

- Land Use Planning
 - Civil Engineering
- Construction Permitting

December 23, 2021

Douglas Golemme, Chair Rockland Conservation Commission 242 Union Street Rockland, MA 02301

RE: Concord Meadows – Proposed Planned Unit Development 365 Concord Street Notice of Intent Peer Review MassDEP File No. SE 273-0416

Dear Mr. Golemme:

The purpose of this letter is to address comments received from Mr. Jonathan Niro and Mr. Gary James, P.E. of BETA dated 12/14/21.

Below is a copy of the review comments in normal font followed by our responses in **bold italics**:

Comments from BETA, dated 12/14/21

ADMINISTRATIVE AND PLAN COMMENTS:

A1. MassDEP has not issued technical comments on this filing as of this writing.

Response: MassDEP has issued a DEP File No. SE 273-0416 on 7/26/21 with no further comments.

A2. The Applicant submitted a fee under both Category 3 (subdivision roadway) and Category 2 (single-family residence) per the WPA fee schedule. However, only seven (7) activities were included under the Category 2 (single-family residence) fee. Eleven (11) single-family homes are located within Buffer Zone to BVW. Provide an updated fee transmittal form and confirm that the Rockland Conservation Commission and the Massachusetts Department of Environmental Protection (MassDEP) receive the remaining owed fees of \$1,012.50 and \$987.50, respectively.

Response: The applicant submitted a revised fee transmittal form and additional fees to MassDEP and the Rockland Conservation Commission. A copy of the Transmittal Form is enclosed.

A3. The Applicant did not provide the fees required under the Bylaw. The appropriate fees (\$1,925.00) should be submitted in accordance with the attached Rockland Conservation Commission fee schedule.

Response: The applicant submitted the additional fee to the Rockland Conservation Commission. A copy of the additional fee checks submitted on 9/24/21 is enclosed.

A4. Provide information on the source of the survey, including the dates and methods used. Indicate the

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horizontal and vertical datums used and how they were established.

Resolved

A5. Provide survey benchmarks.

Resolved

A6. Abutting properties have been labeled with Assessor references; however, labels withnow/formerly owner names should also be included.

Resolved

A7. Provide the Conservation Commission with a summary of where the Project stands in relation to the Planning Board PUD review process.

Acknowledged

A8. Provide the Conservation Commission with proof of abutter notification.

Resolved

WETLAND RESOURCE AREAS AND REGULATORY REVIEW RESOURCE AREA BOUNDARY COMMENTS AND RECOMMENDATIONS

W1. As noted by the Applicant, the intermittent tributary to French Stream that bisects the Site is associated with FEMA Zone AE and Zone A flood hazards. The Applicant should clarify the boundary of the Zone AE, as the noted base flood elevation (BFE) does not appear to correlate with the topography shown.

Addressed

W2. Determine a BFE for the onsite Zone A to establish an accurate BLSF boundary.

Resolved

W3. Provide justification for the Vernal Pool (CVP #2682) boundary depicted on the plans. During a Site visit on August 25, 2021, BETA observed conditions throughout the entirety of the center of the C Series BVW similar to conditions within the area depicted as a Vernal Pool on the plans. This includes ponding over one (1) foot in depth, a topographic break in slope, water-staining on leaves, and potential attachment sites for Vernal Pool wildlife. An accurate boundary of the Vernal Pool must be established in order to determine the extent of the Bylaw VPRA at the Site.

Response: The intermittent stream that connects of the Certified vernal pool and the Potential vernal pool have been shown on the Plans.

W4. 100 foot buffer associated with B series is no longer depicted. Provide the 100 foot buffer on all plan

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sheets.

Resolved

CONSTRUCTION COMMENTS AND RECOMMENDATIONS

W5. Remove all references to hay bales in the construction sequencing narrative and erosion control details.

Resolved

W6. Remove references to the Town of Hingham in the construction sequencing narrative.

Resolved

W7. Provide distances between stakes and overlap length on the compost filter tube detail and includes illation fencing embedded to a minimum depth of six (6) inches.

Response: No siltation fencing is proposed; therefore no detail for a silt fence is shown.

W8. Section 2 of the construction sequencing plans discusses the potential for vegetation to be mulched onsite. A dense stand of Japanese knotweed (*Fallopia japonica*) was observed adjacent to the existing driveway. Provide an invasive species control plan for the Site.

Response: A standalone invasive species management has been prepared for the project and is attached with this response.

W9. Remove the stockpile/staging area depicted within Buffer Zone per Section 3 of the construction sequencing plan.

Resolved

W10. Section 7 of the construction sequencing narrative indicates that home sites will be constructed in phases to "control construction impacts to the Site and also consider current market demands for home sales". BETA recommends that the Applicant provide a phasing plan for clearing as well to keep exposed surfaces to a minimum during the construction process.

Response: Three clearing phases have been added to the Erosion Control sheet and the Construction Sequencing note on Detail Sheet DT4 has been revised to include limit of each clearing phase.

W11. Provide a seed mixture for the stabilization of the Site.

Response: All disturbed soil areas subject to the Conservation Commission's jurisdiction will be stabilized with a New England Erosion Control / Restoration seed mix. The two additional seed mixes previously identified will not be used on the project. Seed mix locations have been added to the plans on the Layout and Grading Plan.

W12. The erosion control plans state that the areas of proposed stormwater basins will not be traversed by heavy

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machinery before or after construction. Provide a method for ensuring that this is adhered to.

Resolved

W13. Provide a plan depicting construction-period stormwater controls.

Response: The Erosion Control Plan has been updated to include dewatering and stockpiling erosion control notes.

W14. Provide a detail for the stockpile/staging areas that depicts perimeter erosion controls around the stockpiles.

Response: Perimeter siltation barriers have been added to the Erosion Control Plan.

W15. Grading at the Site presents the potential for erosion of steep slopes – for example, the proposed1.5H:1V slope at the north side of the Site entrance. Provide interim stabilization measures for steep slopes.

Resolved

W16. The Applicant should provide a dewatering detail that includes potential upland discharge locations.

Response: A sediment filtering bag has been added to the dewatering detail.

W17. Provide details for the development activities associated with the construction of the roadway at the north end of the C Series BVW. Include detail drawings for the retaining wall and revise all profiles and construction narratives to consider the 12-inch CPP observed in the field.

Response: The applicant proposes to replace the 12" CPP within the roadway and retaining wall limits.

MITIGATION COMMENTS AND RECOMMENDATIONS

W18. The MassDEP Wetlands Change data layer depicts approximately 7,500 square feet of altered BVW west of the existing dwelling (WC2-251-34). BETA strongly recommends that the Rockland Conservation Commission require full restoration of this area as part of the Project.

Response: The Applicant is amenable to restoration of the historic wetland area even though it is not associated with the project. Should the Conservation Commission vote to approve the project through issuance of an Order of Conditions, we would respectfully request a special condition stating that a wetland restoration plan be submitted to the Conservation Commission for review and approval prior to the commencement of any project-related activities.

W19. BETA understands that a component of the Planning Board PUD review process is to integrate useable open space into the development. A significant portion of the proposed open space consists of Resource Areas including BVW, Bank, and BLSF. Describe the anticipated use and long-term management goals for these open space areas. Common open space should be cited within upland areas to prevent long-term impacts to Resource Areas.

Response: A separate Plan sheet has been provided, Overall Open Space Sheet 13 of 13, describing all the land uses and open space requirements. All areas labeled "wetlands" include Riverfront area and all FEMA Floodplains. This plan also depicts two walking footbridge wetland crossings and approximately 0.4 miles of

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natural walking trails.

W20. The Project does not describe any Buffer Zone mitigation for the proposed development, such as a planting plan. Provide a planting plan consisting of native species and the rationale for their selection for the Conservation Commission's review.

Response: The Applicant is amenable to a special condition requiring submittal of a restoration plan for areas within the 25-foot No Disturb Zone for review and approval by the Conservation Commission prior to the commencement of any project-related activities. The Applicant is also amenable to a special condition stating that landscape trees located within areas subject to the Conservation Commission's jurisdiction be native species only and that ornamental or non-native species are prohibited. At this stage of project development, final landscape design has not been completed, therefore this type of special condition would allow for flexibility on the types of plant used while protecting the Conservation Commission's interests. Within lots containing the 25-foot No Disturb Buffer, the Applicant proposes to install 4"x4" cedar posts along the limit of the 25-foot No Disturb Buffer with Conservation Markers to ensure that lawn areas are not expanded into the No Disturb Buffer in the future.

WPA PERFORMANCE STANDARDS COMMENTS AND RECOMMENDATIONS

Bordering Vegetated Wetland (310 CMR 10.55)

W21. The proposed roadway construction at the north end of the C Series BVW is likely to involve BVW impacts based on the information provided. Both erosion controls and the footprint of the proposed retaining wall are depicted directly over the BVW boundary. It is presumed that at the least, temporary impacts to BVW will be required in order to construct this wall. Provide the details requested in Comment W16 and demonstrate compliance with 310 CMR 10.55(4)(a)¹.

Resolved

W22. The 12-inch CPP appears to potentially serve as a hydrologic connection between the C Series BVW and BVW complexes to the north. As noted in Comment W16, this pipe has not been considered in the roadway design and it is therefore assumed that the Project has the potential to alter² the BVWs associated with the CPP. The presumption of 310 CMR 10.55(3)³ has not been overcome; therefore, the requested construction details should be provided and compliance with 310 CMR 10.55(4)(a)-(b) should be demonstrated.

Response: The applicant proposes to replace the 12"CPP under the roadway and retaining wall limits under this

¹ 310 CMR 10.55(4)(a): Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.

² 310 CMR 10.04 states that the definition of Alter is to change the condition of any Area Subject to Protection under M.G.L. c. 131, § 40. Examples of alterations include, but are not limited to, the following: (a) the changing of pre- existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas; (b) the lowering of the water level or water table; (c) the destruction of vegetation; (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of the receiving water

³ 310 CMR 10.55(3): Where a proposed activity involves the removing, filling, dredging or altering of a Bordering Vegetated Wetland, the issuing authority shall presume that such area is significant to the interests specified in 310 CMR 10.55(1).

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NOI application.

Bordering Land Subject to Flooding (310 CMR 10.57)

W23. The NOI application does not discuss impacts to BLSF; however, one (1) area of clearing totaling approximately 155 square feet is proposed. As discussed in Comments W1 and W2, an accurate boundary of BLSF should be determined and any work within BLSF should be qualified and quantified to demonstrate compliance with the Performance Standards at 310 CMR 10.57(4).

Resolved

BYLAW REGULATORY COMMENTS AND RECOMMENDATIONS

W24. Section 5C. of the Bylaw <u>requires</u> that a No Disturb Zone with a <u>minimum</u> width of 25 feet be maintained around all Resource Areas⁴. Work currently proposed within the 25-foot No Disturb Zone includes grading establishment of backyards, construction of impervious surfaces, and construction of stormwater management features. Provide a No Disturb Zone with a minimum of 25 feet in width as required by the Bylaw.

In accordance with the Town of Rockland Wetlands Protection Bylaw (Bylaw) (Chapter 407-5C), the Applicant respectfully requests a limited waiver from the performance standard which requires that a 25-foot undisturbed vegetated buffer (No Disturb Buffer) be provided from the bordering and isolated vegetated wetlands within the property. As you are aware, the project has been designed in a clustered manner to meet the PUD requirements and to minimize activities within areas subject to the Conservation Commission's jurisdiction. Access into the subject property is gained via Concord Street along an existing driveway that extends between the property boundary and a bordering vegetated wetland. The existing crossing is currently located within and affects approximately 7,880 square feet of the No Disturb Buffer. This represents the sole means of access into the portions of the property located outside of the No Disturb Buffer (similar to a limited project crossing pursuant to the MA Wetlands Protection Act Regulations). The proposed access road for the project uses the same general layout of the driveway and minimizes additional work within the No Disturbance Buffer (2,200 square feet) to the extent practicable to meet stormwater management and planning board requirements. The Commission has previously permitted work associated with the existing driveway without the issuance of a waiver. With no other viable access into the subject property, the only feasible alternative is to use the existing driveway layout for the proposed access road.

The project, as currently designed, not only protects the interests of the wetland resource areas subject to protection under the Bylaw by avoiding the entire No Disturb Buffer aside from the access roadway crossing, it also serves to provide a significant and substantial benefit by protecting approximately 13.7 acres of the property in perpetuity. This includes not only wetlands and associated buffer zones, but also areas of undisturbed forested upland located outside of the Conservation Commission's jurisdiction. The dedicated open space, to be accessible to the public, ensures permanent protection of areas that could otherwise be developed in the future and provides undisturbed habitat and riparian corridor along French Brook. In addition to the open space, the Applicant is proposing to restore approximately 6,300 square feet of No Disturb Buffer that has been historically altered through development of the subject property for the existing single-family residence and associated appurtenances. Therefore, the total area of existing disturbed No Disturb Buffer will be reduced by

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⁴ In order to protect such areas, there shall be a strip of continuous, undisturbed vegetative cover within 25 feet of the specified resource areas shall not be disturbed and treated as a no disturbance area. The Commission therefore may also require that the applicant maintain a strip of continuous, undisturbed vegetative cover within the aforementioned 100-foot or 200-foot area, unless the applicant convinces the Commission that the area or part of it may be disturbed without harm to the values protected by this chapter.

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4,100 SF (from 7,880 square feet to 3,780 square feet). The benefits associated with the permanent open space protection and the restoration of portions of the No Disturb Buffer far outweigh the limited disturbance associated with the access roadway and will ensure the continued protection of the wetland resource areas and their associated values.

W25. As discussed in Comment W3, an accurate boundary of the onsite Vernal Pool should be determined. Should the onsite VPRA increase in size due to a modification of this boundary, BETAstrongly recommends that the Conservation Commission either prohibit or strongly limit development within the VPRA in order to maintain transitional upland areas that likely serve as wildlife corridors.

Resolved

W25. The plans do not currently reflect the Bylaw Buffer Zone associated with BLSF. BETA recommends addressing comments related to the BLSF boundary prior to revising the Buffer Zones.

Resolved

STORMWATER MANAGEMENT REVIEW

The revised Project proposes to use two (2) infiltration basins to treat and attenuate stormwater flows generated at the Site. Runoff from the proposed roadways and driveways will be collected by six (6) catch basins in the roadway. That portion of the Site where the development of the homes will occur will discharge stormwater to four (4) catch basins and direct it to an infiltration basin. The outlet from this basin will ultimately discharge towards areas tributary to French Stream. Basin 1 will be located adjacent to the Site entrance at Concord Street and will discharge towards the C Series BVW and the Potential Vernal Pool. Due to the presence of a Certified Vernal Pool and the fact that the Site drains towards a tributary to a public water supply, BVW at this Site is considered an Outstanding Resource Water (ORW).

The design of the development has been modified significantly. Accordingly, nearly all the prior comments relative to the development are no longer applicable and will therefore not be continued in this review. All comments listed below are specific to the revised submission only.

GENERAL COMMENTS AND RECOMMENDATIONS

G1. Infiltration Basin 1 is located within 50 feet of the C Series BVW, which is considered an ORW. This is not in compliance with design standards pursuant to the Massachusetts Stormwater Handbook (the Handbook).

Response: The proposed infiltration basin No. 1 has been relocated slightly to the East and the top of the basin is now 50.1 feet away from the adjacent wetland.

G2. In accordance with Volume 2, Chapter 2 of the Handbook, the basins will require monitoring wells; a means of emergency dewatering; and an emergency spillway. Provide details for each of these features including the embankment itself and show water surface elevations required to demonstrate compliance with the Standards.

Response: Monitoring, emergency dewatering wells and emergency spillways have been added to the detail sheet DT3.

G3. The Water Quality Volume (WQV) used for the design of the roof infiltration structures on the east side of the roadway should be 1 inch based upon their proximity to BVW complex associated with the Vernal Pool, which

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is considered an ORW. In addition, the proposed roof infiltration structures are proposed to provide 71 cubic feet of storage; however, BETA calculates only 45 cubic feet. Provide calculations required to demonstrate the required volume.

Response: The calculation for water quality volume for the roof infiltration has been revised to include 1 inch of runoff. Stage storage sheets have been included to show compliance with the required water quality volume for the single home infiltration structures.

G4. As shown on sheet 5, the grade in the back yards of all of the proposed dwellings is six (6) to seven (7) feet lower than at the front. Show a typical detail on how the roof leader in the back yard will connect with the infiltration unit in the front of the house or provide infiltration structures in the backyards.

Response: A detail has been added to sheet DT4 to show how roof leaders will be directed towards the front of the dwellings.

G5. The Vernal Pool and associated BVW at the Site qualify as an Outstanding Resource Water as defined by 314 CMR 4.0. Stormwater discharges will drain to ORW under proposed conditions. Accordingly, the statement asserting that Standard 6 does not apply is incorrect.

Response: Response to Standard 6 has been revised to show compliance with requirements.

G6. The mounding analysis for Basin 1 is incorrect. The application rate should match the design Rawl's Rate, and the duration of the infiltration period should be more than 0.05 days.

Response: Revised mounding analyses are enclosed with this response. Revised input information is as follows:

Recharge Rate (R): The soils found under the infiltration basin consist of sand with a Rawl's Rate of 8.27 in/min (16.4 ft/day)

Specific Yield (Sy): Medium Sand (TP-1) and Coarse Sand (TP-1A) were found around Pond 1. The following soils were found in the three test pits located in the vicinity of Pond 2: Loamy Sand (TP-2), Coarse Sand (TP-2A) and Coarse Sand (TP-2B). Ranges for Specific Yield are listed below and were obtained from "Representative Values of Hydraulic Properties" by Glenn M. Duffield, President, HydroSOLVE, Inc.; http://www.aqtesolv.com/aquifer-tests/aquifer properties.htm and "Summary of Hydrologic and Physical Properties of Rock and Soil Materials, as Analyzed by the Hydrologic Laboratory of the J.S. Geological Survey 1948-60" by D. A. Morris and A. I. Johnson; https://pubs.usgs.gov/wsp/1839d/report.pdf. We used a Sy of 0.28 for Pond 1 and a Sy of 0.26 at Pond 2.

Horizontal Hydraulic Conductivity (K): Using the table below obtained from "Representative Values of Hydraulic Properties" by Glenn M. Duffield, President, HydroSOLVE, Inc.; http://www.aqtesolv.com/aquifer-tests/aquifer-properties.htm and "Summary of Hydrologic and Physical Properties of Rock and Soil Materials, as Analyzed by the Hydrologic Laboratory of the J.S. Geological Survey 1948-60" by D. A. Morris and A. I. Johnson; https://pubs.usgs.gov/wsp/1839d/report.pdf. and based on the soil information referenced above we

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used a value of 300 for K at Pond 1 and 150 at Pond 2.

| Material | Ksat (Low) | | Ksat (High) | | Range |
|--------------------|------------|------------|-------------|------------|----------------|
| | m/s | ft/day | m/s | ft/day | Specific Yield |
| Fine Sand | 0.0000002 | 0.0566784 | 0.0002 | 56.6784 | 0.20-0.30 |
| Medium Sand | 0.0000009 | 0.2550528 | 0.0005 | 141.6960 | 0.26-0.30 |
| Coarse Sand | 0.0000009 | 0.2550528 | 0.0060 | 1,700.3520 | 0.26-0.30 |
| Gravel | 0.0003000 | 85.0176000 | 0.0300 | 8,501.7600 | 0.21-0.28 |

Half Length and Width of Basin (x and y): We used half the approximate length and width of the bottom of Ponds 1 and 2 or 38'x16' for Pond 1 and 60'x6' for Pond 2.

Duration of Infiltration Period (t): We used the time of exfiltration during the 100-year design storm. Per our HydroCAD model, exfiltration commences at hour 5 and ends at hour 24 for Pond 1 and commences at hour 5 and ends at hour 23 for Pond 2. Therefore, t was calculated to be 0.8 days for both Ponds 1 and 2.

Initial Thickness of Saturated Zone (h_{θ}) : We found three well reports for addresses in the vicinity (200, 268 and 308 Rockland Street). Depth to bedrock was found to be 30', 30' and 25' respectively. Therefore, the average depth to bedrock was determined to be 28.3'. The average depth to groundwater in the vicinity of Pond 1 was found to be 2.9' and it was found to be 4.9' for Pond 2. Therefore, h_{θ} was calculated to be 25.4' at Pond 1 and 23.4' at Pond 2.

Mounding calculations resulted in an expected groundwater mound of 0.803' at Pond 1 and 1.483' at Pond 2 which occur within the 2' separation proposed. Therefore, groundwater does not break into the proposed infiltration basins during any design storm event.

G7. The Applicant has requested a waiver from the Planning Board regulations to provide 2H:1V side slopes for Basin 1, which is contrary to the Handbook requirement of 3H:1V.

Response: The proposed basin has in interior side slope of 2:1 while the exterior has a side slope of 3:1, given the size of the pond, less than 1,400 square feet bottom area and maximum depth of the 100 year event of 1.5 feet, we feel given the limiting area to work with this is a reasonable design.

G8. There are no easements provided around Basin 2, the piping from the roadway into the basin, or access from the roadway to the basin. A portion of the basin is located within the proposed lot that will be associated with the exiting dwelling.

Response: Easements have been added to the Planned Unit Development sheet.

G9. The watershed subcatchment numbers on Drawing No. PCSA do not match the HYDRO-CAD analysis.

Response: The Proposed subcatchment area Plan has been revised to reflect the Hydro CAD analysis.

DEP STORMWATER STANDARDS

The Project was reviewed as it relates to MassDEP's Stormwater Management Standards; BETA offers the

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following comments:

NO UNTREATED STORMWATER (STANDARD NUMBER 1): No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. The design proposes to use three (3) infiltration basins to treat the runoff associated with the roadway and a portion of the driveways.

SW1. There are no BMPs provided for the runoff associated with the existing dwelling area. See Standard 7 comments.

SW2. Provide rip-rap sizing calculations at the outlets.

Response: See updated Stormwater Report.

POST-DEVELOPMENT PEAK DISCHARGE RATES (STANDARD NUMBER 2): Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre- development peak discharge rates. The project proposes to mitigate increase to runoff rates through the installation of gravel wetland and detention basins. The Project proposes an overall decrease of peak flow rates in post-development conditions in comparison to the pre-development conditions.

SW3. The runoff calculations for the roof runoff is identified as a link; however, there is no information presented in the calculations which demonstrate how this data was developed.

Response: The Hydro CAD link for the single family homes has been provided in the Hydro CAD report.

RECHARGE TO GROUNDWATER (STANDARD NUMBER 3): Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable. As shown on the Natural Resource Conservation Service (NRCS) web site, the soils at the Site are Hydrologic Soil Group "C". Test pits conducted onsite indicate that there are layers of higher-class soils which will allow the Site to maintain compliance with this standard.

SW4. The static storage provided by the two (2) basins is adequate to meet the Standard; however, the analysis only accounts for the increase in pavement surface area. The Applicant should account for all of the impervious surface area tributary to the infiltration structures and show the amount of impervious outside of the treatment that will be maintained as untreated.

Response: See updated Stormwater Report. All impervious areas have been included in the recharge calculation.

SW5. It appears that all the test pits conducted for Basin 2 are now located outside of the storage area associated with the basin. BETA recommends that additional testing be conducted to establish a minimum of two (2) test pits in the basin location as required by the Standards.

Response: While the test pits do not lie within the bottom of the basin there are 3 test pits within the area of the proposed basin.

SW6. The sediment forebay sizing calculations are not included in the submission.

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Response: See updated Stormwater Report. Sizing calculations have been provided.

SW7. The storage volume in the forebay below the crest of the check dam cannot be used in the calculations for the HydroCAD analysis of the basin. In addition, infiltration through the bottom of the forebay cannot be used. Calculate the infiltration through the basin floor beyond the forebay only and enter it into the calculations as a steady flow rate.

Response: See updated Stormwater Report. The volume of the forebay and the bottom of the basin has been excluded from the volume of both basins in the Hydro - CAD analysis.

SW8. The mounding analysis for Basin 1 is incorrect; see comment G6 above.

Response: Revised mounding calculations have been provided.

TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4): For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids (TSS). The proposed design includes the installation of deep sump catch basin, sediment forebay, and pocket wetland.

SW9. The area tributary to the Vernal Pools qualifies as a Critical Area; therefore, the WQV should be one (1) inch for the subsurface infiltration structures for the roof areas for Lots 1-7.

Response: One inch of runoff was used to calculate WQV for the drywells proposed in Lots 1-7.

SW10. The forebay storage volume cannot be used to satisfy the WOV storage requirement.

Response: See updated Stormwater Report. Roof areas with runoff tributary to the Vernal pool has been revised to 1" for calculating WOV. Forebay volume has been calculated and not used in the storage calculations.

HIGHER POTENTIAL POLLUTANT LOADS (STANDARD NUMBER 5): Stormwater discharges from Land Uses with Higher Potential Pollutant Loads (LUHPPLs) require the use of specific stormwater management BMPs. The Project does not propose new LUHPPLs. This standard is not applicable.

No Response

CRITICAL AREAS (STANDARD NUMBER 6): Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas. Stormwater discharges towards the wetlands around the Vernal Pool, which are considered Critical Areas; treatment should be provided as required by the standards.

Response: See updated Stormwater Report.

REDEVELOPMENT (STANDARD NUMBER 7): Redevelopment of previously developed sites must meet certain Stormwater Management Standards to the maximum extent practicable. This is defined in Volume 1, Chapter 1 of the standards as:

Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other

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requirements of the Stormwater Management Standards and improve existing conditions.

SW11. BETA3: Document that compliance with Standards 1 and 4 has been achieved to the maximum extent practicable for existing impervious outside of the areas tributary to BMPs.

Response: See updated Stormwater Report.

EROSION AND SEDIMENT CONTROLS (STANDARD NUMBER 8): Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities. The Project exceeds one (1) acre of disturbance and will require the filing of a NOI with the Environmental Protection Agency (EPA), which includes the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The erosion control plan with details provided is adequate for the preliminary roadway development. The SWPPP should address erosion control measures as they relate to the development of the houses, driveways, and stormwater improvements.

SW12. The SWPPP report should be submitted to the Commission for review prior to the start of construction.

Response: A SWPPP shall be submitted for review prior to start of Construction.

OPERATIONS/MAINTENANCE PLAN (STANDARD NUMBER 9): A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed. This plan should be a stand-alone document that can be part of the Association/Condo document.

SW13. The Operation and Maintenance plan was not included in the submission.

Response: The Operation and Maintenance Plan has been submitted.

ILLICIT DISCHARGES (STANDARD NUMBER 10): All illicit discharges to the stormwater management system are prohibited. An unsigned Illicit Discharge Compliance Statement was included in the Stormwater Drainage Report.

SW14. No illicit Discharge Statement was included in the submission.

Response: An illicit discharge statement has been included.

We appreciate BETA's thoughtful comments and look forward to presenting these revised materials to you and the Commission at our hearing scheduled on 1/11/22. If any questions arise, please do not hesitate to contact us.

Sincerely,

Cavanaro Consulting, Inc.

John C. Cavanaro, P.E. Managing Principal

Cavanaro Consulting, Inc.
Response to Review Comments
Concord Meadows – Proposed Planned Unit Development 365 Concord Street
Notice of Intent Peer Review MassDEP File No. 273-0416
9/23/21
Page 13 of 13

Enclosures

cc: M. Dacey W. Sullivan File 19.103

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return

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| | |

| A. Applicant | information | | |
|---------------------|-----------------|-----------------------------|-------------|
| 1. Location of Proj | ect: | | |
| 365 Concord St | reet | Rockland | |
| a. Street Address | | b. City/Town | |
| 7397 & 7461 | | \$3,262.50 | |
| c. Check number | | d. Fee amount | |
| 2. Applicant Mailin | g Address: | | |
| Matthew | | Dacey | |
| a. First Name | | b. Last Name | |
| Conrock LLC | | | |
| c. Organization | | | |
| PO Box 1414 | | | |
| d. Mailing Address | | | |
| Duxbury | | MA | 02331 |
| e. City/Town | | f. State | g. Zip Code |
| 781-424-5290 | | mdacey@championbuilders.com | |
| h. Phone Number | i. Fax Number | j. Email Address | |
| 3. Property Owner | (if different): | | |
| Daniel | | Delprete | |
| a. First Name | | b. Last Name | |
| Delprete Realty | Corp. | | |
| c. Organization | | | |
| 365 Concord St | reet | | |
| d. Mailing Address | | | |
| Rockland | | MA | 02370 |
| e. City/Town | | f. State | g. Zip Code |
| h. Phone Number | i. Fax Number | j. Email Address | _ |

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

B. Fees

Fee should be calculated using the following process & worksheet. *Please see Instructions before filling out worksheet.*

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

Massachusetts Department of Environmental Protection Bureau of Resource Protection - Wetlands NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

| B. Fees (continu | ıed) | | | |
|------------------|----------------------------------|-----------------------------|--|--|
| Step 1/Type of A | Activity | Step 2/Number of Activities | Step 3/Individual Activity Fee | Step 4/Subtotal Activity Fee |
| Subdivision Road | lway - Category 3 | 1 | \$1,050.00 | \$1,050.00 |
| Single-Family Re | Single-Family Residence - Cat. 2 | | \$500.00 | \$5,500.00 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | Step 5/T | otal Project Fee: | \$6,550.00 |
| | | Step 6 | Fee Payments: | |
| | | Total Project Fee: | | \$6,550.00 a. Total Fee from Step 5 |
| | | State share of filing Fee: | | \$3,262.50 b. 1/2 Total Fee less \$12.50 |
| _ | | City/Town shar | \$3,287.50 c. 1/2 Total Fee plus \$12.50 | |

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection Box 4062 Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)



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| 土 | For delivery information, visit our website | at www.usps.com®. |
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| 7027 | Sent To Street and Apt. No P.O. Box 4062 P.O. Boston, MA 02211 | 100 |
| | PS Form 3800, April 2015 PSN 7530-02-000-9047 | See Reverse for Instruction |

| ENDER: COMPLETE THIS SECTION | COMPLETE THIS SECTION ON D | ELIVERY |
|---|---|--|
| Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. Attach Addressed to: DEP P.O. Box 4062 Boston, MA 02211 | A. Signature X B. Received by (Printed Name) D. Is delivery address different from If YES, enter delivery address by | Agent Addressee C. Date of Delivery item 1? Yes pelow: No |
| 9590 9402 6905 1104 6584 52 | 3. Service Type Adult Signature Adult Signature Restricted Delivery Certified Mail® Certified Mail Restricted Delivery Cellect on Delivery Collect on Delivery Restricted Delivery | ☐ Priority Mail Express®☐ Registered Mail™☐ Registered Mail Restricted Delivery☐ Signature Confirmation™☐ Signature Confirmation Restricted Delivery |
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61 Meetinghouse Lane, Marshfield, MA 02050

Phone: 978-697-0854

December 23, 2021

Rockland Conservation Commission Rockland Town Hall 242 Union Street Rockland, MA 02301

Re: Concord Meadows – DEP File No. 273-0416

Invasive Species Management Plan

Dear Commission Members:

In response to the review comments provided by the Rockland Conservation Commission's third-party review consultant (Beta Group, Inc.), South River Environmental has prepared a standalone Invasive Species Management Plan for the removal of non-native plants within areas subject to Conservation Commission jurisdiction associated with the above-referenced project located at 365 Concord Street in Rockland, MA.

