

Master Development Plan Stormwater Management Report

**South Weymouth Naval Air Station
Weymouth, Abington and Rockland**

March 2023

Submitted to:

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TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 Project Summary	1
2.0 METHOD OF CALCULATIONS	1
2.1 Precipitation Amounts.....	1
2.2 Soil Conditions.....	2
2.3 Time of Concentration	2
2.4 Runoff Curve Number.....	2
3.0 EXISTING CONDITIONS.....	3
3.1 Topography.....	3
3.2 Hydologic Information.....	3
3.2.1 TACAN Outfall Basin	3
3.2.2 French's Stream West Branch	4
3.2.3 French's Stream East Branch	4
3.2.4 Old Swamp River	4
4.0 PROPOSED CONDITIONS	4
5.0 MASSDEP STORMWATER STANDARDS	6
5.1 Standard No. 1 – Untreated Stormwater	6
5.2 Standard No. 2 – Post-development Peak Discharge Rates	6
5.3 Standard No. 3 - Recharge to Groundwater.....	7
5.4 Standard No. 4 - TSS Removal	8
5.5 Standard No. 5 - Higher Potential Pollutant Loads	9
5.6 Standard No. 6 - Protection of Critical Areas	9
5.7 Standard No. 7 - Redevelopment Projects.....	9
5.8 Standard No. 8 – Erosion and Sediment Control	10
5.9 Standard No. 9 – Operation and Maintenance Plan	10
5.10 Standard No. 10 - Illicit Discharge.....	10
6.0 CONCLUSION	10

LIST OF TABLES

Table 1	Precipitation Amounts.....	2
Table 2	TACAN Outfall Peak Elevations	5
Table 3	Comparison of Peak Runoff Rates (2-, 10-year 24-hour Storm Events).....	6
Table 4	Comparison of Peak Runoff Rates (25-, 100-year 24-hour Storm Events).....	7

LIST OF FIGURES

Figure 1	USGS Locus Map
Figure 2	Pre-Development Drainage Patterns
Figure 3	Pre-Development Watershed Map
Figure 4	Post-Development Drainage Patterns
Figure 5	Post Development Watershed Map

LIST OF APPENDICES

Appendix A	HydroCAD Report - Pre Development
Appendix B	HydroCAD Report – Post Development
Appendix C	Supporting Documentation

1.0 INTRODUCTION

This Stormwater Master Development Plan (SMDP) has been prepared to analyze the impact of the proposed South Weymouth Naval Air Station (SWNAS) Redevelopment Project on stormwater and to define areas where stormwater detention will be provided to mitigate the effects of the increase in impervious area. The SMDP sets forth the guidelines for future phased development projects to adhere to, so that the individual development projects are consistent with the overall existing and proposed hydrology. The SMDP has also been prepared to demonstrate how overall compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) will generally be achieved.

1.1 PROJECT SUMMARY

The Site is approximately 1,440± acres and located in the towns of Weymouth, Rockland and Abington, Massachusetts. The site is bounded by residential uses to the north and south, residential, commercial, and industrial uses to the east, and residential and commercial uses to the west, refer to Figure 1.

The Site is located within the Weir River and South Costal Watersheds, with the French's Stream East Branch and French's Stream West Branch discharging into the South Costal Watershed and the Old Swamp River discharging into the Weir River watershed. Wetland resource areas are located within the Site and include bordering vegetated wetlands, riverfront area, and waterways. There are no mapped FEMA flood zones on site however, portions of the Site are located within a Zone A Surface Water Protection Area and an Outstanding Resource Water (ORW), the Old Swamp River.

2.0 METHOD OF CALCULATIONS

The hydrologic model created to analyze the hydrology of the site was developed using the Soil Conservation Service (SCS) Technical Release No. 20 (SCS unit hydrograph procedures) and SCS Technical Release No. 55 (for Times of Concentration and Runoff Curve Numbers).

The hydrologic model was created and calculated with HydroCAD, Version 10.0 software, developed by Applied Microcomputer Systems. The stormwater facilities were modeled using the Dynamic Routing Method. The runoff from the sub-drainage areas (HydroCAD subcatchments) is calculated based on rainfall and the watershed characteristics, and a runoff hydrograph (a runoff rate versus time curve) is developed. The stage-storage-discharge curve for a specific detention area (i.e., an infiltration basin) is used to compute an outflow hydrograph by hydraulically routing an inflow hydrograph through the detention facilities. This procedure calculates the relationship of the inflow hydrograph with the characteristics of the detention basin systems to determine the outflow, stage, and storage capacity of the detention systems for a given time during the specified storm event.

2.1 PRECIPITATION AMOUNTS

In accordance with the DEP Stormwater Management Standards the 2, 10, 25, and 100-year 24-hour storm events were analyzed. The precipitation amounts summarized in Table 1 represent the most recent data from NOAA (National Oceanic and Atmospheric Administration) Atlas 14 for the Project area.

Table 1 Precipitation Amounts

Storm Event (years)	Duration (hours)	Rainfall Depth (inches)
2	24	3.4
10	24	5.1
25	24	6.2
100	24	7.9

2.2 SOIL CONDITIONS

The MassGIS Natural Resource Conservation Service (NRCS) SSURGO-Certified Soils data layer was used to determine the hydrologic soil groups within the project site, refer to the NRCS Soils Map in Appendix C. This data has been "SSURGO-certified," which means they have been reviewed and approved by the NRCS and meet all standards and requirements for inclusion in the national release of county-level digital soils data. For areas which had a compound classification (i.e., were classified C/D, B/C, etc.) the most conservative soil type was used and for soils without a soil group classification, such as urban land, hydrologic soil group C was used.

The feasibility and applicability of certain Best Management Practices (BMPs) to treat stormwater runoff, especially for the purpose of infiltration and recharge, will be dependent on several critical design factors including the suitability of soils, permeability of the soil, depth to seasonal high groundwater, presence or absence of oil and hazardous material, and the limiting layer (clay/bedrock). The selection of practices for future project phases to treat runoff and meet water quality standards will be determined by field investigations to understand the influence of the critical design factors. Detailed infiltration evaluations will be completed after test-pits are performed in locations where infiltration BMPs are proposed. The results of this information will identify maximum water table fluctuations, hydraulic conductivities, and site-specific geologic information that will be used to evaluate the long-term hydrogeologic effects.

2.3 TIME OF CONCENTRATION

The time of concentration (T_c) is defined as the time required for runoff to travel from the most hydrologically distant point of a subcatchment to the point of collection. The time of concentration is determined by summing the travel time for each consecutive flow segment along the subcatchment's hydraulic path. The subcatchment's hydraulic paths and characteristics for each flow segment were determined by utilizing the Project's survey and U.S. Geological Survey topographic maps (USGS Maps). Per TR-55 methodology, a minimum T_c value of six (6) minutes was used.

2.4 RUNOFF CURVE NUMBER

The SCS curve number is an index value for a watershed area and is based on the area's hydrologic soil group, antecedent moisture condition, and the land use. These factors along with the precipitation data provide the basis of determining the amount of runoff volume for a given storm event. A high curve number

(i.e. 98 for pavement) indicates low retention and high runoff, while a low curve number (i.e. 30 for wooded areas) indicates high retention and low runoff.

While individual project phases have not been designed, an overall program has been developed allowing the estimation of a runoff value for the resulting proposed development areas. A conservative “dense-suburban” curve number value of 88 was used for the stormwater calculations. That runoff curve number was used for the proposed development areas within each of the five main subbasins.

3.0 EXISTING CONDITIONS

The Project site is currently occupied by many former SWNAS components including office, maintenance, and hanger type buildings. There are also significant impervious areas that include the former runways and taxi ways and the former blimp tie down area. The Project site is also occupied by several new developments that include Bill Delahunt Parkway, improvements to Memorial Grove Avenue and Parkview Street (a.k.a. Phase 1A Definitive Subdivision Plan), Union Point Recreation Complex and Pulte Residential Developments. Each of these new developments include stormwater management systems to provide peak rate attenuation and water quality treatment and have been analyzed as part of the Pre-Development HydroCAD model.

3.1 TOPOGRAPHY

The SWNAS topography is generally flat because of the runway construction with some slightly rolling terrain located along the Site’s perimeter. The flat nature of the Site is a key element in the stormwater analysis. Topography ranges from approximately elevation 150 to 155 within most of the Site, with the southern portions of the stream networks at approximately elevation 130 to 140.

3.2 HYDOLOGIC INFORMATION

The Site is comprised of four main watersheds identified as Tactical Air Control and Navigation (TACAN) Outfall Basin, French’s Stream West Branch, French’s Stream East Branch, and the Old Swamp River. Refer to Figure 2, Pre-Development Drainage Patterns and Figure 3, Pre-Development Watershed Map.

3.2.1 TACAN Outfall Basin

The TACAN Outfall Basin is located within the triangular area between the runway sections at the southern side of the Site. The TACAN is a large, excavated area containing connected ditches which collect and carry runoff from the developed portions of the site. It was built by the Navy when the original naval air station was constructed over 80 years ago. It receives runoff from the former Base through the drainage system the Navy built and from a large portion of the Parkway through a new ditch connected to the old, which the State constructed.

The original excavated basin and ditch system has long ago revegetated itself and now contains open water in deep ditches, shrub wetland areas and forested upland areas, each cover type responsive to the frequency and amount of storm inundation. Except for work necessary to enhance flood control, make new drainage connections or to perform habitat restoration, the existing vegetation will remain.

The TACAN ultimately discharges to French's Stream West Branch via twin 60-inch culverts. The area tributary to the TACAN has been analyzed as part of the HydroCAD model and the outlet from the TACAN is modeled as Design Point 1 (DP-1). As further described in Section 4, the TACAN will continue to be utilized for stormwater control under the proposed conditions.

3.2.2 French's Stream West Branch

The west branch of French's Stream is approximately 11,300 feet long and flows in a southerly direction. The stream is located adjacent to the westerly runway area and receives stormwater runoff from the westerly side of the Site in addition to the TACAN, described above. The west branch of French's Stream ultimately discharges via twin 72-inch culverts located under Spruce Street where it converges with the east branch south of Spruce Street and forms French's Stream. The area from the Site tributary to the west branch of French's Stream has been analyzed as part of the HydroCAD model. The first downstream culvert crossing below all proposed development tributary to French's Stream West Branch is modeled as Design Point 2 (DP-2).

3.2.3 French's Stream East Branch

The east branch of French's Stream is approximately 5,900 feet long and also flows in a southerly direction. The stream is located adjacent to the easterly runway area and receives stormwater runoff from the easterly side of the Site. The east branch of French's Stream ultimately discharges via twin 36-inch culverts located under Spruce Street where it converges with the west branch south of Spruce Street and forms French's Stream. The area from the Site tributary to the east branch of French's Stream has been analyzed as part of the HydroCAD model. Similar to the West Branch the first downstream culvert crossing below all proposed development tributary to French's Stream East Branch is modeled as Design Point 3 (DP-3).

3.2.4 Old Swamp River

The Old Swamp River, which is identified as an ORW (outstanding resource water) is located on the eastern side of the Site and flows in a northeasterly direction. The area tributary to the Old Swamp River from the Site has been analyzed as part of the HydroCAD model and is modeled as two design points, Design Point 4 (DP-4), Old Swamp River Upstream and Design Point 5 (DP-5), Old Swamp River Downstream. Those tributary areas are divided by the Parkway.

4.0 PROPOSED CONDITIONS

The overall SMDP stormwater design has been developed to maintain existing drainage patterns to the maximum extent possible. The SMDP focuses on the major stormwater infrastructure components that will provide quantity control and conveyances to adequately control runoff from the proposed redevelopment. The proposed redevelopment will implement stormwater runoff quality and quantity control measures such as street sweeping, deep sump and hooded catch basins, water quality units and infiltration basins and wet basins/created wetlands to protect the surrounding natural resources from potential stormwater runoff impacts. Each project phase will implement individual BMPs specifically designed for the project type and location. Refer to Figure 4, Post-Development Drainage Patterns, and Figure 5, Post-Development Watershed Map.

Phase 1 of the Project includes development located north of Bill Delahunt Parkway and the area west of existing Hanger No. 2 up against the existing development. During this phase the existing upper tributary area that discharges to the TACAN via existing twin 48-inch culverts would be diverted to a proposed basin

**Master Development Plan
Stormwater Management Report**

South Weymouth Naval Air Station, Weymouth, Abington and Rockland

located along French's Stream West Branch between the two existing parkway basins. This phase also includes improvements to the TACAN that include, removing the existing jeep road ditch crossing and its 2-24" culverts, constructing an outlet control structure upstream of the twin 60-inch runway culverts and removing the existing pavement area to create additional storage volume.

The Phase 1 stormwater improvements have two primary benefits, the diversion of the upper tributary area creates additional storage capacity in the TACAN and opens the reuse of the existing twin 48-inch drains tributary to the TACAN. They can be used in subsequent phases until they are replace and abandoned for lot development. The Phase 1 stormwater improvement will allow the tributary areas north and adjacent to the Parkway to be developed without building any additional stormwater basins.

A large portion of the TACAN is located within the eastern box turtle core habitat area. For the purpose of the SMDP it is assumed that the eastern box turtles have adapted to existing level and frequency of flooding within the TACAN. Accordingly, the SMDP is designed to have no adverse hydrologic impacts on the eastern box turtle core habitat area. As shown in Table 2 below, post-development peak flood elevations will not exceed pre-development peak flood elevations for each storm event at the TACAN outfall basin.

Table 2 TACAN Outfall Peak Elevations

24-hour Storm Event	Peak Elevation (feet)		
	Pre-Development	Post-Development	Δ
2-year	143.29	142.68	-0.61
10-year	145.05	144.50	-0.55
25-year	145.81	145.19	-0.62
100-year	146.54	145.97	-0.57

After the Phase 1 stormwater improvements are implemented the remainder of the proposed stormwater improvements will be constructed on a project-by-project basis. As shown on Figure 4, Post-Development Drainage Patterns, these improvements include several stormwater basins including the proposed greenways located south of the Parkway for stormwater conveyance and storage.

One of the organizing features of the proposed developed areas is to convert the old Navy runways to greenway open spaces. The conversion of prior developed areas continues south of the Parkway where the greenways are developed as open channel flow-ways and provides mitigation to the TACAN, DP-1.

These flow-ways are shown on Figures 4 and 5 as long linear basins. In a functional landscape form, they are landscaped open spaces containing pathways bordering a normally dry intermittent stream channel. During storm events those intermittent stream channels would carry runoff. That runoff would be controlled by culvert hydraulics at each crossroad. Hydraulically, each of those flow-way segments controlled by their downstream culvert would act as flood storage area reducing the peak discharges.

The flow-ways are part of the system that discharges into the TACAN which again buffers peak discharges into Design Point 1. All these successive stormwater controls within developed areas will allow the development to occur without disrupting the large continuous green space buffers along the southern end of the Base. Collectively they result in smaller future peak discharges than in existing conditions.

5.0 MASSDEP STORMWATER STANDARDS

The ten (10) MassDEP Stormwater Management Standards provided in the Stormwater Management Policy and Massachusetts Wetlands Protection Act relate to the protection of wetlands and water bodies, control of water quantity, recharge to groundwater, water quality and protection of critical areas, erosion/sedimentation control and stormwater maintenance. The following sections summarize how the Project will comply with the Stormwater Management Standards.

5.1 STANDARD NO. 1 – UNTREATED STORMWATER

Standard 1 requires that no new stormwater conveyances (i.e., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. No new untreated stormwater conveyances are proposed for the Project. The SMDP has been designed so that future phased development projects comply with Standard 1. As phased development projects are permitted and constructed, water quality measures will be implemented to comply with Standard 1 and specific calculations will be provided on a project-by-project basis.

5.2 STANDARD NO. 2 – POST-DEVELOPMENT PEAK DISCHARGE RATES

Standard 2 requires stormwater management systems be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates for the 2, 10, 25, and 100-year 24-hour storm events. The Project's stormwater management systems are designed so that post-development peak discharge rates do not exceed pre-development discharge rates for the 2-year and 10-year, 25-year, and 100-year 24-hour storm events. To determine the peak rate of discharge for existing and proposed conditions, runoff hydrographs were generated for the storm events using the SCS TR-20 method. To reduce peak discharge rates, the proposed stormwater management plan for the Project includes a total of approximately 117 acre-feet (5,096,520 cubic feet) of storage that is spread across 8 (eight) proposed stormwater basins and six (6) greenway/flow-ways. Refer to Appendix A and Appendix B for HydroCAD input/output data for pre-development and post-development conditions.

Tables 3 and 4 summarizes the pre- and post-development peak runoff discharge rates determined in the hydrologic/hydraulic analyses performed for the Project site and are based on the precipitation data provided in Table 1. As shown in Tables 3 and 4 below, post development peak runoff rates for the Project are less than pre-development for each storm event. Full compliance with this standard will be achieved.

Table 3 Comparison of Peak Runoff Rates (2-, 10-year 24-hour Storm Events)

Point of Analysis	Peak Runoff Rates (cfs)					
	2-year, 24-hour Storm Event			10-year, 24-hour Storm Event		
	Pre	Post	Δ	Pre	Post	Δ
DP-1	64.99	53.35	-11.64	77.14	59.82	-17.32
DP-2	177.44	174.36	-3.08	293.61	265.59	-28.02
DP-3	76.28	76.28	0.00	153.44	153.44	0.00

**Master Development Plan
Stormwater Management Report**

South Weymouth Naval Air Station, Weymouth, Abington and Rockland

Point of Analysis	Peak Runoff Rates (cfs)					
	2-year, 24-hour Storm Event			10-year, 24-hour Storm Event		
	Pre	Post	Δ	Pre	Post	Δ
DP-4	18.83	18.79	-0.04	43.18	42.66	-0.52
DP-5	69.24	47.93	-21.31	150.54	118.96	-31.58

* cfs = cubic feet per second

Table 4 Comparison of Peak Runoff Rates (25-, 100-year 24-hour Storm Events)

Point of Analysis	Peak Runoff Rates (cfs)					
	25-year, 24-hour Storm Event			100-year, 24-hour Storm Event		
	Pre	Post	Δ	Pre	Post	Δ
DP-1	95.85	73.00	-22.85	170.79	110.19	-60.60
DP-2	363.68	315.26	-48.42	458.06	388.08	-69.98
DP-3	222.14	222.14	0.00	314.32	314.32	0.00
DP-4	62.23	60.72	-1.54	92.99	89.66	-3.33
DP-5	207.66	194.33	-13.33	300.11	285.08	-15.03

5.3 STANDARD NO. 3 - RECHARGE TO GROUNDWATER

Standard 3 requires that the loss of annual recharge to groundwater be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post- development site shall approximate the annual recharge from pre-development conditions based on soil type. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The groundwater recharge requirement will vary throughout the project Site, due to the varying soil conditions. Recharge will be analyzed and documented as phased development projects are permitted and constructed. Infiltrating BMPs will be located in soils capable of absorbing the recharge volume within 72 hours and where there is a minimum two-foot separation between the bottom of the infiltration BMP and the seasonal high groundwater table.

The calculations included in the SMDP are based on a conservative approach and do not account for groundwater recharge (i.e., exfiltration) for the proposed stormwater basins. Site-specific groundwater recharge calculations will be developed and submitted as phased development projects are permitted and constructed.

5.4 STANDARD NO. 4 - TSS REMOVAL

Standard 4 requires that stormwater management systems be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when:

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan and thereafter are implemented and maintained.
- Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Full compliance with this standard will be achieved. The incorporation of the following stormwater BMPs will achieve a cumulative TSS removal rate greater than 80%. Site-specific TSS removal calculations will be developed and submitted as phased development projects are permitted and constructed.

Street Sweeping

The proposed design incorporates street sweeping as a BMP to control the amount of sediment that enters the stormwater management system. Street sweeping will be conducted on a quarterly basis. In accordance with MassDEP Standards a 5% TSS removal rate is credited for this BMP.

Deep Sump/Hooded Catch Basins

All proposed catch basins will be deep sump/hooded catch basins, which will serve to trap sediment and floatables before entering the stormwater pipe network. Sumps will be four feet deep. In accordance with MassDEP Standards a 25% TSS removal rate is credited for this BMP.

Water Quality Swales

Water quality swales may be incorporated into the stormwater management system to provide stormwater conveyance and treatment. Water quality swales are designed to treat the required water quality volume and when incorporated with pretreatment devices such as sediment forebays with check dams provides a 70% TSS removal rate.

Sediment Forebays

Sediment forebays are required as a pretreatment device before stormwater runoff is discharged to an extended dry detention basin, wet basin, constructed stormwater wetland or infiltration basin. No separate TSS removal credit is given for the sediment forebay when constructed for the BMPs listed above, however when they provide pretreatment for other BMPs, sediment forebays are credited a 25% TSS removal rate.

Water Quality Treatment Units

The stormwater management system incorporates water quality treatment units (i.e., Contech CDS hydrodynamic separators, Stormceptors) prior to discharging to the infiltration basins. All units will be sized to treat the water quality flow rate derived from the required water quality volume and will achieve TSS removal rates exceeding the minimum requirement of 80%.

Infiltration Basins

Infiltration basins may be incorporated into the stormwater management system to provide groundwater recharge and to treat runoff prior to discharging into the adjacent wetland systems. Runoff from paved areas is directed through deep sump/hooded catch basins water quality treatment units, and sediment forebays prior to discharging into the infiltration basin. The final location of infiltration basins will depend on the soil conditions as infiltrating BMPs need to be located in soils capable of absorbing the recharge volume within 72 hours and where there is a minimum two-foot separation between the bottom of the infiltration BMP and

the seasonal high groundwater table. In accordance with MassDEP Standards, a 80% TSS removal rate is credited for this BMP provided that adequate pretreatment has been provided.

Wet Basins/Created Wetlands

The stormwater management system will, of course, include the use of the TACAN, in part, an older created wetland. Similarly, the greenway/flow-ways channel bottoms may see sufficient stormwater to develop a wetland or facultative wetland fringe. The developed vegetation reduces erosion, and enhances sediment capture, deposition, and nutrient uptake.

5.5 STANDARD NO. 5 - HIGHER POTENTIAL POLLUTANT LOADS

Standard 5 requires source control and pollution prevention be implemented to eliminate or reduce the discharge of stormwater runoff from land uses with higher potential pollutant loads (LUHPPL) to the maximum extent practicable. The project will generate more than 1,000 vehicle trips per day and therefore may be considered a higher pollutant load generator.

Stormwater runoff in contact with potential pollutants will be routed through BMPs identified in Table LUHPPL of the MassDEP Stormwater Handbook (i.e., deep sump/hooded catch basins, water quality units, and infiltration basins) prior to discharge. Full compliance with this standard will be achieved. Site-specific water quality calculations will be developed and submitted as phased development projects are permitted and constructed.

5.6 STANDARD NO. 6 - PROTECTION OF CRITICAL AREAS

The Project site is located within the contributing watershed to the Old Swamp River an Outstanding Resource Water (ORW), and therefore considered a critical area. Stormwater discharges within a critical area require the use of a treatment train that provides 80% TSS removal prior to discharge and a least 44% TSS removal prior to discharge to an infiltration BMP. In addition, treatment BMPs must be designed to treat the required water quality volume, a volume equal to one-inch times the total impervious surfaces of the post-development site. Full compliance with this standard will be achieved. Stormwater runoff in contact with potential pollutants will be routed to deep sump/hooded catch basins, water quality units, and infiltration basins prior to discharging into the Old Swamp River. Site-specific water quality calculations will be developed and submitted as phased development projects are permitted and constructed.

5.7 STANDARD NO. 7 - REDEVELOPMENT PROJECTS

Redevelopment projects include development, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area. Redevelopment projects are 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. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The proposed stormwater management plan has been developed so that future phased development projects fully comply with the Stormwater Management Standards. Based on the significant amount of existing impervious surfaces certain portions of the phased development projects may result in no net increase in impervious area and therefore may be considered a redevelopment project. However the Project will attempt to comply fully with the standards.

5.8 STANDARD NO. 8 – EROSION AND SEDIMENT CONTROL

Standard 8 requires a plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented. In addition, Projects that disturb greater than one (1) acre of land are required to obtain coverage under the U.S. EPA National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities (CGP). Full compliance with this standard will be achieved. In support of coverage, a project-specific Storm Water Pollution Prevention Plan (SWPPP) and a Notice of Intent will be submitted to the EPA as phased development projects are permitted and constructed.

5.9 STANDARD NO. 9 – OPERATION AND MAINTENANCE PLAN

Standard 9 requires a Long -Term Operation and Maintenance (O&M) Plan be developed and implemented to ensure that stormwater management systems function as designed. The O&M Plan also identifies best management practices for implementing maintenance activities in a manner that minimizes impacts to wetland resource areas. Full compliance with this standard will be achieved. A site-specific O&M Plan will be prepared and submitted as phased development projects are permitted and constructed.

5.10 STANDARD NO. 10 - ILLICIT DISCHARGE

Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. To the best of the owner's and engineer's knowledge, no illicit discharges exist on Site and no illicit discharges will be incorporated as part of the Project into the proposed stormwater management system. Full compliance with this standard will be achieved. An Illicit Discharge Compliance Statement will be prepared and submitted as phased development projects are permitted and constructed.

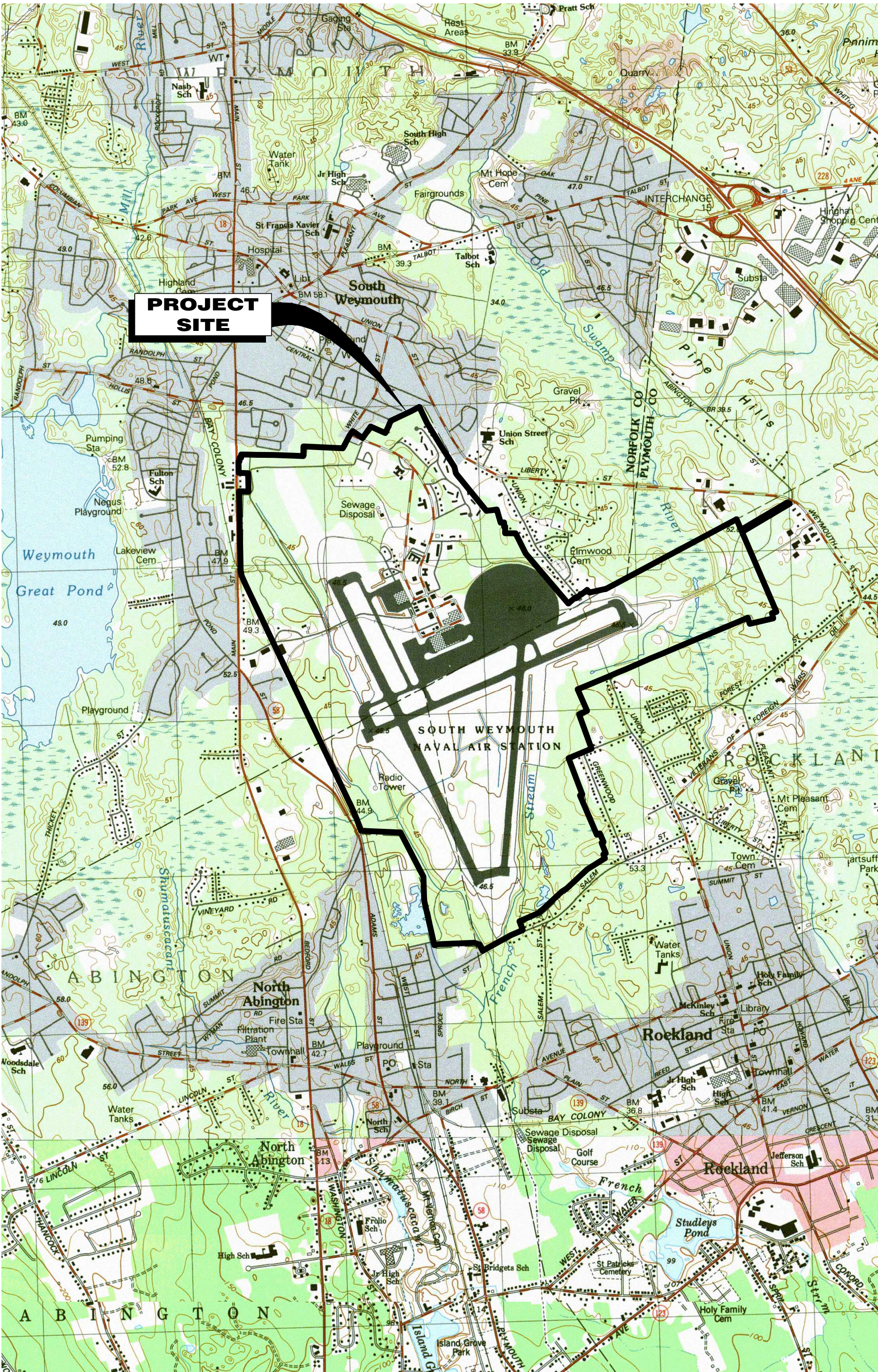
6.0 CONCLUSION

The SMDP sets forth both guidelines and requirements for future phased developments to adhere to and to establish the development protocol for each of the delineated drainage areas. As demonstrated in this report, the SMDP sets the general framework for the Project to comply with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00).

The proposed stormwater management system incorporated into the SMDP utilizes existing drainage infrastructure to the maximum extent practicable. Mitigation measures that were put in place for prior development were left in place solely for their tributary areas, no new development area were added to these. The only exception to that rule is the TACAN.

The SMDP provides the basic stormwater management protocols and patterns for drainage. As one can see from the above summaries and the supporting calculations, this management approach will significantly reduce the future fully developed runoff in major storms by approximately 20% from existing peak runoff rates.

A specific project review process has been developed by which individual phases of development will be reviewed for consistency with the SMDP. Through this process future individual projects will implement the master development plan.



**PROJECT
SITE**

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NAVAL AIR STATION**



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Client: Brookfield Properties / New England Development

South Weymouth Naval Air Station
Weymouth, Abington and Rockland, Massachusetts

USGS Locus Map

Project No.: 143-33244-21001

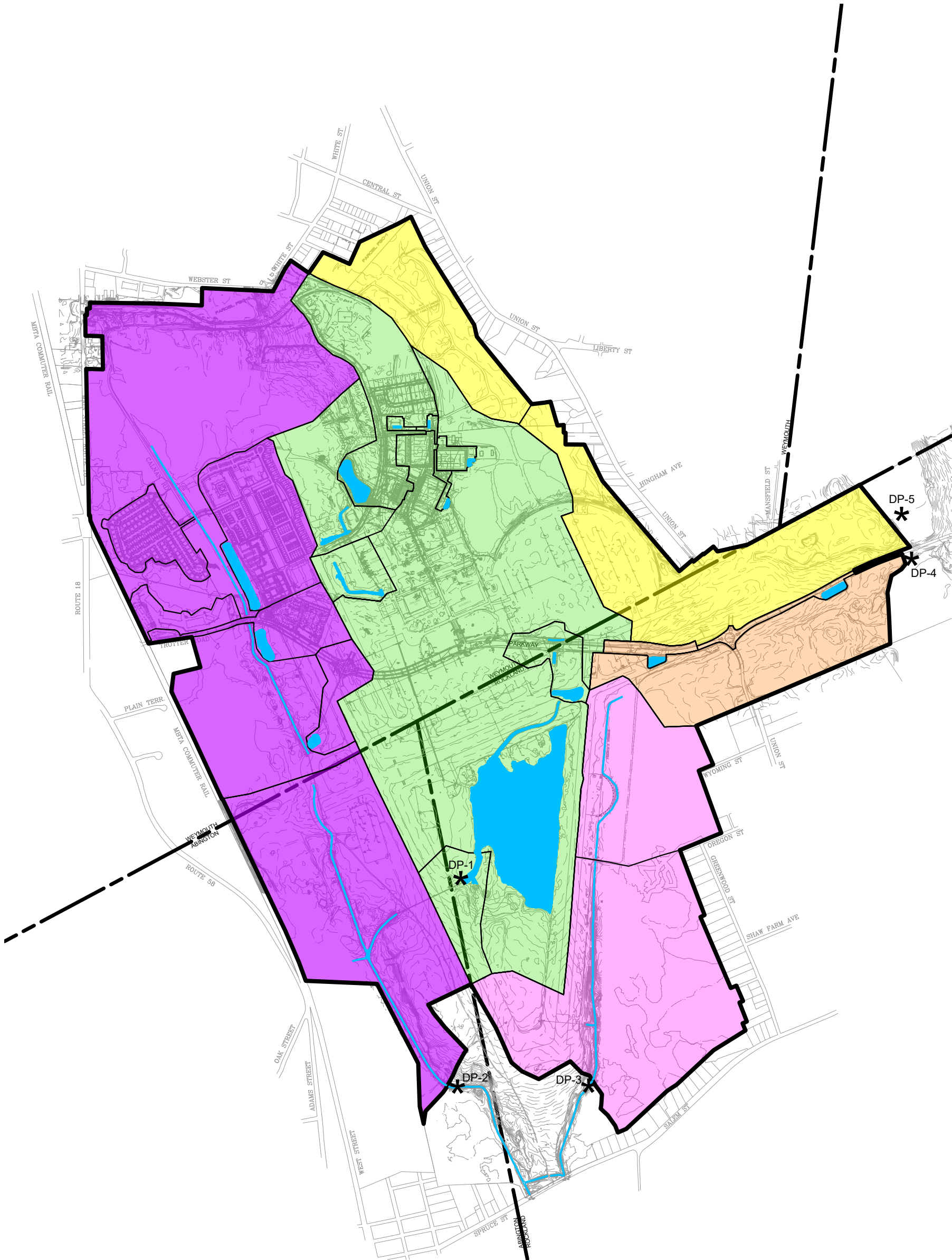
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Figure 1

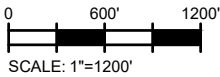
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LEGEND:

- * DESIGN POINT (DP)
- TACAN OUTFALL (DP-1)
- FRENCH'S STREAM WEST BRANCH (DP-2)
- FRENCH'S STREAM EAST BRANCH (DP-3)
- OLD SWAMP RIVER UPSTREAM (DP-4)
- OLD SWAMP RIVER DOWNSTREAM (DP-5)
- EXISTING DRAINAGE BASIN/STREAM
- HYDROLOGIC STUDY AREA (1,285± ACRES)



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PHONE: (508) 786-2200 FAX: (508) 786-2201

Client: Brookfield Properties / New England Development

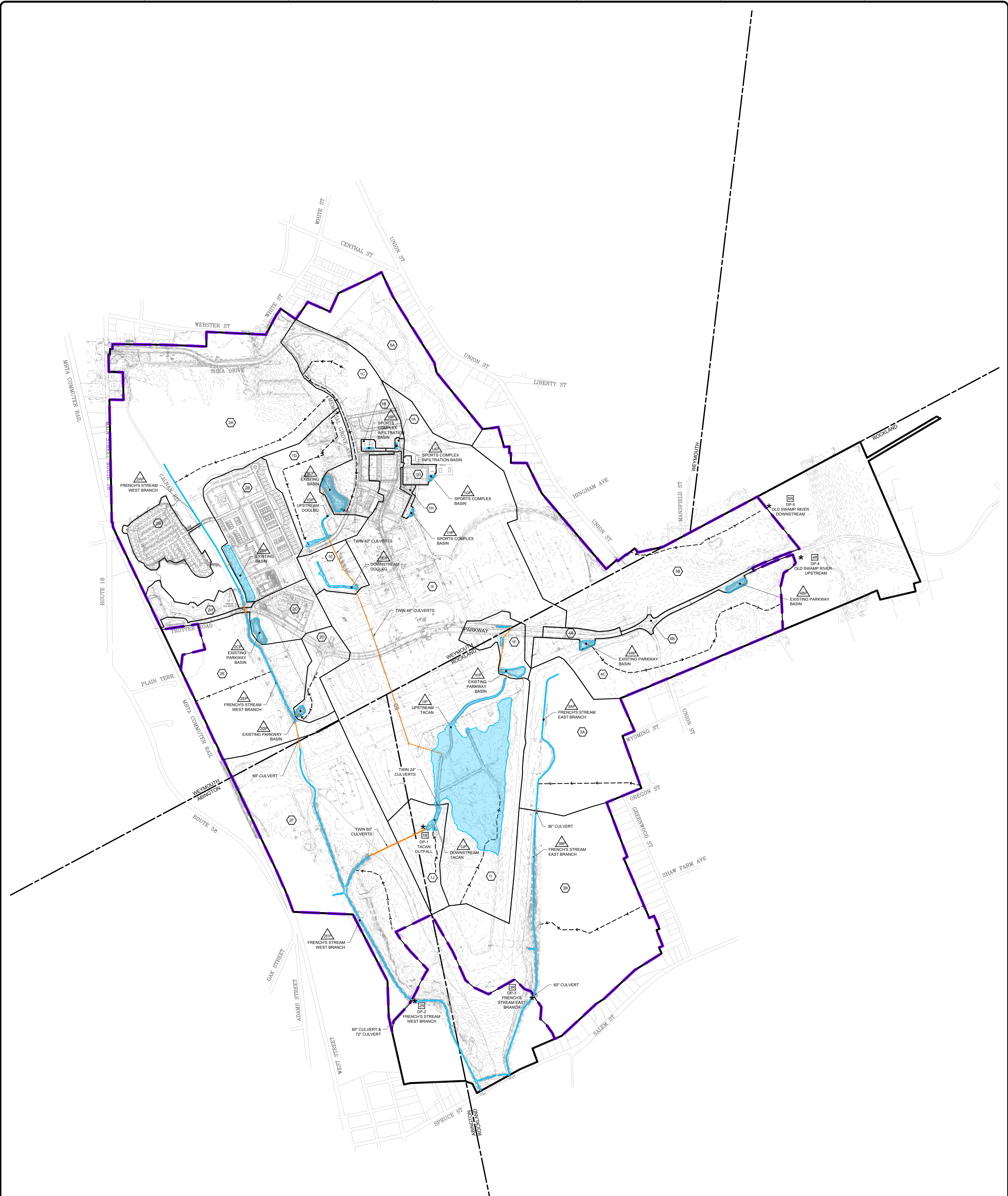
South Weymouth Naval Air Station
Weymouth, Abington and Rockland, Massachusetts
Pre-Development Drainage Patterns

Project No.: 143-33244-21001

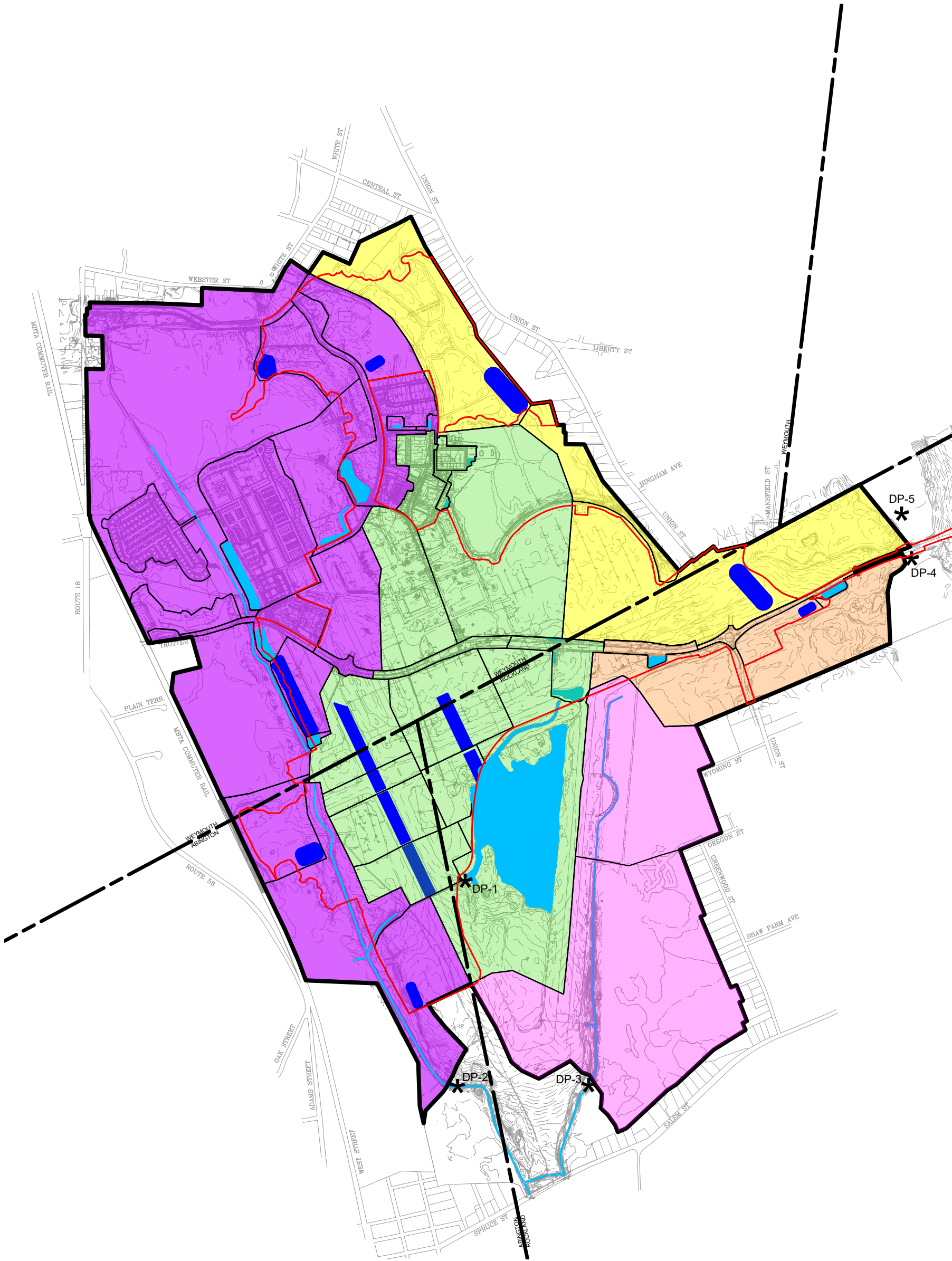
Date: March 2023

Designed By: SJW

Supplemental
Figure 2

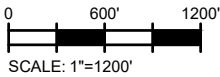


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LEGEND:

