,000	
School	700.6908	$ 242,000	$ 110,000		$ 29,000	$ 5,000	
Fire #2	18.34592	$ 6,000	$ 3,000		$ 1,000	$ -	
Ambulance #2	2.24096	$ 1,000	$ -		$ -	$ -	
Light District #2	2.738407	$ 1,000	$ -		$ -	$ -	
Total Tax Rate	1030.048094						
Implied Annual Taxes		**$ 356,000**	**$ 161,000**		**$ 42,000**	**$ 8,000**	**$ 567,000**
PSF		$ 237.33	$ 146.36		$ 28	$ 7.27	

Appendix H

Westchester County Endangered Species List

Westchester County Endangered Species List

Revision 3/23/2005

Species	Common Name	Scientific Name
Insects: Butterflies		
Endangered	West Virginia White	Pieris virginiensis
	Bronze Copper	Lycaena hyllus
	Silver-bordered Fritillary	Boloria selene
	Aphrodyte Fritillary	Speyeria aphrodyte
	Regal Fritillary	Speyeria idalia
	Two-spotted Skipper	Euphyes bimacula
	Leonard's Skipper	Hesperia leonardus
Threatened	Silvery Checkerspot	Chlosyne nycteis
Special Concern	Brown Elfin	Callophrys augustinus
	Eyed Brown	Satyrodes eurydice
	Edward's Hairstreak	Satyrium edwardsii
	Harris' Checkerspot	Chlosyne harrisii
	Meadow Fritillary	Boloria bellona
	Dion Skipper	Euphyes dion
Insects: Dragonflies		
Endangered	Lyre-tipped Spreadwing	Lestes unguiculatus
	Zebra Clubtail	Stylurus scudderi
Threatened	Tiger Spiketail	Cordulegaster erronea
Special Concern	New England Bluet	Enallagma laterale
	Blue-faced Darner	Aeshna mutata
	Maine Snaketail	Ophiogomphus mainensis
	Mocha Emerald	Somatochlora linearis
	White Corporal	Ladona exusta
	Elfin Skimmer	Nannothemis bella
Amphibians		
Threatened	Jefferson/Blue-spotted Salamander complex	Ambystoma jeffersonianum laterale
	Northern Dusky Salamander	Desmognathus fuscus
Special Concern	Slimy Salamander	Plethodon glutinosus
Reptiles		
Endangered	Bog Turtle	Clemmys muhlenbergi
	Wood Turtle	Clemmys insculpta
	Timber Rattlesnake	Crotalus horridus

Westchester County Endangered Species List
Revision 3/23/2005

Threatened	Spotted Turtle	Clemmys guttata
	Eastern Box Turtle	Terrapene carolina
	Northern Fence Lizard	Sceloporus undulatus
	Eastern Ribbon Snake	Thamnophis sauritis
Special Concern	Five-lined Skink	Eumeces fasciatus
	Northern Copperhead	Agkistrodon contortrix
	Eastern Hognose Snake	Heterodon platyrhinos
	Worm Snake	Carphophis amoenus

Birds

Endangered	Peregrine Falcon	Falco peregrinus
	Loggerhead Shrike	Lanius ludovicianus
	Least Bittern	Ixobrychus exilis
	Bald Eagle	Haliaeetus leucocephalus
	King Rail	Rallus elegans
	Common Tern	Sterna hirundo
	Henslow's Sparrow	Ammodramus henslowii
	Osprey	Pandion haliaetus
	Cooper's Hawk	Accipiter cooperii
	Northern Goshawk	Accipiter gentilis
	Red-shouldered Hawk	Buteo lineatus
	Golden-winged Warbler	Vermivora chrysoptera
	Cerulean Warbler	Dendroica cerulea
	Vesper Sparrow	Pooecetes gramineus
	Grasshopper Sparrow	Ammodramus savannarum
	Seaside Sparrow	Ammodramus maritimus
	Savannah Sparrow	Passerculus sandwichensis
	Kentucky Warbler	Oporornis formosus
Threatened	Yellow-breasted Chat	Icteria virens
	Common Barn Owl	Tyto alba
	Common Raven	Corvus corax
	American Woodcock	Scolopax minor
	Saltmarsh Sharp-tailed Sparrow	Ammodramus caudacutus
	Eastern Meadowlark	Sturnella magna
	Bobolink	Dolichonyx oryzivorus
Special Concern	Common Nighthawk	Chordeiles minor
	Whip-poor-will	Caprimulgus vociferous
	American Black Duck	Anas rubripes
	Wood Thrush	Hylocichla mustelina

Westchester County Endangered Species List

Revision 3/23/2005

	Prairie Warbler	Dendroica discolor
	Worm-eating Warbler	Helmitheros vermivorus
	Canada Warbler	Wilsonia canadensis

Mammals

Special Concern	River Otter	Lutra canadensis
	Bobcat	Lynx rufus

Plants

Endangered	Bog Clubmos	Lycopodiella inundata
	Netted Chain Fern	Woodwardia areolata
	Yellow Harlequin	Corydalis flavula
	Spring Avens	Geum vernum
	Winter Grape	Vitis vulpina
	Tall Thistle	Cirsium altissimum
	Purple Everlasting	Gnaphalium purpureum
	Stiff-leaf Goldenrod	Solidago rigida
	Bicknell's Sedge	Carex bicknellii
	Soft Fox Sedge	Carex conjuncta
	Cat-tail Sedge	Carex typhina
	Long-beaked Bald Rush	Rhynchospora scirpoides
	Large Twayblade	Liparis lilifolia
Threatened	Purple Milkweed	Asclepias purpurascens
	Swamp Cottonwood	Populus heterophylla
	Rattlebox	Crotalaria sagittalis
	Swamp Agrimony	Agrimonia parviflora
	Featherfoil	Hottonia inflata
	Slender Pinweed	Lechea tenuifolia
	Shrubby St. Johnswort	Hypericum prolificum
	Mudwort	Limosella australis
	Winged Monkeyflower	Mimulus alatus
	Slender Saltmarsh Aster	Aster tenuifolius
	Spongy Arrowhead	Sagittaria montevidensis spongiosa
	Strap-leaf Arrowhead	Sagittaria subulata
	Spotted Pondweed	Potamogeton pulcher
	Angled Spikerush	Eleocharis quadrangulata
	Lesser Bladderwort	Utricularia minor
	Yellow Lady Slipper	Cypripedium parviflorum
Special Concern	Walking Fern	Asplenium rhizophyllum
	Purple Cliffbrake	Pellaea atropurpurea
	Eastern Prickly Pear	Opuntia humifusa

Westchester County Endangered Species List
Revision 3/23/2005

Trailing Arbutus	Epigaea repens
Grass-of-Parnassus	Parnassia glauca
Pitcher Plant	Sarracenia purpurea
Four-leaf Milkweed	Asclepias quadrifolia
River Birch	Betula nigra
Striped Maple	Acer pensylvanicum
American Holly	Ilex opaca
Prickly Hornwort	Ceratophyllum echinatum
Dittany	Cunilla origanoides
Stiff Yellow Flax	Linum striatum
Wild Pink	Silene caroliniana
Blunt Mountain Mint	Pycnanthemum muticum
Small Floating Bladderwort	Utricularia radiata
Large Yellow-eyed Grass	Xyris smalliana
Showy Orchis	Galearis spectabilis