Invasive species management will occur within the entire extent of the proposed restoration area. Invasive species present within the property include the following species:

- Locust Robinia pseudoacacia
- Multiflora Rose *Rosa multiflora*
- Oriental Bittersweet Celastrus orbiculata
- Glossy Buckthorn Rhamnus frangula

Efforts will be made to conduct management activities in the appropriate timeframes to prevent invasive species from going to seed. The general flowering / seeding schedule is applicable:

- Locust fruits mature in the fall
- Multiflora Rose flowers in May/June fruits mature in mid-summer
- Oriental Bittersweet Fruits mature in late summer
- Glossy Buckthorn Fruits mature in mid to late summer

The objective of the invasive species management plan (ISMP) will be to control the presence / spread of invasive species within the restoration area as well as portions of the 100-foot buffer zone that are subject to protection under the Wetlands Protection Act and Town of Rockland Wetlands Protection Bylaw.

The following procedures will be implemented:

First Growing Season Post-Construction

- Concurrent with or immediately after the removal of the cut vegetation associated with the
 project, existing stands / stems of invasive species (including but not limited to the species
 identified above) located within the project area will be cut to ground surface, bagged and
 removed from the site. Invasive species removed from the site will be disposed of at a landfill or
 transfer station.
 - o This process will be overseen by the supervising botanist or wetland scientist.
- Immediately after and concurrent with cutting of invasive vegetation, herbicide (glyphosate, triclopyr or equivalent) will be applied by a licensed professional directly to the cut stems / stalks. Herbicide application rates will be in accordance with the product labels / MSDS sheets

and is anticipated to be approximately 1.5 ounces of herbicide per gallon. The name and license number of the individual applicator(s) will be provided to the Conservation Commission a minimum of 72 hours prior to the commencement of treatment activities.

- There will be no broadcast application of herbicide anywhere within the property. Applications will be made using a backpack sprayer or via hand application with a spray bottle to target individual stems. Herbicide applications will not occur within one hour of a forecasted precipitation event. Should a rain event occur while application is being conducted, it will be stopped immediately and will not resume until a minimum of one hour following the completion of the rain event.
- If treatment is required within the 25-foot No Disturb Buffer, it will be conducted using a spray bottle or direct brush to stem application.
- Monthly field reviews will be conducted within the property from July through September to identify additional growth of invasive species within the property. If additional treatments are necessary during the first growing season post-construction, the Conservation Commission will be notified a minimum of 72 hours prior to the field review / treatments. These treatments will be documented within a monitoring report to be submitted by December 15 of the first growing season post-construction.

Second and Third Growing Seasons

- Two field reviews / treatments will be conducted each year in May and September using the same protocols / methods as previously described. If requested, the Conservation Commission will be notified a minimum of 72 hours prior to the field review / treatments. Results of the field reviews will be documented within the respective annual monitoring reports.
- The need for additional monitoring / treatment beyond the third growing season will be reviewed with the Conservation Commission prior to implementation.

Should you have any questions regarding this request or wish to discuss the proposed invasive species management plan, please do not hesitate to contact me at 978-697-0854 or via email at southriverenvironmental@gmail.com.

Sincerely,

South River Environmental

John Zimmer

Wildlife Biologist / Wetland Scientist

Cc: Cavanaro Consulting, Inc.



STORMWATER DRAINAGE CALULATIONS

Proposed Residential Development 365 Concord Street Rockland, MA 02370

APPLICANT: Conrock LLC P.O. Box 1414 Duxbury, MA 02331

SUBMITTED TO: Town of Rockland Planning Board 242 Union Street Rockland, MA 02370

PREPARED BY: Cavanaro Consulting, Inc. 687 Main Street Norwell, MA 02061

REVISED 12/23/21



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| Drainage Calculations and Supplemental Drainage Information | IV |
| Project Plans | V |
| Definitive Planned Unit Development Plan Set | |

SECTION I

STORMWATER REPORT

Existing & Proposed conditions:

The locus property is approximately 21.3 acres and contains one single family home. Approximately 16.9 acres is upland and 4.4 is wetlands. The property is bordered to the west by the French River and an intermittent stream bisects the property. The property is bordered to the north and south by private property and to the east by approximately 100' of frontage on Concord Street and the remainder by private property.

The proposed development consists of 19 new single-family homes and maintaining the existing single family home. The development will only utilize the front portion of the property and not involve a wetland crossing to get to the remainder upland located on the east side of the intermittent stream. The total length of roadway is approximately 980 L.F. and will be constructed with full utilities and a sidewalk on one side. The site is relatively flat with a maximum change in grade of 6± feet and only a 4± foot differential within the area of the development.

1.0 METHODOLOGY

The adequacy of drainage structures and their ability to function properly must be analyzed to minimize detrimental effects due to flooding conditions. The impacts of storm water are mitigated through several mechanisms such as infiltration, transportation and evaporation. The remaining runoff, can be quantified through developed and accepted methods. By determining the characteristics of site specific storm water conditions, mitigating efforts can be taken to avoid floodwater damage by constructing control devices. Designing and analyzing these facilities requires the acquisition of site data through observations, computer modeling the watershed, and the interpretation and application of the calculated values.

2.0 OVERVIEW

Cavanaro Consulting (CC) has analyzed the existing structures on and adjacent to the site utilizing the HydroCad 10.0 Stormwater modeling program. Storm rainfall, run-off curve numbers, and other site characteristics are input into the program. The results of calculations are output into tables and graphs for each area and control structure. The complete calculations are presented in Section IV of this report.

3.0 DESIGN STORMS

CC has computed storm water run-off calculations for the proposed subdivision site, for a 2, 10, 25, and 100 year, Type III, 24-hour storm events. This results in a 3.2", 4.6", 5.5", and a 7.0" rain event, respectively for each storm event.

4.0 EXISTING DRAINAGE AREAS

The existing site is currently divided into four (4) drainage areas: One that flows to the west towards the wetlands associated with the intermittent stream; another flows easterly toward a wetland system which is primarily on adjacent property but also has a portion onsite; the third is a

small area of existing driveway and lawn that discharges easterly into Concord Street; and the fourth flows to the north into a wetland area that is mostly located offsite.

5.0 PROPOSED SUBCATCHMENT AREAS

The proposed site was divided into subcatchment areas as shown on the accompanying plan. Four design control points were established to compare the existing with the proposed conditions. The design control points were chosen at the down slope side of the four existing subcatchment areas as shown on the plan.

6.0 SOIL CONDITIONS

The assumed soil conditions are based on the following available information:

The soil type was mapped and determined using U.S. Conservation Service online data and from test pits taken onsite. Based on this data, we have used a design infiltration rate of a Sand, Hydrologic Soil Group A soil with a corresponding Rawls rate of 8.27 In./Hr for the proposed infiltration ponds.

The proposed project complies with Massachusetts DEP Stormwater Standards as follows:

Standard 1: No New Stormwater Conveyances of Untreated Stormwater or Erosion Offsite

All proposed road and sidewalk runoff will receive 44% TSS removal for pretreatment and 80% total TSS removal. All new roof runoff will be disconnected from the street runoff and will receive 80% TSS removal. Driveways serving the existing dwelling and detached garage that are presently untreated will be reduced from 23,861 SF to 8,919 SF. Therefore, this Standard is met.

Rip Rap sizing:

The size, slope, and invert elevations of the overflow pipe and a detail of the crushed stone pad have been added to the revised Site Plan. The Isbash formula [$D = V^2 / 2gC^2$ (G-1)] was used to size the stone for the splash pad:

D = Median stone size (ft)

V = velocity

C = constant - 0.86 for high turbulence

g = 32.2 Ft/ sec.

G = Specific gravity of stone - 2.86

The outlet with the highest velocity was chosen for design, which is the inlet to Pond No. 2, this results in a design stone of 4.5 inches, therefore a 4"-6" stone has been specified for all outlet structures

$$(5.83)^2 / 2(32.2) (0.86)^2 (2.86 - 1) = 0.38$$
 feet or 4.5 inches

Standard 2: Peak Rate Attenuation

All proposed runoff rates and volumes will be reduced from existing conditions during all design storm events as noted below. The proposed improvements are expected to improve offsite drainage conditions.

Runoff to Stream - Design Control Point (DCP 1) - To Stream

| <u>Storm</u> | Existing (Rea Peak Rate | <u>ch 1E)</u> <u>Volume</u> | Post-developn Peak Rate | nent (Reach 1P) <u>Volume</u> |
|------------------------|----------------------------|--------------------------------|----------------------------|----------------------------------|
| 2–Year-24Hour (3.2") | 4.12 cfs | 0.622 af | 4.01 cfs | 0.557 af |
| 10-Year-24Hour (4.6") | 7.72 cfs | 1.145 af | 7.71 cfs | 1.075 af |
| 25–Year-24Hour (5.5") | 10.18 cfs | 1.506 af | 9.90 cfs | 1.436 af |
| 100–Year-24Hour (7.0") | 14.37 cfs | 2.133 af | 13.32 cfs | 2.055 af |

Runoff to East Wetland – Design Control Point (DCP 2) – To East Wetland

| <u>Storm</u> | Existing (Rea Peak Rate | <u>ch 2E)</u> <u>Volume</u> | Post-developn Peak Rate | nent (Reach 2P) <u>Volume</u> |
|------------------------|----------------------------|--------------------------------|----------------------------|----------------------------------|
| 2–Year-24Hour (3.2") | 2.27 cfs | 0.327 af | 2.15 cfs | 0.321 af |
| 10-Year-24Hour (4.6") | 4.50 cfs | 0.628 af | 4.31 cfs | 0.613 af |
| 25–Year-24Hour (5.5") | 6.04 cfs | 0.839 af | 5.86 cfs | 0.825 af |
| 100–Year-24Hour (7.0") | 8.70 cfs | 1.210 af | 8.45 cfs | 1.190 af |

Runoff to Concord Street - Design Control Point (DCP 3) - To Street

| <u>Storm</u> | Existing (Reach 3E) | | Post-development (Reach 3P) | |
|------------------------|---------------------|----------|-----------------------------|---------------|
| | Peak Rate | Volume | Peak Rate | Volume |
| 2–Year-24Hour (3.2") | 0.06 cfs | 0.004 af | 0.04 cfs | 0.003 af |
| 10-Year-24Hour (4.6") | 0.10 cfs | 0.007 af | 0.06 cfs | 0.004 af |
| 25–Year-24Hour (5.5") | 0.13 cfs | 0.009 af | 0.07 cfs | 0.005 af |
| 100–Year-24Hour (7.0") | 0.17 cfs | 0.012 af | 0.09 cfs | 0.007 af |

Runoff to North Wetland - Design Control Point (DCP 4) - To North Wetland

| <u>Storm</u> | Existing (Reach 4E) | | Post-development (Reach 4P) | |
|------------------------|---------------------|----------|-----------------------------|---------------|
| | Peak Rate | Volume | Peak Rate | Volume |
| 2–Year-24Hour (3.2") | 0.64 cfs | 0.098 af | 0.53 cfs | 0.073 af |
| 10-Year-24Hour (4.6") | 1.24 cfs | 0.186 af | 1.06 cfs | 0.140 af |
| 25–Year-24Hour (5.5") | 1.66 cfs | 0.247 af | 1.42 cfs | 0.187 af |
| 100–Year-24Hour (7.0") | 2.37 cfs | 0.355 af | 2.05 cfs | 0.270 af |

Standard 3: Recharge

Recharge will be increased by minimizing the impervious areas discharging directly over ground. The minimum required recharge volume is calculated as follows:

Existing Impervious Area = 33,166 SF

Proposed Impervious Area = 97,256 SF

Total Increase in Impervious Area = 64,090 SF

 $(0.25"/12 \times 64,090 \text{ SF}) = 1,335 \text{ CF}$

The storage capacity of each infiltration BMP is listed below:

Drywells for Houses 1-19:

Volume below outlet elevation=89 CF X 19=1,691 CF

Pond No.1:

Volume below outlet elevation = 947 CF

Pond No.2:

Volume below outlet elevation = 3,186 <u>CF</u>

Total recharge volume provided:

1,691 CF+947 CF+3,186 CF = 5,824 CF >>> 1,335 CF; therefore, this requirement is met.

In order to confirm that the infiltration systems will drain in 72 hours, the volume under the lowest outlet pipe must be divided by the bottom area of the infiltration system and the infiltration rate as follows:

Pond 1:

$$\frac{\left[\frac{(947 ft^3)}{1,160 ft^2}\right]}{\left(8.27 \frac{in}{hr}\right) \left(\frac{1 ft}{12 in}\right)} = 1.2 hours$$

1.2 hours << 72 hours; therefore, this requirement is met for this infiltration system.

Pond 2:

$$\frac{\left[\frac{(3,186 ft^3)}{1,685 ft^2}\right]}{\left(8.27 \frac{in}{hr}\right) \left(\frac{1 ft}{12 in}\right)} = 2.7 hours$$

2.7 hours << 72 hours; therefore, this requirement is met for this infiltration system.

Bottom of Basin Floor steady flow rate calculation.

Pond 1 bottom infiltration calculation:

8.27 In/Hr.(1Hr/ 3600 sec.)1ft / 12 in (1,160 s.f. -bottom area of pond) = 0.22 CFS

Pond 2 bottom infiltration calculation:

8.27 In/Hr.(1Hr/ 3600 sec.)1ft / 12 in (1,685 s.f. -bottom area of pond) = 0.32 CFS

Standard 4: Water Quality

Water quality requirements are met for work in critical areas; namely, rapid infiltration soils under the proposed infiltration systems and discharging near a potential vernal pool for Pond 1 per BETA's request. Pretreatment consists of deep sump catch basins and forebays prior to exfiltration at each infiltration basin. The proposed pretreatment will remove 44% of TSS while the infiltration basin will provide a total 80% TSS removal with pretreatment. Roof runoff does not require pretreatment. Drywells are proposed to provide 80% TSS removal for each new dwelling.

The WQV required and provided at each infiltration basin is as follows:

Pond 1:

Impervious area directed to Pond 1=10,533 SF

$$(1''/12"$$
per ft) $(10,533) = 878$ SF

Pond 1 has a capacity of 947 CF below the lowest outlet elevation. Therefore, this requirement is met.

Pond 2:

Impervious area directed to Pond 2=38,056 SF

$$(1''/12"$$
per ft) $(38,056 \text{ ft}^2) = 3,171 \text{ ft}^3$

Pond 2 has a capacity of 3,186 CF below the lowest outlet elevation. Therefore, this requirement is met.

Drywells are proposed for House lots 1-19:

Proposed House Lots 1 thru 7 are tributary to a certified vernal pool therefore water Quality Volume is based on 1.0" of runoff.

C soils are expected for the site aside from the infiltration system locations. Thus, the required WQV for the proposed dwellings is as follows:

Proposed roof areas directed to drywells lots 1 thru 7 =(6 houses x 1,550 SF/house) + (1 house x 1,200 SF/house)=10,500 SF.

Required WQV=(1.0"/12"per ft)(10,500 SF) = 875 CF

Proposed roof areas directed to drywells lots 8 thru 19 =(10 houses x 1,550 SF/house) + (2 houses x 1,200 SF/house)=17,900 SF

Required WQV=(0.5"/12"per ft)(17,900 SF) = 746 CF

875 + 746 = 1,621 CF

Volume capacity provided below outlet elevation=89 CF x 19=1,691 CF

1,691 CF > 1,621 CF. Therefore, this standard is met.

Forebay sizing calculations:

Pond 1:

Impervious area directed to Pond 1=10,533 SF

(0.1"/12"per ft) $(10,533) = 88 \text{ ft}^3$

<u>Pond 2:</u>

Impervious area directed to Pond 2=38,056 SF

(0.1"/12"per ft) $(38,056 \text{ ft}^2) = 317 \text{ ft}^3$

Standard 5: Land Uses with Higher Pollutant Loads (LUHPPLs)

The proposed use of the site, single family home, does not constitute a higher potential pollutant load, therefore this standard does not apply.

Standard 6: Critical Areas

A portion of the locus does fall within a critical area and since the infiltration rate for the ponds is greater than 2.4 inches per hour 44% of pretreatment is provided prior to infiltration.

Standard 7: Redevelopment

This project is a combination of redevelopment and new development. All new impervious areas have been treated and infiltrated as per the Stormwater Management Standards. The existing pavement areas without treatment have been reduced from 23,861 square feet to 8,919 square feet. Therefore we feel this requirement has been met to the maximum extent possible.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

The Operation and Maintenance Plan included with this submittal will ensure proper maintenance of the proposed pollution, erosion and sedimentation measures proposed during construction.

Standard 9: Long Term Operation and Maintenance Plan

The Long Term Operation and Maintenance Plan is included within the Operation and Maintenance Plan enclosed in this submittal to ensure the proposed drainage improvements are maintained as intended.

Standard 10: Prohibition of Illicit Discharges

Routine visual inspections are scheduled as part of the Operations and Maintenance Plan to prevent illicit discharges into the stormwater system. Furthermore, an Illicit Compliance Statement is included in this submittal.

Low Impact Measures Used:

The design of the proposed development has incorporated the following low impact development measures:

- Utilizes the natural hydrology to manage Stormwater.
- Treats Stormwater through a combination of stormwater controls.
- Uses natural topography for drainage ways and storage areas.

SECTION II

STORMWATER OPERATION AND MAINTENANCE PLAN

Construction Period Erosion, Sedimentation, and Pollution Prevention Plan

Proposed Residential Development
"Concord Meadows"

PUD Subdivision – Rockland, MA 02370

Stormwater Management System's Owner: Conrock LLC

System Owner's Address: 365 Concord Street

Party responsible for Operations and Maintenance: Owners of Concord Meadows

It is most important for a drainage system to be maintained in order for it to work properly. The following is an Operation and Maintenance plan to upkeep the existing non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy.

Construction Sequencing:

The following section provides construction details and highlights the construction sequence and timing of earth moving activities.

1 Installation of Erosion Controls

Erosion and sedimentation controls (silt fence and hay bales) will be installed where needed and inspected at the limits of the work area prior to the commencement of earth moving activities.

2 Clearing

The project area will be cleared of debris and boulders. Materials removed from the site will be transported to an appropriate facility or will be disposed of properly. No large boulders will be buried on the site. All cleared vegetation will be removed from the project site or mulched and stockpiled for future use on the site.

3 Rough Grading

During this phase of construction, rough grades will be established for the project site. If suitable topsoil is found, it will be removed and stockpiled in an upland area outside of the zone of identified wetlands. The stockpiled topsoil will be stored until ready for re-use on site.

4 Drainage System Construction

After rough grading is complete, the drainage collection, conveyance and discharge areas will be installed. The drainage system design and structures for the proposed development will follow the Department of Environmental Protection's Best Management Practice standards.

5 Utility Installation

In this phase of construction, underground utilities including water, sewer, gas, power, telecommunications, etc. will be installed.

6 Roadway Paving

During this phase of construction, the entrance and exit roadways for the development will be paved to binder course only. Final paving will be done after most of the home sites are developed at the discretion of the developer.

7 Foundation and Structure Construction

This phase of construction consists of installation of the foundations and construction of the buildings. The home sites will be made available for construction and occupancy in phases. The phasing will be designed primarily to control construction impacts to the site and also consider current market demand for home sales.

8 Installation of Amenities

Amenities such as signage and landscaping will be installed or completed as required for safety and as the homes become occupied.

9 Site Stabilization

The final phase of the project is the restoration and stabilization of all exposed surfaces.

Disturbed areas will be landscaped or seeded as necessary with an erosion control seed mix.

Much of the disturbed area is to be rough graded with topsoil and allowed to revegetate with indigenous species and kept thereafter in a natural state as habitat. Permanent restoration and revegetation measures serve to provide additional habitat and to control erosion and sedimentation by establishing a vegetative cover. In the event that weather conditions prevent final restoration, temporary erosion and sedimentation measures will be employed until the weather is suitable for final cleanup. A final inspection will ensure that the project site is cleared of all project debris and that erosion and sedimentation controls are functioning properly.

Haybales and silt fencing will not be removed until the site is stabilized and the final inspection is complete.

Operation and Maintenance Plan during Construction:

Sediment and Erosion Control

- Siltation barriers shall be inspected at least once a week and after each rainfall event.
 Make any required repairs immediately. Repair scoured areas on the back side of fence at this time to prevent future problems.
- Should the fabric of the silt fence tear, decompose or otherwise become ineffective, replace it within 24 hours of discovery.
- Remove silt deposits once they reach 15-30 percent of the height of the silt fence to provide adequate storage volume for the next rain event and to reduce pressure on the fence. Care should be taken to avoid undermining the fence during cleanout process.
- Siltation barriers are to be removed upon stabilization of the contributing drainage area. Accumulated sediment may be spread to form a surface for turf or other vegetation establishment, or disposed of elsewhere. The area should be reshaped to permit natural drainage.
- Crushed stone construction entrances shall be inspected and maintained on a daily basis.
 Any buildup of material within the apron shall be removed offsite and replaced with clean crushed stone as needed.
- Also at the Construction entrances any sediment tracked onto the public road during the construction process shall be removed immediately and any adjustment of the entrance to prevent additional sediment tracking.

Infiltration Systems: Subsurface Infiltration System and Infiltration Basin

All infiltration areas shall be excavated and installed after the construction of the foundation. No heavy equipment shall traverse the proposed infiltration areas after installation.

Per MA DEP Stormwater Guidelines the following work shall be done to stabilize the site prior to installing the infiltration systems:

- Do not allow runoff from any disturbed areas on the site to flow to the proposed location of the infiltration systems.
- Rope off the area where the infiltration systems are to be placed.
- Accomplish any required excavation with equipment placed just outside the area. If the size of the area intended for exfiltration is too large to accommodate this approach, use trucks with low-pressure tires to minimize compaction. Do not allow any other vehicles within the area to be excavated.
- Keep the area above and immediately surrounding the infiltration systems roped off to all construction vehicles until the final top surface is installed.
- At no time shall the area for the infiltration systems be used as a temporary sediment basin. Stockpiles shall be placed away from the infiltration systems

and sedimentation fences shall be placed around the perimeter of the infiltration area to prevent the accumulation of sediment within the native soils.

Dust Control: Sprinkle water as necessary to control dust during construction.

Material Stockpiling: Stockpiles of material must be placed outside all wetland resource areas and their buffer zones. If left overnight, material stockpiling must be protected from the weather.

Good housekeeping:

The following good housekeeping BMP's will be implemented in order to prevent pollution during construction:

- Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- Any asphalt substances used onsite will be applied according to the manufacturer's specifications.
- If portable sanitary units are used, sanitary waste will be removed as necessary to avoid overfilling.
- All paint and other hazardous waste materials will be tightly sealed and stored when not in use. Excess material will not be discharged into the public stormwater system, but will be properly disposed of according to the manufacturer's specifications.
- If spray guns are used, they will be cleaned on a removable tarp.

Temporary Sediment Traps & Basins

Sediment traps and/or basins shall be constructed as shown on the approved plans and as necessitated by field conditions. Sediment traps/basins should be readily accessible for maintenance and sediment removal, and should remain in operation and be properly maintained until the site area is permanently stabilized by vegetation and/or when permanent structures are in place. Remove basin after drainage area has been permanently stabilized, inspected, and approved. Before removing dam, drain water and remove sediment; place waste material in designated disposal areas. Smooth site to blend with surrounding area and stabilize.

Track out controls at Construction Entrance

A stabilized stone apron construction entrance shall be at all construction entrances to help prevent vehicle tracking of sediments. All vehicles shall enter and exit the sit via the stabilized construction entrance. The contractor shall inspect the construction entrance daily and after heavy use. If mud and soil clogs the voids in the crushed stone reducing the effectiveness, the pad shall be top dressed with new, clean stone. If the pad becomes completely clogged, replacement of the entire pad may be necessary Dump trucks hauling material from the construction site will be covered with a tarpaulin.

Long Term Stormwater Operation and Maintenance Plan and Illicit Discharge Statement

Proposed Residential Development

"Concord Meadows"

PUD Subdivision – Rockland, MA 02370

Stormwater Management System's Owner: Conrock LLC

System Owner's Address: 365 Concord Street

Party responsible for Operations and Maintenance: Owners of Concord Meadows

It is most important for a drainage system to be maintained in order for it to work properly. The following is an Operation and Maintenance plan to upkeep the existing non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy.

Operation and Maintenance Plan After Construction:

Good housekeeping:

General trash and litter cleanup of the site, inspect all vehicles on a regular basis for detention of leaking oil, gas and other fluids, provide routine visual inspections of potential pollution sources, and maintain an inventory of potential pollution sources stored on site. Initiate and maintain record keeping of activity with regard to the contents of this plan.

Spill prevention and response:

In the event of a spill, immediately initiate containment and cleanup procedures appropriate for the material and notify the proper authorities. All attempts must be made to prevent spilled material from entering the drainage system or infiltrating into the ground.

Landscape Maintenance:

Maintenance of lawns and landscaped areas: Regularly mow lawn areas and weed landscaped areas.

Pipes:

Drainage pipes (inlets and outlets) shall be inspected to ensure that they are free of all obstructions and that they are structurally sound during every catch basin inspection.

Street Sweeping:

Sweeping of the parking lots and driveways should be done at least 2 times annually, namely in the spring and fall. It is imperative that sweeping take place immediately following final winter snowmelt to remove winter sand. All sediments containing hydrocarbons shall be handled properly and disposed of in accordance with local, state and federal guidelines and regulations.

Catch Basin Cleaning:

Catch basins shall be inspected and sediment removed at least two times per year and at the end of the foliage and snow removal seasons. Sediment must be removed at the required interval or whenever the depth of deposits is greater than or equal to one half the depth of the sump (2 feet). Care must be exercised to not damage the outlet hood when using a clamshell type cleaning bucket. A damaged or dislodged hood must be repaired or replaced immediately.

Culverts. pipes. and manholes:

All culverts, pipes, and manholes shall be inspected two times per year and cleaned when drainage impediments are discovered. Flushing of pipes may be required to remove accumulated sediment.

Riprap Drain Outfalls:

All riprap drain outfalls shall be inspected two times per year and repaired as necessary. Riprap shall be replaced/repaired as necessary, debris and accumulated sediment removed, and any woody growth removed.

Infiltration Basins:

The infiltration basin shall be inspected at least once a year to ensure that the basin is operating as intended. Inspections conducted at intervals during and after storm events will help to determine if the basin is meeting the expected detention times. The outlet structures should be inspected for evidence of clogging or outflow release velocities that are greater than design flow. Potential problems that should be checked include: subsidence, erosion, cracking or tree growth on the embankment; damage to the emergency spillway; sediment accumulation around the outlet; inadequacy of the inlet/outlet channel erosion control measures and erosion within the basin and banks. Any necessary repairs should be made immediately. During inspections, changes to the detention basin or the contributing watershed should be noted, as these may affect basin performance.

The upper-stage side slopes, bottom of pond, embankment and emergency spillway should be mowed at least six (6) times a year primarily during spring and summer. Trash and debris should also be removed at this time. Sediment should be removed from the basin as necessary, and at least once every five years.

The subsurface system is designed to fully drain after a storm event therefore if standing water is observed within the system beyond 24 hours since the cessation of inflow to the system from a rainstorm. this may indicate a problem and should be noted on the inspection log and further inspected for repairs. The Owner may need to contact a Registered Professional Engineer to evaluate the system in the event of major problems.

Pet Waste Management

All pet owners and keepers are required to immediately and properly dispose of their pet's solid waste deposited on any property, public or private, not owned or possessed by that person.

Snow Management

Place snow in pervious areas where it can slowly infiltrate however it should not be placed over any component of the site's stormwater management system, particularly the catch basins. Any sand and debris mixed with snow would block the inlet or be quickly introduced into the drainage system upon snowmelt. At no time shall the stormwater infiltration basins or wetlands be used for the stockpiling of snow.

Estimated Operation and Maintenance Budget:

Maintenance cost will be approximately \$5,000.00 per year.

Illicit Discharges:

At no time will the owner or any other individual utilize the stormwater management system for any purpose other than its intended use. The stormwater management system as shown on the attached site plan at no time shall receive discharges other than stormwater, this includes "wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, raw materials, toxic pollutants, hazardous substances, oil or grease."