- * DESIGN POINT (DP)
- TACAN OUTFALL (DP-1)
- FRENCH'S STREAM WEST BRANCH (DP-2)
- FRENCH'S STREAM EAST BRANCH (DP-3)
- OLD SWAMP RIVER UPSTREAM (DP-4)
- OLD SWAMP RIVER DOWNSTREAM (DP-5)
- EXISTING DRAINAGE BASIN/STREAM
- PROPOSED DRAINAGE BASIN
- HYDROLOGIC STUDY AREA (1,285± ACRES)
- PROPOSED DEVELOPMENT AREA



TETRA TECH

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South Weymouth Naval Air Station
Weymouth, Abington and Rockland, Massachusetts

Post-Development Drainage Patterns

Project No.: 143-33244-21001

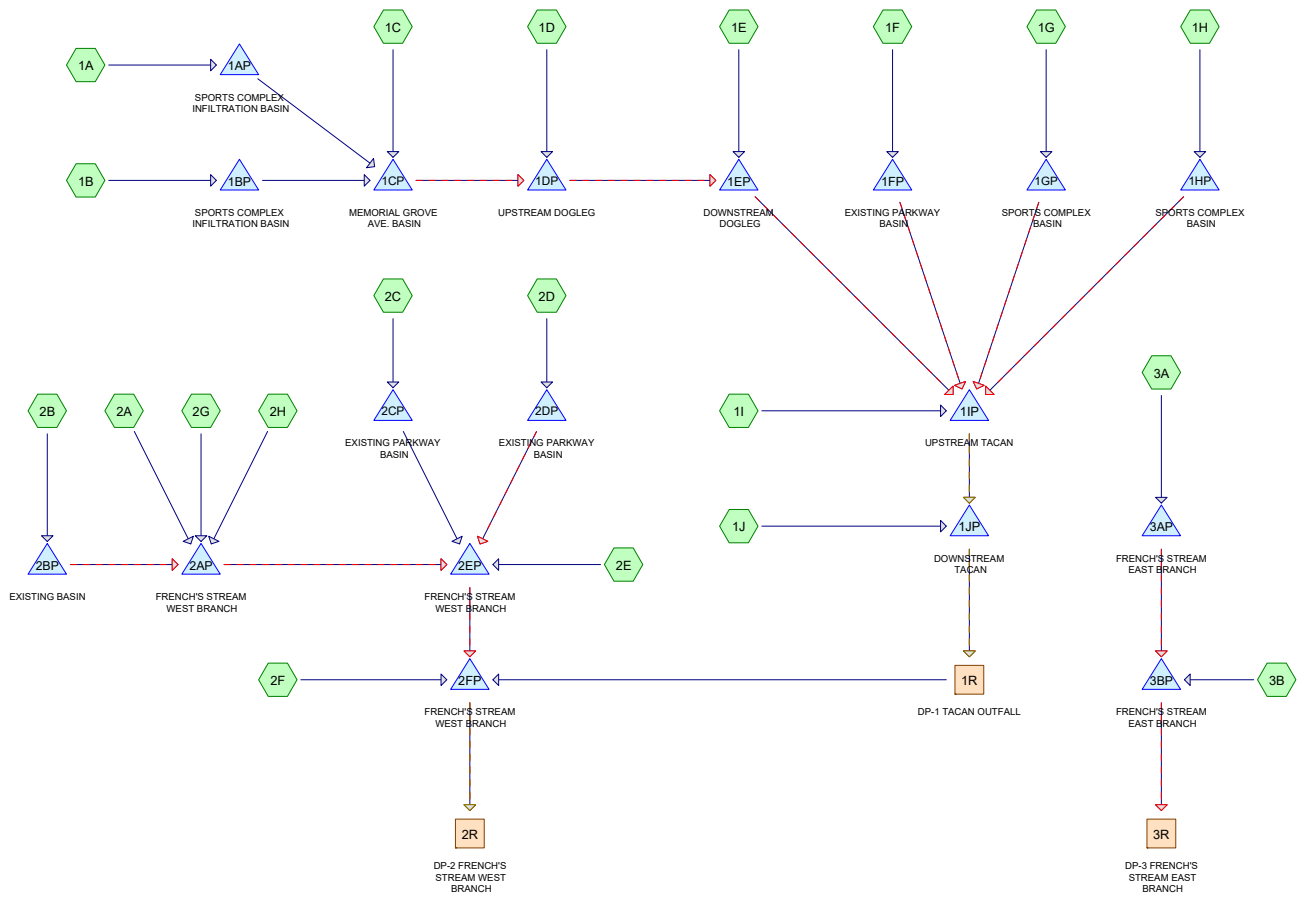
Date: March 2023

Designed By: SJW

Supplemental

Figure 4

Appendix A
HydroCAD Report – Pre Development



SWNAS - Existing Watershed

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
50.470	39	>75% Grass cover, Good, HSG A (1A, 1B, 1C, 1D, 1I, 2C, 2D, 2E)
117.200	61	>75% Grass cover, Good, HSG B (1E, 1F, 1I, 2A, 2F, 2G, 2H, 3B)
62.430	74	>75% Grass cover, Good, HSG C (1C, 1D, 1F, 1I, 2A, 2B, 2C, 2D)
32.810	80	>75% Grass cover, Good, HSG D (1C, 1D, 1G, 1H, 1I, 2E, 2F, 3B)
1.080	85	Artificial Turf (1G, 1H)
1.560	30	Brush, Good, HSG A (1C, 1D, 1I)
24.380	48	Brush, Good, HSG B (1I, 1J)
0.990	65	Brush, Good, HSG C (1D, 1I)
39.550	73	Brush, Good, HSG D (1D, 1I, 1J, 3A, 3B)
2.700	100	Open Water (1C, 1F, 1I, 3B)
215.480	98	Pavement (1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B)
34.380	98	Roof (2A, 2B, 2G, 2H)
8.150	98	Roofs (1C, 1D, 1E, 1I, 2C)
26.950	30	Woods, Good, HSG A (1C, 1D, 1I, 2A, 2E)
51.760	55	Woods, Good, HSG B (1I, 2F, 3A, 3B)
18.830	70	Woods, Good, HSG C (1C, 1D, 1I, 2E)
376.010	77	Woods, Good, HSG D (1C, 1D, 1I, 2A, 2E, 2F, 3A, 3B)
1.620	57	Woods/grass comb., Poor, HSG A (2A)
1,066.350	75	TOTAL AREA

SWNAS - Existing Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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Page 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=2.54" Tc=6.0 min CN=92 Runoff=2.29 cfs 0.167 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=2.45" Tc=6.0 min CN=91 Runoff=2.53 cfs 0.183 af
Subcatchment 1C:	Runoff Area=46.170 ac 42.80% Impervious Runoff Depth=1.49" Flow Length=3,027' Tc=44.5 min CN=79 Runoff=37.06 cfs 5.728 af
Subcatchment 1D:	Runoff Area=32.370 ac 7.63% Impervious Runoff Depth=0.66" Flow Length=2,508' Tc=143.9 min CN=64 Runoff=4.42 cfs 1.767 af
Subcatchment 1E:	Runoff Area=11.300 ac 65.13% Impervious Runoff Depth=1.93" Tc=6.0 min CN=85 Runoff=25.58 cfs 1.817 af
Subcatchment 1F:	Runoff Area=12.080 ac 30.88% Impervious Runoff Depth=1.36" Tc=6.0 min CN=77 Runoff=18.83 cfs 1.366 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=2.54" Flow Length=531' Tc=29.2 min CN=92 Runoff=5.30 cfs 0.673 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=2.74" Tc=6.0 min CN=94 Runoff=4.04 cfs 0.301 af
Subcatchment 1I:	Runoff Area=310.950 ac 37.08% Impervious Runoff Depth=1.42" Flow Length=1,745' Tc=103.9 min CN=78 Runoff=138.80 cfs 36.843 af
Subcatchment 1J:	Runoff Area=18.410 ac 20.53% Impervious Runoff Depth=0.53" Flow Length=660' Tc=22.2 min CN=61 Runoff=5.24 cfs 0.811 af
Subcatchment 2A:	Runoff Area=154.350 ac 2.78% Impervious Runoff Depth=1.11" Flow Length=2,530' Tc=111.4 min CN=73 Runoff=49.29 cfs 14.315 af
Subcatchment 2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=2.74" Tc=6.0 min CN=94 Runoff=125.27 cfs 9.333 af
Subcatchment 2C:	Runoff Area=18.420 ac 57.11% Impervious Runoff Depth=1.17" Tc=6.0 min CN=74 Runoff=24.26 cfs 1.798 af
Subcatchment 2D:	Runoff Area=12.580 ac 44.83% Impervious Runoff Depth=0.95" Flow Length=836' Tc=23.9 min CN=70 Runoff=7.94 cfs 0.993 af
Subcatchment 2E:	Runoff Area=60.570 ac 5.55% Impervious Runoff Depth=0.61" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=10.25 cfs 3.087 af
Subcatchment 2F:	Runoff Area=123.000 ac 10.43% Impervious Runoff Depth=0.89" Flow Length=1,130' Tc=76.9 min CN=69 Runoff=38.60 cfs 9.170 af

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Page 4

Subcatchment2G: Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=2.26"
Tc=120.0 min CN=89 Runoff=10.95 cfs 3.126 af

Subcatchment2H: Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=1.70"
Tc=120.0 min CN=82 Runoff=4.32 cfs 1.244 af

Subcatchment3A: Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=1.42"
Flow Length=1,438' Tc=74.8 min CN=78 Runoff=34.70 cfs 7.325 af

Subcatchment3B: Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=1.29"
Flow Length=1,600' Tc=107.0 min CN=76 Runoff=51.95 cfs 14.215 af

Reach 1R: DP-1 TACAN OUTFALL Inflow=64.99 cfs 47.932 af
Outflow=64.99 cfs 47.932 af

Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH Inflow=177.44 cfs 87.973 af
Outflow=177.44 cfs 87.973 af

Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH Inflow=76.28 cfs 21.534 af
Outflow=76.28 cfs 21.534 af

Pond 1AP: SPORTS COMPLEX Peak Elev=170.39' Storage=2,430 cf Inflow=2.29 cfs 0.167 af
Discarded=0.12 cfs 0.138 af Primary=0.66 cfs 0.030 af Outflow=0.78 cfs 0.167 af

Pond 1BP: SPORTS COMPLEX Peak Elev=170.82' Storage=2,564 cf Inflow=2.53 cfs 0.183 af
Discarded=0.13 cfs 0.148 af Primary=0.85 cfs 0.035 af Outflow=0.98 cfs 0.183 af

Pond 1CP: MEMORIAL GROVE AVE. Peak Elev=151.90' Storage=98,206 cf Inflow=37.75 cfs 5.793 af
Primary=13.43 cfs 5.733 af Secondary=0.00 cfs 0.000 af Outflow=13.43 cfs 5.733 af

Pond 1DP: UPSTREAM DOGLEG Peak Elev=144.59' Storage=489 cf Inflow=16.92 cfs 7.500 af
Primary=8.08 cfs 3.401 af Secondary=8.79 cfs 4.099 af Outflow=16.87 cfs 7.500 af

Pond 1EP: DOWNSTREAM DOGLEG Peak Elev=144.18' Storage=1,728 cf Inflow=25.83 cfs 9.317 af
48.0" Round Culvert x 2.00 n=0.013 L=2,830.0' S=0.0027 ' Outflow=25.49 cfs 9.317 af

Pond 1FP: EXISTING PARKWAY BASIN Peak Elev=146.29' Storage=59,490 cf Inflow=18.83 cfs 1.366 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 1GP: SPORTS COMPLEX BASIN Peak Elev=168.31' Storage=3,949 cf Inflow=5.30 cfs 0.673 af
Primary=3.97 cfs 0.666 af Secondary=0.00 cfs 0.000 af Outflow=3.97 cfs 0.666 af

Pond 1HP: SPORTS COMPLEX BASIN Peak Elev=163.57' Storage=816 cf Inflow=4.04 cfs 0.301 af
Primary=3.22 cfs 0.299 af Secondary=0.00 cfs 0.000 af Outflow=3.22 cfs 0.299 af

Pond 1IP: UPSTREAM TACAN Peak Elev=143.29' Storage=651,132 cf Inflow=158.48 cfs 47.124 af
Primary=32.05 cfs 23.436 af Secondary=32.05 cfs 23.686 af Tertiary=0.00 cfs 0.000 af Outflow=64.10 cfs 47.121 af

Pond 1JP: DOWNSTREAM TACAN Peak Elev=135.71' Storage=1,432 cf Inflow=64.99 cfs 47.932 af
60.0" Round Culvert x 2.00 n=0.013 L=899.0' S=0.0030 ' Outflow=64.99 cfs 47.932 af

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=144.84' Storage=30,872 cf Inflow=86.32 cfs 27.695 af
Primary=40.50 cfs 13.266 af Secondary=42.73 cfs 14.428 af Outflow=83.23 cfs 27.695 af

SWNAS - Existing Watershed

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Page 5

Pond 2BP: EXISTING BASIN Peak Elev=147.76' Storage=163,282 cf Inflow=125.27 cfs 9.333 af
Primary=25.15 cfs 9.010 af Secondary=0.00 cfs 0.000 af Outflow=25.15 cfs 9.010 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=145.10' Storage=78,326 cf Inflow=24.26 cfs 1.798 af
Outflow=0.00 cfs 0.000 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=146.25' Storage=38,403 cf Inflow=7.94 cfs 0.993 af
Primary=0.32 cfs 0.124 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.124 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=141.57' Storage=32,091 cf Inflow=92.47 cfs 30.905 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=91.37 cfs 30.905 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=130.43' Storage=44,178 cf Inflow=177.59 cfs 88.007 af
Primary=65.60 cfs 24.686 af Secondary=111.84 cfs 63.287 af Tertiary=0.00 cfs 0.000 af Outflow=177.44 cfs 87.973 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=144.79' Storage=5,608 cf Inflow=34.70 cfs 7.325 af
Primary=34.35 cfs 7.319 af Secondary=0.00 cfs 0.000 af Outflow=34.35 cfs 7.319 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=132.93' Storage=59,880 cf Inflow=82.52 cfs 21.534 af
Primary=76.28 cfs 21.534 af Secondary=0.00 cfs 0.000 af Outflow=76.28 cfs 21.534 af

Total Runoff Area = 1,066.350 ac Runoff Volume = 114.261 af Average Runoff Depth = 1.29"
75.55% Pervious = 805.640 ac 24.45% Impervious = 260.710 ac

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Page 6

Summary for Subcatchment 1A:

Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 37.06 cfs @ 12.61 hrs, Volume= 5.728 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 7

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 4.42 cfs @ 14.23 hrs, Volume= 1.767 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 8

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

Summary for Subcatchment 1E:

Runoff = 25.58 cfs @ 12.09 hrs, Volume= 1.817 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 9

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.366 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

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Type III 24-hr 2-year Rainfall=3.40"

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Page 10

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

Summary for Subcatchment 1H:

Runoff = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 138.80 cfs @ 13.50 hrs, Volume= 36.843 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 11

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

Summary for Subcatchment 1J:

Runoff = 5.24 cfs @ 12.41 hrs, Volume= 0.811 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

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Type III 24-hr 2-year Rainfall=3.40"

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Page 12

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

Summary for Subcatchment 2A:

Runoff = 49.29 cfs @ 13.61 hrs, Volume= 14.315 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
111.4	2,530	Total			

Summary for Subcatchment 2B:

Runoff = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 13

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 24.26 cfs @ 12.09 hrs, Volume= 1.798 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D:

Runoff = 7.94 cfs @ 12.37 hrs, Volume= 0.993 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

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Type III 24-hr 2-year Rainfall=3.40"

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Page 14

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

Summary for Subcatchment 2E:

Runoff = 10.25 cfs @ 13.39 hrs, Volume= 3.087 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 38.60 cfs @ 13.15 hrs, Volume= 9.170 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 15

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
76.9	1,130	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 10.95 cfs @ 13.60 hrs, Volume= 3.126 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 4.32 cfs @ 13.60 hrs, Volume= 1.244 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 16

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 51.95 cfs @ 13.44 hrs, Volume= 14.215 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 17

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 1.31" for 2-year event
 Inflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af
 Outflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 1.21" for 2-year event
 Inflow = 177.44 cfs @ 13.78 hrs, Volume= 87.973 af
 Outflow = 177.44 cfs @ 13.78 hrs, Volume= 87.973 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event
 Inflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

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Page 18

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af
 Outflow = 0.78 cfs @ 12.37 hrs, Volume= 0.167 af, Atten= 66%, Lag= 17.0 min
 Discarded = 0.12 cfs @ 11.44 hrs, Volume= 0.138 af
 Primary = 0.66 cfs @ 12.37 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 170.39' @ 12.37 hrs Surf.Area= 2,201 sf Storage= 2,430 cf

Plug-Flow detention time= 125.1 min calculated for 0.167 af (100% of inflow)
 Center-of-Mass det. time= 125.1 min (920.7 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 ' /' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 11.44 hrs HW=168.58' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.66 cfs @ 12.37 hrs HW=170.39' TW=150.62' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 0.66 cfs @ 2.72 fps)

Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 2.45" for 2-year event
 Inflow = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af
 Outflow = 0.98 cfs @ 12.33 hrs, Volume= 0.183 af, Atten= 61%, Lag= 14.4 min
 Discarded = 0.13 cfs @ 11.38 hrs, Volume= 0.148 af
 Primary = 0.85 cfs @ 12.33 hrs, Volume= 0.035 af

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Page 19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 170.82' @ 12.33 hrs Surf.Area= 2,378 sf Storage= 2,564 cf

Plug-Flow detention time= 124.3 min calculated for 0.183 af (100% of inflow)

Center-of-Mass det. time= 124.3 min (924.5 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB-Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.13 cfs @ 11.38 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=0.84 cfs @ 12.33 hrs HW=170.82' TW=150.54' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.84 cfs @ 2.85 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area =	47.860 ac, 44.44% Impervious, Inflow Depth = 1.45" for 2-year event
Inflow =	37.75 cfs @ 12.61 hrs, Volume= 5.793 af
Outflow =	13.43 cfs @ 13.42 hrs, Volume= 5.733 af, Atten= 64%, Lag= 48.4 min
Primary =	13.43 cfs @ 13.42 hrs, Volume= 5.733 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 151.90' @ 13.42 hrs Surf.Area= 57,158 sf Storage= 98,206 cf

Plug-Flow detention time= 195.8 min calculated for 5.732 af (99% of inflow)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 20

Center-of-Mass det. time= 190.0 min (1,067.2 - 877.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=13.43 cfs @ 13.42 hrs HW=151.90' TW=144.46' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 13.43 cfs @ 5.07 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area =	80.230 ac, 29.59% Impervious, Inflow Depth > 1.12" for 2-year event
Inflow =	16.92 cfs @ 13.73 hrs, Volume= 7.500 af
Outflow =	16.87 cfs @ 13.74 hrs, Volume= 7.500 af, Atten= 0%, Lag= 0.8 min
Primary =	8.08 cfs @ 13.75 hrs, Volume= 3.401 af
Secondary =	8.79 cfs @ 13.73 hrs, Volume= 4.099 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 144.59' @ 14.08 hrs Surf.Area= 1,022 sf Storage= 489 cf

Plug-Flow detention time= 0.4 min calculated for 7.500 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (1,056.8 - 1,056.4)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 21

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 ' / ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 ' / ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=8.05 cfs @ 13.75 hrs HW=144.56' TW=144.09' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 8.05 cfs @ 2.10 fps)

Secondary OutFlow Max=8.76 cfs @ 13.73 hrs HW=144.56' TW=144.08' (Dynamic Tailwater)

↑ **2=Culvert** (Outlet Controls 8.76 cfs @ 2.14 fps)

Summary for Pond 1EP: DOWNSTREAM DOGLEG

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 1.22" for 2-year event
 Inflow = 25.83 cfs @ 12.09 hrs, Volume= 9.317 af
 Outflow = 25.49 cfs @ 12.10 hrs, Volume= 9.317 af, Atten= 1%, Lag= 0.7 min
 Primary = 25.49 cfs @ 12.10 hrs, Volume= 9.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.18' @ 14.35 hrs Surf.Area= 1,669 sf Storage= 1,728 cf

Plug-Flow detention time= 1.4 min calculated for 9.316 af (100% of inflow)
 Center-of-Mass det. time= 1.4 min (1,012.7 - 1,011.3)

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 22

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	48.0" Round Culvert X 2.00 L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 ' / Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=25.40 cfs @ 12.10 hrs HW=143.79' TW=138.78' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 25.40 cfs @ 3.71 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area =	12.080 ac, 30.88% Impervious, Inflow Depth = 1.36" for 2-year event
Inflow =	18.83 cfs @ 12.09 hrs, Volume= 1.366 af
Outflow =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.29' @ 24.34 hrs Surf.Area= 22,680 sf Storage= 59,490 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

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Page 23

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af
 Outflow = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af, Atten= 25%, Lag= 13.8 min
 Primary = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.31' @ 12.62 hrs Surf.Area= 2,853 sf Storage= 3,949 cf

Plug-Flow detention time= 29.9 min calculated for 0.666 af (99% of inflow)
 Center-of-Mass det. time= 22.5 min (839.6 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 24

Primary OutFlow Max=3.97 cfs @ 12.62 hrs HW=168.31' TW=139.73' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.97 cfs @ 5.06 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 2.74" for 2-year event
 Inflow = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af
 Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af, Atten= 20%, Lag= 3.6 min
 Primary = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 163.57' @ 12.14 hrs Surf.Area= 823 sf Storage= 816 cf

Plug-Flow detention time= 12.1 min calculated for 0.299 af (99% of inflow)

Center-of-Mass det. time= 7.7 min (792.9 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.21 cfs @ 12.14 hrs HW=163.56' TW=138.87' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.21 cfs @ 4.09 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 25

Summary for Pond 1IP: UPSTREAM TACAN

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 1.35" for 2-year event
 Inflow = 158.48 cfs @ 13.50 hrs, Volume= 47.124 af
 Outflow = 64.10 cfs @ 15.27 hrs, Volume= 47.121 af, Atten= 60%, Lag= 106.5 min
 Primary = 32.05 cfs @ 15.27 hrs, Volume= 23.436 af
 Secondary = 32.05 cfs @ 15.27 hrs, Volume= 23.686 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 143.29' @ 15.27 hrs Surf.Area= 384,554 sf Storage= 651,132 cf

Plug-Flow detention time= 117.0 min calculated for 47.115 af (100% of inflow)
 Center-of-Mass det. time= 116.8 min (1,066.2 - 949.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 26

Primary OutFlow Max=32.05 cfs @ 15.27 hrs HW=143.29' TW=135.71' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 32.05 cfs @ 10.20 fps)**Secondary OutFlow** Max=32.05 cfs @ 15.27 hrs HW=143.29' TW=135.71' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 32.05 cfs @ 10.20 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=137.80' TW=133.50' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 1.31" for 2-year event
 Inflow = 64.99 cfs @ 15.17 hrs, Volume= 47.932 af
 Outflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af, Atten= 0%, Lag= 0.4 min
 Primary = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 135.71' @ 15.18 hrs Surf.Area= 1,295 sf Storage= 1,432 cf

Plug-Flow detention time= 0.4 min calculated for 47.932 af (100% of inflow)

Center-of-Mass det. time= 0.4 min (1,064.1 - 1,063.8)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=64.99 cfs @ 15.18 hrs HW=135.71' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 64.99 cfs @ 5.71 fps)

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Page 27

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 1.51" for 2-year event
 Inflow = 86.32 cfs @ 13.49 hrs, Volume= 27.695 af
 Outflow = 83.23 cfs @ 13.79 hrs, Volume= 27.695 af, Atten= 4%, Lag= 17.4 min
 Primary = 40.50 cfs @ 13.79 hrs, Volume= 13.266 af
 Secondary = 42.73 cfs @ 13.79 hrs, Volume= 14.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.84' @ 13.79 hrs Surf.Area= 48,939 sf Storage= 30,872 cf

Plug-Flow detention time= 3.6 min calculated for 27.695 af (100% of inflow)
 Center-of-Mass det. time= 3.6 min (931.7 - 928.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=40.50 cfs @ 13.79 hrs HW=144.84' TW=141.56' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 40.50 cfs @ 5.27 fps)

Secondary OutFlow Max=42.73 cfs @ 13.79 hrs HW=144.84' TW=141.56' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 42.73 cfs @ 5.56 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 2.74" for 2-year event
 Inflow = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af
 Outflow = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af, Atten= 80%, Lag= 25.7 min
 Primary = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Printed 2/14/2023

Page 28

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.76' @ 12.51 hrs Surf.Area= 67,575 sf Storage= 163,282 cf

Plug-Flow detention time= 116.8 min calculated for 9.009 af (97% of inflow)
 Center-of-Mass det. time= 96.7 min (881.8 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=25.15 cfs @ 12.51 hrs HW=147.76' TW=143.76' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 25.15 cfs @ 8.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	18.420 ac, 57.11% Impervious, Inflow Depth = 1.17" for 2-year event
Inflow =	24.26 cfs @ 12.09 hrs, Volume= 1.798 af
Outflow =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.10' @ 24.34 hrs Surf.Area= 24,810 sf Storage= 78,326 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

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Page 29

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.00' TW=138.00' (Dynamic Tailwater)

1=Culvert (Controls 0.00 cfs)

2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.580 ac, 44.83% Impervious, Inflow Depth = 0.95" for 2-year event
Inflow =	7.94 cfs @ 12.37 hrs, Volume= 0.993 af
Outflow =	0.32 cfs @ 20.63 hrs, Volume= 0.124 af, Atten= 96%, Lag= 495.5 min
Primary =	0.32 cfs @ 20.63 hrs, Volume= 0.124 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.25' @ 20.63 hrs Surf.Area= 10,635 sf Storage= 38,403 cfPlug-Flow detention time= 601.4 min calculated for 0.124 af (12% of inflow)
Center-of-Mass det. time= 441.6 min (1,329.5 - 887.9)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 30

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.32 cfs @ 20.63 hrs HW=146.25' TW=139.04' (Dynamic Tailwater)

1=Culvert (Passes 0.32 cfs of 26.00 cfs potential flow)

2=Orifice/Grate (Weir Controls 0.32 cfs @ 0.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	312.160 ac, 23.88% Impervious, Inflow Depth = 1.19" for 2-year event
Inflow =	92.47 cfs @ 13.72 hrs, Volume= 30.905 af
Outflow =	91.37 cfs @ 13.89 hrs, Volume= 30.905 af, Atten= 1%, Lag= 10.2 min
Primary =	91.37 cfs @ 13.89 hrs, Volume= 30.905 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 141.57' @ 13.89 hrs Surf.Area= 25,957 sf Storage= 32,091 cf

Plug-Flow detention time= 5.0 min calculated for 30.905 af (100% of inflow)
Center-of-Mass det. time= 5.0 min (942.7 - 937.7)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 31

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=91.37 cfs @ 13.89 hrs HW=141.57' TW=130.42' (Dynamic Tailwater)
1=Culvert (Barrel Controls 91.37 cfs @ 8.54 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area =	872.630 ac, 27.98% Impervious, Inflow Depth = 1.21" for 2-year event
Inflow =	177.59 cfs @ 13.71 hrs, Volume= 88.007 af
Outflow =	177.44 cfs @ 13.78 hrs, Volume= 87.973 af, Atten= 0%, Lag= 4.0 min
Primary =	65.60 cfs @ 13.78 hrs, Volume= 24.686 af
Secondary =	111.84 cfs @ 13.78 hrs, Volume= 63.287 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 130.43' @ 13.78 hrs Surf.Area= 19,660 sf Storage= 44,178 cf

Plug-Flow detention time= 5.9 min calculated for 87.961 af (100% of inflow)
Center-of-Mass det. time= 5.0 min (1,013.6 - 1,008.6)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 32

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=65.60 cfs @ 13.78 hrs HW=130.43' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 65.60 cfs @ 5.73 fps)

Secondary OutFlow Max=111.84 cfs @ 13.78 hrs HW=130.43' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 111.84 cfs @ 6.77 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 1.42" for 2-year event
 Inflow = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af
 Outflow = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af, Atten= 1%, Lag= 3.1 min
 Primary = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.79' @ 13.10 hrs Surf.Area= 3,411 sf Storage= 5,608 cf

Plug-Flow detention time= 4.0 min calculated for 7.319 af (100% of inflow)
 Center-of-Mass det. time= 3.2 min (913.0 - 909.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 33

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=34.35 cfs @ 13.10 hrs HW=144.79' TW=132.44' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 34.35 cfs @ 5.52 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.50' TW=129.20' (Dynamic Tailwater)↑**2=Spillway over Path** (Controls 0.00 cfs)**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event
 Inflow = 82.52 cfs @ 13.31 hrs, Volume= 21.534 af
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 8%, Lag= 16.7 min
 Primary = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.93' @ 13.59 hrs Surf.Area= 36,830 sf Storage= 59,880 cf

Plug-Flow detention time= 8.8 min calculated for 21.531 af (100% of inflow)
 Center-of-Mass det. time= 8.8 min (943.4 - 934.6)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 34

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=76.28 cfs @ 13.59 hrs HW=132.93' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 76.28 cfs @ 6.74 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=129.20' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 35

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=4.19" Tc=6.0 min CN=92 Runoff=3.68 cfs 0.276 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=4.08" Tc=6.0 min CN=91 Runoff=4.12 cfs 0.306 af
Subcatchment 1C:	Runoff Area=46.170 ac 42.80% Impervious Runoff Depth=2.89" Flow Length=3,027' Tc=44.5 min CN=79 Runoff=73.04 cfs 11.111 af
Subcatchment 1D:	Runoff Area=32.370 ac 7.63% Impervious Runoff Depth=1.65" Flow Length=2,508' Tc=143.9 min CN=64 Runoff=12.72 cfs 4.440 af
Subcatchment 1E:	Runoff Area=11.300 ac 65.13% Impervious Runoff Depth=3.46" Tc=6.0 min CN=85 Runoff=45.35 cfs 3.259 af
Subcatchment 1F:	Runoff Area=12.080 ac 30.88% Impervious Runoff Depth=2.71" Tc=6.0 min CN=77 Runoff=38.35 cfs 2.725 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=4.19" Flow Length=531' Tc=29.2 min CN=92 Runoff=8.54 cfs 1.110 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=4.41" Tc=6.0 min CN=94 Runoff=6.33 cfs 0.485 af
Subcatchment 1I:	Runoff Area=310.950 ac 37.08% Impervious Runoff Depth=2.80" Flow Length=1,745' Tc=103.9 min CN=78 Runoff=280.25 cfs 72.472 af
Subcatchment 1J:	Runoff Area=18.410 ac 20.53% Impervious Runoff Depth=1.43" Flow Length=660' Tc=22.2 min CN=61 Runoff=18.11 cfs 2.193 af
Subcatchment 2A:	Runoff Area=154.350 ac 2.78% Impervious Runoff Depth=2.36" Flow Length=2,530' Tc=111.4 min CN=73 Runoff=111.02 cfs 30.344 af
Subcatchment 2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=4.41" Tc=6.0 min CN=94 Runoff=196.19 cfs 15.019 af
Subcatchment 2C:	Runoff Area=18.420 ac 57.11% Impervious Runoff Depth=2.44" Tc=6.0 min CN=74 Runoff=52.61 cfs 3.752 af
Subcatchment 2D:	Runoff Area=12.580 ac 44.83% Impervious Runoff Depth=2.11" Flow Length=836' Tc=23.9 min CN=70 Runoff=19.10 cfs 2.213 af
Subcatchment 2E:	Runoff Area=60.570 ac 5.55% Impervious Runoff Depth=1.57" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=31.43 cfs 7.938 af
Subcatchment 2F:	Runoff Area=123.000 ac 10.43% Impervious Runoff Depth=2.03" Flow Length=1,130' Tc=76.9 min CN=69 Runoff=96.20 cfs 20.811 af

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Page 36

Subcatchment2G: Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=3.87"
Tc=120.0 min CN=89 Runoff=18.52 cfs 5.337 af

Subcatchment2H: Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=3.17"
Tc=120.0 min CN=82 Runoff=8.14 cfs 2.318 af

Subcatchment3A: Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=2.80"
Flow Length=1,438' Tc=74.8 min CN=78 Runoff=69.64 cfs 14.408 af

Subcatchment3B: Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=2.62"
Flow Length=1,600' Tc=107.0 min CN=76 Runoff=109.34 cfs 28.778 af

Reach 1R: DP-1 TACAN OUTFALL Inflow=77.14 cfs 96.456 af
Outflow=77.14 cfs 96.456 af

Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH Inflow=293.61 cfs 180.623 af
Outflow=293.61 cfs 180.623 af

Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH Inflow=153.44 cfs 43.180 af
Outflow=153.44 cfs 43.180 af

Pond 1AP: SPORTS COMPLEX Peak Elev=171.02' Storage=2,829 cf Inflow=3.68 cfs 0.276 af
Discarded=0.12 cfs 0.170 af Primary=3.51 cfs 0.106 af Outflow=3.63 cfs 0.276 af

Pond 1BP: SPORTS COMPLEX Peak Elev=171.25' Storage=2,975 cf Inflow=4.12 cfs 0.306 af
Discarded=0.13 cfs 0.184 af Primary=3.49 cfs 0.122 af Outflow=3.62 cfs 0.306 af

Pond 1CP: MEMORIAL GROVE AVE. Peak Elev=153.47' Storage=195,497 cf Inflow=74.20 cfs 11.339 af
Primary=26.36 cfs 11.278 af Secondary=0.00 cfs 0.000 af Outflow=26.36 cfs 11.278 af

Pond 1DP: UPSTREAM DOGLEG Peak Elev=146.01' Storage=4,848 cf Inflow=37.68 cfs 15.718 af
Primary=18.18 cfs 7.533 af Secondary=18.82 cfs 8.184 af Outflow=37.00 cfs 15.718 af

Pond 1EP: DOWNSTREAM DOGLEG Peak Elev=145.62' Storage=5,221 cf Inflow=47.87 cfs 18.977 af
48.0" Round Culvert x 2.00 n=0.013 L=2,830.0' S=0.0027 ' Outflow=47.09 cfs 18.977 af

Pond 1FP: EXISTING PARKWAY BASIN Peak Elev=147.16' Storage=79,920 cf Inflow=38.35 cfs 2.725 af
Primary=1.95 cfs 1.234 af Secondary=0.00 cfs 0.000 af Outflow=1.95 cfs 1.234 af

Pond 1GP: SPORTS COMPLEX BASIN Peak Elev=169.36' Storage=7,713 cf Inflow=8.54 cfs 1.110 af
Primary=5.34 cfs 1.098 af Secondary=0.33 cfs 0.003 af Outflow=5.67 cfs 1.102 af

Pond 1HP: SPORTS COMPLEX BASIN Peak Elev=164.27' Storage=1,616 cf Inflow=6.33 cfs 0.485 af
Primary=4.34 cfs 0.483 af Secondary=0.00 cfs 0.000 af Outflow=4.34 cfs 0.483 af

Pond 1IP: UPSTREAM TACAN Peak Elev=145.05' Storage=1,895,130 cf Inflow=322.78 cfs 94.267 af
Primary=37.81 cfs 47.067 af Secondary=37.81 cfs 47.196 af Tertiary=0.00 cfs 0.000 af Outflow=75.62 cfs 94.263 af

Pond 1JP: DOWNSTREAM TACAN Peak Elev=135.93' Storage=1,724 cf Inflow=77.14 cfs 96.456 af
60.0" Round Culvert x 2.00 n=0.013 L=899.0' S=0.0030 ' Outflow=77.14 cfs 96.456 af

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=146.13' Storage=142,749 cf Inflow=162.90 cfs 52.697 af
Primary=69.87 cfs 25.483 af Secondary=72.70 cfs 27.214 af Outflow=142.57 cfs 52.697 af

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Type III 24-hr 10-year Rainfall=5.10"

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Page 37

Pond 2BP: EXISTING BASIN Peak Elev=149.13' Storage=266,655 cf Inflow=196.19 cfs 15.019 af
Primary=30.75 cfs 14.696 af Secondary=0.00 cfs 0.000 af Outflow=30.75 cfs 14.696 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=146.25' Storage=108,793 cf Inflow=52.61 cfs 3.752 af
Outflow=3.17 cfs 1.413 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=146.62' Storage=42,395 cf Inflow=19.10 cfs 2.213 af
Primary=7.10 cfs 1.344 af Secondary=0.00 cfs 0.000 af Outflow=7.10 cfs 1.344 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=143.51' Storage=112,572 cf Inflow=171.28 cfs 63.391 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=164.11 cfs 63.391 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=131.81' Storage=85,540 cf Inflow=296.18 cfs 180.659 af
Primary=119.47 cfs 59.794 af Secondary=174.14 cfs 120.829 af Tertiary=0.00 cfs 0.000 af Outflow=293.61 cfs 180.623 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=146.83' Storage=31,582 cf Inflow=69.64 cfs 14.408 af
Primary=60.25 cfs 14.376 af Secondary=1.31 cfs 0.027 af Outflow=61.56 cfs 14.402 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=135.16' Storage=164,766 cf Inflow=169.73 cfs 43.180 af
Primary=152.02 cfs 43.159 af Secondary=1.42 cfs 0.021 af Outflow=153.44 cfs 43.180 af

Total Runoff Area = 1,066.350 ac Runoff Volume = 229.294 af Average Runoff Depth = 2.58"
75.55% Pervious = 805.640 ac 24.45% Impervious = 260.710 ac

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Type III 24-hr 10-year Rainfall=5.10"

Printed 2/14/2023

Page 38

Summary for Subcatchment 1A:

Runoff = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 73.04 cfs @ 12.61 hrs, Volume= 11.111 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 39

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 12.72 cfs @ 14.07 hrs, Volume= 4.440 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 40

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

Summary for Subcatchment 1E:

Runoff = 45.35 cfs @ 12.09 hrs, Volume= 3.259 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 41

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 38.35 cfs @ 12.09 hrs, Volume= 2.725 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

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Type III 24-hr 10-year Rainfall=5.10"

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Page 42

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

Summary for Subcatchment 1H:

Runoff = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 280.25 cfs @ 13.39 hrs, Volume= 72.472 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 43

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

Summary for Subcatchment 1J:

Runoff = 18.11 cfs @ 12.35 hrs, Volume= 2.193 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

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Type III 24-hr 10-year Rainfall=5.10"

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Page 44

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

Summary for Subcatchment 2A:

Runoff = 111.02 cfs @ 13.49 hrs, Volume= 30.344 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
111.4	2,530	Total			

Summary for Subcatchment 2B:

Runoff = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 45

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 52.61 cfs @ 12.09 hrs, Volume= 3.752 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D:

Runoff = 19.10 cfs @ 12.35 hrs, Volume= 2.213 af, Depth= 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

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Type III 24-hr 10-year Rainfall=5.10"

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Page 46

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

Summary for Subcatchment 2E:

Runoff = 31.43 cfs @ 13.29 hrs, Volume= 7.938 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 96.20 cfs @ 13.07 hrs, Volume= 20.811 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 47

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
76.9	1,130	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 18.52 cfs @ 13.47 hrs, Volume= 5.337 af, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 8.14 cfs @ 13.60 hrs, Volume= 2.318 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 48

	Area (ac)	CN	Description
*	3.370	98	Pavement
*	1.690	98	Roof
	3.720	61	>75% Grass cover, Good, HSG B
	8.780	82	Weighted Average
	3.720		42.37% Pervious Area
	5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

	Area (ac)	CN	Description
*	5.200	98	Pavement
	0.160	55	Woods, Good, HSG B
	50.970	77	Woods, Good, HSG D
	5.490	73	Brush, Good, HSG D
	61.820	78	Weighted Average
	56.620		91.59% Pervious Area
	5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 109.34 cfs @ 13.43 hrs, Volume= 28.778 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 49

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 2.65" for 10-year event
 Inflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af
 Outflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 2.48" for 10-year event
 Inflow = 293.61 cfs @ 13.63 hrs, Volume= 180.623 af
 Outflow = 293.61 cfs @ 13.63 hrs, Volume= 180.623 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event
 Inflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