TO BE SIGNED PRIOR TO CONSTRUCTION

CONROCK LLC

Property Owner (Signature)

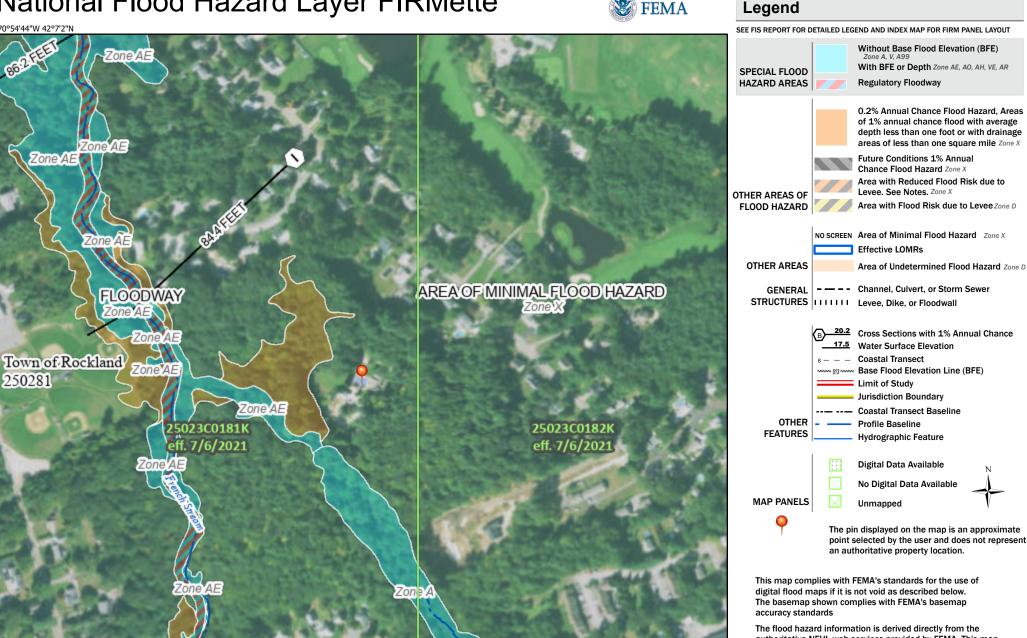
Property Owner (Print)

SECTION III

FIGURES

National Flood Hazard Layer FIRMette





authoritative NFHL web services provided by FEMA. This map was exported on 9/8/2021 at 12:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

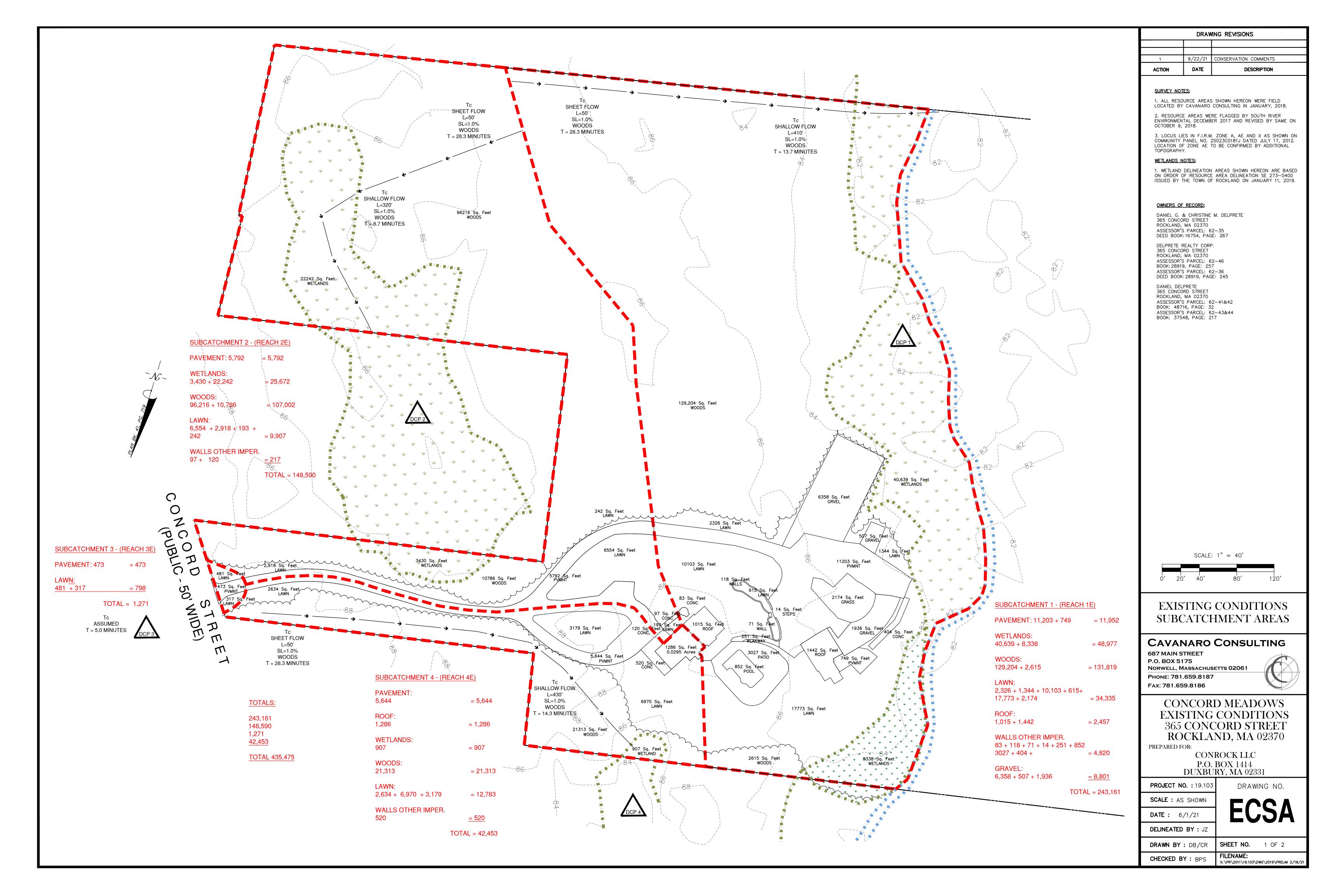
1:6.000 250 500 1,000 1,500 2.000 Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

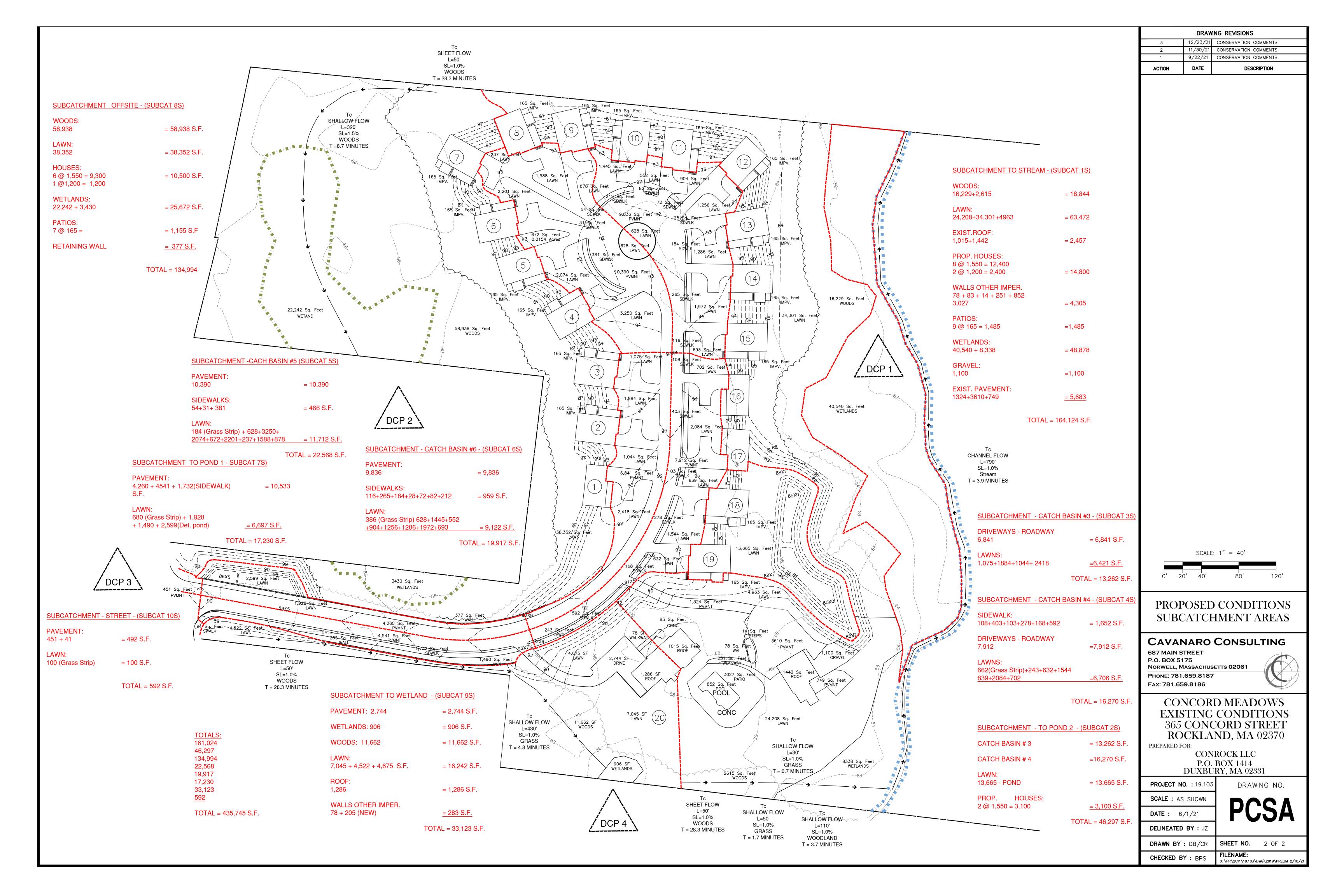
Feet

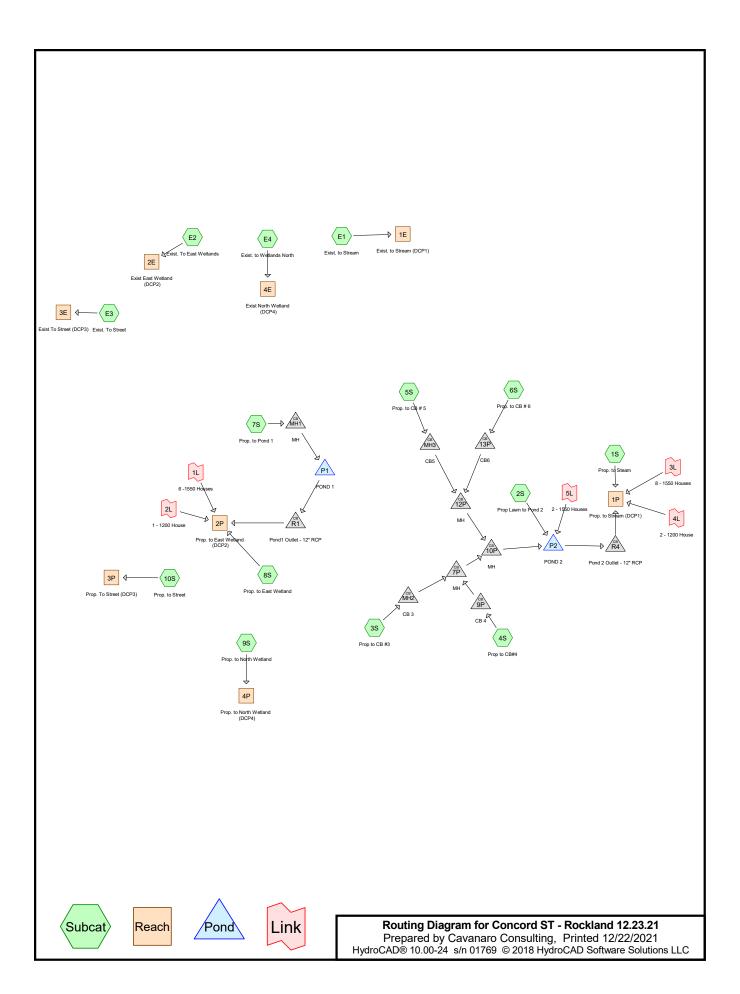
Zone AE Zone AE

SECTION IV

DRAINAGE CALCULATIONS & SUPPLEMENTAL DRAINAGE INFORMATION







Reach 1P: Prop. to Stream (DCP1)

Type III 24-hr 2 Year Event Rainfall=3.20"

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Outflow=4.12 cfs 0.622 af

Inflow=4.01 cfs 0.557 af Outflow=4.01 cfs 0.557 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| Subcatchment 1S: Prop. to Steam Flow Length=1,030' | Runoff Area=146,224 sf 41.94% Impervious Runoff Depth=1.68" Slope=0.0100 '/' Tc=38.3 min CN=84 Runoff=3.33 cfs 0.471 af |
|---|--|
| Subcatchment 2S: Prop Lawn to Pond 2 | Runoff Area=13,665 sf 0.00% Impervious Runoff Depth=1.04" Tc=5.0 min CN=74 Runoff=0.38 cfs 0.027 af |
| Subcatchment 3S: Prop to CB #3 | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=1.84" Tc=5.0 min CN=86 Runoff=0.68 cfs 0.047 af |
| Subcatchment 4S: Prop to CB#4 | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=2.00" Tc=5.0 min CN=88 Runoff=0.90 cfs 0.062 af |
| Subcatchment 5S: Prop. to CB # 5 | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=1.84" Tc=5.0 min CN=86 Runoff=1.16 cfs 0.079 af |
| Subcatchment 6S: Prop. to CB # 6 | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=1.91" Tc=5.0 min CN=87 Runoff=1.06 cfs 0.073 af |
| Subcatchment 7S: Prop. to Pond 1 | Runoff Area=17,230 sf 61.13% Impervious Runoff Depth=2.08" Tc=5.0 min CN=89 Runoff=0.99 cfs 0.069 af |
| | Runoff Area=124,494 sf 20.92% Impervious Runoff Depth=1.21" Flow Length=370' Tc=37.0 min CN=77 Runoff=2.02 cfs 0.289 af |
| | d Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=1.15" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=0.53 cfs 0.073 af |
| Subcatchment 10S: Prop. to Street | Runoff Area=592 sf 83.11% Impervious Runoff Depth=2.54" Tc=5.0 min CN=94 Runoff=0.04 cfs 0.003 af |
| Subcatchment E1: Exist. to Stream Flow Length=460' | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=1.34" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=4.12 cfs 0.622 af |
| Subcatchment E2: Exist. To East | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=1.15" Flow Length=370' Tc=37.0 min CN=76 Runoff=2.27 cfs 0.327 af |
| Subcatchment E3: Exist. To Street | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=1.61" Tc=5.0 min CN=83 Runoff=0.06 cfs 0.004 af |
| | th Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=1.21" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=0.64 cfs 0.098 af |
| Reach 1E: Exist. to Stream (DCP1) | Inflow=4.12 cfs 0.622 af |

Type III 24-hr 2 Year Event Rainfall=3.20"

| Concord ST - Rockla | • | ype III 24-hr 2 Year Event Rainfall=3.20" |
|--------------------------|-------------------------------------|---|
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| | 44 4 4 7 6 7 6 7 | |
| Reach 2E: Exist East W | etland (DCP2) | Inflow=2.27 cfs 0.327 af |
| | | Outflow=2.27 cfs 0.327 af |
| Dooch 2D, Dron to Foot | Wetlered (DCD2) | Inflow=2.45 of 0.224 of |
| Reach 2P: Prop. to East | wetiand (DCP2) | Inflow=2.15 cfs 0.321 af Outflow=2.15 cfs 0.321 af |
| | | Outilow-2.13 cis 0.321 ai |
| Reach 3E: Exist To Stre | et (DCP3) | Inflow=0.06 cfs 0.004 af |
| Redeli de. Exist lo dile | ct (BG1 0) | Outflow=0.06 cfs 0.004 af |
| | | |
| Reach 3P: Prop. To Stre | et (DCP3) | Inflow=0.04 cfs 0.003 af |
| | | Outflow=0.04 cfs 0.003 af |
| | | |
| Reach 4E: Exist North V | Vetland (DCP4) | Inflow=0.64 cfs 0.098 af |
| | | Outflow=0.64 cfs 0.098 af |
| | | |
| Reach 4P: Prop. to Nort | h Wetland (DCP4) | Inflow=0.53 cfs 0.073 af |
| | | Outflow=0.53 cfs 0.073 af |
| Dand 7D: MII | | Peak Elev=88.17' Inflow=1.58 cfs 0.109 af |
| Pond 7P: MH | 15.0" Pound Culvert n=0.011 L- | =60.0' S=0.0100 '/' Outflow=1.58 cfs 0.109 af |
| | 13.0 Round Culvert 11-0.011 E- | -00.0 3-0.0100 / Oddilow-1.30 cis 0.109 ai |
| Pond 9P: CB 4 | | Peak Elev=88.33' Inflow=0.90 cfs 0.062 af |
| 1 0114 01 : 05 4 | 12.0" Round Culvert n=0.011 L= | =22.0' S=0.0100 '/' Outflow=0.90 cfs 0.062 af |
| | | |
| Pond 10P: MH | | Peak Elev=87.78' Inflow=3.80 cfs 0.261 af |
| | 18.0" Round Culvert n=0.011 L= | 120.0' S=0.0154 '/' Outflow=3.80 cfs 0.261 af |
| | | |
| Pond 12P: MH | | Peak Elev=89.39' Inflow=2.22 cfs 0.152 af |
| | 15.0" Round Culvert n=0.011 L=2 | 240.0' S=0.0075 '/' Outflow=2.22 cfs 0.152 af |
| David 40D: ODC | | Deals Eleve-00 041 Inflormed 00 efc. 0.072 ef |
| Pond 13P: CB6 | 12.0" Pound Culvert n=0.011 L- | Peak Elev=89.81' Inflow=1.06 cfs 0.073 af =62.0' S=0.0089 '/' Outflow=1.06 cfs 0.073 af |
| | 12.0 Round Culvert 11-0.011 L- | -02.0 3-0.0009 / Outilow-1.00 cis 0.073 ai |
| Pond MH1: MH | | Peak Elev=87.47' Inflow=0.99 cfs 0.069 af |
| i ond will i will | 15.0" Round Culvert n=0.011 L= | =55.0' S=0.0091 '/' Outflow=0.99 cfs 0.069 af |
| | | |
| Pond MH2: CB 3 | | Peak Elev=88.29' Inflow=0.68 cfs 0.047 af |
| | 12.0" Round Culvert n=0.011 L= | =22.0' S=0.0100 '/' Outflow=0.68 cfs 0.047 af |
| | | |
| Pond MH3: CB5 | | Peak Elev=89.84' Inflow=1.16 cfs 0.079 af |
| | 12.0" Round Culvert n=0.011 L= | =65.0' S=0.0085 '/' Outflow=1.16 cfs 0.079 af |
| Daniel DAL DOND 4 | Deal Claudo | 7.071 Storogo=666 of Inflow=0.00 of 0.000 of |
| Pond P1: POND 1 | | 7.07' Storage=666 cf Inflow=0.99 cfs 0.069 af |
| | Discarded-0.22 dis 0.009 at Primary | =0.00 cfs 0.000 af Outflow=0.22 cfs 0.069 af |
| Pond P2: POND 2 | Peak Flev=86 7 | 79' Storage=4,529 cf Inflow=4.39 cfs 0.298 af |
| I JIIG I Z. I OND Z | | =0.49 cfs 0.041 af Outflow=0.81 cfs 0.298 af |
| | | 5.1.1 1.2 0.0 a. Camon 0.0 1 0.0 0.200 di |

Pond R1: Pond1 Outlet - 12" RCP Peak Elev=86.50' Inflow=0.00 cfs 0.000 af 12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '/' Outflow=0.00 cfs 0.000 af

Type III 24-hr 2 Year Event Rainfall=3.20"

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Pond R4: Pond 2 Outlet - 12" RCP

Peak Elev=85.25' Inflow=0.49 cfs 0.041 af

12.0" Round Culvert n=0.011 L=35.0' S=0.0200 '/' Outflow=0.49 cfs 0.041 af

Link2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.11 cfs 0.005 af Area= 0.036 ac 100.00% Imperv. Primary=0.66 cfs 0.030 af

Link 2L: 1 - 2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.08 cfs 0.003 af Area= 0.028 ac 100.00% Imperv. Primary=0.08 cfs 0.003 af

Link2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 8.00 Inflow=0.11 cfs 0.005 af Area= 0.036 ac 100.00% Imperv. Primary=0.88 cfs 0.040 af

Link 2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.08 cfs 0.003 af Area= 0.028 ac 100.00% Imperv. Primary=0.17 cfs 0.006 af

Link2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 2.00 Inflow=0.11 cfs 0.005 af Area= 0.036 ac 100.00% Imperv. Primary=0.22 cfs 0.010 af

Total Runoff Area = 19.348 ac Runoff Volume = 2.243 af Average Runoff Depth = 1.39" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac

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Summary for Subcatchment 1S: Prop. to Steam

Runoff = 3.33 cfs @ 12.55 hrs, Volume= 0.471 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN [| CN Description | | | | | | |
|---|-------|----------|---------|---------------------------------|--------------|--|--|--|--|--|
| * | | 48,878 | 98 V | 8 Water Surface Wetlands, HSG C | | | | | | |
| | | 63,472 | 74 > | · | | | | | | |
| * | | 4,305 | 98 v | valls othe r | imp. | | | | | |
| | | 1,100 | 87 E | Dirt roads, I | HSG C | | | | | |
| | | 18,844 | 70 V | Voods, Go | od, HSG C | | | | | |
| * | | 2,457 | 98 E | Exisit,. Roo | f | | | | | |
| * | | 5,683 | 98 E | Exisit. Pave | ement | | | | | |
| * | | 1,485 | 74 F | Prop. Patios | S | | | | | |
| | 1 | 46,224 | 84 V | Veighted A | verage | | | | | |
| | | 84,901 | 5 | 8.06% Per | vious Area | | | | | |
| | | 61,323 | 2 | 11.94% lmp | pervious Are | ea | | | | |
| | | | | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | |
| | 1.7 | 50 | 0.0100 | 0.50 | | Shallow Concentrated Flow, | | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | | |
| | 0.7 | 30 | 0.0100 | 0.70 | | Shallow Concentrated Flow, | | | | |
| | | | | | | Short Grass Pasture Kv= 7.0 fps | | | | |
| | 3.7 | 110 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow | | | | |
| | | 700 | 0.0400 | 0.05 | 00.44 | Woodland Kv= 5.0 fps | | | | |
| | 3.9 | 790 | 0.0100 | 3.35 | 20.11 | Channel Flow, Stream | | | | |
| | | | | | | Area= 6.0 sf Perim= 7.0' r= 0.86' | | | | |
| | 00.0 | 4.000 | | | | n= 0.040 Earth, cobble bottom, clean sides | | | | |

38.3 1,030 Total

Summary for Subcatchment 2S: Prop Lawn to Pond 2

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.027 af, Depth= 1.04"

| _ | Area (sf) | CN | Description |
|--------|-----------|----|-------------------------------|
| | 13,665 | 74 | >75% Grass cover, Good, HSG C |
| 13,665 | | | 100.00% Pervious Area |

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Tc | Length | Slope | Velocity | Capacity | Description |
|-----------|--------|---------|----------|----------|----------------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 5.0 | | | | | Direct Entry, DIRECT |

Summary for Subcatchment 3S: Prop to CB #3

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| Are | ea (sf) | CN | Description | | | | |
|-------------|------------------|----------------------|------------------------|-------------------|---|--|--|
| | 6,841 | 98 | Paved park | ing, HSG C | | | |
| | 6,421 | 74 | >75% Gras | s cover, Go | ood, HSG C | | |
| 1 | 13,262 | 86 | Weighted A | verage | | | |
| | 6,421 | | 48.42% Per | vious Area | a e e e e e e e e e e e e e e e e e e e | | |
| | 6,841 | | 51.58% Impervious Area | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | Description | | |
| 5.0 | | Direct Entry, DIRECT | | | | | |

Summary for Subcatchment 4S: Prop to CB#4

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Area (sf) | CN | Description | | | | |
|-------------|------------------|-------|-------------|-------------|--|--|--|
| * | 1,652 | 98 | Paved park | ing, HSG C | C-Sidewalk | | |
| | 7,912 | 98 | Paved park | ing, HSG (| | | |
| | 6,706 | 74 | >75% Gras | s cover, Go | ood, HSG C | | |
| | 16,270 | 88 | Weighted A | verage | | | |
| | 6,706 | | 41.22% Pe | rvious Area | a a constant of the constant o | | |
| | 9,564 | | 58.78% lm | pervious Ar | rea | | |
| _ | a langth | Clan | a Valacity | Capacity | Description | | |
| | c Length | Slop | , | Capacity | Description | | |
| <u>(mir</u> | <u>ı) (feet)</u> | (ft/f | t) (ft/sec) | (cfs) | | | |
| 5. | 0 | | | | Direct Entry, DIRECT | | |

Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 1.84"

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| | Area (sf) | CN | Description | Description | | | | |
|---|--------------|-------|--------------|-------------|---|--|--|--|
| * | 466 | 98 | Paved park | ing, HSG C | C - Sidewalk | | | |
| * | 10,390 | 98 | Paved park | ing, HSG (| C - rroad-drives | | | |
| | 11,712 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | 22,568 | 86 | Weighted A | verage | | | | |
| | 11,712 | | 51.90% Per | vious Area | a e e e e e e e e e e e e e e e e e e e | | | |
| | 10,856 | | 48.10% lmp | pervious Ar | rea | | | |
| | | | | | | | | |
| | Tc Length | Slop | • | Capacity | Description | | | |
| (| (min) (feet) | (ft/f | ft) (ft/sec) | (cfs) | | | | |
| | 5.0 | | | | Direct Entry, | | | |

Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN | Description | | | | | |
|---|-------------|------------------|-----------------|------------------|-------------------|------------------|--|--|--|
| * | | 959 | 98 | Paved park | ing, HSG C | C - Sidewalk | | | |
| * | | 9,836 | 98 | Paved park | ing, HSG C | C - rroad-drives | | | |
| | | 9,122 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | | 19,917 | 87 | Weighted Average | | | | | |
| | | 9,122 | | 45.80% Per | | | | | |
| | | 10,795 | | 54.20% Imp | pervious Ar | rea | | | |
| | Tc (min) | Length (feet) | Slope (ft/ft | , | Capacity (cfs) | · | | | |
| | 5.0 | | | | | Direct Entry, | | | |

Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 0.99 cfs @ 12.07 hrs, Volume= 0.069 af, Depth= 2.08"

| Area (s | sf) CN | Description | | | | | |
|-----------|-----------|-------------------------------|--|--|--|--|--|
| 10,5 | 33 98 | Paved parking, HSG C | | | | | |
| 6,69 | 97 74 | >75% Grass cover, Good, HSG C | | | | | |
| 17,2 | 30 89 | Weighted Average | | | | | |
| 6,69 | 97 | 38.87% Pervious Area | | | | | |
| 10,5 | 33 | 61.13% Impervious Area | | | | | |
| | | | | | | | |
| Tc Len | • | | | | | | |
| (min) (fe | eet) (ft/ | /ft) (ft/sec) (cfs) | | | | | |

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Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 2.02 cfs @ 12.54 hrs, Volume= 0.289 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN | Description | | | | | |
|---|-------|----------|---------|----------------------------------|-------------|--|--|--|--|
| * | | 25,672 | 98 | 98 Water Surface Wetlands, HSG C | | | | | |
| | | 38,352 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | | 58,938 | 70 | Noods, Go | od, HSG C | | | | |
| * | | 1,155 | 74 | Patio | | | | | |
| * | | 377 | 98 | et wall | | | | | |
| | 1 | 24,494 | 77 | Neighted A | verage | | | | |
| | | 98,445 | • | 79.08% Per | vious Area | | | | |
| | | 26,049 | : | 20.92% lmp | pervious Ar | ea | | | |
| | | | | | | | | | |
| | Тс | Length | Slope | | Capacity | Description | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow | | | |
| _ | | | | | | Woodland Kv= 5.0 fps | | | |
| | 37.0 | 370 | Total | | | | | | |

Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af, Depth= 1.15"

| _ | Α | rea (sf) | CN [| Description | | |
|---|-------|----------|---------|--------------|---------------|--|
| * | | 906 | 98 V | Vater Surfa | ace Wetlan | ds, HSG C |
| | | 2,744 | 98 F | Paved park | ing, HSG C | |
| | | 16,242 | 74 > | 75% Gras | s cover, Go | ood, HSG C |
| | | 1,286 | 98 F | Roofs, HSG | GC - infiltra | ted |
| * | | 283 | | valls othe r | • | |
| _ | | 11,662 | 70 V | Voods, Go | od, HSG C | |
| | | 33,123 | 76 V | Veighted A | verage | |
| | | 27,904 | 3 | 84.24% Per | vious Area | |
| | | 5,219 | 1 | 5.76% Imp | pervious Are | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 4.8 | 430 | 0.0100 | 1.50 | | Shallow Concentrated Flow, shallow |
| _ | | | | | | Grassed Waterway Kv= 15.0 fps |
| | 33.1 | 480 | Total | | | |

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Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| A | rea (sf) | CN | Description | | | | |
|-------------|------------------|------------------|-------------------------------|-------------------|----------------------|--|--|
| | 492 | 98 | Paved parking, HSG C | | | | |
| | 100 | 74 | >75% Grass cover, Good, HSG C | | | | |
| | 592 | 94 | Weighted Average | | | | |
| | 100 | | 16.89% Pervious Area | | | | |
| | 492 | | 83.11% lmp | pervious Ar | ea | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | Description | | |
| 5.0 | | | | | Direct Entry, DIRECT | | |

Summary for Subcatchment E1: Exist. to Stream

Runoff = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af, Depth= 1.34"

| | Α | rea (sf) | CN | Description | | |
|---|-------|----------|---------|---------------|-------------|--|
| * | | 48,977 | 98 ' | Water Surfa | ace Wetlan | ds, HSG C |
| | | 11,952 | | | ing, HSG C | • |
| | | 34,335 | 74 | >75% Ġras | s cover, Go | ood, HSG C |
| | | 2,457 | 98 | Roofs, HSG | G C | |
| * | | 4,820 | 98 ' | walls othe r | imp. | |
| | | 8,801 | 87 | Dirt roads, l | HSG C | |
| _ | 1 | 31,819 | 70 | Woods, Go | od, HSG C | |
| | 2 | 243,161 | 79 | Weighted A | verage | |
| | 1 | 74,955 | | 71.95% Per | rvious Area | |
| | | 68,206 | : | 28.05% Imp | pervious Ar | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 13.7 | 410 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 42.0 | 460 | Total | | | |