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Page 50

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af
 Outflow = 3.63 cfs @ 12.11 hrs, Volume= 0.276 af, Atten= 1%, Lag= 1.7 min
 Discarded = 0.12 cfs @ 10.44 hrs, Volume= 0.170 af
 Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.02' @ 12.11 hrs Surf.Area= 2,201 sf Storage= 2,829 cf

Plug-Flow detention time= 100.4 min calculated for 0.276 af (100% of inflow)
 Center-of-Mass det. time= 100.4 min (882.5 - 782.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 ' / ' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 10.44 hrs HW=168.58' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=3.37 cfs @ 12.11 hrs HW=170.99' TW=150.88' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 3.37 cfs @ 3.84 fps)

Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 4.08" for 10-year event
 Inflow = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af
 Outflow = 3.62 cfs @ 12.13 hrs, Volume= 0.306 af, Atten= 12%, Lag= 2.6 min
 Discarded = 0.13 cfs @ 10.34 hrs, Volume= 0.184 af
 Primary = 3.49 cfs @ 12.13 hrs, Volume= 0.122 af

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Page 51

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.25' @ 12.13 hrs Surf.Area= 2,378 sf Storage= 2,975 cf

Plug-Flow detention time= 98.7 min calculated for 0.306 af (100% of inflow)
 Center-of-Mass det. time= 98.7 min (884.9 - 786.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB-Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.13 cfs @ 10.34 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=3.48 cfs @ 12.13 hrs HW=171.25' TW=150.91' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.48 cfs @ 3.82 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area =	47.860 ac, 44.44% Impervious, Inflow Depth = 2.84" for 10-year event
Inflow =	74.20 cfs @ 12.61 hrs, Volume= 11.339 af
Outflow =	26.36 cfs @ 13.37 hrs, Volume= 11.278 af, Atten= 64%, Lag= 45.7 min
Primary =	26.36 cfs @ 13.37 hrs, Volume= 11.278 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 153.47' @ 13.37 hrs Surf.Area= 66,324 sf Storage= 195,497 cf

Plug-Flow detention time= 156.5 min calculated for 11.276 af (99% of inflow)

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Page 52

Center-of-Mass det. time= 153.5 min (1,010.8 - 857.3)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.36 cfs @ 13.37 hrs HW=153.47' TW=145.63' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 26.36 cfs @ 6.63 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area =	80.230 ac, 29.59% Impervious, Inflow Depth > 2.35" for 10-year event
Inflow =	37.68 cfs @ 13.75 hrs, Volume= 15.718 af
Outflow =	37.00 cfs @ 13.86 hrs, Volume= 15.718 af, Atten= 2%, Lag= 6.4 min
Primary =	18.18 cfs @ 13.88 hrs, Volume= 7.533 af
Secondary =	18.82 cfs @ 13.84 hrs, Volume= 8.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 146.01' @ 14.26 hrs Surf.Area= 5,943 sf Storage= 4,848 cf

Plug-Flow detention time= 1.8 min calculated for 15.718 af (100% of inflow)

Center-of-Mass det. time= 1.8 min (1,006.7 - 1,005.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 53

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 ' S= 0.0004 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 ' S= 0.0004 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=18.09 cfs @ 13.88 hrs HW=145.95' TW=145.47' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 18.09 cfs @ 2.45 fps)

Secondary OutFlow Max=18.73 cfs @ 13.84 hrs HW=145.94' TW=145.45' (Dynamic Tailwater)

↑**2=Culvert** (Outlet Controls 18.73 cfs @ 2.47 fps)

Summary for Pond 1EP: DOWNSTREAM DOGLEG

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 2.49" for 10-year event
 Inflow = 47.87 cfs @ 12.09 hrs, Volume= 18.977 af
 Outflow = 47.09 cfs @ 12.11 hrs, Volume= 18.977 af, Atten= 2%, Lag= 0.8 min
 Primary = 47.09 cfs @ 12.11 hrs, Volume= 18.977 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.62' @ 14.68 hrs Surf.Area= 3,551 sf Storage= 5,221 cf

Plug-Flow detention time= 3.0 min calculated for 18.977 af (100% of inflow)
 Center-of-Mass det. time= 3.0 min (975.4 - 972.4)

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 54

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	48.0" Round Culvert X 2.00 L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=46.86 cfs @ 12.11 hrs HW=144.53' TW=139.94' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 46.86 cfs @ 4.21 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area =	12.080 ac, 30.88% Impervious, Inflow Depth = 2.71" for 10-year event
Inflow =	38.35 cfs @ 12.09 hrs, Volume= 2.725 af
Outflow =	1.95 cfs @ 14.95 hrs, Volume= 1.234 af, Atten= 95%, Lag= 171.6 min
Primary =	1.95 cfs @ 14.95 hrs, Volume= 1.234 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.16' @ 14.95 hrs Surf.Area= 24,770 sf Storage= 79,920 cf

Plug-Flow detention time= 453.6 min calculated for 1.234 af (45% of inflow)

Center-of-Mass det. time= 333.7 min (1,162.6 - 828.8)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

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Page 55

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.95 cfs @ 14.95 hrs HW=147.16' TW=144.89' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.95 cfs @ 3.25 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af
 Outflow = 5.67 cfs @ 12.67 hrs, Volume= 1.102 af, Atten= 34%, Lag= 17.1 min
 Primary = 5.34 cfs @ 12.67 hrs, Volume= 1.098 af
 Secondary = 0.33 cfs @ 12.67 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 169.36' @ 12.67 hrs Surf.Area= 4,179 sf Storage= 7,713 cf

Plug-Flow detention time= 26.1 min calculated for 1.102 af (99% of inflow)
 Center-of-Mass det. time= 21.7 min (825.4 - 803.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 56

Primary OutFlow Max=5.34 cfs @ 12.67 hrs HW=169.36' TW=141.60' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.34 cfs @ 6.79 fps)**Secondary OutFlow** Max=0.33 cfs @ 12.67 hrs HW=169.36' TW=141.60' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.64 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 4.41" for 10-year event
 Inflow = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af
 Outflow = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af, Atten= 31%, Lag= 4.9 min
 Primary = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 164.27' @ 12.17 hrs Surf.Area= 1,803 sf Storage= 1,616 cf

Plug-Flow detention time= 9.8 min calculated for 0.483 af (100% of inflow)
 Center-of-Mass det. time= 6.8 min (779.7 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.34 cfs @ 12.17 hrs HW=164.27' TW=140.13' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.34 cfs @ 5.52 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 57

Summary for Pond 1IP: UPSTREAM TACAN

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 2.70" for 10-year event
 Inflow = 322.78 cfs @ 13.39 hrs, Volume= 94.267 af
 Outflow = 75.62 cfs @ 16.52 hrs, Volume= 94.263 af, Atten= 77%, Lag= 187.9 min
 Primary = 37.81 cfs @ 16.52 hrs, Volume= 47.067 af
 Secondary = 37.81 cfs @ 16.52 hrs, Volume= 47.196 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.05' @ 16.52 hrs Surf.Area= 1,099,064 sf Storage= 1,895,130 cf

Plug-Flow detention time= 273.9 min calculated for 94.250 af (100% of inflow)
 Center-of-Mass det. time= 273.7 min (1,203.9 - 930.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 58

Primary OutFlow Max=37.81 cfs @ 16.52 hrs HW=145.05' TW=135.92' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 37.81 cfs @ 12.03 fps)**Secondary OutFlow** Max=37.81 cfs @ 16.52 hrs HW=145.05' TW=135.92' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 37.81 cfs @ 12.03 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=137.80' TW=133.50' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 2.65" for 10-year event
 Inflow = 77.14 cfs @ 15.71 hrs, Volume= 96.456 af
 Outflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af, Atten= 0%, Lag= 0.4 min
 Primary = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 135.93' @ 15.72 hrs Surf.Area= 1,421 sf Storage= 1,724 cf

Plug-Flow detention time= 0.4 min calculated for 96.443 af (100% of inflow)

Center-of-Mass det. time= 0.4 min (1,197.1 - 1,196.7)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=77.14 cfs @ 15.72 hrs HW=135.93' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 77.14 cfs @ 5.97 fps)

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Page 59

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 2.87" for 10-year event
 Inflow = 162.90 cfs @ 13.49 hrs, Volume= 52.697 af
 Outflow = 142.57 cfs @ 13.98 hrs, Volume= 52.697 af, Atten= 12%, Lag= 29.5 min
 Primary = 69.87 cfs @ 13.98 hrs, Volume= 25.483 af
 Secondary = 72.70 cfs @ 13.98 hrs, Volume= 27.214 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.13' @ 13.98 hrs Surf.Area= 130,203 sf Storage= 142,749 cf

Plug-Flow detention time= 8.1 min calculated for 52.689 af (100% of inflow)
 Center-of-Mass det. time= 8.1 min (926.1 - 917.9)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=69.87 cfs @ 13.98 hrs HW=146.13' TW=143.46' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 69.87 cfs @ 6.27 fps)

Secondary OutFlow Max=72.70 cfs @ 13.98 hrs HW=146.13' TW=143.46' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 72.70 cfs @ 6.52 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 4.41" for 10-year event
 Inflow = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af
 Outflow = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af, Atten= 84%, Lag= 28.6 min
 Primary = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Page 60

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.13' @ 12.56 hrs Surf.Area= 81,286 sf Storage= 266,655 cf

Plug-Flow detention time= 125.7 min calculated for 14.696 af (98% of inflow)
 Center-of-Mass det. time= 112.3 min (885.2 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=30.75 cfs @ 12.56 hrs HW=149.13' TW=144.44' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 30.75 cfs @ 9.79 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	18.420 ac, 57.11% Impervious, Inflow Depth = 2.44" for 10-year event
Inflow =	52.61 cfs @ 12.09 hrs, Volume= 3.752 af
Outflow =	3.17 cfs @ 14.47 hrs, Volume= 1.413 af, Atten= 94%, Lag= 143.0 min
Primary =	3.17 cfs @ 14.47 hrs, Volume= 1.413 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.25' @ 14.47 hrs Surf.Area= 28,608 sf Storage= 108,793 cf

Plug-Flow detention time= 354.8 min calculated for 1.413 af (38% of inflow)
 Center-of-Mass det. time= 228.0 min (1,064.4 - 836.5)

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Page 61

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.17 cfs @ 14.47 hrs HW=146.25' TW=143.44' (Dynamic Tailwater)

1=Culvert (Passes 3.17 cfs of 38.80 cfs potential flow)

2=Orifice/Grate (Weir Controls 3.17 cfs @ 1.62 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.580 ac, 44.83% Impervious, Inflow Depth = 2.11" for 10-year event
Inflow =	19.10 cfs @ 12.35 hrs, Volume= 2.213 af
Outflow =	7.10 cfs @ 12.85 hrs, Volume= 1.344 af, Atten= 63%, Lag= 30.1 min
Primary =	7.10 cfs @ 12.85 hrs, Volume= 1.344 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.62' @ 12.85 hrs Surf.Area= 11,206 sf Storage= 42,395 cf

Plug-Flow detention time= 216.1 min calculated for 1.344 af (61% of inflow)

Center-of-Mass det. time= 102.0 min (965.2 - 863.2)

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Page 62

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.10 cfs @ 12.85 hrs HW=146.62' TW=141.72' (Dynamic Tailwater)

1=Culvert (Passes 7.10 cfs of 27.56 cfs potential flow)

2=Orifice/Grate (Weir Controls 7.10 cfs @ 2.12 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	312.160 ac, 23.88% Impervious, Inflow Depth = 2.44" for 10-year event
Inflow =	171.28 cfs @ 13.77 hrs, Volume= 63.391 af
Outflow =	164.11 cfs @ 14.21 hrs, Volume= 63.391 af, Atten= 4%, Lag= 26.4 min
Primary =	164.11 cfs @ 14.21 hrs, Volume= 63.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 143.51' @ 14.21 hrs Surf.Area= 52,987 sf Storage= 112,572 cf

Plug-Flow detention time= 7.4 min calculated for 63.382 af (100% of inflow)

Center-of-Mass det. time= 7.4 min (939.5 - 932.1)

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Page 63

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=164.11 cfs @ 14.21 hrs HW=143.51' TW=131.69' (Dynamic Tailwater)
1=Culvert (Inlet Controls 164.11 cfs @ 8.36 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area =	872.630 ac, 27.98% Impervious, Inflow Depth = 2.48" for 10-year event
Inflow =	296.18 cfs @ 13.42 hrs, Volume= 180.659 af
Outflow =	293.61 cfs @ 13.63 hrs, Volume= 180.623 af, Atten= 1%, Lag= 12.9 min
Primary =	119.47 cfs @ 13.63 hrs, Volume= 59.794 af
Secondary =	174.14 cfs @ 13.63 hrs, Volume= 120.829 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 131.81' @ 13.63 hrs Surf.Area= 49,819 sf Storage= 85,540 cf

Plug-Flow detention time= 5.2 min calculated for 180.623 af (100% of inflow)
Center-of-Mass det. time= 4.6 min (1,078.8 - 1,074.2)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 64

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=119.47 cfs @ 13.63 hrs HW=131.81' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 119.47 cfs @ 7.25 fps)

Secondary OutFlow Max=174.14 cfs @ 13.63 hrs HW=131.81' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 174.14 cfs @ 7.77 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 2.80" for 10-year event
 Inflow = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af
 Outflow = 61.56 cfs @ 13.30 hrs, Volume= 14.402 af, Atten= 12%, Lag= 15.3 min
 Primary = 60.25 cfs @ 13.30 hrs, Volume= 14.376 af
 Secondary = 1.31 cfs @ 13.30 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.83' @ 13.30 hrs Surf.Area= 28,525 sf Storage= 31,582 cf

Plug-Flow detention time= 5.1 min calculated for 14.402 af (100% of inflow)
 Center-of-Mass det. time= 4.6 min (894.7 - 890.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 65

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=60.25 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 60.25 cfs @ 8.52 fps)

Secondary OutFlow Max=1.31 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)

↑**2=Spillway over Path** (Weir Controls 1.31 cfs @ 0.98 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event
 Inflow = 169.73 cfs @ 13.43 hrs, Volume= 43.180 af
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 10%, Lag= 20.5 min
 Primary = 152.02 cfs @ 13.77 hrs, Volume= 43.159 af
 Secondary = 1.42 cfs @ 13.77 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.16' @ 13.77 hrs Surf.Area= 58,726 sf Storage= 164,766 cf

Plug-Flow detention time= 12.1 min calculated for 43.174 af (100% of inflow)
 Center-of-Mass det. time= 12.1 min (927.1 - 914.9)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 66

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=152.01 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 152.01 cfs @ 8.20 fps)
Secondary OutFlow Max=1.42 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)

2=Spillway over Path (Weir Controls 1.42 cfs @ 0.63 fps)

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Page 67

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=5.27" Tc=6.0 min CN=92 Runoff=4.56 cfs 0.347 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=5.15" Tc=6.0 min CN=91 Runoff=5.13 cfs 0.386 af
Subcatchment 1C:	Runoff Area=46.170 ac 42.80% Impervious Runoff Depth=3.86" Flow Length=3,027' Tc=44.5 min CN=79 Runoff=97.47 cfs 14.847 af
Subcatchment 1D:	Runoff Area=32.370 ac 7.63% Impervious Runoff Depth=2.41" Flow Length=2,508' Tc=143.9 min CN=64 Runoff=19.29 cfs 6.493 af
Subcatchment 1E:	Runoff Area=11.300 ac 65.13% Impervious Runoff Depth=4.49" Tc=6.0 min CN=85 Runoff=58.27 cfs 4.229 af
Subcatchment 1F:	Runoff Area=12.080 ac 30.88% Impervious Runoff Depth=3.65" Tc=6.0 min CN=77 Runoff=51.74 cfs 3.679 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=5.27" Flow Length=531' Tc=29.2 min CN=92 Runoff=10.61 cfs 1.396 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=5.49" Tc=6.0 min CN=94 Runoff=7.80 cfs 0.604 af
Subcatchment 1I:	Runoff Area=310.950 ac 37.08% Impervious Runoff Depth=3.76" Flow Length=1,745' Tc=103.9 min CN=78 Runoff=377.40 cfs 97.331 af
Subcatchment 1J:	Runoff Area=18.410 ac 20.53% Impervious Runoff Depth=2.14" Flow Length=660' Tc=22.2 min CN=61 Runoff=28.41 cfs 3.284 af
Subcatchment 2A:	Runoff Area=154.350 ac 2.78% Impervious Runoff Depth=3.26" Flow Length=2,530' Tc=111.4 min CN=73 Runoff=154.99 cfs 41.871 af
Subcatchment 2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=5.49" Tc=6.0 min CN=94 Runoff=241.61 cfs 18.728 af
Subcatchment 2C:	Runoff Area=18.420 ac 57.11% Impervious Runoff Depth=3.35" Tc=6.0 min CN=74 Runoff=72.47 cfs 5.148 af
Subcatchment 2D:	Runoff Area=12.580 ac 44.83% Impervious Runoff Depth=2.96" Flow Length=836' Tc=23.9 min CN=70 Runoff=27.18 cfs 3.108 af
Subcatchment 2E:	Runoff Area=60.570 ac 5.55% Impervious Runoff Depth=2.32" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=48.10 cfs 11.696 af
Subcatchment 2F:	Runoff Area=123.000 ac 10.43% Impervious Runoff Depth=2.87" Flow Length=1,130' Tc=76.9 min CN=69 Runoff=138.40 cfs 29.413 af

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Page 68

Subcatchment2G: Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=4.93"
Tc=120.0 min CN=89 Runoff=23.43 cfs 6.803 af

Subcatchment2H: Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=4.17"
Tc=120.0 min CN=82 Runoff=10.69 cfs 3.052 af

Subcatchment3A: Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=3.76"
Flow Length=1,438' Tc=74.8 min CN=78 Runoff=93.55 cfs 19.350 af

Subcatchment3B: Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=3.55"
Flow Length=1,600' Tc=107.0 min CN=76 Runoff=149.28 cfs 39.057 af

Reach 1R: DP-1 TACAN OUTFALL Inflow=95.85 cfs 130.641 af
Outflow=95.85 cfs 130.641 af

Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH Inflow=363.68 cfs 246.895 af
Outflow=363.68 cfs 246.895 af

Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH Inflow=222.14 cfs 58.401 af
Outflow=222.14 cfs 58.401 af

Pond 1AP: SPORTS COMPLEX Peak Elev=171.26' Storage=2,832 cf Inflow=4.56 cfs 0.347 af
Discarded=0.12 cfs 0.186 af Primary=4.89 cfs 0.161 af Outflow=5.02 cfs 0.347 af

Pond 1BP: SPORTS COMPLEX Peak Elev=171.52' Storage=3,056 cf Inflow=5.13 cfs 0.386 af
Discarded=0.13 cfs 0.202 af Primary=5.36 cfs 0.185 af Outflow=5.49 cfs 0.386 af

Pond 1CP: MEMORIAL GROVE AVE. Peak Elev=154.51' Storage=267,257 cf Inflow=98.92 cfs 15.192 af
Primary=33.58 cfs 15.130 af Secondary=0.00 cfs 0.000 af Outflow=33.58 cfs 15.130 af

Pond 1DP: UPSTREAM DOGLEG Peak Elev=146.93' Storage=11,983 cf Inflow=51.54 cfs 21.623 af
Primary=24.92 cfs 10.557 af Secondary=25.15 cfs 11.066 af Outflow=50.07 cfs 21.623 af

Pond 1EP: DOWNSTREAM DOGLEG Peak Elev=146.41' Storage=8,815 cf Inflow=63.46 cfs 25.853 af
48.0" Round Culvert x 2.00 n=0.013 L=2,830.0' S=0.0027 ' Outflow=62.18 cfs 25.853 af

Pond 1FP: EXISTING PARKWAY BASIN Peak Elev=147.58' Storage=90,661 cf Inflow=51.74 cfs 3.679 af
Primary=4.87 cfs 2.188 af Secondary=0.00 cfs 0.000 af Outflow=4.87 cfs 2.188 af

Pond 1GP: SPORTS COMPLEX BASIN Peak Elev=169.58' Storage=8,644 cf Inflow=10.61 cfs 1.396 af
Primary=5.58 cfs 1.309 af Secondary=3.49 cfs 0.078 af Outflow=9.07 cfs 1.388 af

Pond 1HP: SPORTS COMPLEX BASIN Peak Elev=164.58' Storage=2,285 cf Inflow=7.80 cfs 0.604 af
Primary=4.74 cfs 0.600 af Secondary=0.39 cfs 0.002 af Outflow=5.12 cfs 0.602 af

Pond 1IP: UPSTREAM TACAN Peak Elev=145.81' Storage=2,822,453 cf Inflow=435.95 cfs 127.361 af
Primary=40.05 cfs 61.754 af Secondary=40.05 cfs 61.903 af Tertiary=13.95 cfs 3.700 af Outflow=94.05 cfs 127.357 af

Pond 1JP: DOWNSTREAM TACAN Peak Elev=136.23' Storage=2,276 cf Inflow=95.85 cfs 130.641 af
60.0" Round Culvert x 2.00 n=0.013 L=899.0' S=0.0030 ' Outflow=95.85 cfs 130.641 af

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=146.91' Storage=275,343 cf Inflow=215.82 cfs 70.130 af
Primary=82.96 cfs 34.167 af Secondary=85.55 cfs 35.963 af Outflow=168.18 cfs 70.130 af

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Printed 2/14/2023

Page 69

Pond 2BP: EXISTING BASIN Peak Elev=149.96' Storage=336,733 cf Inflow=241.61 cfs 18.728 af
Primary=33.70 cfs 18.405 af Secondary=0.00 cfs 0.000 af Outflow=33.70 cfs 18.405 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=146.54' Storage=117,526 cf Inflow=72.47 cfs 5.148 af
Outflow=10.52 cfs 2.809 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=147.02' Storage=47,025 cf Inflow=27.18 cfs 3.108 af
Primary=17.45 cfs 2.239 af Secondary=0.00 cfs 0.000 af Outflow=17.45 cfs 2.239 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=145.08' Storage=210,329 cf Inflow=215.04 cfs 86.875 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=193.74 cfs 86.875 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=132.74' Storage=142,442 cf Inflow=373.46 cfs 246.930 af
Primary=148.57 cfs 84.548 af Secondary=215.11 cfs 162.347 af Tertiary=0.00 cfs 0.000 af Outflow=363.68 cfs 246.895 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=147.40' Storage=58,131 cf Inflow=93.55 cfs 19.350 af
Primary=65.43 cfs 18.404 af Secondary=15.51 cfs 0.941 af Outflow=80.94 cfs 19.344 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=135.81' Storage=204,979 cf Inflow=229.36 cfs 58.401 af
Primary=166.13 cfs 55.050 af Secondary=56.01 cfs 3.351 af Outflow=222.14 cfs 58.401 af

Total Runoff Area = 1,066.350 ac Runoff Volume = 310.822 af Average Runoff Depth = 3.50"
75.55% Pervious = 805.640 ac 24.45% Impervious = 260.710 ac

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Type III 24-hr 25-year Rainfall=6.20"

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Page 70

Summary for Subcatchment 1A:

Runoff = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 97.47 cfs @ 12.61 hrs, Volume= 14.847 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 71

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 19.29 cfs @ 13.92 hrs, Volume= 6.493 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 72

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

Summary for Subcatchment 1E:

Runoff = 58.27 cfs @ 12.09 hrs, Volume= 4.229 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 73

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 51.74 cfs @ 12.09 hrs, Volume= 3.679 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

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Type III 24-hr 25-year Rainfall=6.20"

Printed 2/14/2023

Page 74

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

Summary for Subcatchment 1H:

Runoff = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 377.40 cfs @ 13.39 hrs, Volume= 97.331 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 75

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

Summary for Subcatchment 1J:

Runoff = 28.41 cfs @ 12.33 hrs, Volume= 3.284 af, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

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Type III 24-hr 25-year Rainfall=6.20"

Printed 2/14/2023

Page 76

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

Summary for Subcatchment 2A:

Runoff = 154.99 cfs @ 13.49 hrs, Volume= 41.871 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
111.4	2,530	Total			

Summary for Subcatchment 2B:

Runoff = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

SWNAS - Existing Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 77

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 72.47 cfs @ 12.09 hrs, Volume= 5.148 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D:

Runoff = 27.18 cfs @ 12.35 hrs, Volume= 3.108 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

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Type III 24-hr 25-year Rainfall=6.20"

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Page 78

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

Summary for Subcatchment 2E:

Runoff = 48.10 cfs @ 13.28 hrs, Volume= 11.696 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 138.40 cfs @ 13.07 hrs, Volume= 29.413 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 79

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
76.9	1,130	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 23.43 cfs @ 13.47 hrs, Volume= 6.803 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 10.69 cfs @ 13.60 hrs, Volume= 3.052 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 80

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 149.28 cfs @ 13.43 hrs, Volume= 39.057 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Page 81

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 3.58" for 25-year event
 Inflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af
 Outflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 3.40" for 25-year event
 Inflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af
 Outflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event
 Inflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

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Page 82

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af
 Outflow = 5.02 cfs @ 12.07 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.12 cfs @ 9.74 hrs, Volume= 0.186 af
 Primary = 4.89 cfs @ 12.07 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.26' @ 12.07 hrs Surf.Area= 2,201 sf Storage= 2,832 cf

Plug-Flow detention time= 91.8 min calculated for 0.347 af (100% of inflow)
 Center-of-Mass det. time= 91.8 min (867.9 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB-Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 ' / ' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 9.74 hrs HW=168.58' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=4.79 cfs @ 12.07 hrs HW=171.24' TW=151.22' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 4.79 cfs @ 4.17 fps)

Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 5.15" for 25-year event
 Inflow = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af
 Outflow = 5.49 cfs @ 12.08 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.13 cfs @ 9.62 hrs, Volume= 0.202 af
 Primary = 5.36 cfs @ 12.08 hrs, Volume= 0.185 af

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Page 83

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 171.52' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,056 cf

Plug-Flow detention time= 89.9 min calculated for 0.386 af (100% of inflow)

Center-of-Mass det. time= 89.9 min (869.9 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB-Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.13 cfs @ 9.62 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=5.22 cfs @ 12.08 hrs HW=171.50' TW=151.24' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.22 cfs @ 4.14 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area =	47.860 ac, 44.44% Impervious, Inflow Depth = 3.81" for 25-year event
Inflow =	98.92 cfs @ 12.61 hrs, Volume= 15.192 af
Outflow =	33.58 cfs @ 13.39 hrs, Volume= 15.130 af, Atten= 66%, Lag= 46.8 min
Primary =	33.58 cfs @ 13.39 hrs, Volume= 15.130 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 154.51' @ 13.39 hrs Surf.Area= 72,496 sf Storage= 267,257 cf

Plug-Flow detention time= 150.0 min calculated for 15.128 af (100% of inflow)

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Page 84

Center-of-Mass det. time= 147.8 min (996.7 - 848.9)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.58 cfs @ 13.39 hrs HW=154.51' TW=146.33' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 33.58 cfs @ 8.45 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area =	80.230 ac, 29.59% Impervious, Inflow Depth > 3.23" for 25-year event
Inflow =	51.54 cfs @ 13.85 hrs, Volume= 21.623 af
Outflow =	50.07 cfs @ 13.93 hrs, Volume= 21.623 af, Atten= 3%, Lag= 4.9 min
Primary =	24.92 cfs @ 13.95 hrs, Volume= 10.557 af
Secondary =	25.15 cfs @ 13.92 hrs, Volume= 11.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.93' @ 14.39 hrs Surf.Area= 9,612 sf Storage= 11,983 cf

Plug-Flow detention time= 3.8 min calculated for 21.623 af (100% of inflow)
 Center-of-Mass det. time= 3.8 min (995.1 - 991.3)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 85

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 ' / ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 ' / ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=24.80 cfs @ 13.95 hrs HW=146.82' TW=146.23' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 24.80 cfs @ 2.71 fps)

Secondary OutFlow Max=25.03 cfs @ 13.92 hrs HW=146.81' TW=146.22' (Dynamic Tailwater)

↑**2=Culvert** (Outlet Controls 25.03 cfs @ 2.70 fps)

Summary for Pond 1EP: DOWNSTREAM DOGLEG

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 3.39" for 25-year event
 Inflow = 63.46 cfs @ 12.09 hrs, Volume= 25.853 af
 Outflow = 62.18 cfs @ 12.11 hrs, Volume= 25.853 af, Atten= 2%, Lag= 0.9 min
 Primary = 62.18 cfs @ 12.11 hrs, Volume= 25.853 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.41' @ 14.63 hrs Surf.Area= 6,039 sf Storage= 8,815 cf

Plug-Flow detention time= 4.3 min calculated for 25.849 af (100% of inflow)
 Center-of-Mass det. time= 4.3 min (967.3 - 963.1)

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 86

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	48.0" Round Culvert X 2.00 L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=61.90 cfs @ 12.11 hrs HW=145.03' TW=140.71' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 61.90 cfs @ 4.38 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area =	12.080 ac, 30.88% Impervious, Inflow Depth = 3.65" for 25-year event
Inflow =	51.74 cfs @ 12.09 hrs, Volume= 3.679 af
Outflow =	4.87 cfs @ 13.03 hrs, Volume= 2.188 af, Atten= 91%, Lag= 56.6 min
Primary =	4.87 cfs @ 13.03 hrs, Volume= 2.188 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.58' @ 13.03 hrs Surf.Area= 25,821 sf Storage= 90,661 cf

Plug-Flow detention time= 335.8 min calculated for 2.188 af (59% of inflow)

Center-of-Mass det. time= 228.4 min (1,048.6 - 820.2)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

SWNAS - Existing Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 87

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.87 cfs @ 13.03 hrs HW=147.58' TW=143.54' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.87 cfs @ 4.08 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af
 Outflow = 9.07 cfs @ 12.55 hrs, Volume= 1.388 af, Atten= 15%, Lag= 10.5 min
 Primary = 5.58 cfs @ 12.55 hrs, Volume= 1.309 af
 Secondary = 3.49 cfs @ 12.55 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 169.58' @ 12.55 hrs Surf.Area= 4,379 sf Storage= 8,644 cf

Plug-Flow detention time= 23.7 min calculated for 1.387 af (99% of inflow)
 Center-of-Mass det. time= 20.2 min (817.9 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 88

Primary OutFlow Max=5.58 cfs @ 12.55 hrs HW=169.57' TW=142.09' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.58 cfs @ 7.10 fps)**Secondary OutFlow** Max=3.49 cfs @ 12.55 hrs HW=169.57' TW=142.09' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.49 cfs @ 1.41 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 5.49" for 25-year event
 Inflow = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af
 Outflow = 5.12 cfs @ 12.17 hrs, Volume= 0.602 af, Atten= 34%, Lag= 5.3 min
 Primary = 4.74 cfs @ 12.17 hrs, Volume= 0.600 af
 Secondary = 0.39 cfs @ 12.17 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 164.58' @ 12.17 hrs Surf.Area= 2,625 sf Storage= 2,285 cf

Plug-Flow detention time= 8.9 min calculated for 0.602 af (100% of inflow)
 Center-of-Mass det. time= 6.6 min (774.3 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.74 cfs @ 12.17 hrs HW=164.57' TW=140.94' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.74 cfs @ 6.03 fps)**Secondary OutFlow** Max=0.38 cfs @ 12.17 hrs HW=164.57' TW=140.94' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.38 cfs @ 0.73 fps)

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Page 89

Summary for Pond 1IP: UPSTREAM TACAN

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 3.65" for 25-year event
 Inflow = 435.95 cfs @ 13.39 hrs, Volume= 127.361 af
 Outflow = 94.05 cfs @ 16.71 hrs, Volume= 127.357 af, Atten= 78%, Lag= 199.2 min
 Primary = 40.05 cfs @ 16.71 hrs, Volume= 61.754 af
 Secondary = 40.05 cfs @ 16.71 hrs, Volume= 61.903 af
 Tertiary = 13.95 cfs @ 16.71 hrs, Volume= 3.700 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.81' @ 16.71 hrs Surf.Area= 1,330,651 sf Storage= 2,822,453 cf

Plug-Flow detention time= 366.6 min calculated for 127.357 af (100% of inflow)
 Center-of-Mass det. time= 366.5 min (1,287.8 - 921.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 90

Primary OutFlow Max=40.05 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 40.05 cfs @ 12.75 fps)**Secondary OutFlow** Max=40.05 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 40.05 cfs @ 12.75 fps)**Tertiary OutFlow** Max=13.95 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Weir Controls 13.95 cfs @ 1.50 fps)**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 3.58" for 25-year event

Inflow = 95.85 cfs @ 16.65 hrs, Volume= 130.641 af

Outflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af, Atten= 0%, Lag= 0.6 min

Primary = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 136.23' @ 16.66 hrs Surf.Area= 2,319 sf Storage= 2,276 cf

Plug-Flow detention time= 0.4 min calculated for 130.623 af (100% of inflow)

Center-of-Mass det. time= 0.4 min (1,277.7 - 1,277.4)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=95.85 cfs @ 16.66 hrs HW=136.23' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 95.85 cfs @ 6.32 fps)

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Page 91

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 3.82" for 25-year event
 Inflow = 215.82 cfs @ 13.49 hrs, Volume= 70.130 af
 Outflow = 168.18 cfs @ 13.96 hrs, Volume= 70.130 af, Atten= 22%, Lag= 28.4 min
 Primary = 82.96 cfs @ 14.17 hrs, Volume= 34.167 af
 Secondary = 85.55 cfs @ 13.96 hrs, Volume= 35.963 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.91' @ 14.17 hrs Surf.Area= 208,066 sf Storage= 275,343 cf

Plug-Flow detention time= 12.9 min calculated for 70.121 af (100% of inflow)
 Center-of-Mass det. time= 12.9 min (927.9 - 915.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/ Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/ Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=82.92 cfs @ 14.17 hrs HW=146.91' TW=145.03' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 82.92 cfs @ 6.60 fps)

Secondary OutFlow Max=85.43 cfs @ 13.96 hrs HW=146.87' TW=144.88' (Dynamic Tailwater)
 ↑**2=Culvert** (Inlet Controls 85.43 cfs @ 6.80 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 5.49" for 25-year event
 Inflow = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af
 Outflow = 33.70 cfs @ 12.59 hrs, Volume= 18.405 af, Atten= 86%, Lag= 30.3 min
 Primary = 33.70 cfs @ 12.59 hrs, Volume= 18.405 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Page 92

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.96' @ 12.59 hrs Surf.Area= 87,833 sf Storage= 336,733 cf

Plug-Flow detention time= 138.8 min calculated for 18.405 af (98% of inflow)
 Center-of-Mass det. time= 127.8 min (895.4 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.70 cfs @ 12.59 hrs HW=149.96' TW=144.82' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 33.70 cfs @ 10.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	18.420 ac, 57.11% Impervious, Inflow Depth = 3.35" for 25-year event
Inflow =	72.47 cfs @ 12.09 hrs, Volume= 5.148 af
Outflow =	10.52 cfs @ 12.63 hrs, Volume= 2.809 af, Atten= 85%, Lag= 32.6 min
Primary =	10.52 cfs @ 12.63 hrs, Volume= 2.809 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.54' @ 12.63 hrs Surf.Area= 29,622 sf Storage= 117,526 cf

Plug-Flow detention time= 249.7 min calculated for 2.809 af (55% of inflow)
 Center-of-Mass det. time= 136.5 min (963.8 - 827.3)

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Page 93

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 ' / ' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.52 cfs @ 12.63 hrs HW=146.54' TW=141.98' (Dynamic Tailwater)

1=Culvert (Passes 10.52 cfs of 40.90 cfs potential flow)

2=Orifice/Grate (Weir Controls 10.52 cfs @ 2.41 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.580 ac, 44.83% Impervious, Inflow Depth = 2.96" for 25-year event
Inflow =	27.18 cfs @ 12.35 hrs, Volume= 3.108 af
Outflow =	17.45 cfs @ 12.62 hrs, Volume= 2.239 af, Atten= 36%, Lag= 16.6 min
Primary =	17.45 cfs @ 12.62 hrs, Volume= 2.239 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 147.02' @ 12.62 hrs Surf.Area= 11,834 sf Storage= 47,025 cf

Plug-Flow detention time= 162.3 min calculated for 2.239 af (72% of inflow)

Center-of-Mass det. time= 67.0 min (920.2 - 853.2)

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Page 94

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=17.45 cfs @ 12.62 hrs HW=147.02' TW=141.95' (Dynamic Tailwater)↑ **1=Culvert** (Passes 17.45 cfs of 29.18 cfs potential flow)↑ **2=Orifice/Grate** (Orifice Controls 17.45 cfs @ 4.36 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	312.160 ac, 23.88% Impervious, Inflow Depth = 3.34" for 25-year event
Inflow =	215.04 cfs @ 13.59 hrs, Volume= 86.875 af
Outflow =	193.74 cfs @ 14.39 hrs, Volume= 86.875 af, Atten= 10%, Lag= 47.5 min
Primary =	193.74 cfs @ 14.39 hrs, Volume= 86.875 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 145.08' @ 14.39 hrs Surf.Area= 72,655 sf Storage= 210,329 cf

Plug-Flow detention time= 10.7 min calculated for 86.863 af (100% of inflow)
Center-of-Mass det. time= 10.7 min (940.0 - 929.3)

SWNAS - Existing Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 95

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=193.74 cfs @ 14.39 hrs HW=145.08' TW=132.30' (Dynamic Tailwater)
1=Culvert (Barrel Controls 193.74 cfs @ 9.87 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 3.40" for 25-year event
 Inflow = 373.46 cfs @ 13.25 hrs, Volume= 246.930 af
 Outflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af, Atten= 3%, Lag= 17.5 min
 Primary = 148.57 cfs @ 13.54 hrs, Volume= 84.548 af
 Secondary = 215.11 cfs @ 13.54 hrs, Volume= 162.347 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.74' @ 13.54 hrs Surf.Area= 71,401 sf Storage= 142,442 cf

Plug-Flow detention time= 5.2 min calculated for 246.860 af (100% of inflow)
 Center-of-Mass det. time= 5.0 min (1,119.4 - 1,114.5)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Existing Watershed

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Type III 24-hr 25-year Rainfall=6.20"

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Page 96

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=148.57 cfs @ 13.54 hrs HW=132.74' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 148.57 cfs @ 7.86 fps)

Secondary OutFlow Max=215.11 cfs @ 13.54 hrs HW=132.74' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Barrel Controls 215.11 cfs @ 8.36 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑ **3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 3.76" for 25-year event
 Inflow = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af
 Outflow = 80.94 cfs @ 13.31 hrs, Volume= 19.344 af, Atten= 13%, Lag= 16.5 min
 Primary = 65.43 cfs @ 13.31 hrs, Volume= 18.404 af
 Secondary = 15.51 cfs @ 13.31 hrs, Volume= 0.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.40' @ 13.31 hrs Surf.Area= 77,102 sf Storage= 58,131 cf

Plug-Flow detention time= 6.4 min calculated for 19.342 af (100% of inflow)
 Center-of-Mass det. time= 6.2 min (887.8 - 881.6)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 97

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=65.43 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 65.43 cfs @ 9.26 fps)

Secondary OutFlow Max=15.51 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)

↑ **2=Spillway over Path** (Weir Controls 15.51 cfs @ 2.23 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event
 Inflow = 229.36 cfs @ 13.43 hrs, Volume= 58.401 af
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 3%, Lag= 9.0 min
 Primary = 166.13 cfs @ 13.58 hrs, Volume= 55.050 af
 Secondary = 56.01 cfs @ 13.58 hrs, Volume= 3.351 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.81' @ 13.58 hrs Surf.Area= 66,525 sf Storage= 204,979 cf

Plug-Flow detention time= 12.7 min calculated for 58.393 af (100% of inflow)
 Center-of-Mass det. time= 12.7 min (919.5 - 906.8)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Existing Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 98

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=166.13 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 166.13 cfs @ 8.47 fps)**Secondary OutFlow** Max=56.00 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Weir Controls 56.00 cfs @ 2.26 fps)

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Page 99

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=6.94" Tc=6.0 min CN=92 Runoff=5.92 cfs 0.457 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=6.83" Tc=6.0 min CN=91 Runoff=6.69 cfs 0.512 af
Subcatchment 1C:	Runoff Area=46.170 ac 42.80% Impervious Runoff Depth=5.41" Flow Length=3,027' Tc=44.5 min CN=79 Runoff=135.86 cfs 20.834 af
Subcatchment 1D:	Runoff Area=32.370 ac 7.63% Impervious Runoff Depth=3.70" Flow Length=2,508' Tc=143.9 min CN=64 Runoff=30.52 cfs 9.985 af
Subcatchment 1E:	Runoff Area=11.300 ac 65.13% Impervious Runoff Depth=6.12" Tc=6.0 min CN=85 Runoff=78.20 cfs 5.760 af
Subcatchment 1F:	Runoff Area=12.080 ac 30.88% Impervious Runoff Depth=5.18" Tc=6.0 min CN=77 Runoff=72.87 cfs 5.217 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=6.94" Flow Length=531' Tc=29.2 min CN=92 Runoff=13.80 cfs 1.840 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=7.18" Tc=6.0 min CN=94 Runoff=10.05 cfs 0.790 af
Subcatchment 1I:	Runoff Area=310.950 ac 37.08% Impervious Runoff Depth=5.30" Flow Length=1,745' Tc=103.9 min CN=78 Runoff=531.06 cfs 137.302 af
Subcatchment 1J:	Runoff Area=18.410 ac 20.53% Impervious Runoff Depth=3.37" Flow Length=660' Tc=22.2 min CN=61 Runoff=46.18 cfs 5.168 af
Subcatchment 2A:	Runoff Area=154.350 ac 2.78% Impervious Runoff Depth=4.72" Flow Length=2,530' Tc=111.4 min CN=73 Runoff=226.01 cfs 60.729 af
Subcatchment 2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=7.18" Tc=6.0 min CN=94 Runoff=311.35 cfs 24.480 af
Subcatchment 2C:	Runoff Area=18.420 ac 57.11% Impervious Runoff Depth=4.84" Tc=6.0 min CN=74 Runoff=104.23 cfs 7.424 af
Subcatchment 2D:	Runoff Area=12.580 ac 44.83% Impervious Runoff Depth=4.38" Flow Length=836' Tc=23.9 min CN=70 Runoff=40.34 cfs 4.590 af
Subcatchment 2E:	Runoff Area=60.570 ac 5.55% Impervious Runoff Depth=3.59" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=76.38 cfs 18.122 af
Subcatchment 2F:	Runoff Area=123.000 ac 10.43% Impervious Runoff Depth=4.26" Flow Length=1,130' Tc=76.9 min CN=69 Runoff=207.68 cfs 43.714 af

SWNAS - Existing Watershed*Type III 24-hr 100-year Rainfall=7.90"*

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Page 100

Subcatchment2G: Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=6.59"
Tc=120.0 min CN=89 Runoff=31.00 cfs 9.092 af

Subcatchment2H: Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=5.76"
Tc=120.0 min CN=82 Runoff=14.69 cfs 4.218 af

Subcatchment3A: Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=5.30"
Flow Length=1,438' Tc=74.8 min CN=78 Runoff=131.39 cfs 27.297 af

Subcatchment3B: Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=5.07"
Flow Length=1,600' Tc=107.0 min CN=76 Runoff=212.96 cfs 55.695 af

Reach 1R: DP-1 TACAN OUTFALL Inflow=170.79 cfs 185.867 af
Outflow=170.79 cfs 185.867 af

Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH Inflow=458.06 cfs 354.670 af
Outflow=458.06 cfs 354.670 af

Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH Inflow=314.32 cfs 82.986 af
Outflow=314.32 cfs 82.986 af

Pond 1AP: SPORTS COMPLEX Peak Elev=171.41' Storage=2,834 cf Inflow=5.92 cfs 0.457 af
Discarded=0.12 cfs 0.207 af Primary=5.81 cfs 0.250 af Outflow=5.94 cfs 0.457 af

Pond 1BP: SPORTS COMPLEX Peak Elev=171.80' Storage=3,060 cf Inflow=6.69 cfs 0.512 af
Discarded=0.13 cfs 0.224 af Primary=6.75 cfs 0.288 af Outflow=6.88 cfs 0.512 af

Pond 1CP: MEMORIAL GROVE AVE. Peak Elev=156.07' Storage=388,123 cf Inflow=137.75 cfs 21.372 af
Primary=42.21 cfs 21.298 af Secondary=0.50 cfs 0.012 af Outflow=42.71 cfs 21.309 af

Pond 1DP: UPSTREAM DOGLEG Peak Elev=148.96' Storage=41,249 cf Inflow=71.77 cfs 31.294 af
Primary=32.74 cfs 15.457 af Secondary=32.74 cfs 15.838 af Outflow=65.48 cfs 31.294 af

Pond 1EP: DOWNSTREAM DOGLEG Peak Elev=147.97' Storage=23,625 cf Inflow=85.25 cfs 37.054 af
48.0" Round Culvert x 2.00 n=0.013 L=2,830.0' S=0.0027 ' Outflow=82.39 cfs 37.054 af

Pond 1FP: EXISTING PARKWAY BASIN Peak Elev=148.54' Storage=116,776 cf Inflow=72.87 cfs 5.217 af
Primary=13.33 cfs 3.726 af Secondary=0.00 cfs 0.000 af Outflow=13.33 cfs 3.726 af

Pond 1GP: SPORTS COMPLEX BASIN Peak Elev=169.75' Storage=9,423 cf Inflow=13.80 cfs 1.840 af
Primary=5.76 cfs 1.607 af Secondary=7.33 cfs 0.225 af Outflow=13.09 cfs 1.832 af

Pond 1HP: SPORTS COMPLEX BASIN Peak Elev=164.79' Storage=2,902 cf Inflow=10.05 cfs 0.790 af
Primary=5.00 cfs 0.755 af Secondary=2.89 cfs 0.033 af Outflow=7.89 cfs 0.788 af

Pond 1IP: UPSTREAM TACAN Peak Elev=146.54' Storage=3,875,260 cf Inflow=608.26 cfs 180.703 af
Primary=42.08 cfs 72.610 af Secondary=42.08 cfs 72.774 af Tertiary=83.51 cfs 35.315 af Outflow=167.67 cfs 180.699 af

Pond 1JP: DOWNSTREAM TACAN Peak Elev=137.35' Storage=6,977 cf Inflow=170.80 cfs 185.867 af
60.0" Round Culvert x 2.00 n=0.013 L=899.0' S=0.0030 ' Outflow=170.79 cfs 185.867 af

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=148.37' Storage=734,502 cf Inflow=302.63 cfs 98.197 af
Primary=87.38 cfs 48.325 af Secondary=87.38 cfs 49.872 af Outflow=174.77 cfs 98.197 af

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Type III 24-hr 100-year Rainfall=7.90"

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Page 101

Pond 2BP: EXISTING BASIN Peak Elev=150.94' Storage=426,331 cf Inflow=311.35 cfs 24.480 af
Primary=36.61 cfs 22.379 af Secondary=24.16 cfs 1.778 af Outflow=60.17 cfs 24.157 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=147.61' Storage=150,968 cf Inflow=104.23 cfs 7.424 af
Outflow=24.43 cfs 5.085 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=148.08' Storage=60,486 cf Inflow=40.34 cfs 4.590 af
Primary=26.42 cfs 3.721 af Secondary=0.00 cfs 0.000 af Outflow=26.42 cfs 3.721 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=146.34' Storage=313,483 cf Inflow=268.35 cfs 125.125 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=219.93 cfs 125.125 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=134.13' Storage=259,668 cf Inflow=483.24 cfs 354.706 af
Primary=189.85 cfs 128.906 af Secondary=268.20 cfs 225.764 af Tertiary=0.00 cfs 0.000 af Outflow=458.06 cfs 354.670 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=147.92' Storage=114,298 cf Inflow=131.39 cfs 27.297 af
Primary=69.92 cfs 23.972 af Secondary=35.59 cfs 3.319 af Outflow=105.51 cfs 27.291 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=136.34' Storage=242,197 cf Inflow=318.31 cfs 82.986 af
Primary=184.83 cfs 70.933 af Secondary=129.49 cfs 12.053 af Outflow=314.32 cfs 82.986 af

Total Runoff Area = 1,066.350 ac Runoff Volume = 443.226 af Average Runoff Depth = 4.99"
75.55% Pervious = 805.640 ac 24.45% Impervious = 260.710 ac

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Type III 24-hr 100-year Rainfall=7.90"

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Page 102

Summary for Subcatchment 1A:

Runoff = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af, Depth= 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 135.86 cfs @ 12.61 hrs, Volume= 20.834 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 103

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 30.52 cfs @ 13.91 hrs, Volume= 9.985 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 104

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

Summary for Subcatchment 1E:

Runoff = 78.20 cfs @ 12.09 hrs, Volume= 5.760 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 105

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 72.87 cfs @ 12.09 hrs, Volume= 5.217 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

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Type III 24-hr 100-year Rainfall=7.90"

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Page 106

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

Summary for Subcatchment 1H:

Runoff = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 531.06 cfs @ 13.39 hrs, Volume= 137.302 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 107

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

Summary for Subcatchment 1J:

Runoff = 46.18 cfs @ 12.31 hrs, Volume= 5.168 af, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

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Type III 24-hr 100-year Rainfall=7.90"

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Page 108

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

Summary for Subcatchment 2A:

Runoff = 226.01 cfs @ 13.49 hrs, Volume= 60.729 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
111.4	2,530	Total			

Summary for Subcatchment 2B:

Runoff = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 109

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 104.23 cfs @ 12.09 hrs, Volume= 7.424 af, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D:

Runoff = 40.34 cfs @ 12.34 hrs, Volume= 4.590 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

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Type III 24-hr 100-year Rainfall=7.90"

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Page 110

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

Summary for Subcatchment 2E:

Runoff = 76.38 cfs @ 13.28 hrs, Volume= 18.122 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 207.68 cfs @ 13.07 hrs, Volume= 43.714 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 111

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
76.9	1,130	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 31.00 cfs @ 13.47 hrs, Volume= 9.092 af, Depth= 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 14.69 cfs @ 13.47 hrs, Volume= 4.218 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 112

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 212.96 cfs @ 13.43 hrs, Volume= 55.695 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 113

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 5.10" for 100-year event
Inflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af
Outflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 4.88" for 100-year event
Inflow = 458.06 cfs @ 13.47 hrs, Volume= 354.670 af
Outflow = 458.06 cfs @ 13.47 hrs, Volume= 354.670 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event
Inflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af
Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

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Type III 24-hr 100-year Rainfall=7.90"

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Page 114

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af
 Outflow = 5.94 cfs @ 12.08 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.12 cfs @ 8.94 hrs, Volume= 0.207 af
 Primary = 5.81 cfs @ 12.08 hrs, Volume= 0.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.41' @ 12.08 hrs Surf.Area= 2,201 sf Storage= 2,834 cf

Plug-Flow detention time= 82.8 min calculated for 0.457 af (100% of inflow)
 Center-of-Mass det. time= 82.8 min (852.2 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 ' /' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 8.94 hrs HW=168.58' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=5.80 cfs @ 12.08 hrs HW=171.41' TW=151.84' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 5.80 cfs @ 4.37 fps)

Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 6.83" for 100-year event
 Inflow = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af
 Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.13 cfs @ 8.82 hrs, Volume= 0.224 af
 Primary = 6.75 cfs @ 12.08 hrs, Volume= 0.288 af

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Page 115

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.80' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,060 cf

Plug-Flow detention time= 80.7 min calculated for 0.512 af (100% of inflow)
 Center-of-Mass det. time= 80.7 min (853.7 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB-Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.13 cfs @ 8.82 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=6.70 cfs @ 12.08 hrs HW=171.78' TW=151.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 6.70 cfs @ 4.27 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area =	47.860 ac, 44.44% Impervious, Inflow Depth = 5.36" for 100-year event
Inflow =	137.75 cfs @ 12.61 hrs, Volume= 21.372 af
Outflow =	42.71 cfs @ 13.43 hrs, Volume= 21.309 af, Atten= 69%, Lag= 49.7 min
Primary =	42.21 cfs @ 13.43 hrs, Volume= 21.298 af
Secondary =	0.50 cfs @ 13.43 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 156.07' @ 13.43 hrs Surf.Area= 82,223 sf Storage= 388,123 cf

Plug-Flow detention time= 150.3 min calculated for 21.309 af (100% of inflow)

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Page 116

Center-of-Mass det. time= 148.4 min (987.7 - 839.3)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.21 cfs @ 13.43 hrs HW=156.07' TW=147.54' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 42.21 cfs @ 10.62 fps)**Secondary OutFlow** Max=0.50 cfs @ 13.43 hrs HW=156.07' TW=147.54' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 0.71 fps)**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 80.230 ac, 29.59% Impervious, Inflow Depth > 4.68" for 100-year event
 Inflow = 71.77 cfs @ 13.91 hrs, Volume= 31.294 af
 Outflow = 65.48 cfs @ 13.92 hrs, Volume= 31.294 af, Atten= 9%, Lag= 1.1 min
 Primary = 32.74 cfs @ 13.92 hrs, Volume= 15.457 af
 Secondary = 32.74 cfs @ 13.92 hrs, Volume= 15.838 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.96' @ 14.67 hrs Surf.Area= 20,149 sf Storage= 41,249 cf

Plug-Flow detention time= 7.4 min calculated for 31.290 af (100% of inflow)
 Center-of-Mass det. time= 7.4 min (988.1 - 980.8)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 100-year Rainfall=7.90"

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Page 117

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 ' / S= 0.0004 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 ' / S= 0.0004 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=32.54 cfs @ 13.92 hrs HW=148.39' TW=147.31' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 32.54 cfs @ 3.38 fps)

Secondary OutFlow Max=32.54 cfs @ 13.92 hrs HW=148.39' TW=147.31' (Dynamic Tailwater)

↑**2=Culvert** (Outlet Controls 32.54 cfs @ 3.38 fps)

Summary for Pond 1EP: DOWNSTREAM DOGLEG

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 4.86" for 100-year event
 Inflow = 85.25 cfs @ 12.09 hrs, Volume= 37.054 af
 Outflow = 82.39 cfs @ 12.12 hrs, Volume= 37.054 af, Atten= 3%, Lag= 1.4 min
 Primary = 82.39 cfs @ 12.12 hrs, Volume= 37.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.97' @ 14.84 hrs Surf.Area= 13,002 sf Storage= 23,625 cf

Plug-Flow detention time= 5.5 min calculated for 37.054 af (100% of inflow)
 Center-of-Mass det. time= 5.5 min (963.0 - 957.5)

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 118

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	48.0" Round Culvert X 2.00 L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=81.99 cfs @ 12.12 hrs HW=145.78' TW=141.88' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 81.99 cfs @ 4.44 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area =	12.080 ac, 30.88% Impervious, Inflow Depth = 5.18" for 100-year event
Inflow =	72.87 cfs @ 12.09 hrs, Volume= 5.217 af
Outflow =	13.33 cfs @ 12.55 hrs, Volume= 3.726 af, Atten= 82%, Lag= 27.5 min
Primary =	13.33 cfs @ 12.55 hrs, Volume= 3.726 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.54' @ 12.55 hrs Surf.Area= 28,531 sf Storage= 116,776 cf

Plug-Flow detention time= 257.0 min calculated for 3.726 af (71% of inflow)

Center-of-Mass det. time= 165.6 min (975.8 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

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Page 119

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=13.33 cfs @ 12.55 hrs HW=148.54' TW=143.11' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 13.33 cfs @ 5.16 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af
 Outflow = 13.09 cfs @ 12.47 hrs, Volume= 1.832 af, Atten= 5%, Lag= 6.0 min
 Primary = 5.76 cfs @ 12.47 hrs, Volume= 1.607 af
 Secondary = 7.33 cfs @ 12.47 hrs, Volume= 0.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 169.75' @ 12.47 hrs Surf.Area= 4,540 sf Storage= 9,423 cf

Plug-Flow detention time= 20.8 min calculated for 1.832 af (100% of inflow)
 Center-of-Mass det. time= 18.1 min (809.0 - 790.9)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Printed 2/14/2023

Page 120

Primary OutFlow Max=5.76 cfs @ 12.47 hrs HW=169.75' TW=142.90' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.76 cfs @ 7.34 fps)**Secondary OutFlow** Max=7.33 cfs @ 12.47 hrs HW=169.75' TW=142.90' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 7.33 cfs @ 1.81 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 7.18" for 100-year event
 Inflow = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af
 Outflow = 7.89 cfs @ 12.15 hrs, Volume= 0.788 af, Atten= 21%, Lag= 3.7 min
 Primary = 5.00 cfs @ 12.15 hrs, Volume= 0.755 af
 Secondary = 2.89 cfs @ 12.15 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 164.79' @ 12.15 hrs Surf.Area= 3,201 sf Storage= 2,902 cf

Plug-Flow detention time= 8.2 min calculated for 0.788 af (100% of inflow)
 Center-of-Mass det. time= 6.2 min (767.9 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.00 cfs @ 12.15 hrs HW=164.79' TW=141.97' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.00 cfs @ 6.36 fps)**Secondary OutFlow** Max=2.88 cfs @ 12.15 hrs HW=164.79' TW=141.97' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.88 cfs @ 1.44 fps)

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Page 121

Summary for Pond 1IP: UPSTREAM TACAN

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 5.17" for 100-year event
 Inflow = 608.26 cfs @ 13.39 hrs, Volume= 180.703 af
 Outflow = 167.67 cfs @ 16.05 hrs, Volume= 180.699 af, Atten= 72%, Lag= 159.9 min
 Primary = 42.08 cfs @ 16.05 hrs, Volume= 72.610 af
 Secondary = 42.08 cfs @ 16.05 hrs, Volume= 72.774 af
 Tertiary = 83.51 cfs @ 16.05 hrs, Volume= 35.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.54' @ 16.05 hrs Surf.Area= 1,566,257 sf Storage= 3,875,260 cf

Plug-Flow detention time= 368.4 min calculated for 180.699 af (100% of inflow)
 Center-of-Mass det. time= 368.3 min (1,280.4 - 912.0)

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	24.0" Round Culvert L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	30.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 122

Primary OutFlow Max=42.08 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 42.08 cfs @ 13.39 fps)**Secondary OutFlow** Max=42.08 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 42.08 cfs @ 13.39 fps)**Tertiary OutFlow** Max=83.51 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Weir Controls 83.51 cfs @ 2.68 fps)**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 5.10" for 100-year event
 Inflow = 170.80 cfs @ 16.00 hrs, Volume= 185.867 af
 Outflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af, Atten= 0%, Lag= 0.9 min
 Primary = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 137.35' @ 16.01 hrs Surf.Area= 5,666 sf Storage= 6,977 cf

Plug-Flow detention time= 0.5 min calculated for 185.841 af (100% of inflow)

Center-of-Mass det. time= 0.5 min (1,269.1 - 1,268.7)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 1' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=170.79 cfs @ 16.01 hrs HW=137.35' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 170.79 cfs @ 7.28 fps)

SWNAS - Existing Watershed

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Page 123

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 5.34" for 100-year event
 Inflow = 302.63 cfs @ 13.49 hrs, Volume= 98.197 af
 Outflow = 174.77 cfs @ 15.02 hrs, Volume= 98.197 af, Atten= 42%, Lag= 91.8 min
 Primary = 87.38 cfs @ 15.02 hrs, Volume= 48.325 af
 Secondary = 87.38 cfs @ 15.02 hrs, Volume= 49.872 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.37' @ 14.55 hrs Surf.Area= 463,281 sf Storage= 734,502 cf

Plug-Flow detention time= 31.8 min calculated for 98.183 af (100% of inflow)
 Center-of-Mass det. time= 31.8 min (942.4 - 910.6)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=87.45 cfs @ 15.02 hrs HW=148.28' TW=146.20' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 87.45 cfs @ 6.96 fps)

Secondary OutFlow Max=87.45 cfs @ 15.02 hrs HW=148.28' TW=146.20' (Dynamic Tailwater)
 ↑**2=Culvert** (Inlet Controls 87.45 cfs @ 6.96 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 7.18" for 100-year event
 Inflow = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af
 Outflow = 60.17 cfs @ 12.50 hrs, Volume= 24.157 af, Atten= 81%, Lag= 24.9 min
 Primary = 36.61 cfs @ 12.39 hrs, Volume= 22.379 af
 Secondary = 24.16 cfs @ 12.52 hrs, Volume= 1.778 af

SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 124

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.94' @ 12.52 hrs Surf.Area= 94,618 sf Storage= 426,331 cf

Plug-Flow detention time= 152.8 min calculated for 24.157 af (99% of inflow)
 Center-of-Mass det. time= 144.2 min (905.9 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=36.54 cfs @ 12.39 hrs HW=150.86' TW=145.03' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 36.54 cfs @ 11.63 fps)

Secondary OutFlow Max=24.16 cfs @ 12.52 hrs HW=150.94' TW=145.32' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 24.16 cfs @ 2.56 fps)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	18.420 ac, 57.11% Impervious, Inflow Depth = 4.84" for 100-year event
Inflow =	104.23 cfs @ 12.09 hrs, Volume= 7.424 af
Outflow =	24.43 cfs @ 12.50 hrs, Volume= 5.085 af, Atten= 77%, Lag= 24.5 min
Primary =	24.43 cfs @ 12.50 hrs, Volume= 5.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.61' @ 12.50 hrs Surf.Area= 33,249 sf Storage= 150,968 cf

Plug-Flow detention time= 190.7 min calculated for 5.084 af (68% of inflow)
 Center-of-Mass det. time= 94.0 min (910.8 - 816.8)

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Page 125

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.43 cfs @ 12.50 hrs HW=147.61' TW=142.63' (Dynamic Tailwater)

1=Culvert (Passes 24.43 cfs of 47.62 cfs potential flow)

2=Orifice/Grate (Orifice Controls 24.43 cfs @ 6.11 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.580 ac, 44.83% Impervious, Inflow Depth = 4.38" for 100-year event
Inflow =	40.34 cfs @ 12.34 hrs, Volume= 4.590 af
Outflow =	26.42 cfs @ 12.60 hrs, Volume= 3.721 af, Atten= 35%, Lag= 15.9 min
Primary =	26.42 cfs @ 12.60 hrs, Volume= 3.721 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 148.08' @ 12.60 hrs Surf.Area= 13,563 sf Storage= 60,486 cfPlug-Flow detention time= 124.2 min calculated for 3.721 af (81% of inflow)
Center-of-Mass det. time= 48.8 min (890.8 - 842.0)

SWNAS - Existing Watershed

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Page 126

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.42 cfs @ 12.60 hrs HW=148.08' TW=143.06' (Dynamic Tailwater)↑ **1=Culvert** (Passes 26.42 cfs of 33.08 cfs potential flow)↑ **2=Orifice/Grate** (Orifice Controls 26.42 cfs @ 6.60 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	312.160 ac, 23.88% Impervious, Inflow Depth = 4.81" for 100-year event
Inflow =	268.35 cfs @ 13.05 hrs, Volume= 125.125 af
Outflow =	219.93 cfs @ 14.26 hrs, Volume= 125.125 af, Atten= 18%, Lag= 72.6 min
Primary =	219.93 cfs @ 14.26 hrs, Volume= 125.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.34' @ 14.26 hrs Surf.Area= 92,512 sf Storage= 313,483 cf

Plug-Flow detention time= 15.4 min calculated for 125.107 af (100% of inflow)
Center-of-Mass det. time= 15.4 min (951.5 - 936.0)

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Page 127

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=219.93 cfs @ 14.26 hrs HW=146.34' TW=133.70' (Dynamic Tailwater)
1=Culvert (Barrel Controls 219.93 cfs @ 11.20 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area =	872.630 ac, 27.98% Impervious, Inflow Depth = 4.88" for 100-year event
Inflow =	483.24 cfs @ 13.16 hrs, Volume= 354.706 af
Outflow =	458.06 cfs @ 13.47 hrs, Volume= 354.670 af, Atten= 5%, Lag= 18.7 min
Primary =	189.85 cfs @ 13.47 hrs, Volume= 128.906 af
Secondary =	268.20 cfs @ 13.47 hrs, Volume= 225.764 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 134.13' @ 13.47 hrs Surf.Area= 95,941 sf Storage= 259,668 cf

Plug-Flow detention time= 6.6 min calculated for 354.621 af (100% of inflow)
Center-of-Mass det. time= 6.4 min (1,117.1 - 1,110.8)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 128

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=189.85 cfs @ 13.47 hrs HW=134.13' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 189.85 cfs @ 9.67 fps)

Secondary OutFlow Max=268.20 cfs @ 13.47 hrs HW=134.13' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 268.20 cfs @ 9.49 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 5.30" for 100-year event
 Inflow = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af
 Outflow = 105.51 cfs @ 13.38 hrs, Volume= 27.291 af, Atten= 20%, Lag= 24.6 min
 Primary = 69.92 cfs @ 13.38 hrs, Volume= 23.972 af
 Secondary = 35.59 cfs @ 13.38 hrs, Volume= 3.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 147.92' @ 13.38 hrs Surf.Area= 137,190 sf Storage= 114,298 cf

Plug-Flow detention time= 9.2 min calculated for 27.291 af (100% of inflow)

Center-of-Mass det. time= 8.9 min (880.7 - 871.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 129

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=69.92 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 69.92 cfs @ 9.89 fps)

Secondary OutFlow Max=35.58 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)

↑ **2=Spillway over Path** (Weir Controls 35.58 cfs @ 2.92 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event
 Inflow = 318.31 cfs @ 13.43 hrs, Volume= 82.986 af
 Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 1%, Lag= 5.0 min
 Primary = 184.83 cfs @ 13.51 hrs, Volume= 70.933 af
 Secondary = 129.49 cfs @ 13.51 hrs, Volume= 12.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 136.34' @ 13.51 hrs Surf.Area= 73,867 sf Storage= 242,197 cf

Plug-Flow detention time= 12.5 min calculated for 82.974 af (100% of inflow)
 Center-of-Mass det. time= 12.5 min (910.3 - 897.8)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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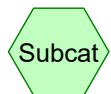
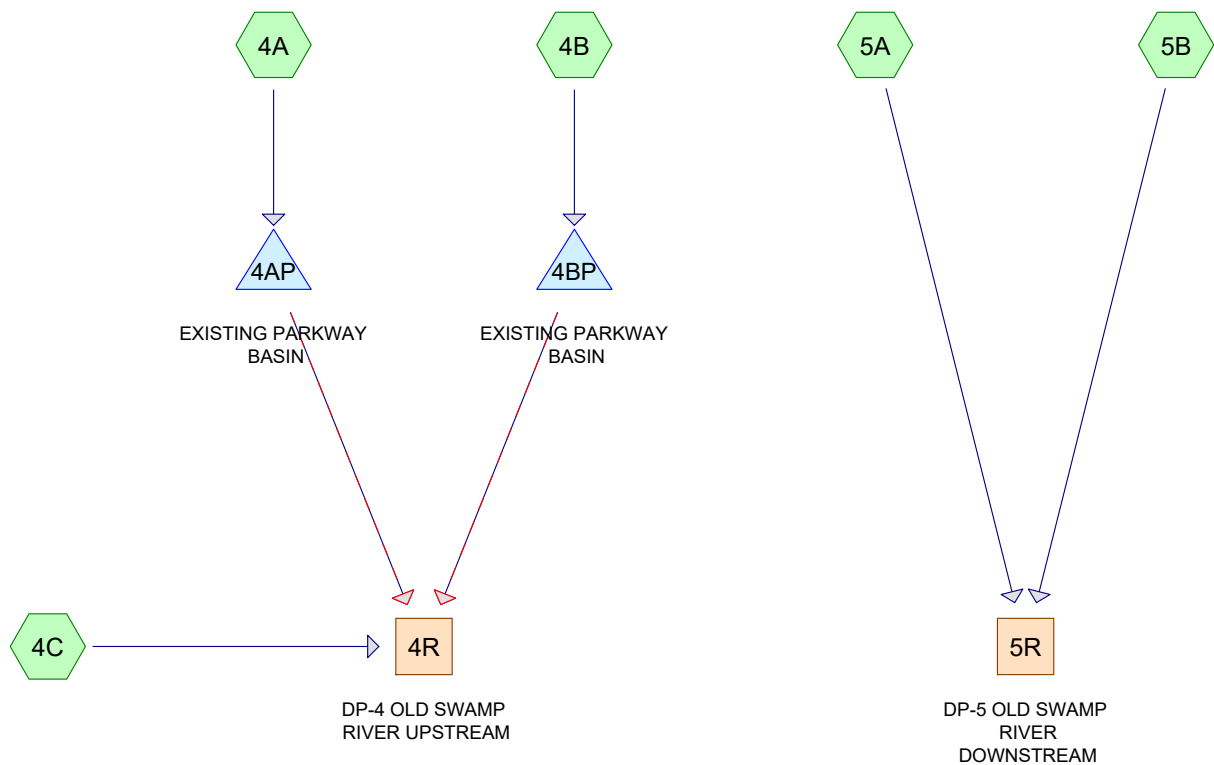
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Page 130

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

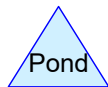
Primary OutFlow Max=184.83 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 184.83 cfs @ 9.41 fps)**Secondary OutFlow** Max=129.49 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Weir Controls 129.49 cfs @ 2.99 fps)



Subcat



Reach



Pond



Link

Routing Diagram for SWNAS - Existing Watershed Swamp River

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.660	39	>75% Grass cover, Good, HSG A (5B)
32.570	61	>75% Grass cover, Good, HSG B (4C, 5B)
0.650	74	>75% Grass cover, Good, HSG C (4C)
18.510	80	>75% Grass cover, Good, HSG D (4C, 5A, 5B)
7.520	48	Brush, Good, HSG B (4A, 4B, 4C, 5B)
1.360	73	Brush, Good, HSG D (4C)
44.260	98	Pavement (4A, 4B, 4C, 5A, 5B)
0.200	100	Water - Basin (4A)
0.400	100	Water - Basin Area (4B)
4.390	30	Woods, Good, HSG A (5A, 5B)
31.160	55	Woods, Good, HSG B (4C, 5B)
2.630	70	Woods, Good, HSG C (4C)
71.820	77	Woods, Good, HSG D (4C, 5A, 5B)
218.130	74	TOTAL AREA

SWNAS - Existing Watershed Swamp River*Type III 24-hr 2-year Rainfall=3.40"*

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Page 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=0.79"
Tc=6.0 min CN=67 Runoff=3.20 cfs 0.264 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=92 Runoff=11.77 cfs 0.860 af

Subcatchment4C: Runoff Area=64.270 ac 6.04% Impervious Runoff Depth=1.06"
Flow Length=3,308' Tc=120.0 min CN=72 Runoff=18.34 cfs 5.656 af

Subcatchment5A: Runoff Area=47.740 ac 7.27% Impervious Runoff Depth=1.29"
Flow Length=1,990' Tc=68.3 min CN=76 Runoff=25.45 cfs 5.145 af

Subcatchment5B: Runoff Area=98.080 ac 33.08% Impervious Runoff Depth=1.11"
Flow Length=1,990' Tc=68.3 min CN=73 Runoff=43.79 cfs 9.096 af

Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM Inflow=18.83 cfs 5.920 af
Outflow=18.83 cfs 5.920 af

Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM Inflow=69.24 cfs 14.241 af
Outflow=69.24 cfs 14.241 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=146.52' Storage=2,898 cf Inflow=3.20 cfs 0.264 af
Primary=1.08 cfs 0.263 af Secondary=0.00 cfs 0.000 af Outflow=1.08 cfs 0.263 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=136.57' Storage=37,451 cf Inflow=11.77 cfs 0.860 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 218.130 ac Runoff Volume = 21.021 af Average Runoff Depth = 1.16"
79.43% Pervious = 173.270 ac 20.57% Impervious = 44.860 ac

SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 4

Summary for Subcatchment 4A:

Runoff = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 5

Summary for Subcatchment 4C:

Runoff = 18.34 cfs @ 13.73 hrs, Volume= 5.656 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 5A:

Runoff = 25.45 cfs @ 12.98 hrs, Volume= 5.145 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 6

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Subcatchment 5B:

Runoff = 43.79 cfs @ 12.98 hrs, Volume= 9.096 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 0.98" for 2-year event
 Inflow = 18.83 cfs @ 13.73 hrs, Volume= 5.920 af
 Outflow = 18.83 cfs @ 13.73 hrs, Volume= 5.920 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 1.17" for 2-year event
 Inflow = 69.24 cfs @ 12.98 hrs, Volume= 14.241 af
 Outflow = 69.24 cfs @ 12.98 hrs, Volume= 14.241 af, Atten= 0%, Lag= 0.0 min

SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 0.79" for 2-year event
 Inflow = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af
 Outflow = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af, Atten= 66%, Lag= 23.3 min
 Primary = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.52' @ 12.49 hrs Surf.Area= 5,925 sf Storage= 2,898 cf

Plug-Flow detention time= 85.7 min calculated for 0.263 af (100% of inflow)
 Center-of-Mass det. time= 85.7 min (967.6 - 881.9)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.08 cfs @ 12.49 hrs HW=146.52' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.08 cfs @ 2.50 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 136.57' @ 24.34 hrs Surf.Area= 14,463 sf Storage= 37,451 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

SWNAS - Existing Watershed Swamp River*Type III 24-hr 10-year Rainfall=5.10"*

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Page 9

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=67 Runoff=8.47 cfs 0.621 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=4.19"
Tc=6.0 min CN=92 Runoff=18.89 cfs 1.417 af

Subcatchment4C: Runoff Area=64.270 ac 6.04% Impervious Runoff Depth=2.28"
Flow Length=3,308' Tc=120.0 min CN=72 Runoff=41.83 cfs 12.185 af

Subcatchment5A: Runoff Area=47.740 ac 7.27% Impervious Runoff Depth=2.62"
Flow Length=1,990' Tc=68.3 min CN=76 Runoff=53.02 cfs 10.416 af

Subcatchment5B: Runoff Area=98.080 ac 33.08% Impervious Runoff Depth=2.36"
Flow Length=1,990' Tc=68.3 min CN=73 Runoff=97.52 cfs 19.282 af

Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM Inflow=43.18 cfs 13.244 af
Outflow=43.18 cfs 13.244 af

Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM Inflow=150.54 cfs 29.698 af
Outflow=150.54 cfs 29.698 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=147.16' Storage=7,049 cf Inflow=8.47 cfs 0.621 af
Primary=3.12 cfs 0.621 af Secondary=0.00 cfs 0.000 af Outflow=3.12 cfs 0.621 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=137.30' Storage=48,608 cf Inflow=18.89 cfs 1.417 af
Primary=0.63 cfs 0.438 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.438 af

Total Runoff Area = 218.130 ac Runoff Volume = 43.921 af Average Runoff Depth = 2.42"
79.43% Pervious = 173.270 ac 20.57% Impervious = 44.860 ac

SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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Page 10

Summary for Subcatchment 4A:

Runoff = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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Page 11

Summary for Subcatchment 4C:

Runoff = 41.83 cfs @ 13.73 hrs, Volume= 12.185 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 5A:

Runoff = 53.02 cfs @ 12.97 hrs, Volume= 10.416 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

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Type III 24-hr 10-year Rainfall=5.10"

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Page 12

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Subcatchment 5B:

Runoff = 97.52 cfs @ 12.97 hrs, Volume= 19.282 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 2.20" for 10-year event
 Inflow = 43.18 cfs @ 13.61 hrs, Volume= 13.244 af
 Outflow = 43.18 cfs @ 13.61 hrs, Volume= 13.244 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 2.44" for 10-year event
 Inflow = 150.54 cfs @ 12.97 hrs, Volume= 29.698 af
 Outflow = 150.54 cfs @ 12.97 hrs, Volume= 29.698 af, Atten= 0%, Lag= 0.0 min

SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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Page 13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 1.87" for 10-year event
 Inflow = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af
 Outflow = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af, Atten= 63%, Lag= 19.1 min
 Primary = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.16' @ 12.41 hrs Surf.Area= 7,002 sf Storage= 7,049 cf

Plug-Flow detention time= 58.8 min calculated for 0.621 af (100% of inflow)
 Center-of-Mass det. time= 59.1 min (913.4 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.12 cfs @ 12.41 hrs HW=147.16' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.12 cfs @ 3.97 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af
 Outflow = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af, Atten= 97%, Lag= 214.3 min
 Primary = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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Page 14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 137.30' @ 15.66 hrs Surf.Area= 16,042 sf Storage= 48,608 cf

Plug-Flow detention time= 590.5 min calculated for 0.438 af (31% of inflow)
 Center-of-Mass det. time= 439.8 min (1,221.9 - 782.1)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.63 cfs @ 15.66 hrs HW=137.30' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.63 cfs @ 2.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

SWNAS - Existing Watershed Swamp River*Type III 24-hr 25-year Rainfall=6.20"*

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Page 15

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=67 Runoff=12.38 cfs 0.890 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=5.27"
Tc=6.0 min CN=92 Runoff=23.45 cfs 1.782 af

Subcatchment4C: Runoff Area=64.270 ac 6.04% Impervious Runoff Depth=3.16"
Flow Length=3,308' Tc=120.0 min CN=72 Runoff=58.85 cfs 16.911 af

Subcatchment5A: Runoff Area=47.740 ac 7.27% Impervious Runoff Depth=3.55"
Flow Length=1,990' Tc=68.3 min CN=76 Runoff=72.20 cfs 14.136 af

Subcatchment5B: Runoff Area=98.080 ac 33.08% Impervious Runoff Depth=3.26"
Flow Length=1,990' Tc=68.3 min CN=73 Runoff=135.56 cfs 26.606 af

Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM Inflow=62.26 cfs 18.604 af
Outflow=62.26 cfs 18.604 af

Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM Inflow=207.66 cfs 40.743 af
Outflow=207.66 cfs 40.743 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=147.66' Storage=10,737 cf Inflow=12.38 cfs 0.890 af
Primary=4.11 cfs 0.889 af Secondary=0.00 cfs 0.000 af Outflow=4.11 cfs 0.889 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=137.55' Storage=52,744 cf Inflow=23.45 cfs 1.782 af
Primary=1.49 cfs 0.803 af Secondary=0.00 cfs 0.000 af Outflow=1.49 cfs 0.803 af

Total Runoff Area = 218.130 ac Runoff Volume = 60.325 af Average Runoff Depth = 3.32"
79.43% Pervious = 173.270 ac 20.57% Impervious = 44.860 ac

SWNAS - Existing Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 16

Summary for Subcatchment 4A:

Runoff = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

SWNAS - Existing Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 17

Summary for Subcatchment 4C:

Runoff = 58.85 cfs @ 13.60 hrs, Volume= 16.911 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 5A:

Runoff = 72.20 cfs @ 12.91 hrs, Volume= 14.136 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

SWNAS - Existing Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 18

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Subcatchment 5B:

Runoff = 135.56 cfs @ 12.97 hrs, Volume= 26.606 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 3.09" for 25-year event
Inflow = 62.26 cfs @ 13.60 hrs, Volume= 18.604 af
Outflow = 62.26 cfs @ 13.60 hrs, Volume= 18.604 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 3.35" for 25-year event
Inflow = 207.66 cfs @ 12.97 hrs, Volume= 40.743 af
Outflow = 207.66 cfs @ 12.97 hrs, Volume= 40.743 af, Atten= 0%, Lag= 0.0 min

SWNAS - Existing Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 2.68" for 25-year event
 Inflow = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af
 Outflow = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af, Atten= 67%, Lag= 20.3 min
 Primary = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.66' @ 12.43 hrs Surf.Area= 7,752 sf Storage= 10,737 cf

Plug-Flow detention time= 54.0 min calculated for 0.889 af (100% of inflow)
 Center-of-Mass det. time= 54.3 min (897.9 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.11 cfs @ 12.43 hrs HW=147.66' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 4.11 cfs @ 5.23 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af
 Outflow = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af, Atten= 94%, Lag= 92.1 min
 Primary = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

SWNAS - Existing Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 137.55' @ 13.62 hrs Surf.Area= 16,545 sf Storage= 52,744 cf

Plug-Flow detention time= 430.2 min calculated for 0.802 af (45% of inflow)
 Center-of-Mass det. time= 306.4 min (1,082.6 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.49 cfs @ 13.62 hrs HW=137.55' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 1.49 cfs @ 2.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

SWNAS - Existing Watershed Swamp River*Type III 24-hr 100-year Rainfall=7.90"*

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Page 21

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=67 Runoff=18.83 cfs 1.339 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=6.94"
Tc=6.0 min CN=92 Runoff=30.44 cfs 2.350 af

Subcatchment4C: Runoff Area=64.270 ac 6.04% Impervious Runoff Depth=4.61"
Flow Length=3,308' Tc=120.0 min CN=72 Runoff=86.52 cfs 24.673 af

Subcatchment5A: Runoff Area=47.740 ac 7.27% Impervious Runoff Depth=5.07"
Flow Length=1,990' Tc=68.3 min CN=76 Runoff=102.90 cfs 20.158 af

Subcatchment5B: Runoff Area=98.080 ac 33.08% Impervious Runoff Depth=4.72"
Flow Length=1,990' Tc=68.3 min CN=73 Runoff=197.19 cfs 38.590 af

Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM Inflow=92.99 cfs 27.383 af
Outflow=92.99 cfs 27.383 af

Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM Inflow=300.11 cfs 58.748 af
Outflow=300.11 cfs 58.748 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=148.47' Storage=17,483 cf Inflow=18.83 cfs 1.339 af
Primary=5.33 cfs 1.339 af Secondary=0.00 cfs 0.000 af Outflow=5.33 cfs 1.339 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=138.19' Storage=63,713 cf Inflow=30.44 cfs 2.350 af
Primary=3.36 cfs 1.370 af Secondary=0.00 cfs 0.000 af Outflow=3.36 cfs 1.370 af

Total Runoff Area = 218.130 ac Runoff Volume = 87.110 af Average Runoff Depth = 4.79"
79.43% Pervious = 173.270 ac 20.57% Impervious = 44.860 ac