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Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN [| Description | | |
|---|--|----------|---------|--------------|-------------|--|
| * | | 25,672 | 98 \ | Nater Surfa | ace Wetlan | ds, HSG C |
| | | 5,792 | 98 F | Paved park | ing, HSG C | |
| | 9,907 74 >75% Grass cover, Good, HSG C | | | | | |
| * | | 217 | 98 v | valls othe r | imp. | |
| _ | 1 | 07,002 | 70 \ | Noods, Go | od, HSG C | |
| | 1 | 48,590 | 76 \ | Weighted A | verage | |
| | 1 | 16,909 | 7 | 78.68% Per | vious Area | |
| | | 31,681 | 2 | 21.32% Imp | pervious Ar | ea |
| | | | | | | |
| | Тс | Length | Slope | | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow - woods |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 37.0 | 370 | Total | | | |

Summary for Subcatchment E3: Exist. To Street

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|------------------|----------------------|-------------------|---------------|--|--|--|
| | 473 | 98 | Paved parking, HSG C | | | | | |
| | 798 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | 1,271 | 83 | Weighted Average | | | | | |
| | 798 | (| 62.79% Pervious Area | | | | | |
| | 473 | ; | 37.21% Imp | ervious Ar | rea | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | • | | | |
| 5.0 | | | | | Direct Entry, | | | |

Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af, Depth= 1.21"

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| | Α | rea (sf) | CN E | Description | | | | | |
|---|-------|----------|---------------------|----------------------|--------------|--|--|--|--|
| * | | 907 | 98 V | Vater Surfa | ace Wetlan | ds, HSG C | | | |
| | | 5,644 | 98 F | Paved parking, HSG C | | | | | |
| | | 12,783 | 74 > | 75% Gras | s cover, Go | ood, HSG C | | | |
| * | | 520 | | walls othe rimp. | | | | | |
| | | 21,313 | 70 V | Voods, Go | od, HSG C | | | | |
| | | 1,286 | 98 F | Roofs, HSC | G C | | | | |
| | | 42,453 | 77 Weighted Average | | | | | | |
| | | 34,096 | 8 | 0.31% Per | vious Area | | | | |
| | | 8,357 | 1 | 9.69% Imp | pervious Are | ea | | | |
| | | | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | |
| | 14.3 | 430 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | |
| | 42.6 | 480 | Total | | | | | | |

Summary for Reach 1E: Exist. to Stream (DCP1)

| Inflow Area = | 5.582 ac, 28.05% Impervious | Inflow Depth = 1.34" | for 2 Year Event event |
|---------------|-----------------------------|----------------------|------------------------|
|---------------|-----------------------------|----------------------|------------------------|

Inflow = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af

Outflow = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 1P: Prop. to Stream (DCP1)

| Inflow Area = | 5.423 ac. | 43.89% Impervio | ous. Inflow Depth = | 1.23" | for 2 Year Event event |
|---------------|-----------|-----------------|---------------------|-------|------------------------|
| | | | | | |

Inflow = 4.01 cfs @ 12.51 hrs, Volume= 0.557 af

Outflow = 4.01 cfs @ 12.51 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2E: Exist East Wetland (DCP2)

| Inflow Area = | 2 /11 00 | 21 220/ Importious | Inflow Donth - | 1 15" | for 2 Year Event event | |
|---------------|--------------|--------------------|----------------|-------|------------------------|--|
| inilow Area = | . 3 4 I I ac | 71.32% impervious | iniiow Debin = | าเอ | Tor / Year Eveni eveni | |

Inflow = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af

Outflow = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2P: Prop. to East Wetland (DCP2)

| Inflow Area = | 3 317 ac | 27.22% Impervious. | Inflow Depth = | 1.16" | for 2 Year Event event |
|----------------|-----------|--------------------|----------------|-------|--------------------------|
| IIIIIOW AICA — | 0.011 ac. | | | 1.10 | TOT Z TOUL EVELLE CVELLE |

Inflow = 2.15 cfs @ 12.53 hrs, Volume= 0.321 af

Outflow = 2.15 cfs @ 12.53 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min

Type III 24-hr 2 Year Event Rainfall=3.20"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3E: Exist To Street (DCP3)

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 1.61" for 2 Year Event event

Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af

Outflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 2.54" for 2 Year Event event

Inflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af

Outflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4E: Exist North Wetland (DCP4)

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 1.21" for 2 Year Event event

Inflow = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af

Outflow = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af

Outflow = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 7P: MH

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 1.92" for 2 Year Event event

Inflow = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af

Outflow = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Primary = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.17' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.45' | 15.0" Round Culvert L= 60.0' Ke= 0.500 |

Inlet / Outlet Invert= 87.45' / 86.85' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

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Primary OutFlow Max=1.57 cfs @ 12.07 hrs HW=88.17' TW=87.78' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.57 cfs @ 3.08 fps)

Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 2.00" for 2 Year Event event

Inflow = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af

Outflow = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.33' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 |
| | _ | | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.88 cfs @ 12.07 hrs HW=88.33' TW=88.17' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.88 cfs @ 2.26 fps)

Summary for Pond 10P: MH

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 1.89" for 2 Year Event event

Inflow = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af

Outflow = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min

Primary = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.78' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 86.85' | 18.0" Round Culvert L= 120.0' Ke= 0.500 Inlet / Outlet Invert= 86.85' / 85.00' S= 0.0154 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

Primary OutFlow Max=3.79 cfs @ 12.07 hrs HW=87.78' TW=86.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 3.79 cfs @ 3.29 fps)

Summary for Pond 12P: MH

| Inflow Are | ea = | 0.975 ac, 50.96% Impervious, Inflow Depth = | = 1.87 | 7" for 2 Y | ear Event event |
|------------|------|---|----------------|------------|-----------------|
| Inflow | = | 2.22 cfs @ 12.07 hrs, Volume= 0.15 | 52 af | | |
| Outflow | = | 2 22 cfs @ 12 07 hrs Volume= 0.15 | 52 af <i>I</i> | Atten= 0% | I ag = 0.0 min |

Primary = 2.22 cfs @ 12.07 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.39' @ 12.08 hrs

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 88.65' | 15.0" Round Culvert L= 240.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=2.21 cfs @ 12.07 hrs HW=89.39' TW=87.78' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.21 cfs @ 4.18 fps)

Summary for Pond 13P: CB6

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 1.91" for 2 Year Event event

Inflow = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af

Outflow = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.81' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 62.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.05 cfs @ 12.07 hrs HW=89.81' TW=89.39' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.05 cfs @ 3.00 fps)

Summary for Pond MH1: MH

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 2.08" for 2 Year Event event

Inflow = 0.99 cfs @ 12.07 hrs, Volume= 0.069 af

Outflow = 0.99 cfs @ 12.07 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Primary = 0.99 cfs @ 12.07 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.47' @ 12.07 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.00' | 15.0" Round Culvert L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0091 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=0.99 cfs @ 12.07 hrs HW=87.47' TW=86.75' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.99 cfs @ 2.34 fps)

Type III 24-hr 2 Year Event Rainfall=3.20"

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Summary for Pond MH2: CB 3

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 1.84" for 2 Year Event event

Inflow = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af

Outflow = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.29' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.65 cfs @ 12.07 hrs HW=88.28' TW=88.17' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.65 cfs @ 1.86 fps)

Summary for Pond MH3: CB5

| Inflow Area = | 0.518 ac | 48 10% Impervious | Inflow Denth = | 1 84" | for 2 Year Event event |
|----------------|------------|--------------------------|------------------|-------|--------------------------|
| IIIIIOW AIGA – | 0.5 16 ac. | 40. 10 /0 IIIIDEI VIOUS. | IIIIIOW Debili - | 1.04 | IOI Z TEAL EVELIL EVELIL |

Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af

Outflow = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.84' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 65.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.15 cfs @ 12.07 hrs HW=89.84' TW=89.39' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.15 cfs @ 3.08 fps)

Summary for Pond P1: POND 1

| Inflow Area = | 0.396 ac, 61.13% Impervious, Inflow Do | epth = 2.08" for 2 Year Event event |
|---------------|--|-------------------------------------|
| Inflow = | 0.99 cfs @ 12.07 hrs, Volume= | 0.069 af |
| Outflow = | 0.22 cfs @ 11.91 hrs, Volume= | 0.069 af, Atten= 78%, Lag= 0.0 min |
| Discarded = | 0.22 cfs @ 11.91 hrs, Volume= | 0.069 af |
| Primary = | 0.00 cfs @ 0.00 hrs, Volume= | 0.000 af |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.07' @ 12.48 hrs Surf.Area= 1,191 sf Storage= 666 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 15.8 min (825.9 - 810.2)

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| Volume | Invert | Avai | I.Storage | Storage Descriptio | n | | |
|----------|-----------|---------------------|------------------|---------------------------|----------------------------|-----------------------------|--|
| #1 | 86.50' | | 5,732 cf | Custom Stage Da | ta (Irregular) List | ed below (Recalc) | |
| Elevatio | | urf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft <u>)</u> | |
| 86.5 | 50 | 1,160 | 190.0 | 0 | 0 | 1,160 | |
| 87.0 | 00 | 1,160 | 190.0 | 580 | 580 | 1,255 | |
| 88.0 | 00 | 1,620 | 138.0 | 1,384 | 1,964 | 2,622 | |
| 89.0 | 00 | 1,882 | 248.0 | 1,749 | 3,713 | 6,007 | |
| 90.0 | 00 | 2,160 | 260.0 | 2,019 | 5,732 | 6,554 | |
| Device | Routing | In | vert Outle | et Devices | | | |
| #1 | Primary | 87 | .30' 6.0" | Vert. Orifice/Grate | C= 0.600 | | |
| #2 | Discarded | 86 | .50' 0.22 | cfs Exfiltration wh | en above 86.50' | | |

Discarded OutFlow Max=0.22 cfs @ 11.91 hrs HW=86.54' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.50' TW=86.50' (Dynamic Tailwater) 1=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond P2: POND 2

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 1.79" for 2 Year Event event Inflow = 4.39 cfs @ 12.08 hrs, Volume= 0.298 af 0.81 cfs @ 12.53 hrs, Volume= 0.32 cfs @ 11.69 hrs, Volume= Outflow 0.298 af, Atten= 82%, Lag= 27.3 min Discarded = 0.257 af 0.49 cfs @ 12.53 hrs, Volume= 0.041 af Primary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 86.79' @ 12.53 hrs Surf.Area= 3,928 sf Storage= 4,529 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 88.3 min (909.8 - 821.5)

#2

Discarded

| Volume | Inve | ert Ava | il.Storage | Storage Description | on | | |
|----------|---------|----------------------|-------------------|---------------------------|-----------------------------|---------------------|--|
| #1 | 85.0 | 00' | 16,163 cf | Custom Stage Da | ita (Irregular) List | ed below (Recalc) | |
| Elevatio | | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | |
| 85.0 | | 1,685 | 280.0 | 0 | 0 | 1,685 | |
| 86.0 | - | 2,544 | 300.0 | 2,100 | 2,100 | 2,653 | |
| 86.5 | 50 | 2,980 | 310.0 | 1,380 | 3,479 | 3,161 | |
| 86.6 | 0 | 3,685 | 372.0 | 333 | 3,812 | 6,526 | |
| 87.0 | 0 | 4,211 | 380.0 | 1,578 | 5,390 | 7,028 | |
| 88.0 | 0 | 5,383 | 400.0 | 4,785 | 10,175 | 8,329 | |
| 89.0 | 00 | 6,615 | 421.0 | 5,988 | 16,163 | 9,762 | |
| Device | Routing | Ir | vert Outle | et Devices | | | |
| #1 | Primary | 86 | 6.40' 9.0" | Vert. Orifice/Grate | C= 0.600 | | |

85.00' 0.32 cfs Exfiltration when above 85.00'

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Discarded OutFlow Max=0.32 cfs @ 11.69 hrs HW=85.05' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.49 cfs @ 12.53 hrs HW=86.79' TW=85.25' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.49 cfs @ 2.12 fps)

Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 0.00" for 2 Year Event event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.50' @ 0.00 hrs

Device Routing Invert Outlet Devices

#1 Primary

86.50' **12.0" Round Culvert** L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.50' TW=0.00' (Dynamic Tailwater) 1=Culvert (Controls 0.00 cfs)

Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 0.25" for 2 Year Event event

Inflow = 0.49 cfs @ 12.53 hrs, Volume= 0.041 af

Outflow = 0.49 cfs @ 12.53 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary = 0.49 cfs @ 12.53 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.25' @ 12.53 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 84.90'
 12.0" Round Culvert L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 84.90' / 84.20' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.49 cfs @ 12.53 hrs HW=85.25' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.49 cfs @ 2.01 fps)

Summary for Link 1L: 6 -1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 1.67" for 2 Year Event event

Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.005 af

Primary = 0.66 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 2 Year Event Rainfall=3.20"

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2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 1.34" for 2 Year Event event

Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.003 af

Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 3L: 8 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 1.67" for 2 Year Event event

Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.005 af

Primary = 0.88 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 8.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 1.34" for 2 Year Event event

Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.003 af

Primary = 0.17 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 5L: 2 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 1.67" for 2 Year Event event

Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.005 af

Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Reach 1P: Prop. to Stream (DCP1)

Type III 24-hr 10 Year Event Rainfall=4.60"

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Outflow=7.72 cfs 1.145 af

Inflow=7.71 cfs 1.075 af Outflow=7.71 cfs 1.075 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| Subcatchment 1S: Prop. to Steam Flow Length=1,030' | Runoff Area=146,224 sf 41.94% Impervious Runoff Depth=2.91" Slope=0.0100 '/' Tc=38.3 min CN=84 Runoff=5.74 cfs 0.813 af |
|---|--|
| Subcatchment 2S: Prop Lawn to Pond 2 | Runoff Area=13,665 sf 0.00% Impervious Runoff Depth=2.05" Tc=5.0 min CN=74 Runoff=0.77 cfs 0.054 af |
| Subcatchment 3S: Prop to CB #3 | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=3.10" Tc=5.0 min CN=86 Runoff=1.13 cfs 0.079 af |
| Subcatchment 4S: Prop to CB#4 | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=3.29" Tc=5.0 min CN=88 Runoff=1.47 cfs 0.102 af |
| Subcatchment 5S: Prop. to CB # 5 | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=3.10" Tc=5.0 min CN=86 Runoff=1.93 cfs 0.134 af |
| Subcatchment 6S: Prop. to CB # 6 | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=3.19" Tc=5.0 min CN=87 Runoff=1.75 cfs 0.122 af |
| Subcatchment 7S: Prop. to Pond 1 | Runoff Area=17,230 sf 61.13% Impervious Runoff Depth=3.39" Tc=5.0 min CN=89 Runoff=1.59 cfs 0.112 af |
| | Runoff Area=124,494 sf 20.92% Impervious Runoff Depth=2.29" Flow Length=370' Tc=37.0 min CN=77 Runoff=3.92 cfs 0.546 af |
| | d Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=2.21" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=1.06 cfs 0.140 af |
| Subcatchment 10S: Prop. to Street | Runoff Area=592 sf 83.11% Impervious Runoff Depth=3.91" Tc=5.0 min CN=94 Runoff=0.06 cfs 0.004 af |
| Subcatchment E1: Exist. to Stream Flow Length=460' | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=2.46" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=7.72 cfs 1.145 af |
| Subcatchment E2: Exist. To East | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=2.21" Flow Length=370' Tc=37.0 min CN=76 Runoff=4.50 cfs 0.628 af |
| Subcatchment E3: Exist. To Street | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=2.81" Tc=5.0 min CN=83 Runoff=0.10 cfs 0.007 af |
| | th Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=2.29" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=1.24 cfs 0.186 af |
| Reach 1E: Exist. to Stream (DCP1) | Inflow=7.72 cfs 1.145 af |

| Concord ST - Rockland Prepared by Cavanaro Co | - | Year Event Rainfall=4.60" Printed 12/22/2021 |
|--|---|---|
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| Reach 2E: Exist East Wetla | and (DCP2) | Inflow=4.50 cfs 0.628 af Outflow=4.50 cfs 0.628 af |
| Reach 2P: Prop. to East W | etland (DCP2) | Inflow=4.31 cfs 0.613 af Outflow=4.31 cfs 0.613 af |
| Reach 3E: Exist To Street | (DCP3) | Inflow=0.10 cfs 0.007 af Outflow=0.10 cfs 0.007 af |
| Reach 3P: Prop. To Street | (DCP3) | Inflow=0.06 cfs 0.004 af Outflow=0.06 cfs 0.004 af |
| Reach 4E: Exist North Wet | land (DCP4) | Inflow=1.24 cfs 0.186 af Outflow=1.24 cfs 0.186 af |
| Reach 4P: Prop. to North V | Vetland (DCP4) | Inflow=1.06 cfs 0.140 af Outflow=1.06 cfs 0.140 af |
| Pond 7P: MH | Peak Elev=88 15.0" Round Culvert n=0.011 L=60.0' S=0.0100 | .51' Inflow=2.60 cfs 0.181 af '/' Outflow=2.60 cfs 0.181 af |
| Pond 9P: CB 4 | Peak Elev=88 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 | .66' Inflow=1.47 cfs 0.102 af '/' Outflow=1.47 cfs 0.102 af |
| Pond 10P: MH | Peak Elev=88 18.0" Round Culvert n=0.011 L=120.0' S=0.0154 | .14' Inflow=6.28 cfs 0.436 af '/' Outflow=6.28 cfs 0.436 af |
| Pond 12P: MH | Peak Elev=89 15.0" Round Culvert n=0.011 L=240.0' S=0.0075 | .70' Inflow=3.68 cfs 0.255 af '/' Outflow=3.68 cfs 0.255 af |
| Pond 13P: CB6 | Peak Elev=90 12.0" Round Culvert n=0.011 L=62.0' S=0.0089 | .09' Inflow=1.75 cfs 0.122 af '/' Outflow=1.75 cfs 0.122 af |
| Pond MH1: MH | Peak Elev=87 | .64' Inflow=1.59 cfs 0.112 af |

15.0" Round Culvert n=0.011 L=55.0' S=0.0091 '/' Outflow=1.59 cfs 0.112 af

Peak Elev=88.61' Inflow=1.13 cfs 0.079 af Pond MH2: CB 3 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.13 cfs 0.079 af

Pond MH3: CB5 Peak Elev=90.14' Inflow=1.93 cfs 0.134 af 12.0" Round Culvert n=0.011 L=65.0' S=0.0085 '/' Outflow=1.93 cfs 0.134 af

Pond P1: POND 1 Peak Elev=87.56' Storage=1,304 cf Inflow=1.59 cfs 0.112 af

Discarded=0.22 cfs 0.104 af Primary=0.18 cfs 0.008 af Outflow=0.40 cfs 0.112 af

Pond P2: POND 2 Peak Elev=87.40' Storage=7,149 cf Inflow=7.36 cfs 0.508 af Discarded=0.32 cfs 0.329 af Primary=1.68 cfs 0.178 af Outflow=2.00 cfs 0.508 af

Pond R1: Pond1 Outlet - 12" RCP Peak Elev=86.71' Inflow=0.18 cfs 0.008 af

12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '/' Outflow=0.18 cfs 0.008 af

Type III 24-hr 10 Year Event Rainfall=4.60"

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Pond R4: Pond 2 Outlet - 12" RCP

Peak Elev=85.60' Inflow=1.68 cfs 0.178 af

12.0" Round Culvert n=0.011 L=35.0' S=0.0200 '/' Outflow=1.68 cfs 0.178 af

Link 0 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.16 cfs 0.009 af Area= 0.036 ac 100.00% Imperv. Primary=0.95 cfs 0.054 af

Link 2L: 1 - 10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.12 cfs 0.006 af Area= 0.028 ac 100.00% Imperv. Primary=0.12 cfs 0.006 af

Link 0 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 8.00 Inflow=0.16 cfs 0.009 af Area= 0.036 ac 100.00% Imperv. Primary=1.27 cfs 0.072 af

Link 10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.12 cfs 0.006 af Area= 0.028 ac 100.00% Imperv. Primary=0.25 cfs 0.012 af

Link 0 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 2.00 Inflow=0.16 cfs 0.009 af Area= 0.036 ac 100.00% Imperv. Primary=0.32 cfs 0.018 af

Total Runoff Area = 19.348 ac Runoff Volume = 4.071 af Average Runoff Depth = 2.52" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac

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Summary for Subcatchment 1S: Prop. to Steam

Runoff = 5.74 cfs @ 12.52 hrs, Volume= 0.813 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Α | rea (sf) | CN [| Description | | | | | | | |
|---|-------|----------|---------|-------------------------------|--------------|--|--|--|--|--|--|
| * | | 48,878 | 98 V | Water Surface Wetlands, HSG C | | | | | | | |
| | | 63,472 | 74 > | >75% Grass cover, Good, HSG C | | | | | | | |
| * | | 4,305 | 98 v | valls othe r | imp. | | | | | | |
| | | 1,100 | 87 E | Dirt roads, I | HSG C | | | | | | |
| | | 18,844 | 70 V | Voods, Go | od, HSG C | | | | | | |
| * | | 2,457 | 98 E | Exisit,. Roo | f | | | | | | |
| * | | 5,683 | 98 E | Exisit. Pave | ement | | | | | | |
| * | | 1,485 | 74 F | Prop. Patios | S | | | | | | |
| | 1 | 46,224 | 84 V | Veighted A | verage | | | | | | |
| | | 84,901 | 5 | 8.06% Per | vious Area | | | | | | |
| | | 61,323 | 2 | 11.94% lmp | pervious Are | ea | | | | | |
| | | | | | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | | |
| | 1.7 | 50 | 0.0100 | 0.50 | | Shallow Concentrated Flow, | | | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | | | |
| | 0.7 | 30 | 0.0100 | 0.70 | | Shallow Concentrated Flow, | | | | | |
| | | | | | | Short Grass Pasture Kv= 7.0 fps | | | | | |
| | 3.7 | 110 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow | | | | | |
| | | 700 | 0.0400 | 0.05 | 00.44 | Woodland Kv= 5.0 fps | | | | | |
| | 3.9 | 790 | 0.0100 | 3.35 | 20.11 | Channel Flow, Stream | | | | | |
| | | | | | | Area= 6.0 sf Perim= 7.0' r= 0.86' | | | | | |
| | 00.0 | 4.000 | | | | n= 0.040 Earth, cobble bottom, clean sides | | | | | |

38.3 1,030 Total

Summary for Subcatchment 2S: Prop Lawn to Pond 2

Runoff = 0.77 cfs @ 12.08 hrs, Volume= 0.054 af, Depth= 2.05"

| _ | Area (sf) | CN | Description |
|---|-----------|----|-------------------------------|
| | 13,665 | 74 | >75% Grass cover, Good, HSG C |
| | 13,665 | | 100.00% Pervious Area |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Tc | Length | Slope | Velocity | Capacity | Description |
|-----------|--------|---------|----------|----------|----------------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 5.0 | | | | | Direct Entry, DIRECT |

Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| Area | a (sf) C | N D | Description | | | | | | |
|---------------|----------|------------------|----------------------|-------------------|----------------------|--|--|--|--|
| 6 | ,841 9 | 98 F | Paved parking, HSG C | | | | | | |
| 6 | ,421 7 | ⁷ 4 > | 75% Grass | s cover, Go | ood, HSG C | | | | |
| 13 | ,262 8 | 36 V | Weighted Average | | | | | | |
| 6 | ,421 | 4 | 8.42% Per | vious Area | 1 | | | | |
| 6 | ,841 | 5 | 1.58% Imp | ervious Are | rea | | | | |
| Tc L (min) | - | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | | |
| 5.0 | | | | | Direct Entry, DIRECT | | | | |

Direct Entry, Direct

Summary for Subcatchment 4S: Prop to CB#4

Runoff = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Area (sf) | CN | Description | | | | | | | |
|-------------|------------------|-------|-------------------------------|-------------|--|--|--|--|--|--|
| * | 1,652 | 98 | Paved parking, HSG C-Sidewalk | | | | | | | |
| | 7,912 | 98 | Paved park | ing, HSG (| | | | | | |
| | 6,706 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | | |
| | 16,270 | 88 | 88 Weighted Average | | | | | | | |
| | 6,706 | | 41.22% Pe | rvious Area | a a constant of the constant o | | | | | |
| | 9,564 | | 58.78% Imp | pervious Ar | rea | | | | | |
| | | | | | | | | | | |
| Т | c Length | | , | Capacity | Description | | | | | |
| <u>(mir</u> | <u>ı) (feet)</u> | (ft/f | (ft/sec) | (cfs) | | | | | | |
| 5. | 0 | | | | Direct Entry, DIRECT | | | | | |

Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 1.93 cfs @ 12.07 hrs, Volume= 0.134 af, Depth= 3.10"

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| | Area (sf) | CN | Description | | |
|---|--------------|-------|--------------|-------------|------------------|
| * | 466 | 98 | Paved park | ing, HSG C | C - Sidewalk |
| * | 10,390 | 98 | Paved park | ing, HSG (| C - rroad-drives |
| | 11,712 | 74 | >75% Gras | s cover, Go | ood, HSG C |
| | 22,568 | 86 | Weighted A | | |
| | 11,712 | | 51.90% Pei | vious Area | a |
| | 10,856 | | 48.10% lmp | pervious Ar | rea |
| | To Longth | Clar | o Volocity | Conneity | Description |
| , | Tc Length | Slop | , | Capacity | · |
| (| (min) (feet) | (ft/1 | ft) (ft/sec) | (cfs) | |
| | 5.0 | | | | Direct Entry, |

Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 1.75 cfs @ 12.07 hrs, Volume= 0.1

0.122 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Α | rea (sf) | CN | Description | | | | | | |
|---|-------------|------------------|---------------|-------------|-------------------|------------------|--|--|--|--|
| * | | 959 | 98 | Paved park | ing, HSG C | C - Sidewalk | | | | |
| * | | 9,836 | 98 | Paved park | ing, HSG C | C - rroad-drives | | | | |
| | | 9,122 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | |
| | | 19,917 | 87 | | | | | | | |
| | | 9,122 | | 45.80% Pei | | | | | | |
| | | 10,795 | | 54.20% lmp | pervious Ar | rea | | | | |
| | Tc (min) | Length (feet) | Slop (ft/f | , | Capacity (cfs) | · · | | | | |
| | 5.0 | | | | | Direct Entry, | | | | |

Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.112 af, Depth= 3.39"

| | Area (sf) | CN | Description | | | | | | |
|-------|-----------|--------|----------------------|-------------|-------------|--|--|--|--|
| | 10,533 | 98 | Paved parking, HSG C | | | | | | |
| | 6,697 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | |
| | 17,230 | 89 | Weighted A | verage | | | | | |
| | 6,697 | | 38.87% Per | rvious Area | | | | | |
| | 10,533 | | 61.13% Imp | pervious Ar | ea | | | | |
| | | | | | | | | | |
| Tc | 9 | Slope | , | Capacity | Description | | | | |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | | | | | |
| | | | | | | | | | |

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Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 3.92 cfs @ 12.54 hrs, Volume= 0.546 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Α | rea (sf) | CN | Description | | | | | | | |
|---|-------|----------|---------|-------------------------------|-------------|--|--|--|--|--|--|
| * | | 25,672 | 98 | Water Surface Wetlands, HSG C | | | | | | | |
| | | 38,352 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | | |
| | | 58,938 | 70 | Noods, Go | od, HSG C | | | | | | |
| * | | 1,155 | 74 | Patio | | | | | | | |
| * | | 377 | 98 | et wall | | | | | | | |
| | 1 | 24,494 | 77 | Neighted A | verage | | | | | | |
| | | 98,445 | • | 79.08% Per | vious Area | | | | | | |
| | | 26,049 | : | 20.92% lmp | pervious Ar | ea | | | | | |
| | | | | | | | | | | | |
| | Тс | Length | Slope | | Capacity | Description | | | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | | |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow | | | | | |
| _ | | | | | | Woodland Kv= 5.0 fps | | | | | |
| | 37.0 | 370 | Total | | | | | | | | |

Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af, Depth= 2.21"

| | Α | rea (sf) | CN [| Description | | | | | | | | |
|---|-------|----------|---------|-------------------------------|---------------|--|--|--|--|--|--|--|
| * | | 906 | 98 V | Water Surface Wetlands, HSG C | | | | | | | | |
| | | 2,744 | 98 F | Paved parking, HSG C | | | | | | | | |
| | | 16,242 | 74 > | 75% Gras | s cover, Go | ood, HSG C | | | | | | |
| | | 1,286 | 98 F | Roofs, HSC | GC - infiltra | ted | | | | | | |
| * | | 283 | | valls othe r | | | | | | | | |
| | | 11,662 | 70 V | Voods, Go | od, HSG C | | | | | | | |
| | | 33,123 | 76 V | Veighted A | verage | | | | | | | |
| | | 27,904 | 3 | 84.24% Pei | rvious Area | | | | | | | |
| | | 5,219 | 1 | 5.76% Imp | pervious Ar | ea | | | | | | |
| | _ | | | | _ | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | | | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | | | |
| | 4.8 | 430 | 0.0100 | 1.50 | | Shallow Concentrated Flow, shallow | | | | | | |
| | | | | | | Grassed Waterway Kv= 15.0 fps | | | | | | |
| | 33.1 | 480 | Total | | | | | | | | | |

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Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| A | rea (sf) | CN | Description | | | | | | | |
|-------|----------|---------|----------------------|-------------|----------------------|--|--|--|--|--|
| | 492 | 98 | Paved parking, HSG C | | | | | | | |
| | 100 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | | |
| | 592 | 94 | Weighted A | verage | | | | | | |
| | 100 | | 16.89% Per | vious Area | | | | | | |
| | 492 | | 83.11% lmp | pervious Ar | ea | | | | | |
| _ | | | | _ | | | | | | |
| Tc | Length | Slope | , | Capacity | Description | | | | | |
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | | |
| 5.0 | | | | | Direct Entry, DIRECT | | | | | |