SWNAS - Existing Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 22

Summary for Subcatchment 4A:

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

SWNAS - Existing Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 23

Summary for Subcatchment 4C:

Runoff = 86.52 cfs @ 13.60 hrs, Volume= 24.673 af, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 5A:

Runoff = 102.90 cfs @ 12.90 hrs, Volume= 20.158 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

SWNAS - Existing Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 24

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Subcatchment 5B:

Runoff = 197.19 cfs @ 12.91 hrs, Volume= 38.590 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
68.3	1,990	Total			

Summary for Reach 4R: DP-4 OLD SWAMP RIVER UPSTREAM

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 4.54" for 100-year event
Inflow = 92.99 cfs @ 13.60 hrs, Volume= 27.383 af
Outflow = 92.99 cfs @ 13.60 hrs, Volume= 27.383 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER DOWNSTREAM

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 4.83" for 100-year event
Inflow = 300.11 cfs @ 12.90 hrs, Volume= 58.748 af
Outflow = 300.11 cfs @ 12.90 hrs, Volume= 58.748 af, Atten= 0%, Lag= 0.0 min

SWNAS - Existing Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 4.04" for 100-year event
 Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af
 Outflow = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af, Atten= 72%, Lag= 22.3 min
 Primary = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.47' @ 12.46 hrs Surf.Area= 8,987 sf Storage= 17,483 cf

Plug-Flow detention time= 52.7 min calculated for 1.339 af (100% of inflow)
 Center-of-Mass det. time= 52.9 min (884.6 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.33 cfs @ 12.46 hrs HW=148.47' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.33 cfs @ 6.79 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af
 Outflow = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af, Atten= 89%, Lag= 39.2 min
 Primary = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

SWNAS - Existing Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 26

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 138.19' @ 12.74 hrs Surf.Area= 17,819 sf Storage= 63,713 cf

Plug-Flow detention time= 341.6 min calculated for 1.370 af (58% of inflow)
 Center-of-Mass det. time= 234.3 min (1,003.8 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

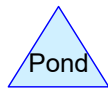
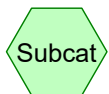
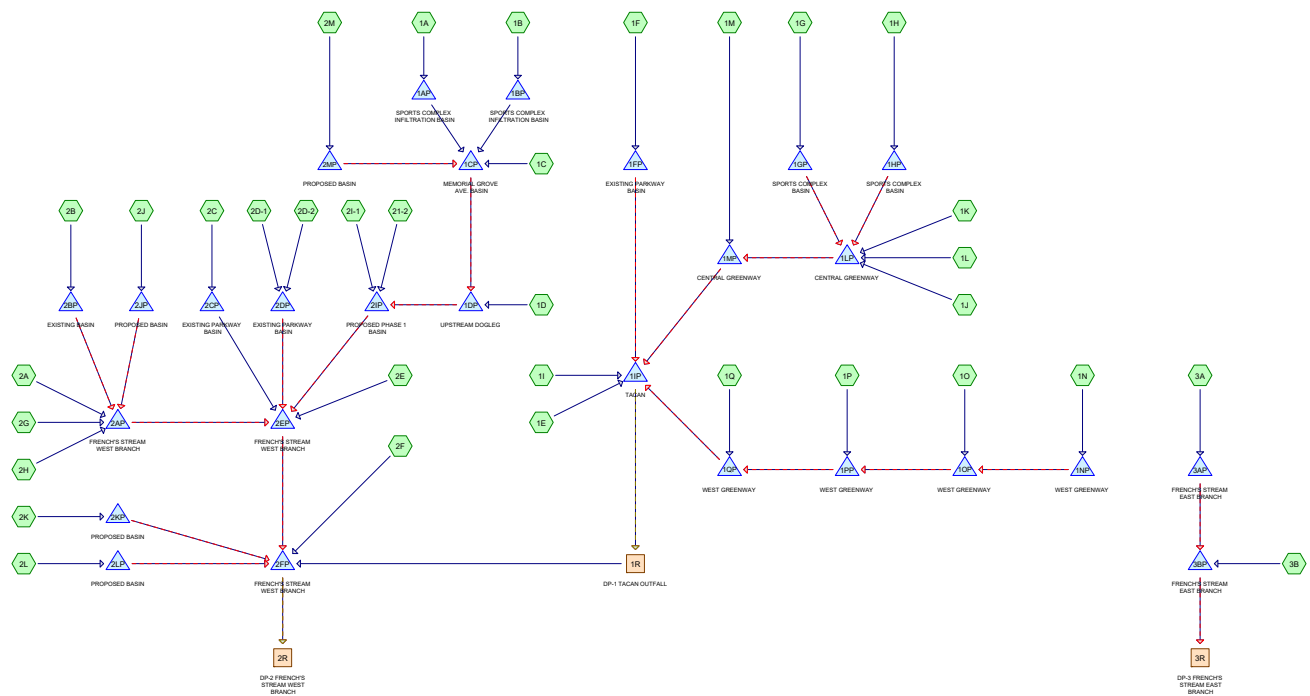
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.36 cfs @ 12.74 hrs HW=138.19' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 3.36 cfs @ 4.28 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Appendix B

HydroCAD Report – Post Development



Routing Diagram for SWNAS - Proposed Watershed
 Prepared by Tetra Tech, Inc., Printed 2/14/2023
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SWNAS - Proposed Watershed

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
24.340	39	>75% Grass cover, Good, HSG A (1A, 1B, 1C, 1D, 1E, 1N, 2C, 2D-2, 2E, 2I-2)
78.720	61	>75% Grass cover, Good, HSG B (1F, 1I, 1L, 1M, 2A, 2F, 2G, 2H, 3B)
43.740	74	>75% Grass cover, Good, HSG C (1D, 1F, 1I, 1L, 1N, 1O, 1P, 1Q, 2A, 2B, 2C)
18.270	80	>75% Grass cover, Good, HSG D (1D, 1G, 1H, 1I, 2E, 2J, 3B)
1.080	85	Artificial Turf (1G, 1H)
14.760	48	Brush, Good, HSG B (1I)
34.880	73	Brush, Good, HSG D (1I, 3A, 3B)
2.560	100	Open Water (1C, 1F, 3B)
79.150	98	Pavement (1A, 1B, 1C, 1F, 1G, 1H, 1J, 2A, 2B, 2C, 2D-1, 2G, 2H, 3A, 3B)
282.910	88	Proposed Development Area (1C, 1D, 1E, 1I, 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 2I-1, 2J, 2K, 2L, 2M, 2I-2)
34.380	98	Roof (2A, 2B, 2G, 2H)
3.740	98	Roofs (1C, 2C)
13.130	30	Woods, Good, HSG A (1D, 2E)
36.730	55	Woods, Good, HSG B (1I, 2F, 3A, 3B)
13.060	70	Woods, Good, HSG C (1D, 2E)
364.050	77	Woods, Good, HSG D (1D, 1E, 1I, 2A, 2E, 2F, 2K, 3A, 3B)
1.620	57	Woods/grass comb., Poor, HSG A (2A)
1,047.120	78	TOTAL AREA

SWNAS - Proposed Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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Page 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=2.54" Tc=6.0 min CN=92 Runoff=2.29 cfs 0.167 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=2.45" Tc=6.0 min CN=91 Runoff=2.53 cfs 0.183 af
Subcatchment 1C:	Runoff Area=26.820 ac 73.68% Impervious Runoff Depth=2.18" Flow Length=3,027' Tc=44.5 min CN=88 Runoff=31.91 cfs 4.867 af
Subcatchment 1D:	Runoff Area=29.320 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=1,740' Tc=72.2 min CN=64 Runoff=6.27 cfs 1.601 af
Subcatchment 1E:	Runoff Area=91.280 ac 0.00% Impervious Runoff Depth=1.63" Tc=6.0 min CN=81 Runoff=173.61 cfs 12.383 af
Subcatchment 1F:	Runoff Area=9.970 ac 54.96% Impervious Runoff Depth=1.93" Tc=6.0 min CN=85 Runoff=22.57 cfs 1.603 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=2.54" Flow Length=531' Tc=29.2 min CN=92 Runoff=5.30 cfs 0.673 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=2.74" Tc=6.0 min CN=94 Runoff=4.04 cfs 0.301 af
Subcatchment 1I:	Runoff Area=110.360 ac 0.00% Impervious Runoff Depth=0.84" Flow Length=1,745' Tc=103.9 min CN=68 Runoff=26.20 cfs 7.760 af
Subcatchment 1J:	Runoff Area=4.500 ac 100.00% Impervious Runoff Depth=3.17" Tc=6.0 min CN=98 Runoff=14.87 cfs 1.188 af
Subcatchment 1K:	Runoff Area=28.940 ac 0.00% Impervious Runoff Depth=2.18" Tc=10.0 min CN=88 Runoff=64.29 cfs 5.252 af
Subcatchment 1L:	Runoff Area=29.940 ac 0.00% Impervious Runoff Depth=2.01" Tc=10.0 min CN=86 Runoff=61.62 cfs 5.015 af
Subcatchment 1M:	Runoff Area=10.300 ac 0.00% Impervious Runoff Depth=1.93" Tc=10.0 min CN=85 Runoff=20.36 cfs 1.656 af
Subcatchment 1N:	Runoff Area=25.210 ac 0.00% Impervious Runoff Depth=2.01" Tc=10.0 min CN=86 Runoff=51.89 cfs 4.223 af
Subcatchment 1O:	Runoff Area=7.610 ac 0.00% Impervious Runoff Depth=2.09" Tc=6.0 min CN=87 Runoff=18.63 cfs 1.327 af
Subcatchment 1P:	Runoff Area=19.090 ac 0.00% Impervious Runoff Depth=2.09" Tc=6.0 min CN=87 Runoff=46.73 cfs 3.329 af

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Type III 24-hr 2-year Rainfall=3.40"

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Page 4

Subcatchment1Q:	Runoff Area=16.930 ac 0.00% Impervious Runoff Depth=2.09" Tc=6.0 min CN=87 Runoff=41.44 cfs 2.953 af
Subcatchment2A:	Runoff Area=141.850 ac 3.02% Impervious Runoff Depth=1.36" Flow Length=2,090' Tc=100.5 min CN=77 Runoff=61.33 cfs 16.037 af
Subcatchment2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=2.74" Tc=6.0 min CN=94 Runoff=125.27 cfs 9.333 af
Subcatchment2C:	Runoff Area=12.710 ac 94.57% Impervious Runoff Depth=2.95" Tc=6.0 min CN=96 Runoff=40.71 cfs 3.121 af
Subcatchment2D-1:	Runoff Area=2.100 ac 100.00% Impervious Runoff Depth=3.17" Tc=6.0 min CN=98 Runoff=6.94 cfs 0.554 af
Subcatchment2D-2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment2E:	Runoff Area=49.030 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=8.30 cfs 2.499 af
Subcatchment2F:	Runoff Area=61.960 ac 0.00% Impervious Runoff Depth=0.75" Flow Length=775' Slope=0.0100 '/' Tc=70.4 min CN=66 Runoff=16.19 cfs 3.855 af
Subcatchment2G:	Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=2.26" Tc=120.0 min CN=89 Runoff=10.95 cfs 3.126 af
Subcatchment2H:	Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=1.70" Tc=120.0 min CN=82 Runoff=4.32 cfs 1.244 af
Subcatchment2I-1:	Runoff Area=23.880 ac 0.00% Impervious Runoff Depth=2.18" Tc=10.0 min CN=88 Runoff=53.05 cfs 4.334 af
Subcatchment2J:	Runoff Area=15.720 ac 0.00% Impervious Runoff Depth=2.09" Tc=6.0 min CN=87 Runoff=38.48 cfs 2.742 af
Subcatchment2K:	Runoff Area=21.000 ac 0.00% Impervious Runoff Depth=1.85" Tc=6.0 min CN=84 Runoff=45.61 cfs 3.239 af
Subcatchment2L:	Runoff Area=10.690 ac 0.00% Impervious Runoff Depth=2.18" Tc=6.0 min CN=88 Runoff=27.16 cfs 1.940 af
Subcatchment2M:	Runoff Area=19.350 ac 0.00% Impervious Runoff Depth=2.18" Tc=6.0 min CN=88 Runoff=49.15 cfs 3.512 af
Subcatchment3A:	Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=1.42" Flow Length=1,438' Tc=74.8 min CN=78 Runoff=34.70 cfs 7.325 af
Subcatchment3B:	Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=1.29" Flow Length=1,600' Tc=107.0 min CN=76 Runoff=51.95 cfs 14.215 af
Subcatchment2I-2:	Runoff Area=11.740 ac 0.00% Impervious Runoff Depth=0.89" Tc=10.0 min CN=69 Runoff=9.60 cfs 0.875 af

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Type III 24-hr 2-year Rainfall=3.40"

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Page 5

Reach 1R: DP-1 TACAN OUTFALLInflow=53.35 cfs 45.641 af
Outflow=53.35 cfs 45.641 af**Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**Inflow=174.36 cfs 97.800 af
Outflow=174.36 cfs 97.800 af**Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**Inflow=76.28 cfs 21.534 af
Outflow=76.28 cfs 21.534 af**Pond 1AP: SPORTS COMPLEX**Peak Elev=170.39' Storage=2,430 cf Inflow=2.29 cfs 0.167 af
Discarded=0.12 cfs 0.138 af Primary=0.66 cfs 0.030 af Outflow=0.78 cfs 0.167 af**Pond 1BP: SPORTS COMPLEX**Peak Elev=170.82' Storage=2,564 cf Inflow=2.53 cfs 0.183 af
Discarded=0.13 cfs 0.148 af Primary=0.85 cfs 0.035 af Outflow=0.98 cfs 0.183 af**Pond 1CP: MEMORIAL GROVE AVE.**Peak Elev=152.58' Storage=138,842 cf Inflow=51.28 cfs 8.274 af
Primary=20.41 cfs 8.213 af Secondary=0.00 cfs 0.000 af Outflow=20.41 cfs 8.213 af**Pond 1DP: UPSTREAM DOGLEG**Peak Elev=144.75' Storage=676 cf Inflow=26.62 cfs 9.814 af
Primary=12.84 cfs 4.487 af Secondary=13.78 cfs 5.326 af Outflow=26.62 cfs 9.814 af**Pond 1FP: EXISTING PARKWAY BASIN**Peak Elev=146.69' Storage=68,602 cf Inflow=22.57 cfs 1.603 af
Primary=0.16 cfs 0.113 af Secondary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.113 af**Pond 1GP: SPORTS COMPLEX BASIN**Peak Elev=168.31' Storage=3,949 cf Inflow=5.30 cfs 0.673 af
Primary=3.97 cfs 0.666 af Secondary=0.00 cfs 0.000 af Outflow=3.97 cfs 0.666 af**Pond 1HP: SPORTS COMPLEX BASIN**Peak Elev=163.57' Storage=816 cf Inflow=4.04 cfs 0.301 af
Primary=3.22 cfs 0.299 af Secondary=0.00 cfs 0.000 af Outflow=3.22 cfs 0.299 af**Pond 1IP: TACAN**Peak Elev=142.68' Storage=563,083 cf Inflow=215.42 cfs 45.642 af
Outflow=53.35 cfs 45.641 af**Pond 1LP: CENTRAL GREENWAY**Peak Elev=149.07' Storage=117,720 cf Inflow=143.46 cfs 12.419 af
Primary=69.42 cfs 12.415 af Secondary=0.00 cfs 0.000 af Outflow=69.42 cfs 12.415 af**Pond 1MP: CENTRAL GREENWAY**Peak Elev=148.40' Storage=77,753 cf Inflow=85.66 cfs 14.071 af
Primary=59.95 cfs 14.067 af Secondary=0.00 cfs 0.000 af Outflow=59.95 cfs 14.067 af**Pond 1NP: WEST GREENWAY**Peak Elev=148.91' Storage=86,123 cf Inflow=51.89 cfs 4.223 af
Primary=8.50 cfs 4.189 af Secondary=0.00 cfs 0.000 af Outflow=8.50 cfs 4.189 af**Pond 1OP: WEST GREENWAY**Peak Elev=148.38' Storage=18,185 cf Inflow=21.92 cfs 5.516 af
Primary=11.17 cfs 5.512 af Secondary=0.00 cfs 0.000 af Outflow=11.17 cfs 5.512 af**Pond 1PP: WEST GREENWAY**Peak Elev=147.83' Storage=82,150 cf Inflow=56.13 cfs 8.841 af
Primary=14.41 cfs 8.807 af Secondary=0.00 cfs 0.000 af Outflow=14.41 cfs 8.807 af**Pond 1QP: WEST GREENWAY**Peak Elev=146.66' Storage=74,424 cf Inflow=51.18 cfs 11.759 af
Primary=20.55 cfs 11.318 af Secondary=0.00 cfs 0.000 af Outflow=20.55 cfs 11.318 af

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Page 6

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=145.16' Storage=49,612 cf Inflow=104.15 cfs 31.813 af
Primary=47.94 cfs 15.281 af Secondary=50.36 cfs 16.531 af Outflow=98.29 cfs 31.813 af

Pond 2BP: EXISTING BASIN Peak Elev=147.76' Storage=163,282 cf Inflow=125.27 cfs 9.333 af
Primary=25.15 cfs 9.010 af Secondary=0.00 cfs 0.000 af Outflow=25.15 cfs 9.010 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=146.16' Storage=106,450 cf Inflow=40.71 cfs 3.121 af
Outflow=1.72 cfs 0.782 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=144.76' Storage=24,152 cf Inflow=6.94 cfs 0.554 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=141.90' Storage=41,753 cf Inflow=106.39 cfs 44.394 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=104.58 cfs 44.394 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=130.39' Storage=43,451 cf Inflow=174.50 cfs 97.838 af
Primary=64.12 cfs 27.186 af Secondary=110.24 cfs 70.614 af Tertiary=0.00 cfs 0.000 af Outflow=174.36 cfs 97.800 af

Pond 2IP: PROPOSED PHASE 1 BASIN Peak Elev=142.17' Storage=401,200 cf Inflow=66.09 cfs 15.023 af
Primary=10.30 cfs 9.301 af Secondary=0.00 cfs 0.000 af Outflow=10.30 cfs 9.301 af

Pond 2JP: PROPOSED BASIN Peak Elev=162.62' Storage=50,528 cf Inflow=38.48 cfs 2.742 af
Primary=11.04 cfs 2.396 af Secondary=0.00 cfs 0.000 af Outflow=11.04 cfs 2.396 af

Pond 2KP: PROPOSED BASIN Peak Elev=149.68' Storage=74,740 cf Inflow=45.61 cfs 3.239 af
Primary=4.67 cfs 2.235 af Secondary=0.00 cfs 0.000 af Outflow=4.67 cfs 2.235 af

Pond 2LP: PROPOSED BASIN Peak Elev=156.56' Storage=32,284 cf Inflow=27.16 cfs 1.940 af
Primary=10.06 cfs 1.714 af Secondary=0.00 cfs 0.000 af Outflow=10.06 cfs 1.714 af

Pond 2MP: PROPOSED BASIN Peak Elev=179.76' Storage=44,575 cf Inflow=49.15 cfs 3.512 af
Primary=22.61 cfs 3.342 af Secondary=0.00 cfs 0.000 af Outflow=22.61 cfs 3.342 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=144.79' Storage=5,608 cf Inflow=34.70 cfs 7.325 af
Primary=34.35 cfs 7.319 af Secondary=0.00 cfs 0.000 af Outflow=34.35 cfs 7.319 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=132.93' Storage=59,880 cf Inflow=82.52 cfs 21.534 af
Primary=76.28 cfs 21.534 af Secondary=0.00 cfs 0.000 af Outflow=76.28 cfs 21.534 af

Total Runoff Area = 1,047.120 ac Runoff Volume = 132.432 af Average Runoff Depth = 1.52"
88.56% Pervious = 927.290 ac 11.44% Impervious = 119.830 ac

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Type III 24-hr 2-year Rainfall=3.40"

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Page 7

Summary for Subcatchment 1A:

Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 31.91 cfs @ 12.61 hrs, Volume= 4.867 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 8

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 6.27 cfs @ 13.15 hrs, Volume= 1.601 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 9

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
72.2	1,740	Total			

Summary for Subcatchment 1E:

Runoff = 173.61 cfs @ 12.09 hrs, Volume= 12.383 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 44.640	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
91.280	81	Weighted Average
91.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 22.57 cfs @ 12.09 hrs, Volume= 1.603 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 10

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531				Total

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Type III 24-hr 2-year Rainfall=3.40"

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Page 11

Summary for Subcatchment 1H:

Runoff = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 26.20 cfs @ 13.51 hrs, Volume= 7.760 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 2-year Rainfall=3.40"

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Page 12

Summary for Subcatchment 1J:

Runoff = 14.87 cfs @ 12.08 hrs, Volume= 1.188 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1K:

Runoff = 64.29 cfs @ 12.14 hrs, Volume= 5.252 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1L:

Runoff = 61.62 cfs @ 12.14 hrs, Volume= 5.015 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 2-year Rainfall=3.40"

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Page 13

Summary for Subcatchment 1M:

Runoff = 20.36 cfs @ 12.14 hrs, Volume= 1.656 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1N:

Assumed slope of 0.002

Runoff = 51.89 cfs @ 12.14 hrs, Volume= 4.223 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1O:

Runoff = 18.63 cfs @ 12.09 hrs, Volume= 1.327 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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Type III 24-hr 2-year Rainfall=3.40"

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Page 14

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1P:

Runoff = 46.73 cfs @ 12.09 hrs, Volume= 3.329 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1Q:

Runoff = 41.44 cfs @ 12.09 hrs, Volume= 2.953 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2A:

Runoff = 61.33 cfs @ 13.40 hrs, Volume= 16.037 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 15

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
100.5	2,090	Total			

Summary for Subcatchment 2B:

Runoff = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 40.71 cfs @ 12.08 hrs, Volume= 3.121 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 16

	Area (ac)	CN	Description
*	10.340	98	Pavement
*	1.680	98	Roofs
	0.400	39	>75% Grass cover, Good, HSG A
	0.290	74	>75% Grass cover, Good, HSG C
	12.710	96	Weighted Average
	0.690		5.43% Pervious Area
	12.020		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-1:

Runoff = 6.94 cfs @ 12.08 hrs, Volume= 0.554 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

	Area (ac)	CN	Description
*	2.100	98	Pavement
	2.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-2:

Runoff = 0.00 cfs @ 23.42 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

	Area (ac)	CN	Description
	0.670	39	>75% Grass cover, Good, HSG A
	0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2E:

Runoff = 8.30 cfs @ 13.39 hrs, Volume= 2.499 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 17

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 16.19 cfs @ 13.06 hrs, Volume= 3.855 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
70.4	775	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 10.95 cfs @ 13.60 hrs, Volume= 3.126 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 18

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 4.32 cfs @ 13.60 hrs, Volume= 1.244 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2I-1:

Runoff = 53.05 cfs @ 12.14 hrs, Volume= 4.334 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 2-year Rainfall=3.40"

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Page 19

Summary for Subcatchment 2J:

Runoff = 38.48 cfs @ 12.09 hrs, Volume= 2.742 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2K:

Runoff = 45.61 cfs @ 12.09 hrs, Volume= 3.239 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2L:

Runoff = 27.16 cfs @ 12.09 hrs, Volume= 1.940 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 2-year Rainfall=3.40"

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Page 20

Summary for Subcatchment 2M:

Runoff = 49.15 cfs @ 12.09 hrs, Volume= 3.512 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 51.95 cfs @ 13.44 hrs, Volume= 14.215 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 21

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Subcatchment 21-2:

Runoff = 9.60 cfs @ 12.15 hrs, Volume= 0.875 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth > 1.53" for 2-year event
 Inflow = 53.35 cfs @ 14.93 hrs, Volume= 45.641 af
 Outflow = 53.35 cfs @ 14.93 hrs, Volume= 45.641 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 2-year Rainfall=3.40"

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Page 22

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 1.38" for 2-year event
 Inflow = 174.36 cfs @ 13.78 hrs, Volume= 97.800 af
 Outflow = 174.36 cfs @ 13.78 hrs, Volume= 97.800 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event
 Inflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af
 Outflow = 0.78 cfs @ 12.37 hrs, Volume= 0.167 af, Atten= 66%, Lag= 17.0 min
 Discarded = 0.12 cfs @ 11.44 hrs, Volume= 0.138 af
 Primary = 0.66 cfs @ 12.37 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 170.39' @ 12.37 hrs Surf.Area= 2,201 sf Storage= 2,430 cf

Plug-Flow detention time= 125.1 min calculated for 0.167 af (100% of inflow)

Center-of-Mass det. time= 125.1 min (920.7 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A
			5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

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Page 23

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 11.44 hrs HW=168.58' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)**Primary OutFlow** Max=0.66 cfs @ 12.37 hrs HW=170.39' TW=151.40' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.66 cfs @ 2.72 fps)**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 2.45" for 2-year event
 Inflow = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af
 Outflow = 0.98 cfs @ 12.33 hrs, Volume= 0.183 af, Atten= 61%, Lag= 14.4 min
 Discarded = 0.13 cfs @ 11.38 hrs, Volume= 0.148 af
 Primary = 0.85 cfs @ 12.33 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 170.82' @ 12.33 hrs Surf.Area= 2,378 sf Storage= 2,564 cf

Plug-Flow detention time= 124.3 min calculated for 0.183 af (100% of inflow)

Center-of-Mass det. time= 124.3 min (924.5 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB -Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

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Page 24

Discarded OutFlow Max=0.13 cfs @ 11.38 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=0.84 cfs @ 12.33 hrs HW=170.82' TW=151.29' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.84 cfs @ 2.85 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 2.07" for 2-year event
 Inflow = 51.28 cfs @ 12.51 hrs, Volume= 8.274 af
 Outflow = 20.41 cfs @ 13.25 hrs, Volume= 8.213 af, Atten= 60%, Lag= 44.6 min
 Primary = 20.41 cfs @ 13.25 hrs, Volume= 8.213 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 152.58' @ 13.25 hrs Surf.Area= 61,121 sf Storage= 138,842 cf

Plug-Flow detention time= 171.7 min calculated for 8.213 af (99% of inflow)
 Center-of-Mass det. time= 166.5 min (1,020.8 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.41 cfs @ 13.25 hrs HW=152.58' TW=144.75' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 20.41 cfs @ 5.61 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 25

Summary for Pond 1DP: UPSTREAM DOGLEG

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 1.53" for 2-year event
 Inflow = 26.62 cfs @ 13.17 hrs, Volume= 9.814 af
 Outflow = 26.62 cfs @ 13.19 hrs, Volume= 9.814 af, Atten= 0%, Lag= 1.3 min
 Primary = 12.84 cfs @ 13.19 hrs, Volume= 4.487 af
 Secondary = 13.78 cfs @ 13.19 hrs, Volume= 5.326 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.75' @ 13.19 hrs Surf.Area= 1,257 sf Storage= 676 cf

Plug-Flow detention time= 0.3 min calculated for 9.814 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (1,010.4 - 1,010.1)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=12.84 cfs @ 13.19 hrs HW=144.75' TW=140.76' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 12.84 cfs @ 2.96 fps)

Secondary OutFlow Max=13.78 cfs @ 13.19 hrs HW=144.75' TW=140.76' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 13.78 cfs @ 3.00 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

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Type III 24-hr 2-year Rainfall=3.40"

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Page 26

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 1.93" for 2-year event
 Inflow = 22.57 cfs @ 12.09 hrs, Volume= 1.603 af
 Outflow = 0.16 cfs @ 24.07 hrs, Volume= 0.113 af, Atten= 99%, Lag= 719.1 min
 Primary = 0.16 cfs @ 24.07 hrs, Volume= 0.113 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.69' @ 24.07 hrs Surf.Area= 23,631 sf Storage= 68,602 cf

Plug-Flow detention time= 1,252.5 min calculated for 0.113 af (7% of inflow)
 Center-of-Mass det. time= 1,052.7 min (1,876.1 - 823.4)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.16 cfs @ 24.07 hrs HW=146.69' TW=135.28' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 0.16 cfs @ 1.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 1GP: SPORTS COMPLEX BASIN

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af
 Outflow = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af, Atten= 25%, Lag= 13.8 min
 Primary = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Page 27

Peak Elev= 168.31' @ 12.62 hrs Surf.Area= 2,853 sf Storage= 3,949 cf

Plug-Flow detention time= 29.9 min calculated for 0.666 af (99% of inflow)

Center-of-Mass det. time= 22.5 min (839.6 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.97 cfs @ 12.62 hrs HW=168.31' TW=148.95' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.97 cfs @ 5.06 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' TW=146.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 2.74" for 2-year event
Inflow = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af
Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af, Atten= 20%, Lag= 3.6 min
Primary = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 163.57' @ 12.14 hrs Surf.Area= 823 sf Storage= 816 cf

Plug-Flow detention time= 12.1 min calculated for 0.299 af (99% of inflow)

Center-of-Mass det. time= 7.7 min (792.9 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 28

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.21 cfs @ 12.14 hrs HW=163.56' TW=148.54' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.21 cfs @ 4.09 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=146.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1IP: TACAN**

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth > 1.53" for 2-year event
 Inflow = 215.42 cfs @ 12.10 hrs, Volume= 45.642 af
 Outflow = 53.35 cfs @ 14.93 hrs, Volume= 45.641 af, Atten= 75%, Lag= 170.0 min
 Primary = 53.35 cfs @ 14.93 hrs, Volume= 45.641 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 142.68' @ 14.93 hrs Surf.Area= 319,132 sf Storage= 563,083 cf

Plug-Flow detention time= 104.7 min calculated for 45.641 af (100% of inflow)
 Center-of-Mass det. time= 104.5 min (1,031.2 - 926.6)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Printed 2/14/2023

Page 29

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	24.0" W x 24.0" H Vert. Low Flow Orifice C= 0.600
#3	Device 1	144.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

Primary OutFlow Max=53.35 cfs @ 14.93 hrs HW=142.68' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 53.35 cfs of 377.25 cfs potential flow)
 2=Low Flow Orifice (Orifice Controls 53.35 cfs @ 13.34 fps)
 3=Custom Weir/Orifice (Controls 0.00 cfs)

Summary for Pond 1LP: CENTRAL GREENWAY

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 2.20" for 2-year event
 Inflow = 143.46 cfs @ 12.13 hrs, Volume= 12.419 af
 Outflow = 69.42 cfs @ 12.25 hrs, Volume= 12.415 af, Atten= 52%, Lag= 6.9 min
 Primary = 69.42 cfs @ 12.25 hrs, Volume= 12.415 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.07' @ 12.43 hrs Surf.Area= 59,905 sf Storage= 117,720 cf

Plug-Flow detention time= 42.1 min calculated for 12.413 af (100% of inflow)
 Center-of-Mass det. time= 42.2 min (856.3 - 814.1)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 30

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	42.0" Round Culvert X 2.00 L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	130.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=68.14 cfs @ 12.25 hrs HW=148.93' TW=147.91' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 68.14 cfs @ 5.36 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1MP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 2.16" for 2-year event
 Inflow = 85.66 cfs @ 12.20 hrs, Volume= 14.071 af
 Outflow = 59.95 cfs @ 12.56 hrs, Volume= 14.067 af, Atten= 30%, Lag= 21.5 min
 Primary = 59.95 cfs @ 12.56 hrs, Volume= 14.067 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.40' @ 12.56 hrs Surf.Area= 37,695 sf Storage= 77,753 cf

Plug-Flow detention time= 27.3 min calculated for 14.067 af (100% of inflow)
 Center-of-Mass det. time= 26.7 min (879.5 - 852.8)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 31

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	42.0" Round Culvert L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	130.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.95 cfs @ 12.56 hrs HW=148.40' TW=141.16' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 59.95 cfs @ 6.28 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event
 Inflow = 51.89 cfs @ 12.14 hrs, Volume= 4.223 af
 Outflow = 8.50 cfs @ 12.68 hrs, Volume= 4.189 af, Atten= 84%, Lag= 32.4 min
 Primary = 8.50 cfs @ 12.68 hrs, Volume= 4.189 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.91' @ 12.72 hrs Surf.Area= 59,740 sf Storage= 86,123 cf

Plug-Flow detention time= 208.8 min calculated for 4.189 af (99% of inflow)
 Center-of-Mass det. time= 203.9 min (1,027.5 - 823.6)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

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Page 32

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	24.0" Round Culvert L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 38.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.50 cfs @ 12.68 hrs HW=148.91' TW=148.37' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 8.50 cfs @ 3.53 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 10P: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 2.02" for 2-year event
 Inflow = 21.92 cfs @ 12.09 hrs, Volume= 5.516 af
 Outflow = 11.17 cfs @ 12.38 hrs, Volume= 5.512 af, Atten= 49%, Lag= 17.4 min
 Primary = 11.17 cfs @ 12.38 hrs, Volume= 5.512 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.38' @ 12.84 hrs Surf.Area= 12,406 sf Storage= 18,185 cf

Plug-Flow detention time= 31.6 min calculated for 5.511 af (100% of inflow)
 Center-of-Mass det. time= 29.3 min (1,006.0 - 976.7)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	24.0" Round Culvert L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 33

Primary OutFlow Max=11.07 cfs @ 12.38 hrs HW=148.27' TW=147.60' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 11.07 cfs @ 3.89 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth > 2.04" for 2-year event
 Inflow = 56.13 cfs @ 12.09 hrs, Volume= 8.841 af
 Outflow = 14.41 cfs @ 13.48 hrs, Volume= 8.807 af, Atten= 74%, Lag= 83.1 min
 Primary = 14.41 cfs @ 13.48 hrs, Volume= 8.807 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.83' @ 13.08 hrs Surf.Area= 45,219 sf Storage= 82,150 cf

Plug-Flow detention time= 107.6 min calculated for 8.806 af (100% of inflow)
 Center-of-Mass det. time= 98.3 min (1,032.8 - 934.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	24.0" Round Culvert L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.41 cfs @ 13.48 hrs HW=147.81' TW=146.56' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 14.41 cfs @ 4.59 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 34

Summary for Pond 1QP: WEST GREENWAY

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 2.05" for 2-year event
 Inflow = 51.18 cfs @ 12.09 hrs, Volume= 11.759 af
 Outflow = 20.55 cfs @ 12.56 hrs, Volume= 11.318 af, Atten= 60%, Lag= 28.2 min
 Primary = 20.55 cfs @ 12.56 hrs, Volume= 11.318 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.66' @ 12.56 hrs Surf.Area= 43,146 sf Storage= 74,424 cf

Plug-Flow detention time= 110.8 min calculated for 11.317 af (96% of inflow)
 Center-of-Mass det. time= 66.7 min (1,045.2 - 978.5)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	36.0" Round Culvert L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 ' S= 0.0119 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	148.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.55 cfs @ 12.56 hrs HW=146.66' TW=141.17' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 20.55 cfs of 36.75 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 20.55 cfs @ 4.13 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 35

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 1.71" for 2-year event
 Inflow = 104.15 cfs @ 13.29 hrs, Volume= 31.813 af
 Outflow = 98.29 cfs @ 13.65 hrs, Volume= 31.813 af, Atten= 6%, Lag= 21.5 min
 Primary = 47.94 cfs @ 13.65 hrs, Volume= 15.281 af
 Secondary = 50.36 cfs @ 13.65 hrs, Volume= 16.531 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.16' @ 13.65 hrs Surf.Area= 66,980 sf Storage= 49,612 cf

Plug-Flow detention time= 4.5 min calculated for 31.813 af (100% of inflow)
 Center-of-Mass det. time= 4.5 min (922.8 - 918.3)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=47.94 cfs @ 13.65 hrs HW=145.16' TW=141.86' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 47.94 cfs @ 5.55 fps)

Secondary OutFlow Max=50.36 cfs @ 13.65 hrs HW=145.16' TW=141.86' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 50.36 cfs @ 5.83 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 2.74" for 2-year event
 Inflow = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af
 Outflow = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af, Atten= 80%, Lag= 25.7 min
 Primary = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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Page 36

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.76' @ 12.51 hrs Surf.Area= 67,575 sf Storage= 163,282 cf

Plug-Flow detention time= 117.1 min calculated for 9.009 af (97% of inflow)
 Center-of-Mass det. time= 97.0 min (882.2 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=25.15 cfs @ 12.51 hrs HW=147.76' TW=144.21' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 25.15 cfs @ 8.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.710 ac, 94.57% Impervious, Inflow Depth = 2.95" for 2-year event
Inflow =	40.71 cfs @ 12.08 hrs, Volume= 3.121 af
Outflow =	1.72 cfs @ 14.87 hrs, Volume= 0.782 af, Atten= 96%, Lag= 167.1 min
Primary =	1.72 cfs @ 14.87 hrs, Volume= 0.782 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.16' @ 14.87 hrs Surf.Area= 28,330 sf Storage= 106,450 cf

Plug-Flow detention time= 495.6 min calculated for 0.782 af (25% of inflow)
 Center-of-Mass det. time= 312.1 min (1,084.4 - 772.3)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 37

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.72 cfs @ 14.87 hrs HW=146.16' TW=141.19' (Dynamic Tailwater)

1=Culvert (Passes 1.72 cfs of 38.20 cfs potential flow)

2=Orifice/Grate (Weir Controls 1.72 cfs @ 1.32 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	2.770 ac, 75.81% Impervious, Inflow Depth = 2.40" for 2-year event
Inflow =	6.94 cfs @ 12.08 hrs, Volume= 0.554 af
Outflow =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 144.76' @ 24.34 hrs Surf.Area= 8,472 sf Storage= 24,152 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 38

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **1=Culvert** (Controls 0.00 cfs)↑ **2=Orifice/Grate** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	401.120 ac, 22.54% Impervious, Inflow Depth > 1.33" for 2-year event
Inflow =	106.39 cfs @ 13.64 hrs, Volume= 44.394 af
Outflow =	104.58 cfs @ 13.84 hrs, Volume= 44.394 af, Atten= 2%, Lag= 11.9 min
Primary =	104.58 cfs @ 13.84 hrs, Volume= 44.394 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 141.90' @ 13.84 hrs Surf.Area= 33,303 sf Storage= 41,753 cf

Plug-Flow detention time= 5.2 min calculated for 44.388 af (100% of inflow)
 Center-of-Mass det. time= 5.1 min (1,024.6 - 1,019.5)

SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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Page 39

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=104.58 cfs @ 13.84 hrs HW=141.90' TW=130.39' (Dynamic Tailwater)
1=Culvert (Barrel Controls 104.58 cfs @ 8.78 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 1.38" for 2-year event
Inflow = 174.50 cfs @ 13.72 hrs, Volume= 97.838 af
Outflow = 174.36 cfs @ 13.78 hrs, Volume= 97.800 af, Atten= 0%, Lag= 3.8 min
Primary = 64.12 cfs @ 13.78 hrs, Volume= 27.186 af
Secondary = 110.24 cfs @ 13.78 hrs, Volume= 70.614 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 130.39' @ 13.78 hrs Surf.Area= 19,486 sf Storage= 43,451 cf

Plug-Flow detention time= 6.2 min calculated for 97.800 af (100% of inflow)
Center-of-Mass det. time= 5.0 min (1,027.3 - 1,022.4)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

Printed 2/14/2023

Page 40

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=64.12 cfs @ 13.78 hrs HW=130.39' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 64.12 cfs @ 5.69 fps)

Secondary OutFlow Max=110.24 cfs @ 13.78 hrs HW=130.39' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 110.24 cfs @ 6.75 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond ZIP: PROPOSED PHASE 1 BASIN

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth > 1.60" for 2-year event
 Inflow = 66.09 cfs @ 12.14 hrs, Volume= 15.023 af
 Outflow = 10.30 cfs @ 16.94 hrs, Volume= 9.301 af, Atten= 84%, Lag= 287.9 min
 Primary = 10.30 cfs @ 16.94 hrs, Volume= 9.301 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 142.17' @ 16.94 hrs Surf.Area= 136,900 sf Storage= 401,200 cf

Plug-Flow detention time= 568.0 min calculated for 9.300 af (62% of inflow)
 Center-of-Mass det. time= 409.7 min (1,356.5 - 946.7)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 41

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	36.0" W x 10.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	142.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	144.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.30 cfs @ 16.94 hrs HW=142.17' TW=140.04' (Dynamic Tailwater)

1=Culvert (Passes 10.30 cfs of 43.97 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 10.30 cfs @ 4.12 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2JP: PROPOSED BASIN

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 2.09" for 2-year event
 Inflow = 38.48 cfs @ 12.09 hrs, Volume= 2.742 af
 Outflow = 11.04 cfs @ 12.44 hrs, Volume= 2.396 af, Atten= 71%, Lag= 21.3 min
 Primary = 11.04 cfs @ 12.44 hrs, Volume= 2.396 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 162.62' @ 12.44 hrs Surf.Area= 32,772 sf Storage= 50,528 cf

Plug-Flow detention time= 167.2 min calculated for 2.396 af (87% of inflow)
 Center-of-Mass det. time= 110.2 min (926.5 - 816.3)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 42

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	24.0" Round Culvert L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	164.50'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.04 cfs @ 12.44 hrs HW=162.62' TW=144.13' (Dynamic Tailwater)