Summary for Subcatchment E1: Exist. to Stream

Runoff = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af, Depth= 2.46"

| | Α | rea (sf) | CN E | escription) | | | | | |
|---|-------------------------------|----------|---------|----------------------------------|-----------|--|--|--|--|
| * | | 48,977 | 98 V | 98 Water Surface Wetlands, HSG C | | | | | |
| | | 11,952 | 98 F | Paved parking, HSG C | | | | | |
| 34,335 74 >75% Grass cover, Good, HSG C | | | | | | ood, HSG C | | | |
| 2,457 98 Roofs, HSG C | | | | | | | | | |
| * | | 4,820 | 98 v | <i>l</i> alls othe r | imp. | | | | |
| | | 8,801 | 87 E | irt roads, l | HSG C | | | | |
| | 1 | 31,819 | 70 V | Voods, Go | od, HSG C | | | | |
| | 2 | 43,161 | 79 V | Veighted A | verage | | | | |
| | 174,955 71.95% Pervious Area | | | | | | | | |
| | 68,206 28.05% Impervious Area | | | | | ea | | | |
| | | | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | |
| | 13.7 | 410 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods | | | |
| _ | | | | | | Woodland Kv= 5.0 fps | | | |
| | 42.0 | 460 | Total | | | | | | |

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Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Α | rea (sf) | CN [| Description | | | | | | | |
|---|--|----------|------------------------|-------------------------------|-----------|--|--|--|--|--|--|
| * | | 25,672 | 98 \ | Water Surface Wetlands, HSG C | | | | | | | |
| | | 5,792 | 98 F | , | | | | | | | |
| | 9,907 74 >75% Grass cover, Good, HSG C | | | | | | | | | | |
| * | | 217 | | valls othe r | | | | | | | |
| | 1 | 07,002 | 70 \ | Noods, Go | od, HSG C | | | | | | |
| | 1 | 48,590 | 76 \ | Weighted A | verage | | | | | | |
| | 116,909 78.68% Pervious Area | | | | | | | | | | |
| | | 31,681 | 21.32% Impervious Area | | | | | | | | |
| | | | | | | | | | | | |
| | Тс | Length | Slope | , | Capacity | Description | | | | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | | |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow - woods | | | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | | | |
| | 37.0 | 370 | Total | | | | | | | | |

Summary for Subcatchment E3: Exist. To Street

Runoff = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|--------------------------|-------------|-------------------|---------------|--|--|--|
| | 473 | 98 | Paved park | ing, HSG C | C | | | |
| | 798 | 74 | 1 | | | | | |
| | 1,271 | 83 | Weighted A | verage | | | | |
| | 798 | 798 62.79% Pervious Area | | | | | | |
| | 473 | | 37.21% lm | pervious Ar | rea | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | · | | | |
| 5.0 | | | | | Direct Entry, | | | |

Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 1.24 cfs @ 12.59 hrs, Volume= 0.186 af, Depth= 2.29"

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| | Α | rea (sf) | CN I | Description | | | | | |
|----|------------------------------|----------|---------|-------------------------------|-------------|--|--|--|--|
| * | | 907 | 98 \ | Water Surface Wetlands, HSG C | | | | | |
| | | 5,644 | 98 I | Paved parking, HSG C | | | | | |
| | | 12,783 | 74 > | >75% Gras | s cover, Go | ood, HSG C | | | |
| * | | 520 | 98 ١ | valls othe r | imp. | | | | |
| | | 21,313 | 70 \ | Woods, Go | od, HSG C | | | | |
| | | 1,286 | 98 F | Roofs, HSC | G C | | | | |
| | | 42,453 | 77 \ | Neighted A | verage | | | | |
| | 34,096 80.31% Pervious Area | | | | rvious Area | | | | |
| | 8,357 19.69% Impervious Area | | | | | ea | | | |
| | | | | | | | | | |
| | Тс | Length | Slope | | Capacity | Description | | | |
| (m | nin) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| 2 | 8.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | |
| 14 | 4.3 | 430 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | |
| 4: | 2.6 | 480 | Total | | | | | | |

Summary for Reach 1E: Exist. to Stream (DCP1)

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 2.46" for 10 Year Event event

Inflow = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af

Outflow = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 1P: Prop. to Stream (DCP1)

Inflow Area = 5.423 ac, 43.89% Impervious, Inflow Depth = 2.38" for 10 Year Event event

Inflow = 7.71 cfs @ 12.47 hrs, Volume= 1.075 af

Outflow = 7.71 cfs @ 12.47 hrs, Volume= 1.075 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2E: Exist East Wetland (DCP2)

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 2.21" for 10 Year Event event

Inflow = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af

Outflow = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 2.22" for 10 Year Event event

Inflow = 4.31 cfs @ 12.50 hrs, Volume= 0.613 af

Outflow = 4.31 cfs @ 12.50 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Type III 24-hr 10 Year Event Rainfall=4.60"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3E: Exist To Street (DCP3)

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 2.81" for 10 Year Event event

Inflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af

Outflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 3.91" for 10 Year Event event

Inflow = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af

Outflow = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4E: Exist North Wetland (DCP4)

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 2.29" for 10 Year Event event

Inflow = 1.24 cfs @ 12.59 hrs, Volume= 0.186 af

Outflow = 1.24 cfs @ 12.59 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 2.21" for 10 Year Event event

Inflow = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af

Outflow = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 7P: MH

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 3.20" for 10 Year Event event

Inflow = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af

Outflow = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Primary = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.51' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.45' | 15.0" Round Culvert L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 87.45' / 86.85' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

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Primary OutFlow Max=2.56 cfs @ 12.07 hrs HW=88.50' TW=88.14' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.56 cfs @ 3.14 fps)

Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 3.29" for 10 Year Event event

Inflow = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af

Outflow = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.66' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.38 cfs @ 12.07 hrs HW=88.65' TW=88.50' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.38 cfs @ 2.24 fps)

Summary for Pond 10P: MH

| Inflow Area = 1.653 a | c, 52.84% Impervious, | Inflow Depth = | 3.17" | for 10 Year Event event |
|-----------------------|-----------------------|----------------|-------|-------------------------|
|-----------------------|-----------------------|----------------|-------|-------------------------|

Inflow = 6.28 cfs @ 12.07 hrs, Volume= 0.436 af

Outflow = 6.28 cfs @ 12.07 hrs, Volume= 0.436 af, Atten= 0%, Lag= 0.0 min

Primary = 6.28 cfs @ 12.07 hrs, Volume= 0.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.14' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 86.85' | 18.0" Round Culvert L= 120.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 86.85' / 85.00' S= 0.0154 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

Primary OutFlow Max=6.27 cfs @ 12.07 hrs HW=88.14' TW=86.78' (Dynamic Tailwater) 1=Culvert (Inlet Controls 6.27 cfs @ 3.87 fps)

Summary for Pond 12P: MH

| Inflow Area = | 0.975 ac, 50.96% Impervious, In | flow Depth = 3.14" | for 10 Year Event event |
|---------------|---------------------------------|--------------------|-------------------------|
| Inflow = | 3.68 cfs @ 12.07 hrs Volume= | 0.255 af | |

Outflow = 3.68 cfs @ 12.07 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min

Primary = 3.68 cfs @ 12.07 hrs, Volume= 0.255 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.70' @ 12.08 hrs

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 88.65' | 15.0" Round Culvert L= 240.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=3.66 cfs @ 12.07 hrs HW=89.69' TW=88.14' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.66 cfs @ 4.52 fps)

Summary for Pond 13P: CB6

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 3.19" for 10 Year Event event

Inflow = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af

Outflow = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Primary = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 90.09' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 62.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.72 cfs @ 12.07 hrs HW=90.09' TW=89.69' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.72 cfs @ 3.10 fps)

Summary for Pond MH1: MH

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 3.39" for 10 Year Event event

Inflow = 1.59 cfs @ 12.07 hrs, Volume= 0.112 af

Outflow = 1.59 cfs @ 12.07 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Primary = 1.59 cfs @ 12.07 hrs, Volume= 0.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.64' @ 12.10 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.00' | 15.0" Round Culvert L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0091 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=1.53 cfs @ 12.07 hrs HW=87.63' TW=87.07' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.53 cfs @ 3.64 fps)

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Summary for Pond MH2: CB 3

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 3.10" for 10 Year Event event

Inflow 1.13 cfs @ 12.07 hrs, Volume= 0.079 af

1.13 cfs @ 12.07 hrs, Volume= Outflow 0.079 af, Atten= 0%, Lag= 0.0 min

Primary 1.13 cfs @ 12.07 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.61' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=88.60' TW=88.50' (Dynamic Tailwater) **1-Culvert** (Outlet Controls 1.04 cfs @ 1.79 fps)

Summary for Pond MH3: CB5

| Inflow Area = | 0.518 ac | 48 10% Impervious | Inflow Depth = | 3 10" | for 10 Year Event event |
|----------------|------------|--------------------------|------------------|-------|-----------------------------|
| IIIIIUW AIGa – | 0.5 10 ac, | 40. 10 /0 IIIIpci vious, | IIIIIOW DEPLII - | J. 10 | IOI IO I CAI L VEIIL EVEIIL |

Inflow 1.93 cfs @ 12.07 hrs, Volume= 0.134 af

Outflow 1.93 cfs @ 12.07 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary 1.93 cfs @ 12.07 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.14' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 65.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.90 cfs @ 12.07 hrs HW=90.13' TW=89.69' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.90 cfs @ 3.25 fps)

Summary for Pond P1: POND 1

| Inflow Area = | 0.396 ac, 61.13% Impervious, Inflow D | epth = 3.39" for 10 Year Event event |
|---------------|---------------------------------------|--------------------------------------|
| Inflow = | 1.59 cfs @ 12.07 hrs, Volume= | 0.112 af |
| Outflow = | 0.40 cfs @ 12.44 hrs, Volume= | 0.112 af, Atten= 75%, Lag= 21.9 min |
| Discarded = | 0.22 cfs @ 11.76 hrs, Volume= | 0.104 af |
| Primary = | 0.18 cfs @ 12.44 hrs, Volume= | 0.008 af |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.56' @ 12.44 hrs Surf.Area= 1,410 sf Storage= 1,304 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 30.1 min (826.5 - 796.4)

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| Volume | Inver | t Avai | I.Storage | Storage Descriptio | n | | |
|----------|-----------|----------------------|------------------|---------------------------|----------------------------|---------------------|--|
| #1 | 86.50 | ' | 5,732 cf | Custom Stage Date | ta (Irregular) List | ed below (Recalc) | |
| Elevatio | _ | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | |
| 86.5 | 50 | 1,160 | 190.0 | 0 | 0 | 1,160 | |
| 87.0 | 00 | 1,160 | 190.0 | 580 | 580 | 1,255 | |
| 88.0 | 00 | 1,620 | 138.0 | 1,384 | 1,964 | 2,622 | |
| 89.0 | 00 | 1,882 | 248.0 | 1,749 | 3,713 | 6,007 | |
| 90.0 | 00 | 2,160 | 260.0 | 2,019 | 5,732 | 6,554 | |
| Device | Routing | In | vert Outle | et Devices | | | |
| #1 | Primary | 87 | .30' 6.0" | Vert. Orifice/Grate | C= 0.600 | | |
| #2 | Discarded | 86 | .50' 0.22 | cfs Exfiltration wh | en above 86.50' | | |

Discarded OutFlow Max=0.22 cfs @ 11.76 hrs HW=86.54' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.18 cfs @ 12.44 hrs HW=87.56' TW=86.71' (Dynamic Tailwater) **1=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.75 fps)

Summary for Pond P2: POND 2

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 3.04" for 10 Year Event event
Inflow = 7.36 cfs @ 12.07 hrs, Volume= 0.508 af
Outflow = 2.00 cfs @ 12.43 hrs, Volume= 0.508 af, Atten= 73%, Lag= 21.3 min
Discarded = 0.32 cfs @ 11.25 hrs, Volume= 0.329 af
Primary = 1.68 cfs @ 12.43 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.40' @ 12.43 hrs Surf.Area= 4,659 sf Storage= 7,149 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 77.2 min (884.6 - 807.4)

#2

Discarded

| Volume | Inv | ert Ava | il.Storage | Storage Description | | | | | |
|----------|---------|----------------------|-------------------|---------------------------|---------------------------|---------------------|--|--|--|
| #1 | 85. | 00' | 16,163 cf | Custom Stage Dat | a (Irregular) Liste | ed below (Recalc) | | | |
| Elevatio | | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | | | |
| 85.0 | 00 | 1,685 | 280.0 | 0 | 0 | 1,685 | | | |
| 86.0 | 00 | 2,544 | 300.0 | 2,100 | 2,100 | 2,653 | | | |
| 86.50 | | 2,980 | 310.0 | 1,380 | 3,479 | 3,161 | | | |
| 86.6 | 60 | 3,685 | 372.0 | 333 | 3,812 | 6,526 | | | |
| 87.0 | 00 | 4,211 | 380.0 400.0 | 1,578 | 5,390 | 7,028 | | | |
| 88.0 | 00 | 5,383 | | 4,785 | 10,175 | 8,329 | | | |
| 89.0 | 00 | 6,615 | 421.0 | 5,988 | 16,163 | 9,762 | | | |
| Device | Routing | Ir | vert Outle | et Devices | | | | | |
| #1 | Primary | 86 | 3.40' 9.0" | Vert. Orifice/Grate | C= 0.600 | | | | |

85.00' 0.32 cfs Exfiltration when above 85.00'

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Discarded OutFlow Max=0.32 cfs @ 11.25 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=1.68 cfs @ 12.43 hrs HW=87.40' TW=85.60' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 1.68 cfs @ 3.80 fps)

Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 0.23" for 10 Year Event event

Inflow = 0.18 cfs @ 12.44 hrs, Volume= 0.008 af

Outflow = 0.18 cfs @ 12.44 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary = 0.18 cfs @ 12.44 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.71' @ 12.44 hrs

Device Routing Invert Outlet Devices

#1 Primary

86.50' Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500
Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900
n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.18 cfs @ 12.44 hrs HW=86.71' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.18 cfs @ 1.55 fps)

Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 1.07" for 10 Year Event event

Inflow = 1.68 cfs @ 12.43 hrs, Volume= 0.178 af

Outflow = 1.68 cfs @ 12.43 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min

Primary = 1.68 cfs @ 12.43 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.60' @ 12.43 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 84.90' | 12.0" Round Culvert L= 35.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 84.90' / 84.20' S= 0.0200 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.68 cfs @ 12.43 hrs HW=85.60' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.68 cfs @ 2.85 fps)

Summary for Link 1L: 6 -1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 3.02" for 10 Year Event event

Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.009 af

Primary = 0.95 cfs @ 12.09 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 10 Year Event Rainfall=4.60"

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10 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 2.65" for 10 Year Event event

Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.006 af

Primary = 0.12 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 3L: 8 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 3.02" for 10 Year Event event

Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.009 af

Primary = 1.27 cfs @ 12.09 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 8.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 2.65" for 10 Year Event event

Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.006 af

Primary = 0.25 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 5L: 2 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 3.02" for 10 Year Event event

Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.009 af

Primary = 0.32 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Reach 1P: Prop. to Stream (DCP1)

Type III 24-hr 25 Year Event Rainfall=5.50"

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Outflow=10.18 cfs 1.506 af

Inflow=9.90 cfs 1.436 af Outflow=9.90 cfs 1.436 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| Subcatchment 1S: Prop. to Steam Flow Length=1,030' | Runoff Area=146,224 sf 41.94% Impervious Runoff Depth=3.73" Slope=0.0100 '/' Tc=38.3 min CN=84 Runoff=7.33 cfs 1.044 af |
|--|--|
| Subcatchment 2S: Prop Lawn to Pond 2 | Runoff Area=13,665 sf 0.00% Impervious Runoff Depth=2.77" Tc=5.0 min CN=74 Runoff=1.05 cfs 0.072 af |
| Subcatchment 3S: Prop to CB #3 | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=3.94" Tc=5.0 min CN=86 Runoff=1.43 cfs 0.100 af |
| Subcatchment 4S: Prop to CB#4 | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=4.15" Tc=5.0 min CN=88 Runoff=1.83 cfs 0.129 af |
| Subcatchment 5S: Prop. to CB # 5 | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=3.94" Tc=5.0 min CN=86 Runoff=2.43 cfs 0.170 af |
| Subcatchment 6S: Prop. to CB # 6 | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=4.04" Tc=5.0 min CN=87 Runoff=2.19 cfs 0.154 af |
| Subcatchment 7S: Prop. to Pond 1 | Runoff Area=17,230 sf 61.13% Impervious Runoff Depth=4.25" Tc=5.0 min CN=89 Runoff=1.97 cfs 0.140 af |
| | Runoff Area=124,494 sf 20.92% Impervious Runoff Depth=3.05" Flow Length=370' Tc=37.0 min CN=77 Runoff=5.22 cfs 0.726 af |
| | d Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=2.95" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=1.42 cfs 0.187 af |
| Subcatchment 10S: Prop. to Street | Runoff Area=592 sf 83.11% Impervious Runoff Depth=4.80" Tc=5.0 min CN=94 Runoff=0.07 cfs 0.005 af |
| Subcatchment E1: Exist. to Stream Flow Length=460' | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=3.24" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=10.18 cfs 1.506 af |
| Subcatchment E2: Exist. To East | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=2.95" Flow Length=370' Tc=37.0 min CN=76 Runoff=6.04 cfs 0.839 af |
| Subcatchment E3: Exist. To Street | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=3.63" Tc=5.0 min CN=83 Runoff=0.13 cfs 0.009 af |
| | th Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=3.05" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=1.66 cfs 0.247 af |
| Reach 1E: Exist. to Stream (DCP1) | Inflow=10.18 cfs 1.506 af |

| Concord ST - Rockland 12.23.21 | Type III 24-hr 25 Year Event Rainfall=5.50" |
|---------------------------------|---|
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| Concord ST - Rockla | ind 12.23.21 / ype | e III 24-hr 25 Year Event Rainfall=5.50° |
|--------------------------|---|---|
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| | | |
| Reach 2E: Exist East We | etland (DCP2) | Inflow=6.04 cfs 0.839 at |
| | | Outflow=6.04 cfs 0.839 at |
| | | |
| Reach 2P: Prop. to East | Wetland (DCP2) | Inflow=5.86 cfs 0.825 at |
| | | Outflow=5.86 cfs 0.825 at |
| | | |
| Reach 3E: Exist To Stre | et (DCP3) | Inflow=0.13 cfs 0.009 at |
| | | Outflow=0.13 cfs 0.009 at |
| | | |
| Reach 3P: Prop. To Stre | et (DCP3) | Inflow=0.07 cfs 0.005 at |
| | | Outflow=0.07 cfs 0.005 at |
| 5 145 5 144 414 | / // L/DODA) | 1 fl 4 00 f 0 0 47 |
| Reach 4E: Exist North V | Petland (DCP4) | Inflow=1.66 cfs 0.247 at |
| | | Outflow=1.66 cfs 0.247 at |
| Doogle 4D: Duois to Nort | h Matland (DODA) | Inflamm4 40 afa 0 407 af |
| Reach 4P: Prop. to Nort | n Wetland (DCP4) | Inflow=1.42 cfs 0.187 af Outflow=1.42 cfs 0.187 af |
| | | Outliow=1.42 dis 0.167 al |
| Pond 7P: MH | | Peak Elev=88.79' Inflow=3.26 cfs 0.229 at |
| PONG /P. WIH | 15.0" Round Culvert, n=0.011, L=6 | 60.0' S=0.0100 '/' Outflow=3.26 cfs 0.229 at |
| | 13.0 Round Galvert 11-0.011 E-0 | 0.0 0-0.0100 / Outhow-3.20 cis 0.229 al |
| Pond 9P: CB 4 | | Peak Elev=89.01' Inflow=1.83 cfs 0.129 at |
| 1 0110 01 : 05 4 | 12.0" Round Culvert n=0.011 L=2 | 22.0' S=0.0100 '/' Outflow=1.83 cfs 0.129 at |
| | 12.0 Realia Galvert II 6.6 FT 2 2 | |
| Pond 10P: MH | | Peak Elev=88.46' Inflow=7.88 cfs 0.553 at |
| | 18.0" Round Culvert n=0.011 L=12 | 20.0' S=0.0154 '/' Outflow=7.88 cfs 0.553 at |
| | | |
| Pond 12P: MH | | Peak Elev=89.93' Inflow=4.62 cfs 0.324 at |
| | 15.0" Round Culvert n=0.011 L=24 | 40.0' S=0.0075 '/' Outflow=4.62 cfs 0.324 at |
| | | |
| Pond 13P: CB6 | | Peak Elev=90.32' Inflow=2.19 cfs 0.154 at |
| | 12.0" Round Culvert n=0.011 L=6 | 32.0' S=0.0089 '/' Outflow=2.19 cfs 0.154 at |
| | | |
| Pond MH1: MH | | Peak Elev=87.79' Inflow=1.97 cfs 0.140 at |
| | 15.0" Round Culvert n=0.011 L=5 | 55.0' S=0.0091 '/' Outflow=1.97 cfs 0.140 at |
| | | D E 0000 f |
| Pond MH2: CB 3 | 40.011 D. 1.0.1.1.0.044 1.0 | Peak Elev=88.93' Inflow=1.43 cfs 0.100 at |
| | 12.0" Round Culvert n=0.011 L=2 | 22.0' S=0.0100 '/' Outflow=1.43 cfs 0.100 at |
| Dond MU2. CD5 | | Peak Elev=90.38' Inflow=2.43 cfs 0.170 at |
| Pond MH3: CB5 | 12.0" Pound Culvert n=0.011.1 =6 | 65.0' S=0.0085 '/' Outflow=2.43 cfs 0.170 at |
| | 12.0 Noulia Guiveit II-0.011 L-0 | 55.0 5-0.0065 / Outilow-2.45 GS 0.170 al |
| Pond P1: POND 1 | Dook Flow-97 73 | ' Storage=1,551 cf Inflow=1.97 cfs 0.140 at |
| I OHU F I. FOND I | | 0.41 cfs |
| | 5.0001000 0.22 013 0.120 01 1 1111aly-1 | 0.11 0.0 0.020 di Oddiow-0.00 013 0.140 di |
| Pond P2: POND 2 | Peak Flev=87 84 | ' Storage=9,319 cf Inflow=9.31 cfs 0.649 at |
| . 5.14 . 2 5115 2 | | 2.10 cfs 0.281 af Outflow=2.51 cfs 0.640 at |

Discarded=0.32 cfs 0.368 af Primary=2.19 cfs 0.281 af Outflow=2.51 cfs 0.649 af

Pond R1: Pond1 Outlet - 12" RCP Peak Elev=86.82' Inflow=0.41 cfs 0.020 af

12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '/' Outflow=0.41 cfs 0.020 af

Type III 24-hr 25 Year Event Rainfall=5.50"

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Pond R4: Pond 2 Outlet - 12" RCP

Peak Elev=85.74' Inflow=2.19 cfs 0.281 af

12.0" Round Culvert n=0.011 L=35.0' S=0.0200 '/' Outflow=2.19 cfs 0.281 af

Ling5 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.19 cfs 0.012 af
Area= 0.036 ac 100.00% Imperv. Primary=1.15 cfs 0.071 af

Link 2L: 1 - 25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.15 cfs 0.008 af Area= 0.028 ac 100.00% Imperv. Primary=0.15 cfs 0.008 af

Ling5 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 8.00 Inflow=0.19 cfs 0.012 af Area= 0.036 ac 100.00% Imperv. Primary=1.53 cfs 0.095 af

Link 25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.15 cfs 0.008 af Area= 0.028 ac 100.00% Imperv. Primary=0.30 cfs 0.017 af

Ling5 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 2.00 Inflow=0.19 cfs 0.012 af
Area= 0.036 ac 100.00% Imperv. Primary=0.38 cfs 0.024 af

Total Runoff Area = 19.348 ac Runoff Volume = 5.328 af Average Runoff Depth = 3.30" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac HydroCAD® 10.00-24 s/n 01769 © 2018 HydroCAD Software Solutions LLC

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Summary for Subcatchment 1S: Prop. to Steam

Runoff = 7.33 cfs @ 12.51 hrs, Volume= 1.044 af, Depth= 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| _ | A | rea (sf) | CN I | Description | | | | | | |
|---|-------|----------|-----------|----------------------------------|-------------|--|--|--|--|--|
| * | | 48,878 | 98 \ | 98 Water Surface Wetlands, HSG C | | | | | | |
| | | 63,472 | 74 | 74 >75% Grass cover, Good, HSG C | | | | | | |
| * | | 4,305 | 98 v | valls othe r | imp. | | | | | |
| | | 1,100 | | Dirt roads, l | | | | | | |
| | | 18,844 | | Woods, Go | od, HSG C | | | | | |
| * | | 2,457 | | Exisit,. Roo | | | | | | |
| * | | 5,683 | | Exisit. Pave | | | | | | |
| * | | 1,485 | 74 I | Prop. Patio | 3 | | | | | |
| | | 46,224 | | Weighted A | | | | | | |
| | | 84,901 | | | vious Area | | | | | |
| | | 61,323 | 4 | 11.94% lmp | pervious Ar | ea | | | | |
| | _ | | | | | | | | | |
| | Tc | Length | Slope | • | Capacity | Description | | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | |
| | 1.7 | 50 | 0.0100 | 0.50 | | Shallow Concentrated Flow, | | | | |
| | ۰ | | 0.0400 | 0.70 | | Woodland Kv= 5.0 fps | | | | |
| | 0.7 | 30 | 0.0100 | 0.70 | | Shallow Concentrated Flow, | | | | |
| | 0.7 | 440 | 0.0400 | 0.50 | | Short Grass Pasture Kv= 7.0 fps | | | | |
| | 3.7 | 110 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow | | | | |
| | 2.0 | 700 | 0.0400 | 2.25 | 20.44 | Woodland Kv= 5.0 fps | | | | |
| | 3.9 | 790 | 0.0100 | 3.35 | 20.11 | Channel Flow, Stream | | | | |
| | | | | | | Area= 6.0 sf Perim= 7.0' r= 0.86' | | | | |
| _ | 00.0 | 4.000 | T - 4 - 1 | | | n= 0.040 Earth, cobble bottom, clean sides | | | | |
| | 38.3 | 1,030 | Total | | | | | | | |

Summary for Subcatchment 2S: Prop Lawn to Pond 2

Runoff = 1.05 cfs @ 12.08 hrs, Volume= 0.072 af, Depth= 2.77"

| _ | Area (sf) | CN | Description |
|---|-----------|----|-------------------------------|
| | 13,665 | 74 | >75% Grass cover, Good, HSG C |
| | 13,665 | | 100.00% Pervious Area |

Type III 24-hr 25 Year Event Rainfall=5.50"

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| Tc | Length | Slope | Velocity | Capacity | Description | |
|-------|--------|---------|----------|----------|----------------------|--|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | |
| 5.0 | | | | | Direct Entry, DIRECT | |

Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.43 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| Are | ea (sf) | CN | Description | | | | | | |
|-------------|------------------|------------------|-------------------------------|-------------------|----------------------|--|--|--|--|
| | 6,841 | 98 | Paved parking, HSG C | | | | | | |
| | 6,421 | 74 | >75% Grass cover, Good, HSG C | | | | | | |
| 1 | 13,262 | 86 | Weighted Average | | | | | | |
| | 6,421 | | 48.42% Pervious Area | | | | | | |
| | 6,841 | | 51.58% Impervious Area | | | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | Description | | | | |
| 5.0 | | | | | Direct Entry, DIRECT | | | | |

Summary for Subcatchment 4S: Prop to CB#4

Runoff = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| | Ar | ea (sf) | CN | Description | | | | | | | |
|----|------|---------|--------|-------------------------------|------------|----------------------|--|--|--|--|--|
| * | | 1,652 | 98 | Paved park | ing, HSG C | C-Sidewalk | | | | | |
| | | 7,912 | | Paved parking, HSG C | | | | | | | |
| | | 6,706 | 74 | >75% Grass cover, Good, HSG C | | | | | | | |
| | • | 16,270 | 88 | Weighted Average | | | | | | | |
| | | 6,706 | | 41.22% Pervious Area | | | | | | | |
| | | 9,564 | | 58.78% Impervious Area | | | | | | | |
| | | | | | | | | | | | |
| | Tc | Length | Slope | e Velocity | Capacity | / Description | | | | | |
| (r | min) | (feet) | (ft/ft | (ft/sec) | (cfs) | | | | | | |
| | 5.0 | | | | | Direct Entry, DIRECT | | | | | |

Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af, Depth= 3.94"

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| | Area (sf) | CN | Description | | | | |
|---|--------------|-------|------------------|-------------|------------------|--|--|
| * | 466 | 98 | Paved park | ing, HSG C | C - Sidewalk | | |
| * | 10,390 | 98 | Paved park | ing, HSG (| C - rroad-drives | | |
| | 11,712 | 74 | >75% Gras | s cover, Go | ood, HSG C | | |
| | 22,568 | 86 | Weighted Average | | | | |
| | 11,712 | | 51.90% Pei | vious Area | a | | |
| | 10,856 | | 48.10% lmp | pervious Ar | rea | | |
| | To Longth | Clar | o Volocity | Conneity | Description | | |
| , | Tc Length | Slop | , | Capacity | · | | |
| (| (min) (feet) | (ft/1 | ft) (ft/sec) | (cfs) | | | |
| | 5.0 | | | | Direct Entry, | | |

Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| | Α | rea (sf) | CN | Description | | | | | | |
|---|-------|----------|--------|------------------------|-------------------------------|------------------|--|--|--|--|
| * | | 959 | 98 | Paved park | ing, HSG C | C - Sidewalk | | | | |
| * | | 9,836 | 98 | Paved park | ing, HSG C | C - rroad-drives | | | | |
| | | 9,122 | 74 | >75% Gras | >75% Grass cover, Good, HSG C | | | | | |
| _ | | 19,917 | 87 | Weighted A | Weighted Average | | | | | |
| | | 9,122 | | 45.80% Pervious Area | | | | | | |
| | | 10,795 | | 54.20% Impervious Area | | | | | | |
| | | | | | | | | | | |
| | Тс | Length | Slop | e Velocity | Capacity | / Description | | | | |
| | (min) | (feet) | (ft/ft | t) (ft/sec) | (cfs) | | | | | |
| | 5.0 | | | | | Direct Entry. | | | | |

Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 1.97 cfs @ 12.07 hrs, Volume= 0.140 af, Depth= 4.25"

| | Area (sf) | CN | Description | | | | | |
|-------|----------------------------|--------|-------------------------------|-------------|-------------|--|--|--|
| | 10,533 | 98 | Paved park | ing, HSG C | , | | | |
| | 6,697 | 74 | >75% Grass cover, Good, HSG C | | | | | |
| | 17,230 | 89 | Weighted A | verage | | | | |
| | 6,697 38.87% Pervious Area | | | | | | | |
| | 10,533 | | 61.13% Imp | pervious Ar | ea | | | |
| | | | | | | | | |
| Tc | 9 | Slope | , | Capacity | Description | | | |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | | | | |
| | | | | | | | | |

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Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 5.22 cfs @ 12.53 hrs, Volume= 0.726 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| | Α | rea (sf) | CN | Description | | |
|---|-----------------------------|----------|--------------------------|-------------|-------------|--|
| * | | 25,672 | 98 | Water Surfa | ace Wetlan | ds, HSG C |
| | | 38,352 | 74 | >75% Gras | s cover, Go | ood, HSG C |
| | | 58,938 | 70 | Woods, Go | od, HSG C | |
| * | | 1,155 | 74 | Patio | | |
| * | | 377 | 98 | ret wall | | |
| | 1 | 24,494 | 77 | Weighted A | verage | |
| | 98,445 79.08% Pervious Area | | | | | |
| | | 26,049 | .9 20.92% Impervious Are | | | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 37.0 | 370 | Total | | | |

Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 1.42 cfs @ 12.47 hrs, Volume= 0.187 af, Depth= 2.95"

| | Α | rea (sf) | CN [| Description | | | | |
|---|-------|----------|---------|-------------------------------|---------------|--|--|--|
| * | | 906 | 98 \ | Vater Surfa | ace Wetlan | ds, HSG C | | |
| | | 2,744 | 98 F | Paved park | ing, HSG C | | | |
| | | 16,242 | 74 > | >75% Grass cover, Good, HSG C | | | | |
| | | 1,286 | 98 F | Roofs, HSG | GC - infiltra | ted | | |
| * | | 283 | | valls othe r | • | | | |
| | | 11,662 | 70 \ | Woods, Good, HSG C | | | | |
| | | 33,123 | 76 \ | Veighted A | verage | | | |
| | | 27,904 | 3 | 84.24% Per | | | | |
| | | 5,219 | | 15.76% Impervious Area | | | | |
| | | | | | | | | |
| | Тс | Length | Slope | | Capacity | Description | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | |
| | 4.8 | 430 | 0.0100 | 1.50 | | Shallow Concentrated Flow, shallow | | |
| | | | | | | Grassed Waterway Kv= 15.0 fps | | |
| | 33 1 | 480 | Total | | | | | |

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Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| A | rea (sf) | CN | Description | | | | | |
|-------|----------|------------------------|-------------------------------|------------|----------------------|--|--|--|
| | 492 | 98 | Paved park | ing, HSG C | | | | |
| | 100 | 74 | >75% Grass cover, Good, HSG C | | | | | |
| | 592 | 94 | Weighted A | verage | | | | |
| | 100 | 0 16.89% Pervious Area | | | | | | |
| | 492 | 83.11% Impervious Area | | | | | | |
| _ | | ٥. | | | - | | | |
| Tc | Length | Slope | , | Capacity | Description | | | |
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| 5.0 | • | | | | Direct Entry, DIRECT | | | |

Summary for Subcatchment E1: Exist. to Stream

Runoff = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af, Depth= 3.24"

| | Α | rea (sf) | CN | Description | | |
|---|------------------------------|----------|-------------|---------------|-------------|--|
| * | | 48,977 | 98 ' | Water Surfa | ace Wetlan | ds, HSG C |
| | | 11,952 | | | ing, HSG C | • |
| | | 34,335 | 74 | >75% Ġras | s cover, Go | ood, HSG C |
| | | 2,457 | 98 | Roofs, HSG | G C | |
| * | | 4,820 | 98 ' | walls othe r | imp. | |
| | | 8,801 | 87 | Dirt roads, l | HSG C | |
| _ | 1 | 31,819 | 70 | Woods, Go | od, HSG C | |
| | 2 | 243,161 | 79 | Weighted A | verage | |
| | 174,955 71.95% Pervious Area | | rvious Area | | | |
| | | 68,206 | : | 28.05% Imp | pervious Ar | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 13.7 | 410 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 42.0 | 460 | Total | | | |

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Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 6.04 cfs @ 12.53 hrs, Volume= 0.839 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| | Α | rea (sf) | CN [| Description | | |
|---|-------|----------|---------|--------------|-------------|--|
| * | | 25,672 | 98 \ | Vater Surfa | ace Wetlan | ds, HSG C |
| | | 5,792 | 98 F | Paved park | ing, HSG C | |
| | | 9,907 | 74 > | >75% Gras | s cover, Go | ood, HSG C |
| * | | 217 | 98 v | valls othe r | imp. | |
| | 1 | 07,002 | 70 \ | Voods, Go | od, HSG C | |
| | 1 | 48,590 | 76 \ | Veighted A | verage | |
| | 1 | 16,909 | 7 | 78.68% Per | rvious Area | |
| | | 31,681 | 2 | 21.32% Imp | pervious Ar | ea |
| | | | | | | |
| | Tc | Length | Slope | | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow - woods |
| | | | | | | Woodland Kv= 5.0 fps |
| | 37.0 | 370 | Total | | | |

Summary for Subcatchment E3: Exist. To Street

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| A | rea (sf) | CN | Description | | | | | |
|-------------|------------------|------------------------|----------------------|-------------------|---------------|--|--|--|
| | 473 | 98 | Paved parking, HSG C | | | | | |
| | 798 | 74 | >75% Ġras | s cover, Go | lood, HSG C | | | |
| | 1,271 | 83 | Weighted A | verage | | | | |
| | 798 | 62.79% Pervious Area | | | | | | |
| | 473 | 37.21% Impervious Area | | | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | · | | | |
| 5.0 | | | | | Direct Entry, | | | |

Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 1.66 cfs @ 12.59 hrs, Volume= 0.247 af, Depth= 3.05"

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| | Α | rea (sf) | CN [| Description | | |
|-----------|----------------------------|----------|---------|--------------|--------------|--|
| * | | 907 | 98 \ | Vater Surfa | ace Wetlan | ds, HSG C |
| | | 5,644 | 98 F | Paved park | ing, HSG C | |
| | | 12,783 | 74 > | 75% Gras | s cover, Go | ood, HSG C |
| * | | 520 | 98 v | valls othe r | imp. | |
| | | 21,313 | | , | od, HSG C | |
| | | 1,286 | 98 F | Roofs, HSC | G C | |
| | 42,453 77 Weighted Average | | | | | |
| | | 34,096 | 3 | 30.31% Per | vious Area | |
| | | 8,357 | | 9.69% Imp | pervious Are | ea |
| | | | | | | |
| | Tc | Length | Slope | Velocity | Capacity | Description |
| <u>(r</u> | min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 2 | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| • | 14.3 | 430 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods |
| | | | | | | Woodland Kv= 5.0 fps |
| 4 | 42.6 | 480 | Total | | | |

Summary for Reach 1E: Exist. to Stream (DCP1)

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 3.24" for 25 Year Event event

Inflow = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af

Outflow = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 1P: Prop. to Stream (DCP1)

Inflow Area = 5.423 ac, 43.89% Impervious, Inflow Depth = 3.18" for 25 Year Event event

Inflow = 9.90 cfs @ 12.47 hrs, Volume= 1.436 af

Outflow = 9.90 cfs @ 12.47 hrs, Volume= 1.436 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2E: Exist East Wetland (DCP2)

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 2.95" for 25 Year Event event

Inflow = 6.04 cfs @ 12.53 hrs, Volume= 0.839 af

Outflow = $6.04 \text{ cfs } \overline{\text{@}}$ 12.53 hrs, Volume= 0.839 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 2.99" for 25 Year Event event

Inflow = 5.86 cfs @ 12.46 hrs, Volume= 0.825 af

Outflow = 5.86 cfs @ 12.46 hrs, Volume= 0.825 af, Atten= 0%, Lag= 0.0 min

Type III 24-hr 25 Year Event Rainfall=5.50"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3E: Exist To Street (DCP3)

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 3.63" for 25 Year Event event

Inflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af

Outflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 4.80" for 25 Year Event event

Inflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af

Outflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4E: Exist North Wetland (DCP4)

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 3.05" for 25 Year Event event

Inflow = 1.66 cfs @ 12.59 hrs, Volume= 0.247 af

Outflow = 1.66 cfs @ 12.59 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 2.95" for 25 Year Event event

Inflow = 1.42 cfs @ 12.47 hrs, Volume= 0.187 af

Outflow = 1.42 cfs @ 12.47 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 7P: MH

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 4.05" for 25 Year Event event

Inflow = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af

Outflow = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min

Primary = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.79' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.45' | 15.0" Round Culvert L= 60.0' Ke= 0.500 |

Inlet / Outlet Invert= 87.45' / 86.85' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

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Primary OutFlow Max=3.18 cfs @ 12.07 hrs HW=88.78' TW=88.46' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.18 cfs @ 3.03 fps)

Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 4.15" for 25 Year Event event

Inflow = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af

Outflow = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Primary = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.01' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices | | | |
|--------|---------|--------|--|--|--|--|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 | | | |
| | | | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 | | | |
| | | | n= 0.011 Concrete pipe, straight & clean. Flow Area= 0.79 sf | | | |

Primary OutFlow Max=1.68 cfs @ 12.07 hrs HW=88.98' TW=88.78' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.68 cfs @ 2.14 fps)

Summary for Pond 10P: MH

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 4.01" for 25 Year Event event

Inflow = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af

Outflow = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af, Atten= 0%, Lag= 0.0 min

Primary = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.46' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 86.85' | 18.0" Round Culvert L= 120.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 86.85' / 85.00' S= 0.0154 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

Primary OutFlow Max=7.87 cfs @ 12.07 hrs HW=88.46' TW=87.18' (Dynamic Tailwater) 1=Culvert (Inlet Controls 7.87 cfs @ 4.45 fps)

Summary for Pond 12P: MH

| Inflow Area = | 0.975 ac, 50.96% Impervious, Inflow | / Depth = 3.98" | for 25 Year Event event |
|---------------|-------------------------------------|-----------------|-------------------------|
| Inflow = | 4.62 cfs @ 12.07 hrs, Volume= | 0.324 af | |
| | | | |

Outflow = 4.62 cfs @ 12.07 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min

Primary = 4.62 cfs @ 12.07 hrs, Volume= 0.324 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.93' @ 12.08 hrs

Type III 24-hr 25 Year Event Rainfall=5.50"

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| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 88.65' | 15.0" Round Culvert L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=4.59 cfs @ 12.07 hrs HW=89.93' TW=88.46' (Dynamic Tailwater) 1=Culvert (Outlet Controls 4.59 cfs @ 4.54 fps)

Summary for Pond 13P: CB6

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 4.04" for 25 Year Event event

Inflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af

Outflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Primary = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 90.32' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 62.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=2.13 cfs @ 12.07 hrs HW=90.30' TW=89.93' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.13 cfs @ 3.06 fps)

Summary for Pond MH1: MH

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 4.25" for 25 Year Event event

Inflow = 1.97 cfs @ 12.07 hrs, Volume= 0.140 af

Outflow = 1.97 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Primary = 1.97 cfs @ 12.07 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.79' @ 12.31 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.00' | 15.0" Round Culvert L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0091 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=1.87 cfs @ 12.07 hrs HW=87.75' TW=87.28' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.87 cfs @ 3.48 fps)

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Summary for Pond MH2: CB 3

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 3.94" for 25 Year Event event

Inflow 1.43 cfs @ 12.07 hrs, Volume= 0.100 af

1.43 cfs @ 12.07 hrs, Volume= Outflow 0.100 af, Atten= 0%, Lag= 0.0 min =

Primary 1.43 cfs @ 12.07 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.93' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.25 cfs @ 12.07 hrs HW=88.89' TW=88.78' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 1.25 cfs @ 1.59 fps)

Summary for Pond MH3: CB5

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 3.94" for 25 Year Event event

2.43 cfs @ 12.07 hrs, Volume= 2.43 cfs @ 12.07 hrs, Volume= Inflow = 0.170 af

0.170 af, Atten= 0%, Lag= 0.0 min Outflow

Primary = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.38' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 65.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=2.37 cfs @ 12.07 hrs HW=90.37' TW=89.93' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.37 cfs @ 3.26 fps)

Summary for Pond P1: POND 1

| Inflow Area = | 0.396 ac, 61.13% Impervious, Inflow D | Depth = 4.25" for 25 Year Event even |
|---------------|---------------------------------------|--------------------------------------|
| Inflow = | 1.97 cfs @ 12.07 hrs, Volume= | 0.140 af |
| Outflow = | 0.63 cfs @ 12.36 hrs, Volume= | 0.140 af, Atten= 68%, Lag= 17.4 min |
| Discarded = | 0.22 cfs @ 11.71 hrs \/olume= | 0.120 af |

0.41 cfs @ 12.36 hrs, Volume= Primary = 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.73' @ 12.36 hrs Surf.Area= 1,491 sf Storage= 1,551 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 29.9 min (820.1 - 790.2)

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| Volume | Invert | t Avai | I.Storage | Storage Description | | | | |
|------------------|-----------|---------------------|-------------------|---------------------------|----------------------------|---------------------|--|--|
| #1 | 86.50 | • | 5,732 cf | Custom Stage Date | ta (Irregular) List | ed below (Recalc) | | |
| Elevatio (fee | - | urf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | | |
| 86.5 | 0 | 1,160 | 190.0 | 0 | 0 | 1,160 | | |
| 87.0 | 0 | 1,160 | 190.0 | 580 | 580 | 1,255 | | |
| 88.0 | 0 | 1,620 | 138.0 | 1,384 | 1,964 | 2,622 | | |
| 89.0 | 0 | 1,882 | 248.0 | 1,749 | 3,713 | 6,007 | | |
| 90.0 | 0 | 2,160 | 260.0 | 2,019 | 5,732 | 6,554 | | |
| Device | Routing | In | vert Outle | et Devices | | | | |
| #1 | Primary | 87 | '.30' 6.0" | Vert. Orifice/Grate | C= 0.600 | | | |
| #2 | Discarded | 86 | 5.50' 0.22 | cfs Exfiltration wh | en above 86.50' | | | |

Discarded OutFlow Max=0.22 cfs @ 11.71 hrs HW=86.54' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.41 cfs @ 12.36 hrs HW=87.73' TW=86.82' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.41 cfs @ 2.24 fps)

Summary for Pond P2: POND 2

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 3.89" for 25 Year Event event Inflow = 9.31 cfs @ 12.07 hrs, Volume= 0.649 af Outflow = 2.51 cfs @ 12.42 hrs, Volume= 0.649 af, Atten= 73%, Lag= 21.1 min Discarded = 0.32 cfs @ 10.73 hrs, Volume= 0.368 af Primary = 2.19 cfs @ 12.42 hrs, Volume= 0.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.84' @ 12.42 hrs Surf.Area= 5,183 sf Storage= 9,319 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 75.0 min (875.9 - 800.9)

#2

Discarded

| Volume | Inv | ert Ava | il.Storage | Storage Description | | | | |
|------------------|---------|----------------------|-------------------|---------------------------|----------------------------|---------------------|---|--|
| #1 | 85.0 | 00' | 16,163 cf | Custom Stage Da | ta (Irregular) List | ed below (Recalc) | _ | |
| Elevatio (fee | | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | | |
| 85.0 | 00 | 1,685 | 280.0 | Ó | Ó | 1,685 | | |
| 86.0 | 00 | 2,544 | 300.0 | 2,100 | 2,100 | 2,653 | | |
| 86.5 | 50 | 2,980 | 310.0 | 1,380 | 3,479 | 3,161 | | |
| 86.6 | 0 | 3,685 | 372.0 | 333 | 3,812 | 6,526 | | |
| 87.0 | 00 | 4,211 | 380.0 | 1,578 | 5,390 | 7,028 | | |
| 88.0 | 00 | 5,383 | 400.0 | 4,785 | 10,175 | 8,329 | | |
| 89.0 | 00 | 6,615 | 421.0 | 5,988 | 16,163 | 9,762 | | |
| Device | Routing | | | et Devices | | | | |
| #1 | Primary | 86 | 6.40' 9.0" | Vert. Orifice/Grate | C = 0.600 | | | |

85.00' 0.32 cfs Exfiltration when above 85.00'

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Discarded OutFlow Max=0.32 cfs @ 10.73 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=2.19 cfs @ 12.42 hrs HW=87.84' TW=85.74' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 2.19 cfs @ 4.96 fps)

Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 0.61" for 25 Year Event event

Inflow = 0.41 cfs @ 12.36 hrs, Volume= 0.020 af

Outflow = 0.41 cfs @ 12.36 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary = 0.41 cfs @ 12.36 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.82' @ 12.36 hrs

Device Routing Invert Outlet Devices

#1 Primary

86.50' **12.0" Round Culvert** L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.36 hrs HW=86.82' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.41 cfs @ 1.91 fps)

Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 1.68" for 25 Year Event event

Inflow = 2.19 cfs @ 12.42 hrs, Volume= 0.281 af

Outflow = 2.19 cfs @ 12.42 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min

Primary = 2.19 cfs @ 12.42 hrs, Volume= 0.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.74' @ 12.42 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 84.90' | 12.0" Round Culvert L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 84.90' / 84.20' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean. Flow Area= 0.79 sf |

Primary OutFlow Max=2.19 cfs @ 12.42 hrs HW=85.74' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.19 cfs @ 3.12 fps)

Summary for Link 1L: 6 -1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 4.00" for 25 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.012 af

Primary = 1.15 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 25 Year Event Rainfall=5.50"

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25 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 3.62" for 25 Year Event event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.008 af

Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 3L: 8 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 4.00" for 25 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.012 af

Primary = 1.53 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 8.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 3.62" for 25 Year Event event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.008 af

Primary = 0.30 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 5L: 2 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 4.00" for 25 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.012 af

Primary = 0.38 cfs @ 12.09 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Reach 1P: Prop. to Stream (DCP1)

Type III 24-hr 100 Year Event Rainfall=7.00"

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Outflow=14.37 cfs 2.133 af

Inflow=13.32 cfs 2.055 af Outflow=13.32 cfs 2.055 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| Subcatchment 1S: Prop. to Steam Flow Length=1,030' | Runoff Area=146,224 sf 41.94% Impervious Runoff Depth=5.14" Slope=0.0100 '/' Tc=38.3 min CN=84 Runoff=10.00 cfs 1.438 af |
|---|---|
| Subcatchment 2S: Prop Lawn to Pond 2 | Runoff Area=13,665 sf 0.00% Impervious Runoff Depth=4.04" Tc=5.0 min CN=74 Runoff=1.54 cfs 0.106 af |
| Subcatchment 3S: Prop to CB #3 | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=5.37" Tc=5.0 min CN=86 Runoff=1.92 cfs 0.136 af |
| Subcatchment 4S: Prop to CB#4 | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=5.59" Tc=5.0 min CN=88 Runoff=2.43 cfs 0.174 af |
| Subcatchment 5S: Prop. to CB # 5 | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=5.37" Tc=5.0 min CN=86 Runoff=3.27 cfs 0.232 af |
| Subcatchment 6S: Prop. to CB # 6 | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=5.48" Tc=5.0 min CN=87 Runoff=2.93 cfs 0.209 af |
| Subcatchment 7S: Prop. to Pond 1 | Runoff Area=17,230 sf 61.13% Impervious Runoff Depth=5.71" Tc=5.0 min CN=89 Runoff=2.61 cfs 0.188 af |
| Subcatchment 8S: Prop. to East Wetland | Runoff Area=124,494 sf 20.92% Impervious Runoff Depth=4.37" Flow Length=370' Tc=37.0 min CN=77 Runoff=7.47 cfs 1.040 af |
| | nd Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=4.26" O' Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=2.05 cfs 0.270 af |
| Subcatchment 10S: Prop. to Street | Runoff Area=592 sf 83.11% Impervious Runoff Depth=6.29" Tc=5.0 min CN=94 Runoff=0.09 cfs 0.007 af |
| Subcatchment E1: Exist. to Stream Flow Length=460' | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=4.58" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=14.37 cfs 2.133 af |
| Subcatchment E2: Exist. To East | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=4.26" Flow Length=370' Tc=37.0 min CN=76 Runoff=8.70 cfs 1.210 af |
| Subcatchment E3: Exist. To Street | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=5.03" Tc=5.0 min CN=83 Runoff=0.17 cfs 0.012 af |
| | orth Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=4.37" O' Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=2.37 cfs 0.355 af |
| Reach 1E: Exist. to Stream (DCP1) | Inflow=14.37 cfs 2.133 af |

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|---|--------------------------|--|--|----------|
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| Reach 2E: Exist East We | tland (DCP2) | | Inflow=8.70 cfs Outflow=8.70 cfs | |
| Reach 2P: Prop. to East | Wetland (DCP2) | | Inflow=8.45 cfs Outflow=8.45 cfs | |
| Reach 3E: Exist To Stree | et (DCP3) | | Inflow=0.17 cfs Outflow=0.17 cfs | |
| Reach 3P: Prop. To Stre | et (DCP3) | | Inflow=0.09 cfs Outflow=0.09 cfs | |
| Reach 4E: Exist North W | etland (DCP4) | | Inflow=2.37 cfs Outflow=2.37 cfs | |
| Reach 4P: Prop. to North | n Wetland (DCP4) | | Inflow=2.05 cfs Outflow=2.05 cfs | |
| Pond 7P: MH | 15.0" Round Culvert | Peak Elev=89. n=0.011 L=60.0' S=0.0100 ' | 93' Inflow=4.35 cfs /' Outflow=4.35 cfs | |
| Pond 9P: CB 4 | 12.0" Round Culvert | Peak Elev=90. n=0.011 L=22.0' S=0.0100 ' | 30' Inflow=2.43 cfs /' Outflow=2.43 cfs | |
| Pond 10P: MH | 18.0" Round Culvert n= | Peak Elev=89.4 -0.011 L=120.0' S=0.0154 <i>'\</i> ' | 2' Inflow=10.54 cfs Outflow=10.54 cfs | |
| Pond 12P: MH | 15.0" Round Culvert r | Peak Elev=91. n=0.011 L=240.0' S=0.0075 ' | 52' Inflow=6.20 cfs /' Outflow=6.20 cfs | |
| Pond 13P: CB6 | | Peak Elev=92. | 11' Inflow=2.93 cfs | 0.209 af |

Pond 13P: CB6

Peak Elev=92.11' Inflow=2.93 cfs 0.209 af
12.0" Round Culvert n=0.011 L=62.0' S=0.0089 '/' Outflow=2.93 cfs 0.209 af

Peak Elev=88.09' Inflow=2.61 cfs 0.188 af
15.0" Round Culvert n=0.011 L=55.0' S=0.0091 '/' Outflow=2.61 cfs 0.188 af

Pond MH2: CB 3 Peak Elev=90.16' Inflow=1.92 cfs 0.136 af 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.92 cfs 0.136 af

Pond MH3: CB5

Peak Elev=92.27' Inflow=3.27 cfs 0.232 af
12.0" Round Culvert n=0.011 L=65.0' S=0.0085 '/' Outflow=3.27 cfs 0.232 af

Pond P1: POND 1 Peak Elev=88.05' Storage=2,040 cf Inflow=2.61 cfs 0.188 af

Discarded=0.22 cfs 0.145 af Primary=0.67 cfs 0.043 af Outflow=0.89 cfs 0.188 af

Pond P2: POND 2 Peak Elev=88.55' Storage=13,306 cf Inflow=12.54 cfs 0.888 af Discarded=0.32 cfs 0.422 af Primary=2.83 cfs 0.466 af Outflow=3.15 cfs 0.888 af

Pond R1: Pond1 Outlet - 12" RCP Peak Elev=86.91' Inflow=0.67 cfs 0.043 af

12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '/' Outflow=0.67 cfs 0.043 af

Type III 24-hr 100 Year Event Rainfall=7.00"

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Pond R4: Pond 2 Outlet - 12" RCP
Peak Elev=85.96' Inflow=2.83 cfs 0.466 af 12.0" Round Culvert n=0.011 L=35.0' S=0.0200 '/' Outflow=2.83 cfs 0.466 af

Ling Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.24 cfs 0.016 af Area= 0.036 ac 100.00% Imperv. Primary=1.42 cfs 0.096 af

Link 2L: 1 100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.19 cfs 0.011 af Area= 0.028 ac 100.00% Imperv. Primary=0.19 cfs 0.011 af

Ling Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 8.00 Inflow=0.24 cfs 0.016 af Area= 0.036 ac 100.00% Imperv. Primary=1.89 cfs 0.128 af

Link100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.19 cfs 0.011 af
Area= 0.028 ac 100.00% Imperv. Primary=0.37 cfs 0.023 af

Ling Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 2.00 Inflow=0.24 cfs 0.016 af Area= 0.036 ac 100.00% Imperv. Primary=0.47 cfs 0.032 af

Total Runoff Area = 19.348 ac Runoff Volume = 7.509 af Average Runoff Depth = 4.66" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac HydroCAD® 10.00-24 s/n 01769 © 2018 HydroCAD Software Solutions LLC

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Summary for Subcatchment 1S: Prop. to Steam

Runoff = 10.00 cfs @ 12.51 hrs, Volume= 1.438 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| | Α | rea (sf) | CN [| Description | | | | | |
|---|-------|----------|---------|-------------------------------|--------------|--|--|--|--|
| * | | 48,878 | 98 V | Water Surface Wetlands, HSG C | | | | | |
| | | 63,472 | 74 > | >75% Grass cover, Good, HSG C | | | | | |
| * | | 4,305 | 98 v | walls othe rimp. | | | | | |
| | | 1,100 | 87 E | Dirt roads, HSG C | | | | | |
| | | 18,844 | 70 V | Voods, Go | od, HSG C | | | | |
| * | | 2,457 | 98 E | Exisit,. Roo | f | | | | |
| * | | 5,683 | 98 E | Exisit. Pave | ement | | | | |
| * | | 1,485 | 74 F | Prop. Patios | S | | | | |
| | 1 | 46,224 | 84 V | Veighted A | verage | | | | |
| | | 84,901 | 5 | 8.06% Per | vious Area | | | | |
| | | 61,323 | 2 | 11.94% lmp | pervious Are | ea | | | |
| | | | | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | |
| | 1.7 | 50 | 0.0100 | 0.50 | | Shallow Concentrated Flow, | | | |
| | | | | | | Woodland Kv= 5.0 fps | | | |
| | 0.7 | 30 | 0.0100 | 0.70 | | Shallow Concentrated Flow, | | | |
| | | | | | | Short Grass Pasture Kv= 7.0 fps | | | |
| | 3.7 | 110 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow | | | |
| | | 700 | 0.0400 | 0.05 | 00.44 | Woodland Kv= 5.0 fps | | | |
| | 3.9 | 790 | 0.0100 | 3.35 | 20.11 | Channel Flow, Stream | | | |
| | | | | | | Area= 6.0 sf Perim= 7.0' r= 0.86' | | | |
| | 00.0 | 4.000 | | | | n= 0.040 Earth, cobble bottom, clean sides | | | |

38.3 1,030 Total

Summary for Subcatchment 2S: Prop Lawn to Pond 2

Runoff = 1.54 cfs @ 12.07 hrs, Volume= 0.106 af, Depth= 4.04"

| _ | Area (sf) | CN | Description |
|---|-----------|----|-------------------------------|
| | 13,665 | 74 | >75% Grass cover, Good, HSG C |
| | 13,665 | | 100.00% Pervious Area |

Type III 24-hr 100 Year Event Rainfall=7.00"

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| Tc | Length | Slope | Velocity | Capacity | Description |
|-------|--------|---------|----------|----------|----------------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 5.0 | | | | | Direct Entry, DIRECT |

Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| Area | a (sf) C | N D | Description | | | | | |
|---------------|----------|------------------|-------------------------------|-------------------|-------------|--|--|--|
| 6 | ,841 9 | 98 F | aved parki | ng, HSG C | | | | |
| 6 | ,421 7 | ⁷ 4 > | >75% Grass cover, Good, HSG C | | | | | |
| 13 | ,262 8 | 36 V | Weighted Average | | | | | |
| 6 | ,421 | 4 | 8.42% Per | vious Area | 1 | | | |
| 6 | ,841 | 5 | 1.58% Imp | ervious Ar | rea | | | |
| Tc L (min) | - | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | |
| 5.0 | | | Direct Entry, DIRECT | | | | | |

• •

Summary for Subcatchment 4S: Prop to CB#4

Runoff = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| | Α | rea (sf) | CN | Description | | | | | |
|---|------|----------|---------|-------------------------------|-------------|---|--|--|--|
| * | | 1,652 | 98 | Paved parking, HSG C-Sidewalk | | | | | |
| | | 7,912 | 98 | Paved park | ing, HSG (| | | | |
| | | 6,706 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | | 16,270 | 88 | Weighted A | verage | | | | |
| | | 6,706 | | 41.22% Pe | rvious Area | a e e e e e e e e e e e e e e e e e e e | | | |
| | | 9,564 | | 58.78% lm <mark>լ</mark> | pervious Ar | rea | | | |
| | _ | | | | | | | | |
| _ | Tc | Length | Slope | | | | | | |
| (| min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | |
| | 5.0 | | | Direct Entry, DIRECT | | | | | |

Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af, Depth= 5.37"

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| | Area (sf) | CN | Description | | |
|---|--------------|-------|--------------|-------------|---|
| * | 466 | 98 | Paved park | ing, HSG C | C - Sidewalk |
| * | 10,390 | 98 | Paved park | ing, HSG (| C - rroad-drives |
| | 11,712 | 74 | >75% Gras | s cover, Go | ood, HSG C |
| | 22,568 | 86 | Weighted A | verage | |
| | 11,712 | | 51.90% Per | vious Area | a e e e e e e e e e e e e e e e e e e e |
| | 10,856 | | 48.10% lmp | pervious Ar | rea |
| | | | | | |
| | Tc Length | Slop | • | Capacity | Description |
| (| (min) (feet) | (ft/f | ft) (ft/sec) | (cfs) | |
| | 5.0 | | | | Direct Entry, |