1=Culvert (Passes 11.04 cfs of 11.84 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 11.04 cfs @ 3.68 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2KP: PROPOSED BASIN

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 1.85" for 2-year event
 Inflow = 45.61 cfs @ 12.09 hrs, Volume= 3.239 af
 Outflow = 4.67 cfs @ 12.98 hrs, Volume= 2.235 af, Atten= 90%, Lag= 53.5 min
 Primary = 4.67 cfs @ 12.98 hrs, Volume= 2.235 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.68' @ 12.98 hrs Surf.Area= 46,503 sf Storage= 74,740 cf

Plug-Flow detention time= 296.5 min calculated for 2.235 af (69% of inflow)
 Center-of-Mass det. time= 198.8 min (1,025.6 - 826.8)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 43

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	150.75'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	152.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.67 cfs @ 12.98 hrs HW=149.68' TW=130.10' (Dynamic Tailwater)

1=Culvert (Passes 4.67 cfs of 17.99 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 4.67 cfs @ 3.11 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2LP: PROPOSED BASIN

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-year event
 Inflow = 27.16 cfs @ 12.09 hrs, Volume= 1.940 af
 Outflow = 10.06 cfs @ 12.35 hrs, Volume= 1.714 af, Atten= 63%, Lag= 15.9 min
 Primary = 10.06 cfs @ 12.35 hrs, Volume= 1.714 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 156.56' @ 12.35 hrs Surf.Area= 22,297 sf Storage= 32,284 cf

Plug-Flow detention time= 139.6 min calculated for 1.714 af (88% of inflow)
 Center-of-Mass det. time= 85.3 min (897.9 - 812.6)

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 44

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	157.00'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	158.50'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	10.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.06 cfs @ 12.35 hrs HW=156.56' TW=129.41' (Dynamic Tailwater)

1=Culvert (Barrel Controls 10.06 cfs @ 5.28 fps)
 2=Orifice/Grate (Passes 10.06 cfs of 10.34 cfs potential flow)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2MP: PROPOSED BASIN

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-year event
 Inflow = 49.15 cfs @ 12.09 hrs, Volume= 3.512 af
 Outflow = 22.61 cfs @ 12.27 hrs, Volume= 3.342 af, Atten= 54%, Lag= 10.9 min
 Primary = 22.61 cfs @ 12.27 hrs, Volume= 3.342 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 179.76' @ 12.27 hrs Surf.Area= 18,220 sf Storage= 44,575 cf

Plug-Flow detention time= 78.8 min calculated for 3.342 af (95% of inflow)
 Center-of-Mass det. time= 52.3 min (864.9 - 812.6)

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	Custom Stage Data (Prismatic) Listed below

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Type III 24-hr 2-year Rainfall=3.40"

Printed 2/14/2023

Page 45

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	42.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	178.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	180.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.61 cfs @ 12.27 hrs HW=179.76' TW=151.14' (Dynamic Tailwater)

1=Culvert (Passes 22.61 cfs of 46.09 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 10.24 cfs @ 6.83 fps)
 3=Orifice/Grate (Orifice Controls 12.37 cfs @ 4.12 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 1.42" for 2-year event
 Inflow = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af
 Outflow = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af, Atten= 1%, Lag= 3.1 min
 Primary = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.79' @ 13.10 hrs Surf.Area= 3,411 sf Storage= 5,608 cf

Plug-Flow detention time= 4.0 min calculated for 7.319 af (100% of inflow)
 Center-of-Mass det. time= 3.2 min (913.0 - 909.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 46

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=34.35 cfs @ 13.10 hrs HW=144.79' TW=132.44' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 34.35 cfs @ 5.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=141.50' TW=129.20' (Dynamic Tailwater)

↑**2=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event
 Inflow = 82.52 cfs @ 13.31 hrs, Volume= 21.534 af
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 8%, Lag= 16.7 min
 Primary = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.93' @ 13.59 hrs Surf.Area= 36,830 sf Storage= 59,880 cf

Plug-Flow detention time= 8.8 min calculated for 21.531 af (100% of inflow)
 Center-of-Mass det. time= 8.8 min (943.4 - 934.6)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

Printed 2/14/2023

Page 47

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=76.28 cfs @ 13.59 hrs HW=132.93' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 76.28 cfs @ 6.74 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=129.20' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Controls 0.00 cfs)

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Page 48

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=4.19" Tc=6.0 min CN=92 Runoff=3.68 cfs 0.276 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=4.08" Tc=6.0 min CN=91 Runoff=4.12 cfs 0.306 af
Subcatchment 1C:	Runoff Area=26.820 ac 73.68% Impervious Runoff Depth=3.76" Flow Length=3,027' Tc=44.5 min CN=88 Runoff=54.31 cfs 8.413 af
Subcatchment 1D:	Runoff Area=29.320 ac 0.00% Impervious Runoff Depth=1.65" Flow Length=1,740' Tc=72.2 min CN=64 Runoff=18.51 cfs 4.021 af
Subcatchment 1E:	Runoff Area=91.280 ac 0.00% Impervious Runoff Depth=3.07" Tc=6.0 min CN=81 Runoff=328.55 cfs 23.382 af
Subcatchment 1F:	Runoff Area=9.970 ac 54.96% Impervious Runoff Depth=3.46" Tc=6.0 min CN=85 Runoff=40.01 cfs 2.875 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=4.19" Flow Length=531' Tc=29.2 min CN=92 Runoff=8.54 cfs 1.110 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=4.41" Tc=6.0 min CN=94 Runoff=6.33 cfs 0.485 af
Subcatchment 1I:	Runoff Area=110.360 ac 0.00% Impervious Runoff Depth=1.95" Flow Length=1,745' Tc=103.9 min CN=68 Runoff=66.81 cfs 17.943 af
Subcatchment 1J:	Runoff Area=4.500 ac 100.00% Impervious Runoff Depth=4.86" Tc=6.0 min CN=98 Runoff=22.46 cfs 1.824 af
Subcatchment 1K:	Runoff Area=28.940 ac 0.00% Impervious Runoff Depth=3.76" Tc=10.0 min CN=88 Runoff=109.12 cfs 9.078 af
Subcatchment 1L:	Runoff Area=29.940 ac 0.00% Impervious Runoff Depth=3.56" Tc=10.0 min CN=86 Runoff=107.77 cfs 8.883 af
Subcatchment 1M:	Runoff Area=10.300 ac 0.00% Impervious Runoff Depth=3.46" Tc=10.0 min CN=85 Runoff=36.17 cfs 2.970 af
Subcatchment 1N:	Runoff Area=25.210 ac 0.00% Impervious Runoff Depth=3.56" Tc=10.0 min CN=86 Runoff=90.75 cfs 7.480 af
Subcatchment 1O:	Runoff Area=7.610 ac 0.00% Impervious Runoff Depth=3.66" Tc=6.0 min CN=87 Runoff=32.04 cfs 2.322 af
Subcatchment 1P:	Runoff Area=19.090 ac 0.00% Impervious Runoff Depth=3.66" Tc=6.0 min CN=87 Runoff=80.38 cfs 5.825 af

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Page 49

Subcatchment1Q:	Runoff Area=16.930 ac 0.00% Impervious Runoff Depth=3.66" Tc=6.0 min CN=87 Runoff=71.29 cfs 5.166 af
Subcatchment2A:	Runoff Area=141.850 ac 3.02% Impervious Runoff Depth=2.71" Flow Length=2,090' Tc=100.5 min CN=77 Runoff=126.52 cfs 31.997 af
Subcatchment2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=4.41" Tc=6.0 min CN=94 Runoff=196.19 cfs 15.019 af
Subcatchment2C:	Runoff Area=12.710 ac 94.57% Impervious Runoff Depth=4.63" Tc=6.0 min CN=96 Runoff=62.44 cfs 4.906 af
Subcatchment2D-1:	Runoff Area=2.100 ac 100.00% Impervious Runoff Depth=4.86" Tc=6.0 min CN=98 Runoff=10.48 cfs 0.851 af
Subcatchment2D-2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=0.22" Tc=6.0 min CN=39 Runoff=0.03 cfs 0.012 af
Subcatchment2E:	Runoff Area=49.030 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=25.44 cfs 6.425 af
Subcatchment2F:	Runoff Area=61.960 ac 0.00% Impervious Runoff Depth=1.80" Flow Length=775' Slope=0.0100 '/' Tc=70.4 min CN=66 Runoff=44.14 cfs 9.274 af
Subcatchment2G:	Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=3.87" Tc=120.0 min CN=89 Runoff=18.52 cfs 5.337 af
Subcatchment2H:	Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=3.17" Tc=120.0 min CN=82 Runoff=8.14 cfs 2.318 af
Subcatchment2I-1:	Runoff Area=23.880 ac 0.00% Impervious Runoff Depth=3.76" Tc=10.0 min CN=88 Runoff=90.04 cfs 7.490 af
Subcatchment2J:	Runoff Area=15.720 ac 0.00% Impervious Runoff Depth=3.66" Tc=6.0 min CN=87 Runoff=66.19 cfs 4.797 af
Subcatchment2K:	Runoff Area=21.000 ac 0.00% Impervious Runoff Depth=3.36" Tc=6.0 min CN=84 Runoff=82.14 cfs 5.884 af
Subcatchment2L:	Runoff Area=10.690 ac 0.00% Impervious Runoff Depth=3.76" Tc=6.0 min CN=88 Runoff=46.03 cfs 3.353 af
Subcatchment2M:	Runoff Area=19.350 ac 0.00% Impervious Runoff Depth=3.76" Tc=6.0 min CN=88 Runoff=83.32 cfs 6.069 af
Subcatchment3A:	Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=2.80" Flow Length=1,438' Tc=74.8 min CN=78 Runoff=69.64 cfs 14.408 af
Subcatchment3B:	Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=2.62" Flow Length=1,600' Tc=107.0 min CN=76 Runoff=109.34 cfs 28.778 af
Subcatchment2I-2:	Runoff Area=11.740 ac 0.00% Impervious Runoff Depth=2.03" Tc=10.0 min CN=69 Runoff=23.84 cfs 1.986 af

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Type III 24-hr 10-year Rainfall=5.10"

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Page 50

Reach 1R: DP-1 TACAN OUTFALL

Inflow=59.82 cfs 87.316 af

Outflow=59.82 cfs 87.316 af

Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow=265.59 cfs 194.601 af

Outflow=265.59 cfs 194.601 af

Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow=153.44 cfs 43.180 af

Outflow=153.44 cfs 43.180 af

Pond 1AP: SPORTS COMPLEX

Peak Elev=171.02' Storage=2,829 cf Inflow=3.68 cfs 0.276 af

Discarded=0.12 cfs 0.170 af Primary=3.51 cfs 0.106 af Outflow=3.63 cfs 0.276 af

Pond 1BP: SPORTS COMPLEX

Peak Elev=171.25' Storage=2,975 cf Inflow=4.12 cfs 0.306 af

Discarded=0.13 cfs 0.184 af Primary=3.49 cfs 0.122 af Outflow=3.62 cfs 0.306 af

Pond 1CP: MEMORIAL GROVE AVE.

Peak Elev=154.30' Storage=252,476 cf Inflow=84.65 cfs 14.541 af

Primary=32.27 cfs 14.478 af Secondary=0.00 cfs 0.000 af Outflow=32.27 cfs 14.478 af

Pond 1DP: UPSTREAM DOGLEG

Peak Elev=145.67' Storage=3,093 cf Inflow=50.51 cfs 18.500 af

Primary=24.69 cfs 8.731 af Secondary=25.69 cfs 9.769 af Outflow=50.37 cfs 18.500 af

Pond 1FP: EXISTING PARKWAY BASIN

Peak Elev=147.23' Storage=81,891 cf Inflow=40.01 cfs 2.875 af

Primary=2.42 cfs 1.384 af Secondary=0.00 cfs 0.000 af Outflow=2.42 cfs 1.384 af

Pond 1GP: SPORTS COMPLEX BASIN

Peak Elev=169.36' Storage=7,713 cf Inflow=8.54 cfs 1.110 af

Primary=5.34 cfs 1.098 af Secondary=0.33 cfs 0.003 af Outflow=5.67 cfs 1.102 af

Pond 1HP: SPORTS COMPLEX BASIN

Peak Elev=164.27' Storage=1,616 cf Inflow=6.33 cfs 0.485 af

Primary=4.34 cfs 0.483 af Secondary=0.00 cfs 0.000 af Outflow=4.34 cfs 0.483 af

Pond 1IP: TACAN

Peak Elev=144.50' Storage=1,601,028 cf Inflow=410.97 cfs 87.317 af

Outflow=59.82 cfs 87.316 af

Pond 1LP: CENTRAL GREENWAY

Peak Elev=150.47' Storage=216,572 cf Inflow=242.86 cfs 21.369 af

Primary=104.16 cfs 21.364 af Secondary=0.00 cfs 0.000 af Outflow=104.16 cfs 21.364 af

Pond 1MP: CENTRAL GREENWAY

Peak Elev=149.75' Storage=137,467 cf Inflow=136.66 cfs 24.335 af

Primary=80.21 cfs 24.331 af Secondary=0.00 cfs 0.000 af Outflow=80.21 cfs 24.331 af

Pond 1NP: WEST GREENWAY

Peak Elev=150.10' Storage=169,117 cf Inflow=90.75 cfs 7.480 af

Primary=9.21 cfs 7.445 af Secondary=0.00 cfs 0.000 af Outflow=9.21 cfs 7.445 af

Pond 1OP: WEST GREENWAY

Peak Elev=149.73' Storage=39,373 cf Inflow=37.39 cfs 9.767 af

Primary=12.86 cfs 9.763 af Secondary=0.00 cfs 0.000 af Outflow=12.86 cfs 9.763 af

Pond 1PP: WEST GREENWAY

Peak Elev=149.08' Storage=147,885 cf Inflow=93.22 cfs 15.588 af

Primary=18.67 cfs 15.553 af Secondary=0.00 cfs 0.000 af Outflow=18.67 cfs 15.553 af

Pond 1QP: WEST GREENWAY

Peak Elev=147.43' Storage=111,139 cf Inflow=84.38 cfs 20.718 af

Primary=33.71 cfs 20.277 af Secondary=0.00 cfs 0.000 af Outflow=33.71 cfs 20.277 af

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Page 51

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=146.51' Storage=199,436 cf Inflow=189.72 cfs 58.801 af
Primary=77.34 cfs 28.487 af Secondary=80.26 cfs 30.314 af Outflow=157.60 cfs 58.801 af

Pond 2BP: EXISTING BASIN Peak Elev=149.13' Storage=266,655 cf Inflow=196.19 cfs 15.019 af
Primary=30.75 cfs 14.696 af Secondary=0.00 cfs 0.000 af Outflow=30.75 cfs 14.696 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=146.75' Storage=123,632 cf Inflow=62.44 cfs 4.906 af
Outflow=16.66 cfs 2.567 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=146.18' Storage=37,608 cf Inflow=10.48 cfs 0.863 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=143.88' Storage=132,926 cf Inflow=183.10 cfs 90.044 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=173.89 cfs 90.044 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=131.46' Storage=70,177 cf Inflow=265.90 cfs 194.639 af
Primary=107.44 cfs 63.936 af Secondary=158.14 cfs 130.665 af Tertiary=0.00 cfs 0.000 af Outflow=265.59 cfs 194.601 af

Pond 2IP: PROPOSED PHASE 1 BASIN Peak Elev=144.31' Storage=708,876 cf Inflow=127.44 cfs 27.977 af
Primary=36.28 cfs 22.251 af Secondary=0.00 cfs 0.000 af Outflow=36.28 cfs 22.251 af

Pond 2JP: PROPOSED BASIN Peak Elev=163.62' Storage=84,092 cf Inflow=66.19 cfs 4.797 af
Primary=18.29 cfs 4.451 af Secondary=0.00 cfs 0.000 af Outflow=18.29 cfs 4.451 af

Pond 2KP: PROPOSED BASIN Peak Elev=150.92' Storage=135,380 cf Inflow=82.14 cfs 5.884 af
Primary=10.01 cfs 4.879 af Secondary=0.00 cfs 0.000 af Outflow=10.01 cfs 4.879 af

Pond 2LP: PROPOSED BASIN Peak Elev=157.32' Storage=50,005 cf Inflow=46.03 cfs 3.353 af
Primary=17.21 cfs 3.127 af Secondary=0.00 cfs 0.000 af Outflow=17.21 cfs 3.127 af

Pond 2MP: PROPOSED BASIN Peak Elev=180.70' Storage=62,372 cf Inflow=83.32 cfs 6.069 af
Primary=54.02 cfs 5.900 af Secondary=0.00 cfs 0.000 af Outflow=54.02 cfs 5.900 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=146.83' Storage=31,582 cf Inflow=69.64 cfs 14.408 af
Primary=60.25 cfs 14.376 af Secondary=1.31 cfs 0.027 af Outflow=61.56 cfs 14.402 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=135.16' Storage=164,766 cf Inflow=169.73 cfs 43.180 af
Primary=152.02 cfs 43.159 af Secondary=1.42 cfs 0.021 af Outflow=153.44 cfs 43.180 af

Total Runoff Area = 1,047.120 ac Runoff Volume = 251.265 af Average Runoff Depth = 2.88"
88.56% Pervious = 927.290 ac 11.44% Impervious = 119.830 ac

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Type III 24-hr 10-year Rainfall=5.10"

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Page 52

Summary for Subcatchment 1A:

Runoff = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 54.31 cfs @ 12.61 hrs, Volume= 8.413 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 53

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 18.51 cfs @ 13.07 hrs, Volume= 4.021 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 54

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
72.2	1,740	Total			

Summary for Subcatchment 1E:

Runoff = 328.55 cfs @ 12.09 hrs, Volume= 23.382 af, Depth= 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 44.640	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
91.280	81	Weighted Average
91.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 40.01 cfs @ 12.09 hrs, Volume= 2.875 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 55

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531				Total

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Type III 24-hr 10-year Rainfall=5.10"

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Page 56

Summary for Subcatchment 1H:

Runoff = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 66.81 cfs @ 13.50 hrs, Volume= 17.943 af, Depth= 1.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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Page 57

Summary for Subcatchment 1J:

Runoff = 22.46 cfs @ 12.08 hrs, Volume= 1.824 af, Depth= 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1K:

Runoff = 109.12 cfs @ 12.14 hrs, Volume= 9.078 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1L:

Runoff = 107.77 cfs @ 12.14 hrs, Volume= 8.883 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 10-year Rainfall=5.10"

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Page 58

Summary for Subcatchment 1M:

Runoff = 36.17 cfs @ 12.14 hrs, Volume= 2.970 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1N:

Assumed slope of 0.002

Runoff = 90.75 cfs @ 12.14 hrs, Volume= 7.480 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1O:

Runoff = 32.04 cfs @ 12.09 hrs, Volume= 2.322 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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Type III 24-hr 10-year Rainfall=5.10"

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Page 59

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1P:

Runoff = 80.38 cfs @ 12.09 hrs, Volume= 5.825 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1Q:

Runoff = 71.29 cfs @ 12.09 hrs, Volume= 5.166 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2A:

Runoff = 126.52 cfs @ 13.29 hrs, Volume= 31.997 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 60

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
100.5	2,090	Total			

Summary for Subcatchment 2B:

Runoff = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 62.44 cfs @ 12.08 hrs, Volume= 4.906 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 61

	Area (ac)	CN	Description
*	10.340	98	Pavement
*	1.680	98	Roofs
	0.400	39	>75% Grass cover, Good, HSG A
	0.290	74	>75% Grass cover, Good, HSG C
	12.710	96	Weighted Average
	0.690		5.43% Pervious Area
	12.020		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-1:

Runoff = 10.48 cfs @ 12.08 hrs, Volume= 0.851 af, Depth= 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

	Area (ac)	CN	Description
*	2.100	98	Pavement
	2.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-2:

Runoff = 0.03 cfs @ 12.46 hrs, Volume= 0.012 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

	Area (ac)	CN	Description
	0.670	39	>75% Grass cover, Good, HSG A
	0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2E:

Runoff = 25.44 cfs @ 13.29 hrs, Volume= 6.425 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 62

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 44.14 cfs @ 12.99 hrs, Volume= 9.274 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
70.4	775	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 18.52 cfs @ 13.47 hrs, Volume= 5.337 af, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 63

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 8.14 cfs @ 13.60 hrs, Volume= 2.318 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2I-1:

Runoff = 90.04 cfs @ 12.14 hrs, Volume= 7.490 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 10-year Rainfall=5.10"

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Page 64

Summary for Subcatchment 2J:

Runoff = 66.19 cfs @ 12.09 hrs, Volume= 4.797 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2K:

Runoff = 82.14 cfs @ 12.09 hrs, Volume= 5.884 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2L:

Runoff = 46.03 cfs @ 12.09 hrs, Volume= 3.353 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 10-year Rainfall=5.10"

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Page 65

Summary for Subcatchment 2M:

Runoff = 83.32 cfs @ 12.09 hrs, Volume= 6.069 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 109.34 cfs @ 13.43 hrs, Volume= 28.778 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 66

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Subcatchment 21-2:

Runoff = 23.84 cfs @ 12.15 hrs, Volume= 1.986 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth > 2.92" for 10-year event
Inflow = 59.82 cfs @ 16.48 hrs, Volume= 87.316 af
Outflow = 59.82 cfs @ 16.48 hrs, Volume= 87.316 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-year Rainfall=5.10"

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Page 67

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 2.74" for 10-year event
 Inflow = 265.59 cfs @ 13.74 hrs, Volume= 194.601 af
 Outflow = 265.59 cfs @ 13.74 hrs, Volume= 194.601 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event
 Inflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af
 Outflow = 3.63 cfs @ 12.11 hrs, Volume= 0.276 af, Atten= 1%, Lag= 1.7 min
 Discarded = 0.12 cfs @ 10.44 hrs, Volume= 0.170 af
 Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 171.02' @ 12.11 hrs Surf.Area= 2,201 sf Storage= 2,829 cf

Plug-Flow detention time= 100.4 min calculated for 0.276 af (100% of inflow)

Center-of-Mass det. time= 100.4 min (882.5 - 782.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A
			5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

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Type III 24-hr 10-year Rainfall=5.10"

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Page 68

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 10.44 hrs HW=168.58' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)**Primary OutFlow** Max=3.37 cfs @ 12.11 hrs HW=170.99' TW=151.64' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.37 cfs @ 3.84 fps)**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 4.08" for 10-year event
 Inflow = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af
 Outflow = 3.62 cfs @ 12.13 hrs, Volume= 0.306 af, Atten= 12%, Lag= 2.6 min
 Discarded = 0.13 cfs @ 10.34 hrs, Volume= 0.184 af
 Primary = 3.49 cfs @ 12.13 hrs, Volume= 0.122 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.25' @ 12.13 hrs Surf.Area= 2,378 sf Storage= 2,975 cf

Plug-Flow detention time= 98.7 min calculated for 0.306 af (100% of inflow)

Center-of-Mass det. time= 98.7 min (884.9 - 786.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB -Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

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Type III 24-hr 10-year Rainfall=5.10"

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Page 69

Discarded OutFlow Max=0.13 cfs @ 10.34 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=3.48 cfs @ 12.13 hrs HW=171.25' TW=151.70' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.48 cfs @ 3.82 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 3.65" for 10-year event
 Inflow = 84.65 cfs @ 12.20 hrs, Volume= 14.541 af
 Outflow = 32.27 cfs @ 13.25 hrs, Volume= 14.478 af, Atten= 62%, Lag= 62.8 min
 Primary = 32.27 cfs @ 13.25 hrs, Volume= 14.478 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 154.30' @ 13.25 hrs Surf.Area= 71,256 sf Storage= 252,476 cf

Plug-Flow detention time= 152.7 min calculated for 14.478 af (100% of inflow)
 Center-of-Mass det. time= 149.5 min (984.4 - 834.9)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=32.27 cfs @ 13.25 hrs HW=154.30' TW=145.66' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 32.27 cfs @ 8.12 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 70

Summary for Pond 1DP: UPSTREAM DOGLEG

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 2.88" for 10-year event
 Inflow = 50.51 cfs @ 13.08 hrs, Volume= 18.500 af
 Outflow = 50.37 cfs @ 13.13 hrs, Volume= 18.500 af, Atten= 0%, Lag= 3.1 min
 Primary = 24.69 cfs @ 13.13 hrs, Volume= 8.731 af
 Secondary = 25.69 cfs @ 13.13 hrs, Volume= 9.769 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.67' @ 13.13 hrs Surf.Area= 4,505 sf Storage= 3,093 cf

Plug-Flow detention time= 0.5 min calculated for 18.497 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (971.8 - 971.2)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=24.69 cfs @ 13.13 hrs HW=145.67' TW=142.37' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 24.69 cfs @ 3.67 fps)

Secondary OutFlow Max=25.68 cfs @ 13.13 hrs HW=145.67' TW=142.37' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 25.68 cfs @ 3.68 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

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Type III 24-hr 10-year Rainfall=5.10"

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Page 71

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 3.46" for 10-year event
 Inflow = 40.01 cfs @ 12.09 hrs, Volume= 2.875 af
 Outflow = 2.42 cfs @ 13.94 hrs, Volume= 1.384 af, Atten= 94%, Lag= 111.4 min
 Primary = 2.42 cfs @ 13.94 hrs, Volume= 1.384 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.23' @ 13.94 hrs Surf.Area= 24,966 sf Storage= 81,891 cf

Plug-Flow detention time= 418.6 min calculated for 1.384 af (48% of inflow)
 Center-of-Mass det. time= 304.2 min (1,111.0 - 806.8)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.42 cfs @ 13.94 hrs HW=147.23' TW=144.09' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 2.42 cfs @ 3.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 1GP: SPORTS COMPLEX BASIN

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af
 Outflow = 5.67 cfs @ 12.67 hrs, Volume= 1.102 af, Atten= 34%, Lag= 17.1 min
 Primary = 5.34 cfs @ 12.67 hrs, Volume= 1.098 af
 Secondary = 0.33 cfs @ 12.67 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-year Rainfall=5.10"

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Page 72

Peak Elev= 169.36' @ 12.67 hrs Surf.Area= 4,179 sf Storage= 7,713 cf

Plug-Flow detention time= 26.1 min calculated for 1.102 af (99% of inflow)

Center-of-Mass det. time= 21.7 min (825.4 - 803.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.34 cfs @ 12.67 hrs HW=169.36' TW=150.34' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.34 cfs @ 6.79 fps)**Secondary OutFlow** Max=0.33 cfs @ 12.67 hrs HW=169.36' TW=150.34' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.64 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 4.41" for 10-year event
 Inflow = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af
 Outflow = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af, Atten= 31%, Lag= 4.9 min
 Primary = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 164.27' @ 12.17 hrs Surf.Area= 1,803 sf Storage= 1,616 cf

Plug-Flow detention time= 9.8 min calculated for 0.483 af (100% of inflow)

Center-of-Mass det. time= 6.8 min (779.7 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 73

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.34 cfs @ 12.17 hrs HW=164.27' TW=149.76' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 4.34 cfs @ 5.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=146.00' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 1IP: TACAN

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth = 2.92" for 10-year event
 Inflow = 410.97 cfs @ 12.09 hrs, Volume= 87.317 af
 Outflow = 59.82 cfs @ 16.48 hrs, Volume= 87.316 af, Atten= 85%, Lag= 262.9 min
 Primary = 59.82 cfs @ 16.48 hrs, Volume= 87.316 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.50' @ 16.48 hrs Surf.Area= 891,211 sf Storage= 1,601,028 cf

Plug-Flow detention time= 286.4 min calculated for 87.316 af (100% of inflow)
 Center-of-Mass det. time= 286.4 min (1,201.6 - 915.3)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

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Type III 24-hr 10-year Rainfall=5.10"

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Page 74

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	24.0" W x 24.0" H Vert. Low Flow Orifice C= 0.600
#3	Device 1	144.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

Primary OutFlow Max=59.82 cfs @ 16.48 hrs HW=144.50' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 59.82 cfs of 424.06 cfs potential flow)
 2=Low Flow Orifice (Orifice Controls 59.33 cfs @ 14.83 fps)
 3=Custom Weir/Orifice (Weir Controls 0.49 cfs @ 1.02 fps)

Summary for Pond 1LP: CENTRAL GREENWAY

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 3.78" for 10-year event
 Inflow = 242.86 cfs @ 12.13 hrs, Volume= 21.369 af
 Outflow = 104.16 cfs @ 12.19 hrs, Volume= 21.364 af, Atten= 57%, Lag= 3.7 min
 Primary = 104.16 cfs @ 12.19 hrs, Volume= 21.364 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.47' @ 12.49 hrs Surf.Area= 81,605 sf Storage= 216,572 cf

Plug-Flow detention time= 42.9 min calculated for 21.364 af (100% of inflow)
 Center-of-Mass det. time= 42.7 min (842.5 - 799.8)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 75

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	42.0" Round Culvert X 2.00 L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	130.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=101.59 cfs @ 12.19 hrs HW=149.92' TW=148.72' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 101.59 cfs @ 5.28 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1MP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 3.74" for 10-year event
 Inflow = 136.66 cfs @ 12.18 hrs, Volume= 24.335 af
 Outflow = 80.21 cfs @ 12.64 hrs, Volume= 24.331 af, Atten= 41%, Lag= 27.7 min
 Primary = 80.21 cfs @ 12.64 hrs, Volume= 24.331 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.75' @ 12.64 hrs Surf.Area= 51,335 sf Storage= 137,467 cf

Plug-Flow detention time= 26.8 min calculated for 24.331 af (100% of inflow)
 Center-of-Mass det. time= 26.4 min (865.0 - 838.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 76

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	42.0" Round Culvert L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	130.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=80.21 cfs @ 12.64 hrs HW=149.75' TW=142.97' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 80.21 cfs @ 8.34 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area =	25.210 ac,	0.00% Impervious,	Inflow Depth = 3.56" for 10-year event
Inflow =	90.75 cfs @ 12.14 hrs,	Volume=	7.480 af
Outflow =	9.21 cfs @ 16.04 hrs,	Volume=	7.445 af, Atten= 90%, Lag= 234.3 min
Primary =	9.21 cfs @ 16.04 hrs,	Volume=	7.445 af
Secondary =	0.00 cfs @ 0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 150.10' @ 13.16 hrs Surf.Area= 79,457 sf Storage= 169,117 cf

Plug-Flow detention time= 245.8 min calculated for 7.444 af (100% of inflow)

Center-of-Mass det. time= 243.3 min (1,050.7 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

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Page 77

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	24.0" Round Culvert L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 38.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.24 cfs @ 16.04 hrs HW=149.62' TW=149.22' (Dynamic Tailwater)

1=Culvert (Outlet Controls 9.24 cfs @ 2.95 fps)
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Summary for Pond 10P: WEST GREENWAY

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 3.57" for 10-year event
 Inflow = 37.39 cfs @ 12.08 hrs, Volume= 9.767 af
 Outflow = 12.86 cfs @ 12.08 hrs, Volume= 9.763 af, Atten= 66%, Lag= 0.0 min
 Primary = 12.86 cfs @ 12.08 hrs, Volume= 9.763 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 149.73' @ 13.11 hrs Surf.Area= 19,081 sf Storage= 39,373 cf

Plug-Flow detention time= 41.3 min calculated for 9.763 af (100% of inflow)

Center-of-Mass det. time= 40.0 min (1,031.2 - 991.2)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	24.0" Round Culvert L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Type III 24-hr 10-year Rainfall=5.10"

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Page 78

Primary OutFlow Max=12.34 cfs @ 12.08 hrs HW=148.57' TW=147.84' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 12.34 cfs @ 3.97 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 3.60" for 10-year event
 Inflow = 93.22 cfs @ 12.09 hrs, Volume= 15.588 af
 Outflow = 18.67 cfs @ 14.09 hrs, Volume= 15.553 af, Atten= 80%, Lag= 120.1 min
 Primary = 18.67 cfs @ 14.09 hrs, Volume= 15.553 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.08' @ 13.12 hrs Surf.Area= 60,696 sf Storage= 147,885 cf

Plug-Flow detention time= 115.6 min calculated for 15.553 af (100% of inflow)
 Center-of-Mass det. time= 110.1 min (1,055.0 - 945.0)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	24.0" Round Culvert L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=18.67 cfs @ 14.09 hrs HW=148.98' TW=146.88' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 18.67 cfs @ 5.94 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 79

Summary for Pond 1QP: WEST GREENWAY

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 3.61" for 10-year event
 Inflow = 84.38 cfs @ 12.09 hrs, Volume= 20.718 af
 Outflow = 33.71 cfs @ 12.46 hrs, Volume= 20.277 af, Atten= 60%, Lag= 22.7 min
 Primary = 33.71 cfs @ 12.46 hrs, Volume= 20.277 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.43' @ 12.46 hrs Surf.Area= 52,531 sf Storage= 111,139 cf

Plug-Flow detention time= 85.0 min calculated for 20.277 af (98% of inflow)
 Center-of-Mass det. time= 58.6 min (1,050.2 - 991.6)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	36.0" Round Culvert L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 ' S= 0.0119 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	148.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.71 cfs @ 12.46 hrs HW=147.43' TW=142.71' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 33.71 cfs of 47.23 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 33.71 cfs @ 5.62 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

Printed 2/14/2023

Page 80

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 3.15" for 10-year event
 Inflow = 189.72 cfs @ 13.29 hrs, Volume= 58.801 af
 Outflow = 157.60 cfs @ 13.86 hrs, Volume= 58.801 af, Atten= 17%, Lag= 34.0 min
 Primary = 77.34 cfs @ 13.86 hrs, Volume= 28.487 af
 Secondary = 80.26 cfs @ 13.86 hrs, Volume= 30.314 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.51' @ 13.86 hrs Surf.Area= 167,968 sf Storage= 199,436 cf

Plug-Flow detention time= 10.1 min calculated for 58.793 af (100% of inflow)
 Center-of-Mass det. time= 10.1 min (916.5 - 906.4)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=77.34 cfs @ 13.86 hrs HW=146.51' TW=143.80' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 77.34 cfs @ 6.49 fps)

Secondary OutFlow Max=80.26 cfs @ 13.86 hrs HW=146.51' TW=143.80' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 80.26 cfs @ 6.73 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 4.41" for 10-year event
 Inflow = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af
 Outflow = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af, Atten= 84%, Lag= 28.6 min
 Primary = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Type III 24-hr 10-year Rainfall=5.10"

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Page 81

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.13' @ 12.56 hrs Surf.Area= 81,286 sf Storage= 266,655 cf

Plug-Flow detention time= 129.2 min calculated for 14.696 af (98% of inflow)
 Center-of-Mass det. time= 115.8 min (888.7 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=30.75 cfs @ 12.56 hrs HW=149.13' TW=144.93' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 30.75 cfs @ 9.79 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.710 ac, 94.57% Impervious, Inflow Depth = 4.63" for 10-year event
Inflow =	62.44 cfs @ 12.08 hrs, Volume= 4.906 af
Outflow =	16.66 cfs @ 12.43 hrs, Volume= 2.567 af, Atten= 73%, Lag= 21.1 min
Primary =	16.66 cfs @ 12.43 hrs, Volume= 2.567 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.75' @ 12.43 hrs Surf.Area= 30,311 sf Storage= 123,632 cf

Plug-Flow detention time= 269.8 min calculated for 2.567 af (52% of inflow)
 Center-of-Mass det. time= 151.9 min (913.9 - 761.9)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 82

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.66 cfs @ 12.43 hrs HW=146.75' TW=141.46' (Dynamic Tailwater)

1=Culvert (Passes 16.66 cfs of 42.27 cfs potential flow)

2=Orifice/Grate (Orifice Controls 16.66 cfs @ 4.17 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	2.770 ac, 75.81% Impervious, Inflow Depth = 3.74" for 10-year event
Inflow =	10.48 cfs @ 12.08 hrs, Volume= 0.863 af
Outflow =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.18' @ 24.34 hrs Surf.Area= 10,518 sf Storage= 37,608 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 83

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **1=Culvert** (Controls 0.00 cfs)↑ **2=Orifice/Grate** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	401.120 ac, 22.54% Impervious, Inflow Depth > 2.69" for 10-year event
Inflow =	183.10 cfs @ 13.65 hrs, Volume= 90.044 af
Outflow =	173.89 cfs @ 14.15 hrs, Volume= 90.044 af, Atten= 5%, Lag= 30.0 min
Primary =	173.89 cfs @ 14.15 hrs, Volume= 90.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 143.88' @ 14.15 hrs Surf.Area= 57,100 sf Storage= 132,926 cf

Plug-Flow detention time= 8.0 min calculated for 90.044 af (100% of inflow)
Center-of-Mass det. time= 8.0 min (1,009.3 - 1,001.3)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 84

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=173.89 cfs @ 14.15 hrs HW=143.88' TW=131.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 173.89 cfs @ 8.86 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area =	853.400 ac, 12.10% Impervious, Inflow Depth > 2.74" for 10-year event
Inflow =	265.90 cfs @ 13.55 hrs, Volume= 194.639 af
Outflow =	265.59 cfs @ 13.74 hrs, Volume= 194.601 af, Atten= 0%, Lag= 11.1 min
Primary =	107.44 cfs @ 13.74 hrs, Volume= 63.936 af
Secondary =	158.14 cfs @ 13.74 hrs, Volume= 130.665 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 131.46' @ 13.74 hrs Surf.Area= 38,006 sf Storage= 70,177 cf

Plug-Flow detention time= 5.1 min calculated for 194.574 af (100% of inflow)
Center-of-Mass det. time= 4.5 min (1,092.9 - 1,088.4)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 85

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=107.44 cfs @ 13.74 hrs HW=131.46' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 107.44 cfs @ 7.00 fps)

Secondary OutFlow Max=158.14 cfs @ 13.74 hrs HW=131.46' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 158.14 cfs @ 7.53 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond ZIP: PROPOSED PHASE 1 BASIN

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth > 2.98" for 10-year event
 Inflow = 127.44 cfs @ 12.14 hrs, Volume= 27.977 af
 Outflow = 36.28 cfs @ 15.85 hrs, Volume= 22.251 af, Atten= 72%, Lag= 222.5 min
 Primary = 36.28 cfs @ 15.85 hrs, Volume= 22.251 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 144.31' @ 15.32 hrs Surf.Area= 151,040 sf Storage= 708,876 cf

Plug-Flow detention time= 435.2 min calculated for 22.248 af (80% of inflow)

Center-of-Mass det. time= 335.0 min (1,252.5 - 917.6)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 86

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	36.0" W x 10.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	142.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	144.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=36.36 cfs @ 15.85 hrs HW=144.25' TW=142.63' (Dynamic Tailwater)

- 1=Culvert (Passes 36.36 cfs of 43.40 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 15.35 cfs @ 6.14 fps)
- 3=Orifice/Grate (Orifice Controls 16.01 cfs @ 5.34 fps)
- 4=Orifice/Grate (Weir Controls 4.99 cfs @ 1.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2JP: PROPOSED BASIN

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 3.66" for 10-year event
 Inflow = 66.19 cfs @ 12.09 hrs, Volume= 4.797 af
 Outflow = 18.29 cfs @ 12.44 hrs, Volume= 4.451 af, Atten= 72%, Lag= 21.3 min
 Primary = 18.29 cfs @ 12.44 hrs, Volume= 4.451 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 163.62' @ 12.44 hrs Surf.Area= 34,830 sf Storage= 84,092 cf

Plug-Flow detention time= 130.9 min calculated for 4.451 af (93% of inflow)
 Center-of-Mass det. time= 93.5 min (894.0 - 800.5)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 87

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	24.0" Round Culvert L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	164.50'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=18.29 cfs @ 12.44 hrs HW=163.62' TW=144.73' (Dynamic Tailwater)

1=Culvert (Passes 18.29 cfs of 19.23 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 18.29 cfs @ 6.10 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2KP: PROPOSED BASIN

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 3.36" for 10-year event
 Inflow = 82.14 cfs @ 12.09 hrs, Volume= 5.884 af
 Outflow = 10.01 cfs @ 12.73 hrs, Volume= 4.879 af, Atten= 88%, Lag= 38.3 min
 Primary = 10.01 cfs @ 12.73 hrs, Volume= 4.879 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.92' @ 12.73 hrs Surf.Area= 51,905 sf Storage= 135,380 cf

Plug-Flow detention time= 247.9 min calculated for 4.879 af (83% of inflow)
 Center-of-Mass det. time= 178.2 min (988.0 - 809.7)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 88

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	150.75'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	152.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.01 cfs @ 12.73 hrs HW=150.92' TW=130.89' (Dynamic Tailwater)

1=Culvert (Passes 10.01 cfs of 40.83 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 9.33 cfs @ 6.22 fps)
 3=Orifice/Grate (Orifice Controls 0.68 cfs @ 1.33 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2LP: PROPOSED BASIN

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 3.76" for 10-year event
 Inflow = 46.03 cfs @ 12.09 hrs, Volume= 3.353 af
 Outflow = 17.21 cfs @ 12.34 hrs, Volume= 3.127 af, Atten= 63%, Lag= 15.0 min
 Primary = 17.21 cfs @ 12.34 hrs, Volume= 3.127 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 157.32' @ 12.34 hrs Surf.Area= 23,879 sf Storage= 50,005 cf

Plug-Flow detention time= 107.0 min calculated for 3.127 af (93% of inflow)
 Center-of-Mass det. time= 71.4 min (868.6 - 797.2)

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 89

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	157.00'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	158.50'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	10.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=17.21 cfs @ 12.34 hrs HW=157.32' TW=130.18' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 17.21 cfs @ 5.92 fps)
 2=Orifice/Grate (Passes < 16.53 cfs potential flow)
 3=Orifice/Grate (Passes < 1.78 cfs potential flow)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2MP: PROPOSED BASIN

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 3.76" for 10-year event
 Inflow = 83.32 cfs @ 12.09 hrs, Volume= 6.069 af
 Outflow = 54.02 cfs @ 12.18 hrs, Volume= 5.900 af, Atten= 35%, Lag= 5.5 min
 Primary = 54.02 cfs @ 12.18 hrs, Volume= 5.900 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 180.70' @ 12.18 hrs Surf.Area= 19,786 sf Storage= 62,372 cf

Plug-Flow detention time= 59.9 min calculated for 5.899 af (97% of inflow)
 Center-of-Mass det. time= 43.5 min (840.7 - 797.2)

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	Custom Stage Data (Prismatic) Listed below

SWNAS - Proposed Watershed

Type III 24-hr 10-year Rainfall=5.10"

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Page 90

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	42.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	178.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	180.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=53.99 cfs @ 12.18 hrs HW=180.70' TW=151.92' (Dynamic Tailwater)

1=Culvert (Passes 53.99 cfs of 64.64 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 12.40 cfs @ 8.26 fps)
 3=Orifice/Grate (Orifice Controls 18.75 cfs @ 6.25 fps)
 4=Orifice/Grate (Weir Controls 22.85 cfs @ 2.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 2.80" for 10-year event
 Inflow = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af
 Outflow = 61.56 cfs @ 13.30 hrs, Volume= 14.402 af, Atten= 12%, Lag= 15.3 min
 Primary = 60.25 cfs @ 13.30 hrs, Volume= 14.376 af
 Secondary = 1.31 cfs @ 13.30 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.83' @ 13.30 hrs Surf.Area= 28,525 sf Storage= 31,582 cf

Plug-Flow detention time= 5.1 min calculated for 14.402 af (100% of inflow)
 Center-of-Mass det. time= 4.6 min (894.7 - 890.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 91

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=60.25 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 60.25 cfs @ 8.52 fps)

Secondary OutFlow Max=1.31 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)

↑**2=Spillway over Path** (Weir Controls 1.31 cfs @ 0.98 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event
 Inflow = 169.73 cfs @ 13.43 hrs, Volume= 43.180 af
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 10%, Lag= 20.5 min
 Primary = 152.02 cfs @ 13.77 hrs, Volume= 43.159 af
 Secondary = 1.42 cfs @ 13.77 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.16' @ 13.77 hrs Surf.Area= 58,726 sf Storage= 164,766 cf

Plug-Flow detention time= 12.1 min calculated for 43.174 af (100% of inflow)
 Center-of-Mass det. time= 12.1 min (927.1 - 914.9)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

Printed 2/14/2023

Page 92

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=152.01 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 152.01 cfs @ 8.20 fps)**Secondary OutFlow** Max=1.42 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Weir Controls 1.42 cfs @ 0.63 fps)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 93

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=5.27" Tc=6.0 min CN=92 Runoff=4.56 cfs 0.347 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=5.15" Tc=6.0 min CN=91 Runoff=5.13 cfs 0.386 af
Subcatchment 1C:	Runoff Area=26.820 ac 73.68% Impervious Runoff Depth=4.82" Flow Length=3,027' Tc=44.5 min CN=88 Runoff=68.81 cfs 10.770 af
Subcatchment 1D:	Runoff Area=29.320 ac 0.00% Impervious Runoff Depth=2.41" Flow Length=1,740' Tc=72.2 min CN=64 Runoff=27.98 cfs 5.881 af
Subcatchment 1E:	Runoff Area=91.280 ac 0.00% Impervious Runoff Depth=4.07" Tc=6.0 min CN=81 Runoff=432.07 cfs 30.932 af
Subcatchment 1F:	Runoff Area=9.970 ac 54.96% Impervious Runoff Depth=4.49" Tc=6.0 min CN=85 Runoff=51.41 cfs 3.732 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=5.27" Flow Length=531' Tc=29.2 min CN=92 Runoff=10.61 cfs 1.396 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=5.49" Tc=6.0 min CN=94 Runoff=7.80 cfs 0.604 af
Subcatchment 1I:	Runoff Area=110.360 ac 0.00% Impervious Runoff Depth=2.78" Flow Length=1,745' Tc=103.9 min CN=68 Runoff=96.96 cfs 25.524 af
Subcatchment 1J:	Runoff Area=4.500 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98 Runoff=27.35 cfs 2.236 af
Subcatchment 1K:	Runoff Area=28.940 ac 0.00% Impervious Runoff Depth=4.82" Tc=10.0 min CN=88 Runoff=138.09 cfs 11.621 af
Subcatchment 1L:	Runoff Area=29.940 ac 0.00% Impervious Runoff Depth=4.60" Tc=10.0 min CN=86 Runoff=137.82 cfs 11.476 af
Subcatchment 1M:	Runoff Area=10.300 ac 0.00% Impervious Runoff Depth=4.49" Tc=10.0 min CN=85 Runoff=46.50 cfs 3.855 af
Subcatchment 1N:	Runoff Area=25.210 ac 0.00% Impervious Runoff Depth=4.60" Tc=10.0 min CN=86 Runoff=116.05 cfs 9.663 af
Subcatchment 1O:	Runoff Area=7.610 ac 0.00% Impervious Runoff Depth=4.71" Tc=6.0 min CN=87 Runoff=40.74 cfs 2.986 af
Subcatchment 1P:	Runoff Area=19.090 ac 0.00% Impervious Runoff Depth=4.71" Tc=6.0 min CN=87 Runoff=102.19 cfs 7.491 af

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Page 94

Subcatchment1Q:	Runoff Area=16.930 ac 0.00% Impervious Runoff Depth=4.71" Tc=6.0 min CN=87 Runoff=90.63 cfs 6.643 af
Subcatchment2A:	Runoff Area=141.850 ac 3.02% Impervious Runoff Depth=3.65" Flow Length=2,090' Tc=100.5 min CN=77 Runoff=171.79 cfs 43.197 af
Subcatchment2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=5.49" Tc=6.0 min CN=94 Runoff=241.61 cfs 18.728 af
Subcatchment2C:	Runoff Area=12.710 ac 94.57% Impervious Runoff Depth=5.73" Tc=6.0 min CN=96 Runoff=76.39 cfs 6.065 af
Subcatchment2D-1:	Runoff Area=2.100 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98 Runoff=12.76 cfs 1.043 af
Subcatchment2D-2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=0.50" Tc=6.0 min CN=39 Runoff=0.14 cfs 0.028 af
Subcatchment2E:	Runoff Area=49.030 ac 0.00% Impervious Runoff Depth=2.32" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=38.94 cfs 9.468 af
Subcatchment2F:	Runoff Area=61.960 ac 0.00% Impervious Runoff Depth=2.59" Flow Length=775' Slope=0.0100 '/' Tc=70.4 min CN=66 Runoff=65.37 cfs 13.370 af
Subcatchment2G:	Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=4.93" Tc=120.0 min CN=89 Runoff=23.43 cfs 6.803 af
Subcatchment2H:	Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=4.17" Tc=120.0 min CN=82 Runoff=10.69 cfs 3.052 af
Subcatchment2I-1:	Runoff Area=23.880 ac 0.00% Impervious Runoff Depth=4.82" Tc=10.0 min CN=88 Runoff=113.95 cfs 9.589 af
Subcatchment2J:	Runoff Area=15.720 ac 0.00% Impervious Runoff Depth=4.71" Tc=6.0 min CN=87 Runoff=84.15 cfs 6.169 af
Subcatchment2K:	Runoff Area=21.000 ac 0.00% Impervious Runoff Depth=4.38" Tc=6.0 min CN=84 Runoff=106.14 cfs 7.672 af
Subcatchment2L:	Runoff Area=10.690 ac 0.00% Impervious Runoff Depth=4.82" Tc=6.0 min CN=88 Runoff=58.22 cfs 4.293 af
Subcatchment2M:	Runoff Area=19.350 ac 0.00% Impervious Runoff Depth=4.82" Tc=6.0 min CN=88 Runoff=105.39 cfs 7.770 af
Subcatchment3A:	Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=3.76" Flow Length=1,438' Tc=74.8 min CN=78 Runoff=93.55 cfs 19.350 af
Subcatchment3B:	Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=3.55" Flow Length=1,600' Tc=107.0 min CN=76 Runoff=149.28 cfs 39.057 af
Subcatchment2I-2:	Runoff Area=11.740 ac 0.00% Impervious Runoff Depth=2.87" Tc=10.0 min CN=69 Runoff=34.24 cfs 2.807 af

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Type III 24-hr 25-year Rainfall=6.20"

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Page 95

Reach 1R: DP-1 TACAN OUTFALLInflow=73.00 cfs 116.130 af
Outflow=73.00 cfs 116.130 af**Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**Inflow=315.26 cfs 262.076 af
Outflow=315.26 cfs 262.076 af**Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**Inflow=222.14 cfs 58.401 af
Outflow=222.14 cfs 58.401 af**Pond 1AP: SPORTS COMPLEX**Peak Elev=171.26' Storage=2,832 cf Inflow=4.56 cfs 0.347 af
Discarded=0.12 cfs 0.186 af Primary=4.89 cfs 0.161 af Outflow=5.02 cfs 0.347 af**Pond 1BP: SPORTS COMPLEX**Peak Elev=171.52' Storage=3,056 cf Inflow=5.13 cfs 0.386 af
Discarded=0.13 cfs 0.202 af Primary=5.36 cfs 0.185 af Outflow=5.49 cfs 0.386 af**Pond 1CP: MEMORIAL GROVE AVE.**Peak Elev=155.35' Storage=330,546 cf Inflow=113.71 cfs 18.716 af
Primary=38.48 cfs 18.653 af Secondary=0.00 cfs 0.000 af Outflow=38.48 cfs 18.653 af**Pond 1DP: UPSTREAM DOGLEG**Peak Elev=146.28' Storage=6,577 cf Inflow=66.03 cfs 24.535 af
Primary=32.41 cfs 11.779 af Secondary=33.22 cfs 12.755 af Outflow=65.63 cfs 24.535 af**Pond 1FP: EXISTING PARKWAY BASIN**Peak Elev=147.72' Storage=94,419 cf Inflow=51.41 cfs 3.732 af
Primary=6.04 cfs 2.241 af Secondary=0.00 cfs 0.000 af Outflow=6.04 cfs 2.241 af**Pond 1GP: SPORTS COMPLEX BASIN**Peak Elev=169.58' Storage=8,644 cf Inflow=10.61 cfs 1.396 af
Primary=5.58 cfs 1.309 af Secondary=3.49 cfs 0.078 af Outflow=9.07 cfs 1.388 af**Pond 1HP: SPORTS COMPLEX BASIN**Peak Elev=164.58' Storage=2,285 cf Inflow=7.80 cfs 0.604 af
Primary=4.74 cfs 0.600 af Secondary=0.39 cfs 0.002 af Outflow=5.12 cfs 0.602 af**Pond 1IP: TACAN**Peak Elev=145.19' Storage=2,320,069 cf Inflow=535.08 cfs 116.132 af
Outflow=73.00 cfs 116.130 af**Pond 1LP: CENTRAL GREENWAY**Peak Elev=151.37' Storage=295,581 cf Inflow=306.99 cfs 27.323 af
Primary=110.51 cfs 27.319 af Secondary=0.00 cfs 0.000 af Outflow=110.51 cfs 27.319 af**Pond 1MP: CENTRAL GREENWAY**Peak Elev=150.44' Storage=175,096 cf Inflow=154.94 cfs 31.174 af
Primary=89.03 cfs 31.170 af Secondary=0.00 cfs 0.000 af Outflow=89.03 cfs 31.170 af**Pond 1NP: WEST GREENWAY**Peak Elev=150.82' Storage=230,483 cf Inflow=116.05 cfs 9.663 af
Primary=9.84 cfs 9.628 af Secondary=0.00 cfs 0.000 af Outflow=9.84 cfs 9.628 af**Pond 1OP: WEST GREENWAY**Peak Elev=150.43' Storage=54,316 cf Inflow=45.75 cfs 12.614 af
Primary=12.55 cfs 12.610 af Secondary=0.00 cfs 0.000 af Outflow=12.55 cfs 12.610 af**Pond 1PP: WEST GREENWAY**Peak Elev=149.75' Storage=191,710 cf Inflow=114.71 cfs 20.100 af
Primary=20.64 cfs 20.064 af Secondary=0.00 cfs 0.000 af Outflow=20.64 cfs 20.064 af**Pond 1QP: WEST GREENWAY**Peak Elev=147.88' Storage=136,437 cf Inflow=104.74 cfs 26.708 af
Primary=39.15 cfs 26.266 af Secondary=0.00 cfs 0.000 af Outflow=39.15 cfs 26.266 af

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Page 96

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=147.31' Storage=369,480 cf Inflow=247.39 cfs 77.280 af
Primary=90.43 cfs 37.852 af Secondary=92.38 cfs 39.428 af Outflow=182.14 cfs 77.280 af

Pond 2BP: EXISTING BASIN Peak Elev=149.97' Storage=337,084 cf Inflow=241.61 cfs 18.728 af
Primary=33.32 cfs 18.405 af Secondary=0.00 cfs 0.000 af Outflow=33.32 cfs 18.405 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=147.37' Storage=143,191 cf Inflow=76.39 cfs 6.065 af
Outflow=22.56 cfs 3.726 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=146.27' Storage=38,583 cf Inflow=12.80 cfs 1.071 af
Primary=0.49 cfs 0.203 af Secondary=0.00 cfs 0.000 af Outflow=0.49 cfs 0.203 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=145.33' Storage=228,758 cf Inflow=216.74 cfs 121.881 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=199.15 cfs 121.880 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=132.09' Storage=100,420 cf Inflow=318.93 cfs 262.114 af
Primary=128.66 cfs 89.952 af Secondary=186.60 cfs 172.124 af Tertiary=0.00 cfs 0.000 af Outflow=315.26 cfs 262.076 af

Pond 2IP: PROPOSED PHASE 1 BASIN Peak Elev=145.99' Storage=972,688 cf Inflow=169.61 cfs 36.931 af
Primary=57.56 cfs 31.204 af Secondary=0.00 cfs 0.000 af Outflow=57.56 cfs 31.204 af

Pond 2JP: PROPOSED BASIN Peak Elev=164.24' Storage=106,135 cf Inflow=84.15 cfs 6.169 af
Primary=21.56 cfs 5.823 af Secondary=0.00 cfs 0.000 af Outflow=21.56 cfs 5.823 af

Pond 2KP: PROPOSED BASIN Peak Elev=151.60' Storage=171,236 cf Inflow=106.14 cfs 7.672 af
Primary=17.84 cfs 6.668 af Secondary=0.00 cfs 0.000 af Outflow=17.84 cfs 6.668 af

Pond 2LP: PROPOSED BASIN Peak Elev=157.82' Storage=62,144 cf Inflow=58.22 cfs 4.293 af
Primary=19.90 cfs 4.066 af Secondary=0.00 cfs 0.000 af Outflow=19.90 cfs 4.066 af

Pond 2MP: PROPOSED BASIN Peak Elev=181.13' Storage=71,059 cf Inflow=105.39 cfs 7.770 af
Primary=71.51 cfs 7.601 af Secondary=0.00 cfs 0.000 af Outflow=71.51 cfs 7.601 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=147.40' Storage=58,131 cf Inflow=93.55 cfs 19.350 af
Primary=65.43 cfs 18.404 af Secondary=15.51 cfs 0.941 af Outflow=80.94 cfs 19.344 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=135.81' Storage=204,979 cf Inflow=229.36 cfs 58.401 af
Primary=166.13 cfs 55.050 af Secondary=56.01 cfs 3.351 af Outflow=222.14 cfs 58.401 af

Total Runoff Area = 1,047.120 ac Runoff Volume = 334.005 af Average Runoff Depth = 3.83"
88.56% Pervious = 927.290 ac 11.44% Impervious = 119.830 ac

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Type III 24-hr 25-year Rainfall=6.20"

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Page 97

Summary for Subcatchment 1A:

Runoff = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 68.81 cfs @ 12.61 hrs, Volume= 10.770 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 98

	Area (ac)	CN	Description
*	2.790	88	Proposed Development Area
*	16.950	98	Pavement
*	2.060	98	Roofs
*	0.750	100	Open Water
	4.270	39	>75% Grass cover, Good, HSG A
	26.820	88	Weighted Average
	7.060		26.32% Pervious Area
	19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 27.98 cfs @ 13.00 hrs, Volume= 5.881 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 99

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
72.2	1,740	Total			

Summary for Subcatchment 1E:

Runoff = 432.07 cfs @ 12.09 hrs, Volume= 30.932 af, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 44.640	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
91.280	81	Weighted Average
91.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 51.41 cfs @ 12.09 hrs, Volume= 3.732 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 100

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531				Total

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Type III 24-hr 25-year Rainfall=6.20"

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Page 101

Summary for Subcatchment 1H:

Runoff = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 96.96 cfs @ 13.40 hrs, Volume= 25.524 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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Page 102

Summary for Subcatchment 1J:

Runoff = 27.35 cfs @ 12.08 hrs, Volume= 2.236 af, Depth= 5.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1K:

Runoff = 138.09 cfs @ 12.14 hrs, Volume= 11.621 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1L:

Runoff = 137.82 cfs @ 12.14 hrs, Volume= 11.476 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 25-year Rainfall=6.20"

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Page 103

Summary for Subcatchment 1M:

Runoff = 46.50 cfs @ 12.14 hrs, Volume= 3.855 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1N:

Assumed slope of 0.002

Runoff = 116.05 cfs @ 12.14 hrs, Volume= 9.663 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1O:

Runoff = 40.74 cfs @ 12.09 hrs, Volume= 2.986 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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Type III 24-hr 25-year Rainfall=6.20"

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Page 104

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1P:

Runoff = 102.19 cfs @ 12.09 hrs, Volume= 7.491 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1Q:

Runoff = 90.63 cfs @ 12.09 hrs, Volume= 6.643 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2A:

Runoff = 171.79 cfs @ 13.29 hrs, Volume= 43.197 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 105

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
100.5	2,090	Total			

Summary for Subcatchment 2B:

Runoff = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 76.39 cfs @ 12.08 hrs, Volume= 6.065 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 106

	Area (ac)	CN	Description
*	10.340	98	Pavement
*	1.680	98	Roofs
	0.400	39	>75% Grass cover, Good, HSG A
	0.290	74	>75% Grass cover, Good, HSG C
	12.710	96	Weighted Average
	0.690		5.43% Pervious Area
	12.020		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-1:

Runoff = 12.76 cfs @ 12.08 hrs, Volume= 1.043 af, Depth= 5.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (ac)	CN	Description
*	2.100	98	Pavement
	2.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-2:

Runoff = 0.14 cfs @ 12.33 hrs, Volume= 0.028 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

	Area (ac)	CN	Description
	0.670	39	>75% Grass cover, Good, HSG A
	0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2E:

Runoff = 38.94 cfs @ 13.28 hrs, Volume= 9.468 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 107

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 65.37 cfs @ 12.98 hrs, Volume= 13.370 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
70.4	775	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 23.43 cfs @ 13.47 hrs, Volume= 6.803 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 108

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 10.69 cfs @ 13.60 hrs, Volume= 3.052 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2I-1:

Runoff = 113.95 cfs @ 12.14 hrs, Volume= 9.589 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 25-year Rainfall=6.20"

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Page 109

Summary for Subcatchment 2J:

Runoff = 84.15 cfs @ 12.09 hrs, Volume= 6.169 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2K:

Runoff = 106.14 cfs @ 12.09 hrs, Volume= 7.672 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2L:

Runoff = 58.22 cfs @ 12.09 hrs, Volume= 4.293 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 25-year Rainfall=6.20"

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Page 110

Summary for Subcatchment 2M:

Runoff = 105.39 cfs @ 12.09 hrs, Volume= 7.770 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 149.28 cfs @ 13.43 hrs, Volume= 39.057 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 111

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Subcatchment 21-2:

Runoff = 34.24 cfs @ 12.14 hrs, Volume= 2.807 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth > 3.89" for 25-year event
 Inflow = 73.00 cfs @ 16.57 hrs, Volume= 116.130 af
 Outflow = 73.00 cfs @ 16.57 hrs, Volume= 116.130 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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Page 112

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 3.69" for 25-year event
 Inflow = 315.26 cfs @ 13.46 hrs, Volume= 262.076 af
 Outflow = 315.26 cfs @ 13.46 hrs, Volume= 262.076 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event
 Inflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af
 Outflow = 5.02 cfs @ 12.07 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.12 cfs @ 9.74 hrs, Volume= 0.186 af
 Primary = 4.89 cfs @ 12.07 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 171.26' @ 12.07 hrs Surf.Area= 2,201 sf Storage= 2,832 cf

Plug-Flow detention time= 91.8 min calculated for 0.347 af (100% of inflow)

Center-of-Mass det. time= 91.8 min (867.9 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

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Page 113

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 9.74 hrs HW=168.58' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)**Primary OutFlow** Max=4.79 cfs @ 12.07 hrs HW=171.24' TW=151.99' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.79 cfs @ 4.17 fps)**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 5.15" for 25-year event
 Inflow = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af
 Outflow = 5.49 cfs @ 12.08 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.13 cfs @ 9.62 hrs, Volume= 0.202 af
 Primary = 5.36 cfs @ 12.08 hrs, Volume= 0.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 171.52' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,056 cf

Plug-Flow detention time= 89.9 min calculated for 0.386 af (100% of inflow)

Center-of-Mass det. time= 89.9 min (869.9 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB-Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

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Type III 24-hr 25-year Rainfall=6.20"

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Page 114

Discarded OutFlow Max=0.13 cfs @ 9.62 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=5.22 cfs @ 12.08 hrs HW=171.50' TW=152.04' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.22 cfs @ 4.14 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 4.69" for 25-year event
 Inflow = 113.71 cfs @ 12.25 hrs, Volume= 18.716 af
 Outflow = 38.48 cfs @ 13.27 hrs, Volume= 18.653 af, Atten= 66%, Lag= 61.3 min
 Primary = 38.48 cfs @ 13.27 hrs, Volume= 18.653 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 155.35' @ 13.27 hrs Surf.Area= 77,627 sf Storage= 330,546 cf

Plug-Flow detention time= 150.6 min calculated for 18.653 af (100% of inflow)
 Center-of-Mass det. time= 148.1 min (974.6 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=38.48 cfs @ 13.27 hrs HW=155.35' TW=146.23' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 38.48 cfs @ 9.68 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 115

Summary for Pond 1DP: UPSTREAM DOGLEG

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 3.81" for 25-year event
 Inflow = 66.03 cfs @ 13.07 hrs, Volume= 24.535 af
 Outflow = 65.63 cfs @ 13.13 hrs, Volume= 24.535 af, Atten= 1%, Lag= 3.7 min
 Primary = 32.41 cfs @ 13.13 hrs, Volume= 11.779 af
 Secondary = 33.22 cfs @ 13.13 hrs, Volume= 12.755 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.28' @ 15.58 hrs Surf.Area= 7,011 sf Storage= 6,577 cf

Plug-Flow detention time= 1.6 min calculated for 24.535 af (100% of inflow)
 Center-of-Mass det. time= 1.6 min (961.2 - 959.6)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=32.41 cfs @ 13.13 hrs HW=146.27' TW=143.46' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 32.41 cfs @ 4.00 fps)

Secondary OutFlow Max=33.22 cfs @ 13.13 hrs HW=146.27' TW=143.46' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 33.22 cfs @ 3.99 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

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Type III 24-hr 25-year Rainfall=6.20"

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Page 116

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 4.49" for 25-year event
 Inflow = 51.41 cfs @ 12.09 hrs, Volume= 3.732 af
 Outflow = 6.04 cfs @ 12.73 hrs, Volume= 2.241 af, Atten= 88%, Lag= 38.7 min
 Primary = 6.04 cfs @ 12.73 hrs, Volume= 2.241 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.72' @ 12.73 hrs Surf.Area= 26,178 sf Storage= 94,419 cf

Plug-Flow detention time= 327.4 min calculated for 2.240 af (60% of inflow)
 Center-of-Mass det. time= 224.4 min (1,023.8 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.04 cfs @ 12.73 hrs HW=147.72' TW=143.67' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 6.04 cfs @ 4.29 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 1GP: SPORTS COMPLEX BASIN

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af
 Outflow = 9.07 cfs @ 12.55 hrs, Volume= 1.388 af, Atten= 15%, Lag= 10.5 min
 Primary = 5.58 cfs @ 12.55 hrs, Volume= 1.309 af
 Secondary = 3.49 cfs @ 12.55 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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Page 117

Peak Elev= 169.58' @ 12.55 hrs Surf.Area= 4,379 sf Storage= 8,644 cf

Plug-Flow detention time= 23.7 min calculated for 1.387 af (99% of inflow)

Center-of-Mass det. time= 20.2 min (817.9 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 ' S= 0.0053 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.58 cfs @ 12.55 hrs HW=169.57' TW=151.37' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.58 cfs @ 7.10 fps)**Secondary OutFlow** Max=3.49 cfs @ 12.55 hrs HW=169.57' TW=151.37' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.49 cfs @ 1.41 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 5.49" for 25-year event
 Inflow = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af
 Outflow = 5.12 cfs @ 12.17 hrs, Volume= 0.602 af, Atten= 34%, Lag= 5.3 min
 Primary = 4.74 cfs @ 12.17 hrs, Volume= 0.600 af
 Secondary = 0.39 cfs @ 12.17 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 164.58' @ 12.17 hrs Surf.Area= 2,625 sf Storage= 2,285 cf

Plug-Flow detention time= 8.9 min calculated for 0.602 af (100% of inflow)

Center-of-Mass det. time= 6.6 min (774.3 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 118

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.74 cfs @ 12.17 hrs HW=164.57' TW=150.45' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 4.74 cfs @ 6.03 fps)

Secondary OutFlow Max=0.38 cfs @ 12.17 hrs HW=164.57' TW=150.45' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.38 cfs @ 0.73 fps)

Summary for Pond 1IP: TACAN

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth = 3.89" for 25-year event
 Inflow = 535.08 cfs @ 12.09 hrs, Volume= 116.132 af
 Outflow = 73.00 cfs @ 16.57 hrs, Volume= 116.130 af, Atten= 86%, Lag= 268.9 min
 Primary = 73.00 cfs @ 16.57 hrs, Volume= 116.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.19' @ 16.57 hrs Surf.Area= 1,158,525 sf Storage= 2,320,069 cf

Plug-Flow detention time= 369.2 min calculated for 116.130 af (100% of inflow)
 Center-of-Mass det. time= 369.1 min (1,283.0 - 913.9)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 119

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	24.0" W x 24.0" H Vert. Low Flow Orifice C= 0.600
#3	Device 1	144.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

Primary OutFlow Max=73.00 cfs @ 16.57 hrs HW=145.19' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 73.00 cfs of 440.68 cfs potential flow)
 2=Low Flow Orifice (Orifice Controls 61.46 cfs @ 15.37 fps)
 3=Custom Weir/Orifice (Weir Controls 11.54 cfs @ 2.91 fps)

Summary for Pond 1LP: CENTRAL GREENWAY

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 4.83" for 25-year event
 Inflow = 306.99 cfs @ 12.13 hrs, Volume= 27.323 af
 Outflow = 110.51 cfs @ 12.21 hrs, Volume= 27.319 af, Atten= 64%, Lag= 4.5 min
 Primary = 110.51 cfs @ 12.21 hrs, Volume= 27.319 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 151.37' @ 12.53 hrs Surf.Area= 92,532 sf Storage= 295,581 cf

Plug-Flow detention time= 45.8 min calculated for 27.315 af (100% of inflow)
 Center-of-Mass det. time= 45.9 min (839.3 - 793.4)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 120

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	42.0" Round Culvert X 2.00 L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	130.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=108.20 cfs @ 12.21 hrs HW=150.69' TW=149.33' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 108.20 cfs @ 5.62 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1MP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 4.78" for 25-year event
 Inflow = 154.94 cfs @ 12.15 hrs, Volume= 31.174 af
 Outflow = 89.03 cfs @ 12.72 hrs, Volume= 31.170 af, Atten= 43%, Lag= 34.1 min
 Primary = 89.03 cfs @ 12.72 hrs, Volume= 31.170 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.44' @ 12.72 hrs Surf.Area= 55,939 sf Storage= 175,096 cf

Plug-Flow detention time= 28.4 min calculated for 31.170 af (100% of inflow)
 Center-of-Mass det. time= 28.1 min (862.9 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 121

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	42.0" Round Culvert L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	130.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=89.03 cfs @ 12.72 hrs HW=150.44' TW=143.65' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 89.03 cfs @ 9.25 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event
 Inflow = 116.05 cfs @ 12.14 hrs, Volume= 9.663 af
 Outflow = 9.84 cfs @ 17.02 hrs, Volume= 9.628 af, Atten= 92%, Lag= 293.0 min
 Primary = 9.84 cfs @ 17.02 hrs, Volume= 9.628 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.82' @ 13.68 hrs Surf.Area= 93,007 sf Storage= 230,483 cf

Plug-Flow detention time= 289.2 min calculated for 9.626 af (100% of inflow)
 Center-of-Mass det. time= 287.2 min (1,087.4 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

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Page 122

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	24.0" Round Culvert L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 38.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.87 cfs @ 17.02 hrs HW=150.25' TW=149.78' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 9.87 cfs @ 3.14 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 10P: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 4.61" for 25-year event
 Inflow = 45.75 cfs @ 12.08 hrs, Volume= 12.614 af
 Outflow = 12.55 cfs @ 12.10 hrs, Volume= 12.610 af, Atten= 73%, Lag= 1.5 min
 Primary = 12.55 cfs @ 12.10 hrs, Volume= 12.610 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.43' @ 13.47 hrs Surf.Area= 23,900 sf Storage= 54,316 cf

Plug-Flow detention time= 49.3 min calculated for 12.610 af (100% of inflow)
 Center-of-Mass det. time= 48.2 min (1,066.1 - 1,017.8)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	24.0" Round Culvert L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 123

Primary OutFlow Max=12.03 cfs @ 12.10 hrs HW=149.29' TW=148.56' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 12.03 cfs @ 3.83 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 4.65" for 25-year event
 Inflow = 114.71 cfs @ 12.09 hrs, Volume= 20.100 af
 Outflow = 20.64 cfs @ 14.56 hrs, Volume= 20.064 af, Atten= 82%, Lag= 148.2 min
 Primary = 20.64 cfs @ 14.56 hrs, Volume= 20.064 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.75' @ 13.22 hrs Surf.Area= 69,546 sf Storage= 191,710 cf

Plug-Flow detention time= 124.9 min calculated for 20.064 af (100% of inflow)
 Center-of-Mass det. time= 120.5 min (1,085.0 - 964.5)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	24.0" Round Culvert L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.64 cfs @ 14.56 hrs HW=149.59' TW=147.01' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 20.64 cfs @ 6.57 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 124

Summary for Pond 1QP: WEST GREENWAY

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 4.66" for 25-year event
 Inflow = 104.74 cfs @ 12.09 hrs, Volume= 26.708 af
 Outflow = 39.15 cfs @ 12.47 hrs, Volume= 26.266 af, Atten= 63%, Lag= 22.8 min
 Primary = 39.15 cfs @ 12.47 hrs, Volume= 26.266 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.88' @ 12.47 hrs Surf.Area= 58,240 sf Storage= 136,437 cf

Plug-Flow detention time= 78.0 min calculated for 26.266 af (98% of inflow)
 Center-of-Mass det. time= 56.8 min (1,069.3 - 1,012.5)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	36.0" Round Culvert L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	148.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=39.15 cfs @ 12.47 hrs HW=147.88' TW=143.33' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 39.15 cfs of 52.54 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 39.15 cfs @ 6.52 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 125

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 4.14" for 25-year event
 Inflow = 247.39 cfs @ 13.29 hrs, Volume= 77.280 af
 Outflow = 182.14 cfs @ 13.85 hrs, Volume= 77.280 af, Atten= 26%, Lag= 33.6 min
 Primary = 90.43 cfs @ 13.96 hrs, Volume= 37.852 af
 Secondary = 92.38 cfs @ 13.85 hrs, Volume= 39.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.31' @ 14.07 hrs Surf.Area= 261,717 sf Storage= 369,480 cf

Plug-Flow detention time= 16.9 min calculated for 77.269 af (100% of inflow)
 Center-of-Mass det. time= 16.9 min (920.1 - 903.3)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=90.33 cfs @ 13.96 hrs HW=147.31' TW=145.08' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 90.33 cfs @ 7.19 fps)

Secondary OutFlow Max=92.20 cfs @ 13.85 hrs HW=147.28' TW=144.96' (Dynamic Tailwater)
 ↑**2=Culvert** (Inlet Controls 92.20 cfs @ 7.34 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 5.49" for 25-year event
 Inflow = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af
 Outflow = 33.32 cfs @ 12.42 hrs, Volume= 18.405 af, Atten= 86%, Lag= 20.4 min
 Primary = 33.32 cfs @ 12.42 hrs, Volume= 18.405 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Type III 24-hr 25-year Rainfall=6.20"

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Page 126

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 149.97' @ 12.60 hrs Surf.Area= 87,865 sf Storage= 337,084 cf

Plug-Flow detention time= 144.7 min calculated for 18.405 af (98% of inflow)
 Center-of-Mass det. time= 133.7 min (901.4 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.25 cfs @ 12.42 hrs HW=149.85' TW=145.02' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 33.25 cfs @ 10.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.710 ac, 94.57% Impervious, Inflow Depth = 5.73" for 25-year event
Inflow =	76.39 cfs @ 12.08 hrs, Volume= 6.065 af
Outflow =	22.56 cfs @ 12.40 hrs, Volume= 3.726 af, Atten= 70%, Lag= 19.1 min
Primary =	22.56 cfs @ 12.40 hrs, Volume= 3.726 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.37' @ 12.40 hrs Surf.Area= 32,437 sf Storage= 143,191 cf

Plug-Flow detention time= 235.2 min calculated for 3.726 af (61% of inflow)
 Center-of-Mass det. time= 129.5 min (887.0 - 757.5)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 127

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.56 cfs @ 12.40 hrs HW=147.37' TW=141.87' (Dynamic Tailwater)

1=Culvert (Passes 22.56 cfs of 46.21 cfs potential flow)

2=Orifice/Grate (Orifice Controls 22.56 cfs @ 5.64 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	2.770 ac, 75.81% Impervious, Inflow Depth = 4.64" for 25-year event
Inflow =	12.80 cfs @ 12.08 hrs, Volume= 1.071 af
Outflow =	0.49 cfs @ 15.34 hrs, Volume= 0.203 af, Atten= 96%, Lag= 195.3 min
Primary =	0.49 cfs @ 15.34 hrs, Volume= 0.203 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.27' @ 15.34 hrs Surf.Area= 10,662 sf Storage= 38,583 cf

Plug-Flow detention time= 643.0 min calculated for 0.203 af (19% of inflow)

Center-of-Mass det. time= 361.7 min (1,111.9 - 750.1)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 128

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.49 cfs @ 15.34 hrs HW=146.27' TW=145.17' (Dynamic Tailwater)↑ **1=Culvert** (Passes 0.49 cfs of 15.87 cfs potential flow)↑ **2=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	401.120 ac, 22.54% Impervious, Inflow Depth > 3.65" for 25-year event
Inflow =	216.74 cfs @ 13.75 hrs, Volume= 121.881 af
Outflow =	199.15 cfs @ 14.71 hrs, Volume= 121.880 af, Atten= 8%, Lag= 57.9 min
Primary =	199.15 cfs @ 14.71 hrs, Volume= 121.880 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 145.33' @ 14.71 hrs Surf.Area= 76,038 sf Storage= 228,758 cf

Plug-Flow detention time= 11.2 min calculated for 121.880 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (1,012.5 - 1,001.3)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 129

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=199.15 cfs @ 14.71 hrs HW=145.33' TW=131.88' (Dynamic Tailwater)
1=Culvert (Barrel Controls 199.15 cfs @ 10.14 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area =	853.400 ac, 12.10% Impervious, Inflow Depth > 3.69" for 25-year event
Inflow =	318.93 cfs @ 13.22 hrs, Volume= 262.114 af
Outflow =	315.26 cfs @ 13.46 hrs, Volume= 262.076 af, Atten= 1%, Lag= 14.3 min
Primary =	128.66 cfs @ 13.46 hrs, Volume= 89.952 af
Secondary =	186.60 cfs @ 13.46 hrs, Volume= 172.124 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 132.09' @ 13.46 hrs Surf.Area= 57,930 sf Storage= 100,420 cf

Plug-Flow detention time= 5.1 min calculated for 262.076 af (100% of inflow)
Center-of-Mass det. time= 4.7 min (1,128.1 - 1,123.4)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 130

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=128.66 cfs @ 13.46 hrs HW=132.09' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 128.66 cfs @ 7.44 fps)

Secondary OutFlow Max=186.60 cfs @ 13.46 hrs HW=132.09' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 186.60 cfs @ 7.95 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond ZIP: PROPOSED PHASE 1 BASIN

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth = 3.93" for 25-year event
 Inflow = 169.61 cfs @ 12.14 hrs, Volume= 36.931 af
 Outflow = 57.56 cfs @ 17.56 hrs, Volume= 31.204 af, Atten= 66%, Lag= 325.3 min
 Primary = 57.56 cfs @ 17.56 hrs, Volume= 31.204 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.99' @ 15.85 hrs Surf.Area= 162,334 sf Storage= 972,688 cf

Plug-Flow detention time= 409.1 min calculated for 31.204 af (84% of inflow)
 Center-of-Mass det. time= 327.6 min (1,236.4 - 908.8)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 131

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 ' /' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	36.0" W x 10.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	142.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	144.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=57.64 cfs @ 17.56 hrs HW=145.22' TW=142.35' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 57.64 cfs @ 8.15 fps)
- 2=Orifice/Grate (Passes < 20.39 cfs potential flow)
- 3=Orifice/Grate (Passes < 21.49 cfs potential flow)
- 4=Orifice/Grate (Passes < 47.92 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2JP: PROPOSED BASIN

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 4.71" for 25-year event
 Inflow = 84.15 cfs @ 12.09 hrs, Volume= 6.169 af
 Outflow = 21.56 cfs @ 12.46 hrs, Volume= 5.823 af, Atten= 74%, Lag= 22.4 min
 Primary = 21.56 cfs @ 12.46 hrs, Volume= 5.823 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 164.24' @ 12.46 hrs Surf.Area= 36,146 sf Storage= 106,135 cf

Plug-Flow detention time= 120.7 min calculated for 5.822 af (94% of inflow)
 Center-of-Mass det. time= 90.2 min (883.7 - 793.5)

SWNAS - Proposed Watershed

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Page 132

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	24.0" Round Culvert L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	164.50'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.56 cfs @ 12.46 hrs HW=164.24' TW=145.09' (Dynamic Tailwater)

1=Culvert (Passes 21.56 cfs of 22.62 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 21.56 cfs @ 7.19 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2KP: PROPOSED BASIN

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 4.38" for 25-year event
 Inflow = 106.14 cfs @ 12.09 hrs, Volume= 7.672 af
 Outflow = 17.84 cfs @ 12.56 hrs, Volume= 6.668 af, Atten= 83%, Lag= 28.3 min
 Primary = 17.84 cfs @ 12.56 hrs, Volume= 6.668 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 151.60' @ 12.56 hrs Surf.Area= 53,855 sf Storage= 171,236 cf

Plug-Flow detention time= 225.1 min calculated for 6.667 af (87% of inflow)
 Center-of-Mass det. time= 166.9 min (969.2 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 133

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	150.75'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	152.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=17.84 cfs @ 12.56 hrs HW=151.60' TW=131.15' (Dynamic Tailwater)

1=Culvert (Passes 17.84 cfs of 49.30 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 11.06 cfs @ 7.37 fps)
 3=Orifice/Grate (Orifice Controls 6.78 cfs @ 3.39 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2LP: PROPOSED BASIN

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 4.82" for 25-year event
 Inflow = 58.22 cfs @ 12.09 hrs, Volume= 4.293 af
 Outflow = 19.90 cfs @ 12.36 hrs, Volume= 4.066 af, Atten= 66%, Lag= 16.8 min
 Primary = 19.90 cfs @ 12.36 hrs, Volume= 4.066 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 157.82' @ 12.36 hrs Surf.Area= 24,919 sf Storage= 62,144 cf

Plug-Flow detention time= 97.2 min calculated for 4.066 af (95% of inflow)
 Center-of-Mass det. time= 67.8 min (858.1 - 790.4)