Summary for Subcatchment 6S: Prop. to CB # 6

Runoff 2.93 cfs @ 12.07 hrs, Volume= 0.209 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| | Α | rea (sf) | CN | Description | | | | | |
|---|-------------|------------------|-----------------|------------------|-------------------|------------------|--|--|--|
| * | | 959 | 98 | Paved park | ing, HSG C | C - Sidewalk | | | |
| * | | 9,836 | 98 | Paved park | ing, HSG C | C - rroad-drives | | | |
| | | 9,122 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | |
| | | 19,917 | 87 | Weighted Average | | | | | |
| | | 9,122 | | 45.80% Per | | | | | |
| | | 10,795 | | 54.20% Imp | pervious Ar | rea | | | |
| | Tc (min) | Length (feet) | Slope (ft/ft | , | Capacity (cfs) | • | | | |
| | 5.0 | | | Direct Entry, | | | | | |

Summary for Subcatchment 7S: Prop. to Pond 1

2.61 cfs @ 12.07 hrs, Volume= 0.188 af, Depth= 5.71" Runoff

| | Area (sf |) CN | Description | Description | | | | | |
|-----------|-----------|----------|------------------------|-------------------------------|----------------------|--|--|--|--|
| | 10,533 | 3 98 | Paved park | Paved parking, HSG C | | | | | |
| | 6,697 | 7 74 | >75% Gras | >75% Grass cover, Good, HSG C | | | | | |
| | 17,230 | 89 | Weighted A | verage | | | | | |
| | 6,697 | 7 | 38.87% Pe | rvious Area | a | | | | |
| | 10,533 | 3 | 61.13% lm _l | pervious Ar | rea | | | | |
| | | | | | | | | | |
| | Tc Lengt | | , | Capacity | Description | | | | |
| <u>(n</u> | nin) (fee | t) (ft/1 | t) (ft/sec) | (cfs) | | | | | |
| | 5.0 | | | | Direct Entry, DIRECT | | | | |

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Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 7.47 cfs @ 12.50 hrs, Volume= 1.040 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| | Α | rea (sf) | CN I | Description | | |
|---|-----------------------------|----------|---------|-------------|-------------|--|
| * | | 25,672 | 98 \ | Nater Surfa | ace Wetlan | ds, HSG C |
| | | 38,352 | 74 | >75% Gras | s cover, Go | ood, HSG C |
| | | 58,938 | 70 | Woods, Go | od, HSG C | |
| * | | 1,155 | 74 I | Patio | | |
| * | | 377 | 98 ı | et wall | | |
| | 1 | 24,494 | 77 | Neighted A | verage | |
| | 98,445 79.08% Pervious Area | | | | | |
| | | 26,049 | 2 | 20.92% lmp | pervious Ar | ea |
| | | | | | | |
| | Тс | Length | Slope | | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 37.0 | 370 | Total | | | |

Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 2.05 cfs @ 12.47 hrs, Volume= 0.270 af, Depth= 4.26"

| _ | Α | rea (sf) | CN [| Description | | |
|---|-------|----------|---------|--------------|---------------|--|
| * | | 906 | 98 V | Vater Surfa | ace Wetlan | ds, HSG C |
| | | 2,744 | 98 F | Paved park | ing, HSG C | |
| | | 16,242 | 74 > | 75% Gras | s cover, Go | ood, HSG C |
| | | 1,286 | 98 F | Roofs, HSG | GC - infiltra | ted |
| * | | 283 | | valls othe r | • | |
| _ | | 11,662 | 70 V | Voods, Go | od, HSG C | |
| | | 33,123 | 76 V | Veighted A | verage | |
| | | 27,904 | 3 | 84.24% Per | vious Area | |
| | | 5,219 | 1 | 5.76% Imp | pervious Are | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 4.8 | 430 | 0.0100 | 1.50 | | Shallow Concentrated Flow, shallow |
| _ | | | | | | Grassed Waterway Kv= 15.0 fps |
| | 33.1 | 480 | Total | | | |

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Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 6.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| A | rea (sf) | CN | Description | | | | | | |
|-------------|------------------|------------------|----------------------|-------------|------------|--|--|--|--|
| | 492 | 98 | Paved parking, HSG C | | | | | | |
| | 100 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | |
| | 592 | 94 | Weighted A | verage | | | | | |
| | 100 | | 16.89% Pei | vious Area | 1 | | | | |
| | 492 | | 83.11% lmp | pervious Ar | rea | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | | | | | | | |
| 5.0 | | | Direct Entry, DIRECT | | | | | | |

Summary for Subcatchment E1: Exist. to Stream

Runoff = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af, Depth= 4.58"

| | Α | rea (sf) | CN [| Description | | | | |
|---|-------|----------|-------------------------|-------------------------------|--------------|--|--|--|
| * | | 48,977 | 98 \ | Water Surface Wetlands, HSG C | | | | |
| | | 11,952 | 98 F | Paved park | ing, HSG C | | | |
| | | 34,335 | 74 > | >75% Ġras | s cover, Go | ood, HSG C | | |
| | | 2,457 | 98 F | Roofs, HSC | S C | | | |
| * | | 4,820 | 98 v | valls othe r | imp. | | | |
| | | 8,801 | 87 [| Dirt roads, l | HSG C | | | |
| | 1 | 31,819 | 70 \ | Voods, Go | od, HSG C | | | |
| | 2 | 243,161 | 161 79 Weighted Average | | | | | |
| | 1 | 74,955 | 7 | 71.95% Per | vious Area | | | |
| | | 68,206 | 2 | 28.05% lmp | pervious Are | ea | | |
| | | | | | | | | |
| | Тс | Length | Slope | | Capacity | Description | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | |
| | 13.7 | 410 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods | | |
| _ | | | | | | Woodland Kv= 5.0 fps | | |
| | 42.0 | 460 | Total | | | | | |

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Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| _ | Α | rea (sf) | CN I | Description | | | | | | |
|---|-------|----------|---------|-------------------------------|--------------|--|--|--|--|--|
| * | | 25,672 | 98 \ | Water Surface Wetlands, HSG C | | | | | | |
| | | 5,792 | 98 I | Paved park | ing, HSG C | | | | | |
| | | 9,907 | 74 | >75% Gras | s cover, Go | ood, HSG C | | | | |
| * | | 217 | 98 v | walls othe r | imp. | | | | | |
| | 1 | 07,002 | 70 \ | Woods, Go | od, HSG C | | | | | |
| | 1 | 48,590 | 76 \ | Neighted A | verage | | | | | |
| | 1 | 16,909 | - | 78.68% Per | vious Area | | | | | |
| | | 31,681 | 2 | 21.32% lmp | pervious Are | ea | | | | |
| | | | | | | | | | | |
| | Тс | Length | Slope | • | Capacity | Description | | | | |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | | | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet | | | | |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" | | | | |
| | 8.7 | 320 | 0.0150 | 0.61 | | Shallow Concentrated Flow, shallow - woods | | | | |
| _ | | | | | | Woodland Kv= 5.0 fps | | | | |
| | 37.0 | 370 | Total | | | | | | | |

Summary for Subcatchment E3: Exist. To Street

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| A | rea (sf) | CN | Description | | | |
|-------------|------------------|------------------|-------------------------------|-------------------|---------------|--|
| | 473 | 98 | Paved parking, HSG C | | | |
| | 798 | 74 | >75% Grass cover, Good, HSG C | | | |
| | 1,271 | 83 | 83 Weighted Average | | | |
| | 798 | (| 62.79% Pervious Area | | | |
| | 473 | ; | 37.21% lmp | pervious Ar | rea | |
| Tc (min) | Length (feet) | Slope (ft/ft) | , | Capacity (cfs) | Description | |
| 5.0 | | | | | Direct Entry, | |

Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 2.37 cfs @ 12.59 hrs, Volume= 0.355 af, Depth= 4.37"

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| | Α | rea (sf) | CN E | escription | | |
|---|-------|----------|----------------------------------|----------------------|--------------|--|
| * | | 907 | 98 Water Surface Wetlands, HSG C | | | ds, HSG C |
| | | 5,644 | 98 F | aved park | ing, HSG C | |
| | | 12,783 | 74 > | 75% Gras | s cover, Go | ood, HSG C |
| * | | 520 | | <i>r</i> alls othe r | • | |
| | | 21,313 | | , | od, HSG C | |
| | | 1,286 | 98 F | Roofs, HSC | G C | |
| | | 42,453 | 77 V | Veighted A | verage | |
| | | 34,096 | 8 | 0.31% Per | vious Area | |
| | | 8,357 | 1 | 9.69% Imp | pervious Are | ea |
| | | | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 28.3 | 50 | 0.0100 | 0.03 | | Sheet Flow, Sheet |
| | | | | | | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| | 14.3 | 430 | 0.0100 | 0.50 | | Shallow Concentrated Flow, shallow - woods |
| _ | | | | | | Woodland Kv= 5.0 fps |
| | 42.6 | 480 | Total | | | |

Summary for Reach 1E: Exist. to Stream (DCP1)

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 4.58" for 100 Year Event event

Inflow = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af

Outflow = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 1P: Prop. to Stream (DCP1)

Inflow Area = 5.423 ac, 43.89% Impervious, Inflow Depth = 4.55" for 100 Year Event event

Inflow = 13.32 cfs @ 12.47 hrs, Volume= 2.055 af

Outflow = 13.32 cfs @ 12.47 hrs, Volume= 2.055 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2E: Exist East Wetland (DCP2)

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 4.26" for 100 Year Event event

Inflow = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af

Outflow = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 4.31" for 100 Year Event event

Inflow = 8.45 cfs @ 12.46 hrs, Volume= 1.190 af

Outflow = 8.45 cfs @ 12.46 hrs, Volume= 1.190 af, Atten= 0%, Lag= 0.0 min

Type III 24-hr 100 Year Event Rainfall=7.00"

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Routing by Dvn-Stor-Ind method. Time Span= 0.00-35.00 hrs. dt= 0.01 hrs

Summary for Reach 3E: Exist To Street (DCP3)

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 5.03" for 100 Year Event event

0.17 cfs @ 12.07 hrs, Volume= Inflow 0.012 af

Outflow 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 3P: Prop. To Street (DCP3)

0.014 ac, 83.11% Impervious, Inflow Depth = 6.29" for 100 Year Event event Inflow Area =

Inflow 0.09 cfs @ 12.07 hrs, Volume= 0.007 af

Outflow 0.09 cfs @ 12.07 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4E: Exist North Wetland (DCP4)

0.975 ac, 19.69% Impervious, Inflow Depth = 4.37" for 100 Year Event event Inflow Area =

Inflow 2.37 cfs @ 12.59 hrs, Volume= 0.355 af

0.355 af, Atten= 0%, Lag= 0.0 min Outflow = 2.37 cfs @ 12.59 hrs, Volume=

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 4.26" for 100 Year Event event

Inflow 2.05 cfs @ 12.47 hrs, Volume= 0.270 af

Outflow 2.05 cfs @ 12.47 hrs, Volume= 0.270 af. Atten= 0%. Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 7P: MH

0.678 ac, 55.55% Impervious, Inflow Depth = 5.49" for 100 Year Event event Inflow Area =

= Inflow 4.35 cfs @ 12.07 hrs, Volume= 0.310 af

4.35 cfs @ 12.07 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min Outflow =

Primary 4.35 cfs @ 12.07 hrs, Volume= 0.310 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.93' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 87.45' | 15.0" Round Culvert L= 60.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 87.45' / 86.85' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Type III 24-hr 100 Year Event Rainfall=7.00"

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Primary OutFlow Max=3.91 cfs @ 12.07 hrs HW=89.81' TW=89.37' (Dynamic Tailwater) 1=Culvert (Inlet Controls 3.91 cfs @ 3.18 fps)

Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 5.59" for 100 Year Event event

Inflow = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af

Outflow = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min

Primary = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.30' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 |
| | - | | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.84 cfs @ 12.07 hrs HW=90.05' TW=89.81' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.84 cfs @ 2.35 fps)

Summary for Pond 10P: MH

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 5.45" for 100 Year Event event

Inflow = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af

Outflow = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min

Primary = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.42' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 86.85' | 18.0" Round Culvert L= 120.0' Ke= 0.500 Inlet / Outlet Invert= 86.85' / 85.00' S= 0.0154 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

Primary OutFlow Max=10.31 cfs @ 12.07 hrs HW=89.37' TW=87.75' (Dynamic Tailwater) 1=Culvert (Outlet Controls 10.31 cfs @ 5.83 fps)

Summary for Pond 12P: MH

| Inflow Area = | 0.975 ac, 50.96% Impervious, | Inflow Depth = 5.42" | for 100 Year Event event |
|---------------|-------------------------------|----------------------|--------------------------|
| Inflow = | 6.20 cfs @ 12.07 hrs, Volume= | 0.440 af | |

Outflow = 6.20 cfs @ 12.07 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min

Primary = 6.20 cfs @ 12.07 hrs, Volume= 0.440 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 91.52' @ 12.08 hrs

Type III 24-hr 100 Year Event Rainfall=7.00"

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| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 88.65' | 15.0" Round Culvert L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=6.04 cfs @ 12.07 hrs HW=91.45' TW=89.38' (Dynamic Tailwater) 1=Culvert (Outlet Controls 6.04 cfs @ 4.92 fps)

Summary for Pond 13P: CB6

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 5.48" for 100 Year Event event

Inflow = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af

Outflow = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min

Primary = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 92.11' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---------|--------|--|
| #1 Primary 89.20' 12.0" Round Culvert L= 62.0' Ke= 0.500 | | | |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=2.40 cfs @ 12.07 hrs HW=91.87' TW=91.45' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.40 cfs @ 3.06 fps)

Summary for Pond MH1: MH

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 5.71" for 100 Year Event event

Inflow = 2.61 cfs @ 12.07 hrs, Volume= 0.188 af

Outflow = 2.61 cfs @ 12.07 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Primary = 2.61 cfs @ 12.07 hrs, Volume= 0.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.09' @ 12.30 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.00' | 15.0" Round Culvert L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 87.00' / 86.50' S= 0.0091 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=2.43 cfs @ 12.07 hrs HW=87.99' TW=87.62' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.43 cfs @ 3.21 fps)

Type III 24-hr 100 Year Event Rainfall=7.00"

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Summary for Pond MH2: CB 3

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 5.37" for 100 Year Event event

Inflow = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af

Outflow = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.16' @ 12.10 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|---|
| #1 | Primary | 87.67' | 12.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.11 cfs @ 12.07 hrs HW=89.90' TW=89.81' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.11 cfs @ 1.42 fps)

Summary for Pond MH3: CB5

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 5.37" for 100 Year Event event

Inflow = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af

Outflow = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min

Primary = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 92.27' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices | | |
|--------|---------|--------|--|--|--|
| #1 | Primary | 89.20' | 12.0" Round Culvert L= 65.0' Ke= 0.500 | | |
| | | | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 | | |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf | | |

Primary OutFlow Max=2.82 cfs @ 12.07 hrs HW=92.04' TW=91.45' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.82 cfs @ 3.60 fps)

Summary for Pond P1: POND 1

| Inflow Area | a = | 0.396 ac, 61.13% Impervious | , Inflow Depth = 5.71" | for 100 Year Event event |
|-------------|-----|-----------------------------|------------------------|--------------------------|
| Inflow | = | 2.61 cfs @ 12.07 hrs, Volum | e= 0.188 af | |

Outflow = 0.89 cfs @ 12.33 hrs, Volume= 0.188 af, Atten= 66%, Lag= 15.7 min

Discarded = 0.22 cfs @ 11.62 hrs, Volume= 0.145 af Primary = 0.67 cfs @ 12.33 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.05' @ 12.33 hrs Surf.Area= 1,632 sf Storage= 2,040 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 29.9 min (812.1 - 782.3)

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| Volume | Invert | Ava | vail.Storage Storage Description | | | | |
|---------------------|---------|---------------------|----------------------------------|---|----------------------------|---------------------|--|
| #1 | 86.50' | | 5,732 cf | Custom Stage Da | ta (Irregular) List | ed below (Recalc) | |
| Elevatio | | urf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | |
| 86.5 | 0 | 1,160 | 190.0 | 0 | 0 | 1,160 | |
| 87.0 | 0 | 1,160 | 190.0 | 580 | 580 | 1,255 | |
| 88.0 | 0 | 1,620 | 138.0 | 1,384 | 1,964 | 2,622 | |
| 89.0 | 0 | 1,882 | 248.0 | 1,749 | 3,713 | 6,007 | |
| 90.0 | 0 | 2,160 | 260.0 | 2,019 | 5,732 | 6,554 | |
| Device | Routing | In | vert Outle | et Devices | | | |
| #1 | Primary | 87 | '.30' 6.0" | Vert. Orifice/Grate | C= 0.600 | | |
| #2 Discarded 86.50' | | | 5.50' 0.22 | 0.22 cfs Exfiltration when above 86.50' | | | |

Discarded OutFlow Max=0.22 cfs @ 11.62 hrs HW=86.54' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.67 cfs @ 12.33 hrs HW=88.05' TW=86.91' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.67 cfs @ 3.40 fps)

Summary for Pond P2: POND 2

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 5.32" for 100 Year Event event 12.54 cfs @ 12.07 hrs, Volume= 0.888 af Outflow = 3.15 cfs @ 12.44 hrs, Volume= 0.888 af, Atten= 75%, Lag= 22.1 min 0.32 cfs @ 9.97 hrs, Volume= 0.422 af Primary = 2.83 cfs @ 12.44 hrs, Volume= 0.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.55' @ 12.44 hrs Surf.Area= 6,043 sf Storage= 13,306 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 75.6 min (868.2 - 792.6)

| Volume | /olume Invert Avail.Storage Storage Description | | | | | |
|--------------------------------------|---|-----------|---------------------------|---------------------------|---------------------|--|
| #1 | 85.00' | 16,163 cf | Custom Stage D | ata (Irregular) List | ted below (Recalc) | |
| Elevation (feet) | Surf.Area (sq-ft) | | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) | |
| 85.00 | 1,685 | 280.0 | 0 | 0 | 1,685 | |
| 86.00 | 2,544 | 300.0 | 2,100 | 2,100 | 2,653 | |
| 86.50 | 2,980 | 310.0 | 1,380 | 3,479 | 3,161 | |
| 86.60 | 3,685 | 372.0 | 333 | 3,812 | 6,526 | |
| 87.00 | 4,211 | 380.0 | 1,578 | 5,390 | 7,028 | |
| 88.00 | 5,383 | 400.0 | 4,785 | 10,175 | 8,329 | |
| 89.00 | 6,615 | 421.0 | 5,988 | 16,163 | 9,762 | |
| Device Routing Invert Outlet Devices | | | | | | |

#1 Primary 86.40' **9.0" Vert. Orifice/Grate** C= 0.600 #2 Discarded 85.00' **0.32 cfs Exfiltration when above 85.00'**

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Discarded OutFlow Max=0.32 cfs @ 9.97 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=2.83 cfs @ 12.44 hrs HW=88.55' TW=85.96' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 2.83 cfs @ 6.41 fps)

Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.396 ac, 61.13% Impervious, Inflow Depth = 1.32" for 100 Year Event event

Inflow = 0.67 cfs @ 12.33 hrs, Volume= 0.043 af

Outflow = 0.67 cfs @ 12.33 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Primary = 0.67 cfs @ 12.33 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.91' @ 12.33 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|--------|--|
| #1 | Primary | 86.50' | 12.0" Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500 |
| | | | Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 |
| | | | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.67 cfs @ 12.33 hrs HW=86.91' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.67 cfs @ 2.19 fps)

Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 2.003 ac, 45.40% Impervious, Inflow Depth = 2.79" for 100 Year Event event

Inflow = 2.83 cfs @ 12.44 hrs, Volume= 0.466 af

Outflow = 2.83 cfs @ 12.44 hrs, Volume= 0.466 af, Atten= 0%, Lag= 0.0 min

Primary = 2.83 cfs @ 12.44 hrs, Volume= 0.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.96' @ 12.44 hrs

| vert L= 35.0' Ke= 0.500 |
|---|
| = 84.90' / 84.20' S= 0.0200 '/' Cc= 0.900 e pipe, straight & clean, Flow Area= 0.79 sf |
| |

Primary OutFlow Max=2.83 cfs @ 12.44 hrs HW=85.96' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.83 cfs @ 3.61 fps)

Summary for Link 1L: 6 -1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 5.38" for 100 Year Event event

Inflow = 0.24 cfs @ 12.10 hrs, Volume= 0.016 af

Primary = 1.42 cfs @ 12.10 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 100 Year Event Rainfall=7.00"

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100 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 4.99" for 100 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.011 af

Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Summary for Link 3L: 8 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 5.38" for 100 Year Event event

Inflow = 0.24 cfs @ 12.10 hrs, Volume= 0.016 af

Primary = 1.89 cfs @ 12.10 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 8.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 4.99" for 100 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.011 af

Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house winf. 1200~Reach 2R.hce

Summary for Link 5L: 2 - 1550 Houses

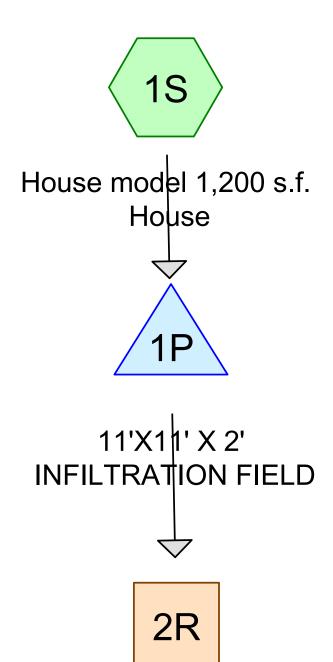
Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 5.38" for 100 Year Event event

Inflow = 0.24 cfs @ 12.10 hrs, Volume= 0.016 af

Primary = 0.47 cfs @ 12.10 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce



1R









Type III 24-hr 2 Year Event Rainfall=3.20"
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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.09 cfs 297 cf

Reach 2R: 1R Inflow=0.08 cfs 134 cf

Outflow=0.08 cfs 134 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.70' Storage=99 cf Inflow=0.09 cfs 297 cf Discarded=0.00 cfs 118 cf Primary=0.08 cfs 134 cf Outflow=0.08 cfs 252 cf

Total Runoff Area = 1,200 sf Runoff Volume = 297 cf Average Runoff Depth = 2.97" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf Prepared by Cavanaro Consulting

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Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff 0.09 cfs @ 12.07 hrs, Volume= 297 cf. Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN I | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,200 | 98 | | | |
| | | 1,200 | | 100.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

1,200 sf,100.00% Impervious, Inflow Depth = 1.34" for 2 Year Event event Inflow Area = Inflow 0.08 cfs @ 12.09 hrs, Volume= 134 cf

0.08 cfs @ 12.09 hrs, Volume= 134 cf, Atten= 0%, Lag= 0.0 min Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

1,200 sf,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event Inflow Area = Inflow 0.09 cfs @ 12.07 hrs, Volume= 297 cf 0.08 cfs @ 12.09 hrs, Volume= 252 cf, Atten= 4%, Lag= 1.4 min Outflow 0.00 cfs @ 12.09 hrs, Volume= Discarded = 118 cf 0.08 cfs @ 12.09 hrs, Volume= Primary 134 cf

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.70' @ 12.09 hrs Surf.Area= 121 sf Storage= 99 cf

Plug-Flow detention time= 281.2 min calculated for 252 cf (85% of inflow) Center-of-Mass det. time= 216.3 min (971.8 - 755.5)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.70' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.08 cfs @ 12.09 hrs HW=99.70' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.52 fps)

Type III 24-hr 10 Year Event Rainfall=4.60"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=0.13 cfs 436 cf

Reach 2R: 1RInflow=0.12 cfs 265 cf

Outflow=0.12 cfs 265 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.76' Storage=102 cf Inflow=0.13 cfs 436 cf Discarded=0.00 cfs 124 cf Primary=0.12 cfs 265 cf Outflow=0.12 cfs 389 cf

Total Runoff Area = 1,200 sf Runoff Volume = 436 cf Average Runoff Depth = 4.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf Prepared by Cavanaro Consulting

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Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 436 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| | Α | rea (sf) | CN [| Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,200 | 98 | | | |
| | | 1,200 | , | 100.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 2.65" for 10 Year Event event

Inflow = 0.12 cfs @ 12.09 hrs, Volume= 265 cf

Outflow = 0.12 cfs @ 12.09 hrs, Volume= 265 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious, | Inflow Depth = 4.36" for 10 Year Event event |
|---------------|-------------------------------|--|
| Inflow = | 0.13 cfs @ 12.07 hrs, Volume= | 436 cf |
| Outflow = | 0.12 cfs @ 12.09 hrs, Volume= | 389 cf, Atten= 3%, Lag= 1.1 min |
| Discarded = | 0.00 cfs @ 12.09 hrs, Volume= | 124 cf |
| Primary = | 0.12 cfs @ 12.09 hrs, Volume= | 265 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.76' @ 12.09 hrs Surf.Area= 121 sf Storage= 102 cf

Plug-Flow detention time= 205.6 min calculated for 389 cf (89% of inflow) Center-of-Mass det. time= 152.9 min (901.4 - 748.5)

| <u>Volume</u> | Invert | Avail.Storage | Storage Description |
|---------------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |
| | | | |

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.76' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.12 cfs @ 12.09 hrs HW=99.76' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.72 fps)

Type III 24-hr 25 Year Event Rainfall=5.60" Printed 12/21/2021

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=5.36" Tc=5.0 min CN=98 Runoff=0.16 cfs 536 cf

Reach 2R: 1R Inflow=0.15 cfs 362 cf
Outflow=0.15 cfs 362 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.79' Storage=104 cf Inflow=0.16 cfs 536 cf Discarded=0.00 cfs 126 cf Primary=0.15 cfs 362 cf Outflow=0.15 cfs 489 cf

Total Runoff Area = 1,200 sf Runoff Volume = 536 cf Average Runoff Depth = 5.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf Prepared by Cavanaro Consulting

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Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 536 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.60"

| _ | Α | rea (sf) | CN E | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,200 | 98 | | | |
| | | 1,200 | 1 | 00.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 3.62" for 25 Year Event event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 362 cf

Outflow = 0.15 cfs @ 12.09 hrs, Volume= 362 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious, | Inflow Depth = 5.36" for 25 Year Event event |
|---------------|-------------------------------|--|
| Inflow = | 0.16 cfs @ 12.07 hrs, Volume= | 536 cf |
| Outflow = | 0.15 cfs @ 12.09 hrs, Volume= | 489 cf, Atten= 3%, Lag= 1.1 min |
| Discarded = | 0.00 cfs @ 12.09 hrs, Volume= | 126 cf |
| Primary = | 0.15 cfs @ 12.09 hrs, Volume= | 362 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.79' @ 12.09 hrs Surf.Area= 121 sf Storage= 104 cf

Plug-Flow detention time= 176.5 min calculated for 489 cf (91% of inflow) Center-of-Mass det. time= 130.6 min (875.9 - 745.3)

| <u>Volume</u> | Invert | Avail.Storage | Storage Description |
|---------------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 444.5 | Tatal Assallable Otensons |

114 cf Total Available Storage

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 25 Year Event Rainfall=5.60"

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.79' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=99.79' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.85 fps)

Type III 24-hr 100 Year Event Rainfall=7.00"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=6.76" Tc=5.0 min CN=98 Runoff=0.20 cfs 676 cf

Reach 2R: 1R Inflow=0.19 cfs 499 cf Outflow=0.19 cfs 499 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.86' Storage=107 cf Inflow=0.20 cfs 676 cf Discarded=0.00 cfs 129 cf Primary=0.19 cfs 499 cf Outflow=0.19 cfs 628 cf

Total Runoff Area = 1,200 sf Runoff Volume = 676 cf Average Runoff Depth = 6.76" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf Prepared by Cavanaro Consulting

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Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 676 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| _ | Α | rea (sf) | CN E | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,200 | 98 | | | |
| | | 1,200 | 1 | 00.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 4.99" for 100 Year Event event Inflow = 0.19 cfs @ 12.09 hrs, Volume= 499 cf

Outflow = 0.19 cfs @ 12.09 hrs, Volume= 499 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious, | Inflow Depth = 6.76" for 100 Year Event event |
|---------------|-------------------------------|---|
| Inflow = | 0.20 cfs @ 12.07 hrs, Volume= | 676 cf |
| Outflow = | 0.19 cfs @ 12.09 hrs, Volume= | 628 cf, Atten= 4%, Lag= 1.4 min |
| Discarded = | 0.00 cfs @ 12.09 hrs, Volume= | 129 cf |
| Primary = | 0.19 cfs @ 12.09 hrs, Volume= | 499 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.86' @ 12.09 hrs Surf.Area= 121 sf Storage= 107 cf

Plug-Flow detention time= 148.8 min calculated for 628 cf (93% of inflow) Center-of-Mass det. time= 110.1 min (852.1 - 742.0)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |
| | | | - |

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 100 Year Event Rainfall=7.00"

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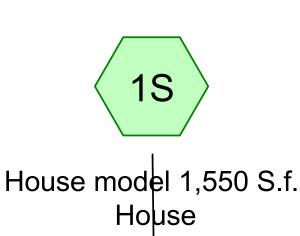
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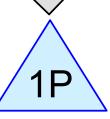
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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.86' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.19 cfs @ 12.09 hrs HW=99.86' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 2.13 fps)









1R









Type III 24-hr 2 Year Event Rainfall=3.20"
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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.11 cfs 383 cf

Reach 2R: 1R Inflow=0.11 cfs 216 cf
Outflow=0.11 cfs 216 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.74' Storage=101 cf Inflow=0.11 cfs 383 cf

Discarded=0.00 cfs 121 cf Primary=0.11 cfs 216 cf Outflow=0.11 cfs 336 cf

Total Runoff Area = 1,550 sf Runoff Volume = 383 cf Average Runoff Depth = 2.97" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff 0.11 cfs @ 12.07 hrs, Volume= 383 cf. Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| | Α | rea (sf) | CN [| Description | | | | |
|---|-------|----------|---------|-------------------------|----------|---------------|--|--|
| * | | 1,550 | 98 | | | | | |
| | | 1,550 | 1 | 100.00% Impervious Area | | | | |
| | Тс | Length | Slope | Velocity | Capacity | Description | | |
| | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | | | |
| | 5.0 | | | | | Direct Entry, | | |

Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 1.67" for 2 Year Event event

Inflow 0.11 cfs @ 12.09 hrs, Volume= 216 cf

0.11 cfs @ 12.09 hrs, Volume= 216 cf, Atten= 0%, Lag= 0.0 min Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

1.550 sf.100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event Inflow Area = Inflow 0.11 cfs @ 12.07 hrs, Volume= 383 cf 0.11 cfs @ 12.09 hrs, Volume= 336 cf, Atten= 3%, Lag= 1.1 min Outflow 0.00 cfs @ 12.09 hrs, Volume= Discarded = 121 cf 0.11 cfs @ 12.09 hrs, Volume= Primary 216 cf

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.74' @ 12.09 hrs Surf.Area= 121 sf Storage= 101 cf

Plug-Flow detention time= 225.3 min calculated for 336 cf (88% of inflow) Center-of-Mass det. time= 168.8 min (924.2 - 755.5)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |

| 114 cf | Total | Available | Storage |
|---------------------|--------|-----------|---------|
| 1 1 1 01 | I Olai | | Otoraut |

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 2 Year Event Rainfall=3.20"

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DeviceRoutingInvertOutlet Devices#1Discarded98.00'0.270 in/hr Exfiltration over Wetted area#2Primary99.50'4.0" Vert. Orifice/GrateC= 0.600

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.74' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=99.74' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.66 fps)

Type III 24-hr 10 Year Event Rainfall=4.60"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=0.17 cfs 564 cf

Reach 2R: 1R Inflow=0.16 cfs 390 cf
Outflow=0.16 cfs 390 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.81' Storage=104 cf Inflow=0.17 cfs 564 cf Discarded=0.00 cfs 126 cf Primary=0.16 cfs 390 cf Outflow=0.16 cfs 516 cf

Total Runoff Area = 1,550 sf Runoff Volume = 564 cf Average Runoff Depth = 4.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 564 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| _ | Α | rea (sf) | CN E | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,550 | 98 | | | |
| | | 1,550 | 1 | 00.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 3.02" for 10 Year Event event Inflow = 0.16 cfs @ 12.09 hrs, Volume= 390 cf

Outflow = 0.16 cfs @ 12.09 hrs, Volume= 390 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious, | Inflow Depth = 4.36" for 10 Year Event event |
|---------------|-------------------------------|--|
| Inflow = | 0.17 cfs @ 12.07 hrs, Volume= | 564 cf |
| Outflow = | 0.16 cfs @ 12.09 hrs, Volume= | 516 cf, Atten= 3%, Lag= 1.2 min |
| Discarded = | 0.00 cfs @ 12.09 hrs, Volume= | 126 cf |
| Primary = | 0.16 cfs @ 12.09 hrs, Volume= | 390 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.81' @ 12.09 hrs Surf.Area= 121 sf Storage= 104 cf

Plug-Flow detention time= 168.2 min calculated for 516 cf (92% of inflow) Center-of-Mass det. time= 124.3 min (872.8 - 748.5)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.81' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=99.81' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 1.89 fps)

Type III 24-hr 25 Year Event Rainfall=5.60" Printed 12/21/2021

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=5.36" Tc=5.0 min CN=98 Runoff=0.20 cfs 693 cf

Reach 2R: 1R Inflow=0.19 cfs 516 cf
Outflow=0.19 cfs 516 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.87' Storage=107 cf Inflow=0.20 cfs 693 cf Discarded=0.00 cfs 128 cf Primary=0.19 cfs 516 cf Outflow=0.19 cfs 645 cf

Total Runoff Area = 1,550 sf Runoff Volume = 693 cf Average Runoff Depth = 5.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 693 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.60"

| _ | Α | rea (sf) | CN E | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,550 | 98 | | | |
| | | 1,550 | 1 | 00.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 4.00" for 25 Year Event event

Inflow = 0.19 cfs @ 12.09 hrs, Volume= 516 cf

Outflow = 0.19 cfs @ 12.09 hrs, Volume= 516 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious, | Inflow Depth = 5.36" for 25 Year Event event |
|---------------|-------------------------------|--|
| Inflow = | 0.20 cfs @ 12.07 hrs, Volume= | 693 cf |
| Outflow = | 0.19 cfs @ 12.09 hrs, Volume= | 645 cf, Atten= 5%, Lag= 1.4 min |
| Discarded = | 0.00 cfs @ 12.09 hrs, Volume= | 128 cf |
| Primary = | 0.19 cfs @ 12.09 hrs, Volume= | 516 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.87' @ 12.09 hrs Surf.Area= 121 sf Storage= 107 cf

Plug-Flow detention time= 144.5 min calculated for 645 cf (93% of inflow) Center-of-Mass det. time= 106.7 min (852.0 - 745.3)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 444.5 | Tatal Assillable Otomore |

114 cf Total Available Storage

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 25 Year Event Rainfall=5.60"

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=99.87' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.19 cfs @ 12.09 hrs HW=99.87' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 2.19 fps)

Type III 24-hr 100 Year Event Rainfall=7.00"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=6.76" Tc=5.0 min CN=98 Runoff=0.25 cfs 873 cf

Reach 2R: 1RInflow=0.24 cfs 694 cf

Outflow=0.24 cfs 694 cf

Pond 1P: 11'X11' X 2' INFILTRATION FIELD Peak Elev=99.98' Storage=113 cf Inflow=0.25 cfs 873 cf Discarded=0.00 cfs 131 cf Primary=0.24 cfs 694 cf Outflow=0.24 cfs 825 cf

Total Runoff Area = 1,550 sf Runoff Volume = 873 cf Average Runoff Depth = 6.76" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 873 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| _ | Α | rea (sf) | CN E | Description | | |
|---|-------|----------|---------|-------------|-------------|---------------|
| * | | 1,550 | 98 | | | |
| | | 1,550 | 1 | 00.00% Im | npervious A | Area |
| | Тс | Length | Slope | Velocity | Capacity | Description |
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| | 5.0 | | | | | Direct Entry, |

Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 5.38" for 100 Year Event event Inflow = 0.24 cfs @ 12.10 hrs, Volume= 694 cf

Outflow = 0.24 cfs @ 12.10 hrs, Volume= 694 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious, | Inflow Depth = 6.76" for 100 Year Event event |
|---------------|-------------------------------|---|
| Inflow = | 0.25 cfs @ 12.07 hrs, Volume= | 873 cf |
| Outflow = | 0.24 cfs @ 12.10 hrs, Volume= | 825 cf, Atten= 6%, Lag= 1.7 min |
| Discarded = | 0.00 cfs @ 12.10 hrs, Volume= | 131 cf |
| Primary = | 0.24 cfs @ 12.10 hrs, Volume= | 694 cf |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.98' @ 12.10 hrs Surf.Area= 121 sf Storage= 113 cf

Plug-Flow detention time= 121.9 min calculated for 825 cf (95% of inflow) Center-of-Mass det. time= 90.1 min (832.1 - 742.0)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|---|
| #1 | 98.00' | 86 cf | Custom Stage Data (Irregular) Listed below |
| | | | 242 cf Overall - 28 cf Embedded = 214 cf x 40.0% Voids |
| #2 | 98.50' | 28 cf | Cultec C-100 x 2 Inside #1 |
| | | | Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf |
| | | | Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap |
| | | 114 cf | Total Available Storage |
| | | | |

| Elevation | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft) |
| 98.00 | 121 | 44.0 | 0 | 0 | 121 |
| 100.00 | 121 | 44.0 | 242 | 242 | 209 |

Type III 24-hr 100 Year Event Rainfall=7.00"

Prepared by Cavanaro Consulting

Printed 12/21/2021

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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2 | Primary | 99.50' | 4.0" Vert. Orifice/Grate C= 0.600 |

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=99.98' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.24 cfs @ 12.10 hrs HW=99.98' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.24 cfs @ 2.71 fps)

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

| | | use consistent units (e.g. feet & days or inches & hours) | Conver | sion Table | |
|--------------|-------|---|---------|------------|--|
| Input Values | | | inch/ho | our feet/ | day |
| 16.4000 | R | Recharge (infiltration) rate (feet/day) | | 0.67 | 1.33 |
| 0.280 | Sy | Specific yield, Sy (dimensionless, between 0 and 1) | | | |
| 300.00 | K | Horizontal hydraulic conductivity, Kh (feet/day)* | | 2.00 | 4.00 In the report accompanying this spreadsheet |
| 38.000 | x | 1/2 length of basin (x direction, in feet) | | | (USGS SIR 2010-5102), vertical soil permeability |
| 8.000 | у | 1/2 width of basin (y direction, in feet) | hours | days | |
| 0.800 | t | duration of infiltration period (days) | | 36 | 1.50 hydraulic conductivity (ft/d). |
| 25.400 | hi(0) | initial thickness of saturated zone (feet) | | | |

maximum thickness of saturated zone (beneath center of basin at end of infiltration period)

maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground- Distance from water center of basin Mounding, in in x direction, in

h(max)

Δh(max)

120

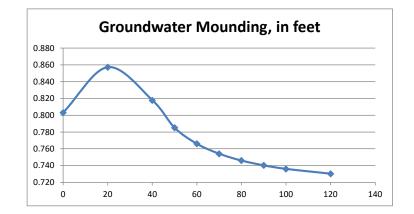
26,203

0.803

feet feet

0.803 0
0.857 20
0.818 40
0.785 50
0.766 60
0.754 70
0.746 80
0.740 90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

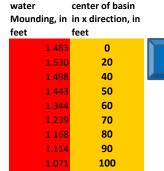
This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

| | | | use consistent units (e.g. feet & days or inches & hours) | Conve | rsion 1 | Гable | |
|-------------|--------------------|-----|---|--------|---------|----------|--|
| Input Value | S | | | inch/h | our | feet/day | 1 |
| 16.40 | 00 F | P | Recharge (infiltration) rate (feet/day) | | 0.67 | , | 1.33 |
| 0.20 | 5 <mark>0</mark> S | y | Specific yield, Sy (dimensionless, between 0 and 1) | | | | |
| 150. | <mark>00</mark> I | K | Horizontal hydraulic conductivity, Kh (feet/day)* | | 2.00 |) | 4.00 In the report accompanying this spreadsheet |
| 60.0 | <mark>00</mark> | X | 1/2 length of basin (x direction, in feet) | | | | (USGS SIR 2010-5102), vertical soil permeability |
| 6.0 | <mark>00</mark> | У | 1/2 width of basin (y direction, in feet) | hours | | days | (ft/d) is assumed to be one-tenth horizontal |
| 0.8 | <mark>00</mark> 1 | t | duration of infiltration period (days) | | 36 | ; | 1.50 hydraulic conductivity (ft/d). |
| 23.4 | <mark>00</mark> hi | (0) | initial thickness of saturated zone (feet) | | | | |

maximum thickness of saturated zone (beneath center of basin at end of infiltration period) maximum groundwater mounding (beneath center of basin at end of infiltration period)



h(max)

Δh(max)

120

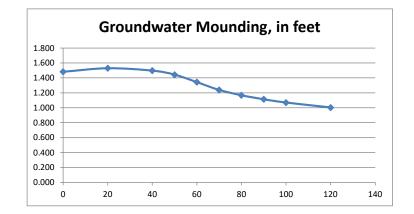
Distance from

24.883

1.483

Ground-

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Hydrograph for Pond P1: POND 1

| Time | Inflow | Storage | Elevation | Outflow | Discarded | Primary |
|---------|--------|--------------|-----------|---------|-----------|---------|
| (hours) | (cfs) | (cubic-feet) | (feet) | (cfs) | (cfs) | (cfs) |
| 0.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.01 | 0 | 86.50 | 0.01 | 0.01 | 0.00 |
| 6.00 | 0.01 | 0 | 86.50 | 0.01 | 0.01 | 0.00 |
| 7.00 | 0.02 | 0 | 86.50 | 0.02 | 0.02 | 0.00 |
| 8.00 | 0.04 | 0 | 86.50 | 0.04 | 0.04 | 0.00 |
| 9.00 | 0.06 | 0 | 86.50 | 0.06 | 0.06 | 0.00 |
| 10.00 | 0.10 | 0 | 86.50 | 0.10 | 0.10 | 0.00 |
| 11.00 | 0.16 | 0 | 86.50 | 0.16 | 0.16 | 0.00 |
| 12.00 | 1.73 | 874 | 87.24 | 0.22 | 0.22 | 0.00 |
| 13.00 | 0.21 | 1,319 | 87.57 | 0.42 | 0.22 | 0.20 |
| 14.00 | 0.14 | 946 | 87.30 | 0.22 | 0.22 | 0.00 |
| 15.00 | 0.10 | 584 | 87.00 | 0.22 | 0.22 | 0.00 |
| 16.00 | 0.07 | 110 | 86.59 | 0.22 | 0.22 | 0.00 |
| 17.00 | 0.06 | 0 | 86.50 | 0.11 | 0.11 | 0.00 |
| 18.00 | 0.04 | 0 | 86.50 | 0.09 | 0.09 | 0.00 |
| 19.00 | 0.04 | 0 | 86.50 | 0.08 | 0.08 | 0.00 |
| 20.00 | 0.04 | 0 | 86.50 | 0.07 | 0.07 | 0.00 |
| 21.00 | 0.03 | 0 | 86.50 | 0.07 | 0.07 | 0.00 |
| 22.00 | 0.03 | 0 | 86.50 | 0.06 | 0.06 | 0.00 |
| 23.00 | 0.03 | 0 | 86.50 | 0.05 | 0.05 | 0.00 |
| 24.00 | 0.02 | 0 | 86.50 | 0.05 | 0.05 | 0.00 |
| 25.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0 | 86.50 | 0.00 | 0.00 | 0.00 |

Hydrograph for Pond P2: POND 2

| Time | Inflow | Storage | Elevation | Outflow | Discarded | Primary |
|---------|--------|--------------|-----------|---------|-----------|---------|
| (hours) | (cfs) | (cubic-feet) | (feet) | (cfs) | (cfs) | (cfs) |
| 0.00 | 0.00 | Ó | 85.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.02 | 0 | 85.00 | 0.02 | 0.02 | 0.00 |
| 6.00 | 0.04 | 0 | 85.00 | 0.04 | 0.04 | 0.00 |
| 7.00 | 0.08 | 0 | 85.00 | 0.08 | 0.08 | 0.00 |
| 8.00 | 0.13 | 0 | 85.00 | 0.13 | 0.13 | 0.00 |
| 9.00 | 0.24 | 0 | 85.00 | 0.24 | 0.24 | 0.00 |
| 10.00 | 0.40 | 79 | 85.05 | 0.32 | 0.32 | 0.00 |
| 11.00 | 0.70 | 880 | 85.47 | 0.32 | 0.32 | 0.00 |
| 12.00 | 8.23 | 6,646 | 87.29 | 1.84 | 0.32 | 1.52 |
| 13.00 | 1.06 | 10,503 | 88.06 | 2.73 | 0.32 | 2.41 |
| 14.00 | 0.68 | 5,792 | 87.09 | 1.53 | 0.32 | 1.21 |
| 15.00 | 0.52 | 4,315 | 86.73 | 0.69 | 0.32 | 0.37 |
| 16.00 | 0.36 | 3,843 | 86.61 | 0.48 | 0.32 | 0.16 |
| 17.00 | 0.29 | 3,512 | 86.51 | 0.37 | 0.32 | 0.05 |
| 18.00 | 0.22 | 3,212 | 86.41 | 0.32 | 0.32 | 0.00 |
| 19.00 | 0.20 | 2,806 | 86.27 | 0.32 | 0.32 | 0.00 |
| 20.00 | 0.18 | 2,326 | 86.09 | 0.32 | 0.32 | 0.00 |
| 21.00 | 0.16 | 1,782 | 85.87 | 0.32 | 0.32 | 0.00 |
| 22.00 | 0.15 | 1,182 | 85.61 | 0.32 | 0.32 | 0.00 |
| 23.00 | 0.13 | 528 | 85.29 | 0.32 | 0.32 | 0.00 |
| 24.00 | 0.12 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | | 85.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0 | 85.00 | 0.00 | 0.00 | 0.00 |

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

- 1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
- 2. Select BMP from Drop Down Menu
- 3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: CONCORD MEADOWS

| | В | C TSS Removal | D Starting TSS | E Amount | F Remaining | | |
|-------------------------------|-------------------------------------|-------------------|-------------------|--|----------------|--|--|
| | BMP ¹ | Rate ¹ | Load* | Removed (C*D) | Load (D-E) | | |
| heet | Deep Sump and Hooded Catch Basin | 0.25 | 1.00 | 0.25 | 0.75 | | |
| Removal on Worksheet | Sediment Forebay | 0.25 | 0.75 | 0.19 | 0.56 | | |
| | | 0.00 | 0.56 | 0.00 | 0.56 | | |
| TSS Re | | 0.00 | 0.56 | 0.00 | 0.56 | | |
| Cal | | 0.00 | 0.56 | 0.00 | 0.56 | | |
| | | Total T | 44% | Separate Form Needs to be Completed for Each Outlet or BMP Train | | | |
| | r roject. | | | | | | |
| Prepared By: <mark>ссн</mark> | | | | *Equals remaining load from previous BMP (E) | | | |
| Date: 12/1/2021 | | | | which enters the BMP | | | |

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed 1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

- 1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
- 2. Select BMP from Drop Down Menu
- 3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: CONCORD MEADOWS В C D Ε F TSS Removal Starting TSS Remaining **Amount** BMP¹ Rate¹ Load* Removed (C*D) Load (D-E) **Calculation Worksheet Infiltration Basin** 0.80 1.00 0.80 0.20 **TSS Removal** 0.00 0.20 0.00 0.20 0.00 0.20 0.20 0.00 0.00 0.20 0.00 0.20 0.00 0.20 0.00 0.20 Separate Form Needs to be Completed for Each **Total TSS Removal = Outlet or BMP Train** 80% Project: 19103 Prepared By: ссн *Equals remaining load from previous BMP (E) Date: 12/1/2021 which enters the BMP

Stage-Area-Storage for Pond P1: POND 1

| | | J | J | | |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
| 86.50 | 1,160 | Ŏ | 89.10 | 1,909 | 3,903 |
| 86.55 | 1,160 | 58 | 89.15 | 1,922 | 3,998 |
| 86.60 | 1,160 | 116 | 89.20 | 1,936 | 4,095 |
| 86.65 | 1,160 | 174 | 89.25 | 1,950 | 4,192 |
| 86.70 | 1,160 | 232 | 89.30 | 1,963 | 4,290 |
| 86.75 | 1,160 | 290 | 89.35 | 1,977 | 4,388 |
| 86.80 | 1,160 | 348 | 89.40 | 1,991 | 4,487 |
| 86.85 | 1,160 | 406 | 89.45 | 2,005 | 4,587 |
| 86.90 | 1,160 | 464 | 89.50 | 2,019 | 4,688 |
| 86.95 | 1,160 | 522 | 89.55 | 2,033 | 4,789 |
| 87.00 | 1,160 | 580 | 89.60 | 2,047 | 4,891 |
| 87.05 | 1,181 | 639 | 89.65 | 2,061 | 4,994 |
| 87.10 | 1,203 | 698 | 89.70 | 2,075 | 5,097 |
| 87.15 | 1,224 | 759 | 89.75 | 2,089 | 5,201 |
| 87.20 | 1,246 | 821 | 89.80 | 2,103 | 5,306 |
| 87.25 | 1,268 | 883 | 89.85 | 2,117 | 5,412 |
| 87.30 | 1,290 | 947 | 89.90 | 2,131 | 5,518 |
| 87.35 | 1,312 | 1,012 | 89.95 | 2,146 | 5,625 |
| 87.40 | 1,335 | 1,079 | 90.00 | 2,160 | 5,732 |
| 87.45 | 1,358 | 1,146 | | | |
| 87.50 87.55 | 1,380 1,404 | 1,214 | | | |
| 87.55 87.60 | 1,404 1,427 | 1,284 1,355 | | | |
| 87.65 | 1,450 | 1,427 | | | |
| 87.70 | 1,474 | 1,500 | | | |
| 87.75 | 1,498 | 1,574 | | | |
| 87.80 | 1,522 | 1,649 | | | |
| 87.85 | 1,546 | 1,726 | | | |
| 87.90 | 1,571 | 1,804 | | | |
| 87.95 | 1,595 | 1,883 | | | |
| 88.00 | 1,620 | 1,964 | | | |
| 88.05 | 1,633 | 2,045 | | | |
| 88.10 | 1,645 | 2,127 | | | |
| 88.15 | 1,658 | 2,209 | | | |
| 88.20 | 1,671 | 2,293 | | | |
| 88.25 | 1,684 | 2,377 | | | |
| 88.30 | 1,697 | 2,461 | | | |
| 88.35 | 1,709 | 2,546 | | | |
| 88.40 | 1,722 | 2,632 | | | |
| 88.45 | 1,735 1,749 | 2,718 2,806 | | | |
| 88.50 88.55 | 1,762 | 2,893 | | | |
| 88.60 | 1,775 | 2,982 | | | |
| 88.65 | 1,788 | 3,071 | | | |
| 88.70 | 1,801 | 3,161 | | | |
| 88.75 | 1,815 | 3,251 | | | |
| 88.80 | 1,828 | 3,342 | | | |
| 88.85 | 1,841 | 3,434 | | | |
| 88.90 | 1,855 | 3,526 | | | |
| 88.95 | 1,868 | 3,619 | | | |
| 89.00 | 1,882 | 3,713 | | | |
| 89.05 | 1,895 | 3,807 | | | |

Stage-Area-Storage for Pond P2: POND 2

| Elevation | Surface | Storage | Elevation | Surface | Storage |
|----------------|----------------|----------------|----------------|----------------|------------------|
| (feet) | (sq-ft) | (cubic-feet) | (feet) | (sq-ft) | (cubic-feet) |
| 85.00 | 1,685 | 0 | 87.60 | 4,897 | 8,120 |
| 85.05 | 1,724 | 85 | 87.65 | 4,956 | 8,366 |
| 85.10 | 1,763 | 172 | 87.70 | 5,016 | 8,615 |
| 85.15 | 1,803 | 262 | 87.75 | 5,077 | 8,868 |
| 85.20 | 1,843 | 353 | 87.80 | 5,137 | 9,123 |
| 85.25 85.30 | 1,883 1,924 | 446 541 | 87.85 87.90 | 5,198 5,259 | 9,382 9,643 |
| 85.35 | 1,966 | 638 | 87.95 | 5,321 | 9,907 |
| 85.40 | 2,007 | 738 | 88.00 | 5,383 | 10,175 |
| 85.45 | 2,050 | 839 | 88.05 | 5,442 | 10,446 |
| 85.50 | 2,092 | 943 | 88.10 | 5,500 | 10,719 |
| 85.55 | 2,136 | 1,048 | 88.15 | 5,560 | 10,996 |
| 85.60 | 2,179 | 1,156 | 88.20 | 5,619 | 11,275 |
| 85.65 85.70 | 2,223 | 1,266 | 88.25 | 5,679 5,730 | 11,558 |
| 85.70 85.75 | 2,268 2,313 | 1,378 1,493 | 88.30 88.35 | 5,739 5,800 | 11,843 12,132 |
| 85.80 | 2,358 | 1,610 | 88.40 | 5,861 | 12,423 |
| 85.85 | 2,404 | 1,729 | 88.45 | 5,922 | 12,718 |
| 85.90 | 2,450 | 1,850 | 88.50 | 5,983 | 13,015 |
| 85.95 | 2,497 | 1,974 | 88.55 | 6,045 | 13,316 |
| 86.00 | 2,544 | 2,100 | 88.60 | 6,107 | 13,620 |
| 86.05 | 2,586 | 2,228 | 88.65 | 6,169 | 13,927 |
| 86.10 86.15 | 2,628 2,671 | 2,358 2,491 | 88.70 88.75 | 6,232 6,295 | 14,237 14,550 |
| 86.20 | 2,714 | 2,626 | 88.80 | 6,358 | 14,866 |
| 86.25 | 2,758 | 2,762 | 88.85 | 6,422 | 15,186 |
| 86.30 | 2,801 | 2,901 | 88.90 | 6,486 | 15,508 |
| 86.35 | 2,846 | 3,042 | 88.95 | 6,550 | 15,834 |
| 86.40 | 2,890 | 3,186 | 89.00 | 6,615 | 16,163 |
| 86.45 | 2,935 | 3,332 | | | |
| 86.50 | 2,980 | 3,479 | | | |
| 86.55 86.60 | 3,323 3,685 | 3,637 3,812 | | | |
| 86.65 | 3,749 | 3,998 | | | |
| 86.70 | 3,813 | 4,187 | | | |
| 86.75 | 3,878 | 4,379 | | | |
| 86.80 | 3,944 | 4,575 | | | |
| 86.85 | 4,010 | 4,774 | | | |
| 86.90 | 4,076 | 4,976 5 191 | | | |
| 86.95 87.00 | 4,143 4,211 | 5,181 5,390 | | | |
| 87.05 | 4,266 | 5,602 | | | |
| 87.10 | 4,322 | 5,817 | | | |
| 87.15 | 4,378 | 6,034 | | | |
| 87.20 | 4,434 | 6,254 | | | |
| 87.25 | 4,491 | 6,478 | | | |
| 87.30 87.35 | 4,548 4,605 | 6,703 | | | |
| 87.35 87.40 | 4,605 4,663 | 6,932 7,164 | | | |
| 87.45 | 4,721 | 7,104 | | | |
| 87.50 | 4,779 | 7,636 | | | |
| 87.55 | 4,838 | 7,876 | | | |
| | | | | | |

Stage-Area-Storage for Pond 1P: 11'X11' X 2' INFILTRATION FIELD

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) | | |
|---------------------|-------------------|-------------------------|---------------------|-------------------|-------------------------|--|---------------------|
| 98.00 | 121 | Ó | 99.04 | 167 | 62 | | |
| 98.02 | 122 | 1 | 99.06 | 168 | 63 | • | |
| 98.04 | 123 | | 99.08 | 169 | 65 | | |
| 98.06 | 124 | 2 3 | 99.10 | 169 | 66 66 | | |
| 98.08 | 125 | 4 | 99.12 | 170 | 67 | | |
| 98.10 | 125 | | 99.12 99.14 | | | | |
| 98.12 | 126 | 5 6 7 | | 171 | 69 70 | | |
| 98.14 | 120 | 7 | 99.16 | 172 | 70 | | |
| | 127 | / | 99.18 | 173 | 71 | | |
| 98.16 | 128 | 8 | 99.20 | 174 | 72 | | |
| 98.18 | 129 | 9 | 99.22 | 175 | 74 | | |
| 98.20 | 130 | 10 | 99.24 | 176 | 75 | - | |
| 98.22 | 131 | 11 | 99.26 | 176 | 76 | | |
| 98.24 | 132 | 12 | 99.28 | 177 | 77 | • | |
| 98.26 | 132 | 13 | 99.30 | 178 | 79 | | |
| 98.28 | 133 | 14 | 99.32 | 179 | 80 | | |
| 98.30 | 134 | 15 | 99.34 | 180 | 81 | | |
| 98.32 | 135 | 15 | 99.36 | 181 | 82 | | |
| 98.34 | 136 | 16 | 99.38 | 182 | 83 | | • |
| 98.36 | 137 | 17 | 99.40 | 183 | | • | |
| 98.38 | 138 | 18 | 99.42 | | 84 | | |
| | | | | 183 | 85 | | |
| 98.40 | 139 | 19 | 99.44 | 184 | 86 | | * |
| 98.42 | 139 | 20 | 99.46 | 185 | 87 | | |
| 98.44 | 140 | 21 | 99.48 | 186 | 88 | | |
| 98.46 | 141 | 22 | 99/50 | .1187 <u>7</u> , | 89 | | ALL THE PARTY NAMES |
| 98.48 | 142 | 23 | 99.52 | 188 | 90 | a consuminate de descriptor de la consumera de | Single-base and the |
| 98.50 | 143 | 24 | 99.54 | 189 | 91 | | |
| 98.52 | 144 | 26 | 99.56 | 190 | 92 | * | |
| 98.54 | 145 | 27 | 99.58 | 191 | 93 | | |
| 98.56 | 146 | 29 | 99.60 | 191 | 94 | | |
| 98.58 | 147 | 30 | 99.62 | 192 | 95 | | |
| 98.60 | 147 | 31 | 99.64 | 193 | 96 | | |
| 98.62 | 148 | 33 | 99.66 | 194 | 97 | | |
| 98.64 | 149 | 34 | 99.68 | 195 | | | |
| 98.66 | 150 | 36 | 99.70 | | 98 | | |
| | | 37 | | 196 | 99 | | |
| 98.68 | 151 | | 99.72 | 197 | 100 | | |
| 98.70 | 152 | 38 | 99.74 | 198 | 101 | | |
| 98.72 | 153 | 40 | 99.76 | 198 | 102 | | • |
| 98.74 | 154 | 41 | 99.78 | 199 | 103 | | |
| 98.76 | 154 | 43 | 99.80 | 200 | 104 | | |
| 98.78 | 155 | 44 | 99.82 | 201 | 105 | | |
| 98.80 | 156 | 45 | 99.84 | 202 | 106 | | |
| 98.82 | 157 | 47 | 99.86 | 203 | 107 | | |
| 98.84 | 158 | 48 | 99.88 | 204 | 108 | | |
| 98.86 | 159 | 50 | 99.90 | 205 | 109 | | |
| 98.88 | 160 | 51 | 99.92 | 205 | 110 | - | |
| 98.90 | 161 | 52 | 99.94 | | | | |
| | | | | 206 | 111 | | |
| 98.92 | 161 | 54 | 99.96 | 207 | 112 | | |
| 98.94 | 162 | 55 | 99.98 | 208 | 113 | | |
| 98.96 | 163 | 57 | 100.00 | 209 | 114 | | |
| 98.98 | 164 | 58 | | | | | |
| 99.00 | 165 | 59 | | | | | |
| 99.02 | 166 | 61 | | , | | | |
| | | | | | | | |

SECTION V

PROJECT PLANS See Attached