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

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Page 134

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	157.00'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	158.50'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	10.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=19.90 cfs @ 12.36 hrs HW=157.82' TW=130.71' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 19.90 cfs @ 6.33 fps)
 2=Orifice/Grate (Passes < 19.44 cfs potential flow)
 3=Orifice/Grate (Passes < 6.59 cfs potential flow)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2MP: PROPOSED BASIN

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 4.82" for 25-year event
 Inflow = 105.39 cfs @ 12.09 hrs, Volume= 7.770 af
 Outflow = 71.51 cfs @ 12.17 hrs, Volume= 7.601 af, Atten= 32%, Lag= 5.1 min
 Primary = 71.51 cfs @ 12.17 hrs, Volume= 7.601 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 181.13' @ 12.17 hrs Surf.Area= 20,526 sf Storage= 71,059 cf

Plug-Flow detention time= 53.1 min calculated for 7.600 af (98% of inflow)
 Center-of-Mass det. time= 40.0 min (830.4 - 790.4)

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	Custom Stage Data (Prismatic) Listed below

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 135

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	42.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	178.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	180.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=71.51 cfs @ 12.17 hrs HW=181.13' TW=152.50' (Dynamic Tailwater)

1=Culvert (Inlet Controls 71.51 cfs @ 7.43 fps)
 2=Orifice/Grate (Passes < 13.28 cfs potential flow)
 3=Orifice/Grate (Passes < 21.05 cfs potential flow)
 4=Orifice/Grate (Passes < 46.12 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 3.76" for 25-year event
 Inflow = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af
 Outflow = 80.94 cfs @ 13.31 hrs, Volume= 19.344 af, Atten= 13%, Lag= 16.5 min
 Primary = 65.43 cfs @ 13.31 hrs, Volume= 18.404 af
 Secondary = 15.51 cfs @ 13.31 hrs, Volume= 0.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.40' @ 13.31 hrs Surf.Area= 77,102 sf Storage= 58,131 cf

Plug-Flow detention time= 6.4 min calculated for 19.342 af (100% of inflow)
 Center-of-Mass det. time= 6.2 min (887.8 - 881.6)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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Page 136

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=65.43 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 65.43 cfs @ 9.26 fps)

Secondary OutFlow Max=15.51 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)

↑ **2=Spillway over Path** (Weir Controls 15.51 cfs @ 2.23 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event
 Inflow = 229.36 cfs @ 13.43 hrs, Volume= 58.401 af
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 3%, Lag= 9.0 min
 Primary = 166.13 cfs @ 13.58 hrs, Volume= 55.050 af
 Secondary = 56.01 cfs @ 13.58 hrs, Volume= 3.351 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.81' @ 13.58 hrs Surf.Area= 66,525 sf Storage= 204,979 cf

Plug-Flow detention time= 12.7 min calculated for 58.393 af (100% of inflow)
 Center-of-Mass det. time= 12.7 min (919.5 - 906.8)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 137

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=166.13 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 166.13 cfs @ 8.47 fps)**Secondary OutFlow** Max=56.00 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Weir Controls 56.00 cfs @ 2.26 fps)

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Page 138

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1A:	Runoff Area=0.790 ac 89.87% Impervious Runoff Depth=6.94" Tc=6.0 min CN=92 Runoff=5.92 cfs 0.457 af
Subcatchment 1B:	Runoff Area=0.900 ac 88.89% Impervious Runoff Depth=6.83" Tc=6.0 min CN=91 Runoff=6.69 cfs 0.512 af
Subcatchment 1C:	Runoff Area=26.820 ac 73.68% Impervious Runoff Depth=6.47" Flow Length=3,027' Tc=44.5 min CN=88 Runoff=91.06 cfs 14.461 af
Subcatchment 1D:	Runoff Area=29.320 ac 0.00% Impervious Runoff Depth=3.70" Flow Length=1,740' Tc=72.2 min CN=64 Runoff=44.05 cfs 9.044 af
Subcatchment 1E:	Runoff Area=91.280 ac 0.00% Impervious Runoff Depth=5.65" Tc=6.0 min CN=81 Runoff=593.31 cfs 42.962 af
Subcatchment 1F:	Runoff Area=9.970 ac 54.96% Impervious Runoff Depth=6.12" Tc=6.0 min CN=85 Runoff=69.00 cfs 5.082 af
Subcatchment 1G:	Runoff Area=3.180 ac 58.18% Impervious Runoff Depth=6.94" Flow Length=531' Tc=29.2 min CN=92 Runoff=13.80 cfs 1.840 af
Subcatchment 1H:	Runoff Area=1.320 ac 75.76% Impervious Runoff Depth=7.18" Tc=6.0 min CN=94 Runoff=10.05 cfs 0.790 af
Subcatchment 1I:	Runoff Area=110.360 ac 0.00% Impervious Runoff Depth=4.15" Flow Length=1,745' Tc=103.9 min CN=68 Runoff=147.28 cfs 38.179 af
Subcatchment 1J:	Runoff Area=4.500 ac 100.00% Impervious Runoff Depth=7.66" Tc=6.0 min CN=98 Runoff=34.90 cfs 2.873 af
Subcatchment 1K:	Runoff Area=28.940 ac 0.00% Impervious Runoff Depth=6.47" Tc=10.0 min CN=88 Runoff=182.56 cfs 15.605 af
Subcatchment 1L:	Runoff Area=29.940 ac 0.00% Impervious Runoff Depth=6.23" Tc=10.0 min CN=86 Runoff=184.08 cfs 15.555 af
Subcatchment 1M:	Runoff Area=10.300 ac 0.00% Impervious Runoff Depth=6.12" Tc=10.0 min CN=85 Runoff=62.45 cfs 5.250 af
Subcatchment 1N:	Runoff Area=25.210 ac 0.00% Impervious Runoff Depth=6.23" Tc=10.0 min CN=86 Runoff=155.00 cfs 13.098 af
Subcatchment 1O:	Runoff Area=7.610 ac 0.00% Impervious Runoff Depth=6.35" Tc=6.0 min CN=87 Runoff=54.10 cfs 4.028 af
Subcatchment 1P:	Runoff Area=19.090 ac 0.00% Impervious Runoff Depth=6.35" Tc=6.0 min CN=87 Runoff=135.71 cfs 10.106 af

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Page 139

Subcatchment1Q:	Runoff Area=16.930 ac 0.00% Impervious Runoff Depth=6.35" Tc=6.0 min CN=87 Runoff=120.35 cfs 8.962 af
Subcatchment2A:	Runoff Area=141.850 ac 3.02% Impervious Runoff Depth=5.18" Flow Length=2,090' Tc=100.5 min CN=77 Runoff=243.75 cfs 61.264 af
Subcatchment2B:	Runoff Area=40.900 ac 81.30% Impervious Runoff Depth=7.18" Tc=6.0 min CN=94 Runoff=311.35 cfs 24.480 af
Subcatchment2C:	Runoff Area=12.710 ac 94.57% Impervious Runoff Depth=7.42" Tc=6.0 min CN=96 Runoff=97.87 cfs 7.860 af
Subcatchment2D-1:	Runoff Area=2.100 ac 100.00% Impervious Runoff Depth=7.66" Tc=6.0 min CN=98 Runoff=16.29 cfs 1.341 af
Subcatchment2D-2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=1.12" Tc=6.0 min CN=39 Runoff=0.56 cfs 0.062 af
Subcatchment2E:	Runoff Area=49.030 ac 0.00% Impervious Runoff Depth=3.59" Flow Length=1,134' Tc=89.9 min CN=63 Runoff=61.83 cfs 14.669 af
Subcatchment2F:	Runoff Area=61.960 ac 0.00% Impervious Runoff Depth=3.93" Flow Length=775' Slope=0.0100 '/' Tc=70.4 min CN=66 Runoff=100.81 cfs 20.270 af
Subcatchment2G:	Runoff Area=16.560 ac 75.00% Impervious Runoff Depth=6.59" Tc=120.0 min CN=89 Runoff=31.00 cfs 9.092 af
Subcatchment2H:	Runoff Area=8.780 ac 57.63% Impervious Runoff Depth=5.76" Tc=120.0 min CN=82 Runoff=14.69 cfs 4.218 af
Subcatchment2I-1:	Runoff Area=23.880 ac 0.00% Impervious Runoff Depth=6.47" Tc=10.0 min CN=88 Runoff=150.64 cfs 12.876 af
Subcatchment2J:	Runoff Area=15.720 ac 0.00% Impervious Runoff Depth=6.35" Tc=6.0 min CN=87 Runoff=111.75 cfs 8.322 af
Subcatchment2K:	Runoff Area=21.000 ac 0.00% Impervious Runoff Depth=6.00" Tc=6.0 min CN=84 Runoff=143.23 cfs 10.499 af
Subcatchment2L:	Runoff Area=10.690 ac 0.00% Impervious Runoff Depth=6.47" Tc=6.0 min CN=88 Runoff=76.93 cfs 5.764 af
Subcatchment2M:	Runoff Area=19.350 ac 0.00% Impervious Runoff Depth=6.47" Tc=6.0 min CN=88 Runoff=139.25 cfs 10.434 af
Subcatchment3A:	Runoff Area=61.820 ac 8.41% Impervious Runoff Depth=5.30" Flow Length=1,438' Tc=74.8 min CN=78 Runoff=131.39 cfs 27.297 af
Subcatchment3B:	Runoff Area=131.900 ac 8.64% Impervious Runoff Depth=5.07" Flow Length=1,600' Tc=107.0 min CN=76 Runoff=212.96 cfs 55.695 af
Subcatchment2I-2:	Runoff Area=11.740 ac 0.00% Impervious Runoff Depth=4.26" Tc=10.0 min CN=69 Runoff=51.28 cfs 4.172 af

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Page 140

Reach 1R: DP-1 TACAN OUTFALLInflow=110.19 cfs 162.297 af
Outflow=110.19 cfs 162.297 af**Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**Inflow=388.08 cfs 370.555 af
Outflow=388.08 cfs 370.555 af**Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**Inflow=314.32 cfs 82.986 af
Outflow=314.32 cfs 82.986 af**Pond 1AP: SPORTS COMPLEX**Peak Elev=171.41' Storage=2,834 cf Inflow=5.92 cfs 0.457 af
Discarded=0.12 cfs 0.207 af Primary=5.81 cfs 0.250 af Outflow=5.94 cfs 0.457 af**Pond 1BP: SPORTS COMPLEX**Peak Elev=171.80' Storage=3,060 cf Inflow=6.69 cfs 0.512 af
Discarded=0.13 cfs 0.224 af Primary=6.75 cfs 0.288 af Outflow=6.88 cfs 0.512 af**Pond 1CP: MEMORIAL GROVE AVE.**Peak Elev=156.68' Storage=439,423 cf Inflow=154.87 cfs 25.264 af
Primary=45.10 cfs 24.244 af Secondary=14.87 cfs 0.956 af Outflow=59.97 cfs 25.200 af**Pond 1DP: UPSTREAM DOGLEG**Peak Elev=148.22' Storage=27,924 cf Inflow=103.20 cfs 34.245 af
Primary=48.90 cfs 16.737 af Secondary=49.60 cfs 17.508 af Outflow=98.50 cfs 34.245 af**Pond 1FP: EXISTING PARKWAY BASIN**Peak Elev=148.63' Storage=119,124 cf Inflow=69.00 cfs 5.082 af
Primary=14.01 cfs 3.591 af Secondary=0.00 cfs 0.000 af Outflow=14.01 cfs 3.591 af**Pond 1GP: SPORTS COMPLEX BASIN**Peak Elev=169.75' Storage=9,423 cf Inflow=13.80 cfs 1.840 af
Primary=5.76 cfs 1.607 af Secondary=7.33 cfs 0.225 af Outflow=13.09 cfs 1.832 af**Pond 1HP: SPORTS COMPLEX BASIN**Peak Elev=164.79' Storage=2,902 cf Inflow=10.05 cfs 0.790 af
Primary=5.00 cfs 0.755 af Secondary=2.89 cfs 0.033 af Outflow=7.89 cfs 0.788 af**Pond 1IP: TACAN**Peak Elev=145.97' Storage=3,309,750 cf Inflow=726.22 cfs 162.298 af
Outflow=110.19 cfs 162.297 af**Pond 1LP: CENTRAL GREENWAY**Peak Elev=152.35' Storage=390,710 cf Inflow=407.92 cfs 36.653 af
Primary=125.13 cfs 34.785 af Secondary=73.95 cfs 1.863 af Outflow=175.95 cfs 36.648 af**Pond 1MP: CENTRAL GREENWAY**Peak Elev=151.36' Storage=228,908 cf Inflow=206.04 cfs 41.898 af
Primary=99.51 cfs 40.139 af Secondary=77.01 cfs 1.756 af Outflow=176.52 cfs 41.895 af**Pond 1NP: WEST GREENWAY**Peak Elev=151.84' Storage=331,257 cf Inflow=155.00 cfs 13.098 af
Primary=10.59 cfs 13.060 af Secondary=0.00 cfs 0.000 af Outflow=10.59 cfs 13.060 af**Pond 1OP: WEST GREENWAY**Peak Elev=151.42' Storage=80,991 cf Inflow=56.21 cfs 17.089 af
Primary=13.54 cfs 17.084 af Secondary=0.00 cfs 0.000 af Outflow=13.54 cfs 17.084 af**Pond 1PP: WEST GREENWAY**Peak Elev=150.67' Storage=259,574 cf Inflow=148.27 cfs 27.189 af
Primary=22.81 cfs 27.152 af Secondary=0.00 cfs 0.000 af Outflow=22.81 cfs 27.152 af**Pond 1QP: WEST GREENWAY**Peak Elev=148.44' Storage=170,837 cf Inflow=135.84 cfs 36.114 af
Primary=52.41 cfs 35.671 af Secondary=0.00 cfs 0.000 af Outflow=52.41 cfs 35.671 af

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Page 141

Pond 2AP: FRENCH'S STREAM WEST Peak Elev=148.68' Storage=893,977 cf Inflow=343.07 cfs 106.708 af
Primary=89.01 cfs 52.693 af Secondary=89.86 cfs 54.015 af Outflow=178.16 cfs 106.708 af

Pond 2BP: EXISTING BASIN Peak Elev=150.96' Storage=427,340 cf Inflow=311.35 cfs 24.480 af
Primary=35.29 cfs 22.182 af Secondary=24.57 cfs 1.976 af Outflow=58.98 cfs 24.157 af

Pond 2CP: EXISTING PARKWAY BASIN Peak Elev=148.32' Storage=175,315 cf Inflow=97.87 cfs 7.860 af
Outflow=29.31 cfs 5.521 af

Pond 2DP: EXISTING PARKWAY BASIN Peak Elev=146.86' Storage=45,091 cf Inflow=16.78 cfs 1.403 af
Primary=2.33 cfs 0.534 af Secondary=0.00 cfs 0.000 af Outflow=2.33 cfs 0.534 af

Pond 2EP: FRENCH'S STREAM WEST Peak Elev=146.95' Storage=373,381 cf Inflow=262.29 cfs 172.995 af
60.0" Round Culvert n=0.013 L=380.0' S=0.0061 '/' Outflow=231.42 cfs 172.995 af

Pond 2FP: FRENCH'S STREAM WEST Peak Elev=133.12' Storage=171,053 cf Inflow=398.68 cfs 370.594 af
Primary=157.63 cfs 133.126 af Secondary=230.45 cfs 237.429 af Tertiary=0.00 cfs 0.000 af Outflow=388.08 cfs 370.555 af

Pond 2IP: PROPOSED PHASE 1 Peak Elev=147.16' Storage=1,166,595 cf Inflow=232.37 cfs 51.293 af
Primary=59.57 cfs 33.812 af Secondary=39.63 cfs 11.751 af Outflow=59.57 cfs 45.564 af

Pond 2JP: PROPOSED BASIN Peak Elev=165.14' Storage=139,715 cf Inflow=111.75 cfs 8.322 af
Primary=26.81 cfs 7.976 af Secondary=0.00 cfs 0.000 af Outflow=26.81 cfs 7.976 af

Pond 2KP: PROPOSED BASIN Peak Elev=152.50' Storage=220,968 cf Inflow=143.23 cfs 10.499 af
Primary=33.75 cfs 9.494 af Secondary=0.00 cfs 0.000 af Outflow=33.75 cfs 9.494 af

Pond 2LP: PROPOSED BASIN Peak Elev=158.56' Storage=81,164 cf Inflow=76.93 cfs 5.764 af
Primary=24.21 cfs 5.538 af Secondary=0.00 cfs 0.000 af Outflow=24.21 cfs 5.538 af

Pond 2MP: PROPOSED BASIN Peak Elev=181.92' Storage=87,767 cf Inflow=139.25 cfs 10.434 af
Primary=82.52 cfs 10.189 af Secondary=7.42 cfs 0.075 af Outflow=89.94 cfs 10.264 af

Pond 3AP: FRENCH'S STREAM EAST Peak Elev=147.92' Storage=114,298 cf Inflow=131.39 cfs 27.297 af
Primary=69.92 cfs 23.972 af Secondary=35.59 cfs 3.319 af Outflow=105.51 cfs 27.291 af

Pond 3BP: FRENCH'S STREAM EAST Peak Elev=136.34' Storage=242,197 cf Inflow=318.31 cfs 82.986 af
Primary=184.83 cfs 70.933 af Secondary=129.49 cfs 12.053 af Outflow=314.32 cfs 82.986 af

Total Runoff Area = 1,047.120 ac Runoff Volume = 467.120 af Average Runoff Depth = 5.35"
88.56% Pervious = 927.290 ac 11.44% Impervious = 119.830 ac

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Type III 24-hr 100-year Rainfall=7.90"

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Page 142

Summary for Subcatchment 1A:

Runoff = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1B:

Runoff = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af, Depth= 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 91.06 cfs @ 12.60 hrs, Volume= 14.461 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 143

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	Pipe Channel, 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	Pipe Channel, 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	Pipe Channel, 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	Pipe Channel, 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

Summary for Subcatchment 1D:

Runoff = 44.05 cfs @ 12.99 hrs, Volume= 9.044 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 144

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
72.2	1,740	Total			

Summary for Subcatchment 1E:

Runoff = 593.31 cfs @ 12.09 hrs, Volume= 42.962 af, Depth= 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 44.640	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
91.280	81	Weighted Average
91.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1F:

Runoff = 69.00 cfs @ 12.09 hrs, Volume= 5.082 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Page 145

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1G:

Runoff = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					Direct Entry, Artificial Turf
1.8	346	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531				Total

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Type III 24-hr 100-year Rainfall=7.90"

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Page 146

Summary for Subcatchment 1H:

Runoff = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1I:

Runoff = 147.28 cfs @ 13.39 hrs, Volume= 38.179 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 100-year Rainfall=7.90"

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Page 147

Summary for Subcatchment 1J:

Runoff = 34.90 cfs @ 12.08 hrs, Volume= 2.873 af, Depth= 7.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1K:

Runoff = 182.56 cfs @ 12.14 hrs, Volume= 15.605 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1L:

Runoff = 184.08 cfs @ 12.14 hrs, Volume= 15.555 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 100-year Rainfall=7.90"

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Page 148

Summary for Subcatchment 1M:

Runoff = 62.45 cfs @ 12.14 hrs, Volume= 5.250 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1N:

Assumed slope of 0.002

Runoff = 155.00 cfs @ 12.14 hrs, Volume= 13.098 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 1O:

Runoff = 54.10 cfs @ 12.08 hrs, Volume= 4.028 af, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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Page 149

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1P:

Runoff = 135.71 cfs @ 12.08 hrs, Volume= 10.106 af, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 1Q:

Runoff = 120.35 cfs @ 12.08 hrs, Volume= 8.962 af, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2A:

Runoff = 243.75 cfs @ 13.29 hrs, Volume= 61.264 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Page 150

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
100.5	2,090	Total			

Summary for Subcatchment 2B:

Runoff = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2C:

Runoff = 97.87 cfs @ 12.08 hrs, Volume= 7.860 af, Depth= 7.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Page 151

	Area (ac)	CN	Description
*	10.340	98	Pavement
*	1.680	98	Roofs
	0.400	39	>75% Grass cover, Good, HSG A
	0.290	74	>75% Grass cover, Good, HSG C
	12.710	96	Weighted Average
	0.690		5.43% Pervious Area
	12.020		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-1:

Runoff = 16.29 cfs @ 12.08 hrs, Volume= 1.341 af, Depth= 7.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

	Area (ac)	CN	Description
*	2.100	98	Pavement
	2.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2D-2:

Runoff = 0.56 cfs @ 12.12 hrs, Volume= 0.062 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

	Area (ac)	CN	Description
	0.670	39	>75% Grass cover, Good, HSG A
	0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2E:

Runoff = 61.83 cfs @ 13.28 hrs, Volume= 14.669 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Page 152

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
89.9	1,134	Total			

Summary for Subcatchment 2F:

Runoff = 100.81 cfs @ 12.92 hrs, Volume= 20.270 af, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
70.4	775	Total			

Summary for Subcatchment 2G:

Assumed Tc value

Runoff = 31.00 cfs @ 13.47 hrs, Volume= 9.092 af, Depth= 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Page 153

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2H:

Assumed Tc value

Runoff = 14.69 cfs @ 13.47 hrs, Volume= 4.218 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					Direct Entry,

Summary for Subcatchment 2I-1:

Runoff = 150.64 cfs @ 12.14 hrs, Volume= 12.876 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

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Type III 24-hr 100-year Rainfall=7.90"

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Page 154

Summary for Subcatchment 2J:

Runoff = 111.75 cfs @ 12.08 hrs, Volume= 8.322 af, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2K:

Runoff = 143.23 cfs @ 12.09 hrs, Volume= 10.499 af, Depth= 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2L:

Runoff = 76.93 cfs @ 12.08 hrs, Volume= 5.764 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 100-year Rainfall=7.90"

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Page 155

Summary for Subcatchment 2M:

Runoff = 139.25 cfs @ 12.08 hrs, Volume= 10.434 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3A:

Runoff = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
74.8	1,438	Total			

Summary for Subcatchment 3B:

Runoff = 212.96 cfs @ 13.43 hrs, Volume= 55.695 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 156

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
107.0	1,600	Total			

Summary for Subcatchment 21-2:

Runoff = 51.28 cfs @ 12.14 hrs, Volume= 4.172 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Reach 1R: DP-1 TACAN OUTFALL

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth > 5.43" for 100-year event
Inflow = 110.19 cfs @ 16.13 hrs, Volume= 162.297 af
Outflow = 110.19 cfs @ 16.13 hrs, Volume= 162.297 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Page 157

Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 5.21" for 100-year event
 Inflow = 388.08 cfs @ 13.47 hrs, Volume= 370.555 af
 Outflow = 388.08 cfs @ 13.47 hrs, Volume= 370.555 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event
 Inflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af
 Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af
 Outflow = 5.94 cfs @ 12.08 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.12 cfs @ 8.94 hrs, Volume= 0.207 af
 Primary = 5.81 cfs @ 12.08 hrs, Volume= 0.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 171.41' @ 12.08 hrs Surf.Area= 2,201 sf Storage= 2,834 cf

Plug-Flow detention time= 82.8 min calculated for 0.457 af (100% of inflow)

Center-of-Mass det. time= 82.8 min (852.2 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	24.83'W x 88.64'L x 2.33'H Field A
			5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	ADS_StormTech SC-310 +Cap x 84 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			84 Chambers in 7 Rows
#3	168.50'	85 cf	4.00'D x 6.80'H CB -Impervious
#4	175.20'	449 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

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Type III 24-hr 100-year Rainfall=7.90"

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Page 158

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	18.0" Round Culvert L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 8.94 hrs HW=168.58' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)**Primary OutFlow** Max=5.80 cfs @ 12.08 hrs HW=171.41' TW=152.81' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.80 cfs @ 4.37 fps)**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 6.83" for 100-year event
 Inflow = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af
 Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.13 cfs @ 8.82 hrs, Volume= 0.224 af
 Primary = 6.75 cfs @ 12.08 hrs, Volume= 0.288 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 171.80' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,060 cf

Plug-Flow detention time= 80.7 min calculated for 0.512 af (100% of inflow)

Center-of-Mass det. time= 80.7 min (853.7 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	24.83'W x 95.76'L x 2.33'H Field A 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	ADS_StormTech SC-310 +Cap x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	4.00'D x 5.70'H CB -Impervious
#4	172.70'	572 cf	Ponding at CB (Prismatic) Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	12.0" Round Culvert X 2.00 L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	2.410 in/hr Exfiltration over Surface area Phase-In= 0.01'

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Type III 24-hr 100-year Rainfall=7.90"

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Page 159

Discarded OutFlow Max=0.13 cfs @ 8.82 hrs HW=169.06' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)**Primary OutFlow** Max=6.70 cfs @ 12.08 hrs HW=171.78' TW=152.80' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 6.70 cfs @ 4.27 fps)**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 6.33" for 100-year event
 Inflow = 154.87 cfs @ 12.43 hrs, Volume= 25.264 af
 Outflow = 59.97 cfs @ 13.15 hrs, Volume= 25.200 af, Atten= 61%, Lag= 43.1 min
 Primary = 45.10 cfs @ 13.15 hrs, Volume= 24.244 af
 Secondary = 14.87 cfs @ 13.15 hrs, Volume= 0.956 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 156.68' @ 13.15 hrs Surf.Area= 87,287 sf Storage= 439,423 cf

Plug-Flow detention time= 146.5 min calculated for 25.200 af (100% of inflow)
 Center-of-Mass det. time= 144.6 min (961.9 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	27.0" Round Culvert L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=45.10 cfs @ 13.15 hrs HW=156.68' TW=148.15' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 45.10 cfs @ 11.34 fps)**Secondary OutFlow** Max=14.87 cfs @ 13.15 hrs HW=156.68' TW=148.15' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 14.87 cfs @ 2.20 fps)

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Type III 24-hr 100-year Rainfall=7.90"

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Page 160

Summary for Pond 1DP: UPSTREAM DOGLEG

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 5.32" for 100-year event
 Inflow = 103.20 cfs @ 13.08 hrs, Volume= 34.245 af
 Outflow = 98.50 cfs @ 13.26 hrs, Volume= 34.245 af, Atten= 5%, Lag= 11.1 min
 Primary = 48.90 cfs @ 13.26 hrs, Volume= 16.737 af
 Secondary = 49.60 cfs @ 13.26 hrs, Volume= 17.508 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.22' @ 13.26 hrs Surf.Area= 15,507 sf Storage= 27,924 cf

Plug-Flow detention time= 4.4 min calculated for 34.245 af (100% of inflow)
 Center-of-Mass det. time= 4.4 min (949.8 - 945.4)

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	42.0" Round Culvert L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

Primary OutFlow Max=48.90 cfs @ 13.26 hrs HW=148.22' TW=145.34' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 48.90 cfs @ 5.08 fps)

Secondary OutFlow Max=49.59 cfs @ 13.26 hrs HW=148.22' TW=145.34' (Dynamic Tailwater)
 ↑**2=Culvert** (Barrel Controls 49.59 cfs @ 5.15 fps)

Summary for Pond 1FP: EXISTING PARKWAY BASIN

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

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Type III 24-hr 100-year Rainfall=7.90"

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Page 161

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 6.12" for 100-year event
 Inflow = 69.00 cfs @ 12.09 hrs, Volume= 5.082 af
 Outflow = 14.01 cfs @ 12.51 hrs, Volume= 3.591 af, Atten= 80%, Lag= 25.7 min
 Primary = 14.01 cfs @ 12.51 hrs, Volume= 3.591 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.63' @ 12.51 hrs Surf.Area= 28,783 sf Storage= 119,124 cf

Plug-Flow detention time= 263.8 min calculated for 3.591 af (71% of inflow)
 Center-of-Mass det. time= 173.0 min (963.9 - 790.9)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	24.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.01 cfs @ 12.51 hrs HW=148.63' TW=144.18' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 14.01 cfs @ 5.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 1GP: SPORTS COMPLEX BASIN

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af
 Outflow = 13.09 cfs @ 12.47 hrs, Volume= 1.832 af, Atten= 5%, Lag= 6.0 min
 Primary = 5.76 cfs @ 12.47 hrs, Volume= 1.607 af
 Secondary = 7.33 cfs @ 12.47 hrs, Volume= 0.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 100-year Rainfall=7.90"

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Page 162

Peak Elev= 169.75' @ 12.47 hrs Surf.Area= 4,540 sf Storage= 9,423 cf

Plug-Flow detention time= 20.8 min calculated for 1.832 af (100% of inflow)

Center-of-Mass det. time= 18.1 min (809.0 - 790.9)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	12.0" Round Culvert L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	9.0' long x 17.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.76 cfs @ 12.47 hrs HW=169.75' TW=152.34' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.76 cfs @ 7.34 fps)**Secondary OutFlow** Max=7.33 cfs @ 12.47 hrs HW=169.75' TW=152.34' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 7.33 cfs @ 1.81 fps)**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 7.18" for 100-year event
 Inflow = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af
 Outflow = 7.89 cfs @ 12.15 hrs, Volume= 0.788 af, Atten= 21%, Lag= 3.7 min
 Primary = 5.00 cfs @ 12.15 hrs, Volume= 0.755 af
 Secondary = 2.89 cfs @ 12.15 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 164.79' @ 12.15 hrs Surf.Area= 3,201 sf Storage= 2,902 cf

Plug-Flow detention time= 8.2 min calculated for 0.788 af (100% of inflow)

Center-of-Mass det. time= 6.2 min (767.9 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 100-year Rainfall=7.90"

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Page 163

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	12.0" Round Culvert L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	7.0' long x 40.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.00 cfs @ 12.15 hrs HW=164.79' TW=151.13' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 5.00 cfs @ 6.36 fps)

Secondary OutFlow Max=2.88 cfs @ 12.15 hrs HW=164.79' TW=151.13' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 2.88 cfs @ 1.44 fps)

Summary for Pond 1IP: TACAN

Inflow Area = 358.630 ac, 3.58% Impervious, Inflow Depth = 5.43" for 100-year event
 Inflow = 726.22 cfs @ 12.09 hrs, Volume= 162.298 af
 Outflow = 110.19 cfs @ 16.13 hrs, Volume= 162.297 af, Atten= 85%, Lag= 242.2 min
 Primary = 110.19 cfs @ 16.13 hrs, Volume= 162.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.97' @ 16.13 hrs Surf.Area= 1,380,166 sf Storage= 3,309,750 cf

Plug-Flow detention time= 414.4 min calculated for 162.274 af (100% of inflow)
 Center-of-Mass det. time= 414.3 min (1,329.9 - 915.6)

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 100-year Rainfall=7.90"

Printed 2/14/2023

Page 164

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	60.0" Round Culvert X 2.00 L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 ' / Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	24.0" W x 24.0" H Vert. Low Flow Orifice C= 0.600
#3	Device 1	144.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

Primary OutFlow Max=110.19 cfs @ 16.13 hrs HW=145.97' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 110.19 cfs of 458.60 cfs potential flow)
 2=Low Flow Orifice (Orifice Controls 63.77 cfs @ 15.94 fps)
 3=Custom Weir/Orifice (Weir Controls 46.42 cfs @ 3.42 fps)

Summary for Pond 1LP: CENTRAL GREENWAY

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 6.48" for 100-year event
 Inflow = 407.92 cfs @ 12.13 hrs, Volume= 36.653 af
 Outflow = 175.95 cfs @ 12.37 hrs, Volume= 36.648 af, Atten= 57%, Lag= 14.3 min
 Primary = 125.13 cfs @ 12.25 hrs, Volume= 34.785 af
 Secondary = 73.95 cfs @ 12.43 hrs, Volume= 1.863 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 152.35' @ 12.43 hrs Surf.Area= 102,440 sf Storage= 390,710 cf

Plug-Flow detention time= 48.2 min calculated for 36.648 af (100% of inflow)
 Center-of-Mass det. time= 48.0 min (833.9 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 100-year Rainfall=7.90"

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Page 165

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	42.0" Round Culvert X 2.00 L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	130.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=123.22 cfs @ 12.25 hrs HW=152.03' TW=150.26' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 123.22 cfs @ 6.40 fps)**Secondary OutFlow** Max=73.93 cfs @ 12.43 hrs HW=152.35' TW=151.29' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 73.93 cfs @ 1.60 fps)**Summary for Pond 1MP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 6.43" for 100-year event
 Inflow = 206.04 cfs @ 12.35 hrs, Volume= 41.898 af
 Outflow = 176.52 cfs @ 12.50 hrs, Volume= 41.895 af, Atten= 14%, Lag= 8.9 min
 Primary = 99.51 cfs @ 12.50 hrs, Volume= 40.139 af
 Secondary = 77.01 cfs @ 12.50 hrs, Volume= 1.756 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 151.36' @ 12.50 hrs Surf.Area= 62,344 sf Storage= 228,908 cf

Plug-Flow detention time= 29.6 min calculated for 41.895 af (100% of inflow)
 Center-of-Mass det. time= 29.3 min (858.3 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 166

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	42.0" Round Culvert L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	130.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=99.51 cfs @ 12.50 hrs HW=151.36' TW=144.16' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 99.51 cfs @ 10.34 fps)**Secondary OutFlow** Max=76.97 cfs @ 12.50 hrs HW=151.36' TW=144.16' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 76.97 cfs @ 1.63 fps)**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event
 Inflow = 155.00 cfs @ 12.14 hrs, Volume= 13.098 af
 Outflow = 10.59 cfs @ 18.99 hrs, Volume= 13.060 af, Atten= 93%, Lag= 411.5 min
 Primary = 10.59 cfs @ 18.99 hrs, Volume= 13.060 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 151.84' @ 14.20 hrs Surf.Area= 103,089 sf Storage= 331,257 cf

Plug-Flow detention time= 365.1 min calculated for 13.060 af (100% of inflow)

Center-of-Mass det. time= 363.2 min (1,155.1 - 791.9)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

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Page 167

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	24.0" Round Culvert L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 38.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.62 cfs @ 18.99 hrs HW=150.96' TW=150.40' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 10.62 cfs @ 3.38 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 10P: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 6.25" for 100-year event
 Inflow = 56.21 cfs @ 12.08 hrs, Volume= 17.089 af
 Outflow = 13.54 cfs @ 17.25 hrs, Volume= 17.084 af, Atten= 76%, Lag= 310.4 min
 Primary = 13.54 cfs @ 17.25 hrs, Volume= 17.084 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 151.42' @ 13.87 hrs Surf.Area= 28,697 sf Storage= 80,991 cf

Plug-Flow detention time= 63.7 min calculated for 17.084 af (100% of inflow)
 Center-of-Mass det. time= 62.9 min (1,130.8 - 1,068.0)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	24.0" Round Culvert L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Page 168

Primary OutFlow Max=13.56 cfs @ 17.25 hrs HW=150.88' TW=149.94' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 13.56 cfs @ 4.32 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 6.29" for 100-year event
 Inflow = 148.27 cfs @ 12.08 hrs, Volume= 27.189 af
 Outflow = 22.81 cfs @ 14.69 hrs, Volume= 27.152 af, Atten= 85%, Lag= 156.3 min
 Primary = 22.81 cfs @ 14.69 hrs, Volume= 27.152 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.67' @ 13.38 hrs Surf.Area= 76,894 sf Storage= 259,574 cf

Plug-Flow detention time= 142.6 min calculated for 27.148 af (100% of inflow)
 Center-of-Mass det. time= 139.3 min (1,141.7 - 1,002.4)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	24.0" Round Culvert L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.82 cfs @ 14.69 hrs HW=150.52' TW=147.37' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 22.82 cfs @ 7.26 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 169

Summary for Pond 1QP: WEST GREENWAY

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 6.30" for 100-year event
 Inflow = 135.84 cfs @ 12.09 hrs, Volume= 36.114 af
 Outflow = 52.41 cfs @ 12.42 hrs, Volume= 35.671 af, Atten= 61%, Lag= 20.1 min
 Primary = 52.41 cfs @ 12.42 hrs, Volume= 35.671 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.44' @ 12.42 hrs Surf.Area= 65,480 sf Storage= 170,837 cf

Plug-Flow detention time= 74.6 min calculated for 35.671 af (99% of inflow)
 Center-of-Mass det. time= 57.7 min (1,111.0 - 1,053.3)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	36.0" Round Culvert L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	148.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	115.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=52.41 cfs @ 12.42 hrs HW=148.44' TW=144.01' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 52.41 cfs of 52.57 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 44.79 cfs @ 7.47 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 7.61 cfs @ 2.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Page 170

Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 5.72" for 100-year event
 Inflow = 343.07 cfs @ 13.29 hrs, Volume= 106.708 af
 Outflow = 178.16 cfs @ 13.09 hrs, Volume= 106.708 af, Atten= 48%, Lag= 0.0 min
 Primary = 89.01 cfs @ 13.10 hrs, Volume= 52.693 af
 Secondary = 89.86 cfs @ 13.06 hrs, Volume= 54.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.68' @ 14.62 hrs Surf.Area= 551,529 sf Storage= 893,977 cf

Plug-Flow detention time= 44.6 min calculated for 106.708 af (100% of inflow)
 Center-of-Mass det. time= 44.6 min (944.2 - 899.6)

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	48.0" Round Culvert L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=88.37 cfs @ 13.10 hrs HW=147.27' TW=145.13' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 88.37 cfs @ 7.03 fps)

Secondary OutFlow Max=89.18 cfs @ 13.06 hrs HW=147.19' TW=145.02' (Dynamic Tailwater)
 ↑**2=Culvert** (Inlet Controls 89.18 cfs @ 7.10 fps)

Summary for Pond 2BP: EXISTING BASIN

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 7.18" for 100-year event
 Inflow = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af
 Outflow = 58.98 cfs @ 12.50 hrs, Volume= 24.157 af, Atten= 81%, Lag= 25.0 min
 Primary = 35.29 cfs @ 12.32 hrs, Volume= 22.182 af
 Secondary = 24.57 cfs @ 12.52 hrs, Volume= 1.976 af

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Page 171

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 150.96' @ 12.52 hrs Surf.Area= 94,691 sf Storage= 427,340 cf

Plug-Flow detention time= 164.8 min calculated for 24.157 af (99% of inflow)
 Center-of-Mass det. time= 156.2 min (917.9 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	24.0" Round Culvert L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=35.20 cfs @ 12.32 hrs HW=150.71' TW=145.30' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 35.20 cfs @ 11.20 fps)

Secondary OutFlow Max=24.57 cfs @ 12.52 hrs HW=150.96' TW=145.83' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 24.57 cfs @ 2.57 fps)

Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	12.710 ac, 94.57% Impervious, Inflow Depth = 7.42" for 100-year event
Inflow =	97.87 cfs @ 12.08 hrs, Volume= 7.860 af
Outflow =	29.31 cfs @ 12.40 hrs, Volume= 5.521 af, Atten= 70%, Lag= 18.8 min
Primary =	29.31 cfs @ 12.40 hrs, Volume= 5.521 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 148.32' @ 12.40 hrs Surf.Area= 35,758 sf Storage= 175,315 cf

Plug-Flow detention time= 224.5 min calculated for 5.521 af (70% of inflow)
 Center-of-Mass det. time= 130.3 min (882.9 - 752.6)

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Page 172

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	30.0" Round Culvert L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 ' / ' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=29.30 cfs @ 12.40 hrs HW=148.32' TW=142.62' (Dynamic Tailwater)

1=Culvert (Passes 29.30 cfs of 51.59 cfs potential flow)

2=Orifice/Grate (Orifice Controls 29.30 cfs @ 7.33 fps)

Summary for Pond 2DP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area =	2.770 ac, 75.81% Impervious, Inflow Depth = 6.08" for 100-year event
Inflow =	16.78 cfs @ 12.08 hrs, Volume= 1.403 af
Outflow =	2.33 cfs @ 12.60 hrs, Volume= 0.534 af, Atten= 86%, Lag= 31.0 min
Primary =	2.33 cfs @ 12.60 hrs, Volume= 0.534 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 146.86' @ 15.89 hrs Surf.Area= 11,575 sf Storage= 45,091 cf

Plug-Flow detention time= 412.1 min calculated for 0.534 af (38% of inflow)

Center-of-Mass det. time= 241.5 min (990.5 - 749.0)

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 173

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	24.0" Round Culvert L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.33 cfs @ 12.60 hrs HW=146.40' TW=143.39' (Dynamic Tailwater)↑ **1=Culvert** (Passes 2.33 cfs of 26.24 cfs potential flow)↑ **2=Orifice/Grate** (Weir Controls 2.33 cfs @ 1.46 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area =	401.120 ac, 22.54% Impervious, Inflow Depth > 5.18" for 100-year event
Inflow =	262.29 cfs @ 13.09 hrs, Volume= 172.995 af
Outflow =	231.42 cfs @ 15.17 hrs, Volume= 172.995 af, Atten= 12%, Lag= 124.6 min
Primary =	231.42 cfs @ 15.17 hrs, Volume= 172.995 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 146.95' @ 15.17 hrs Surf.Area= 105,396 sf Storage= 373,381 cf

Plug-Flow detention time= 17.2 min calculated for 172.971 af (100% of inflow)

Center-of-Mass det. time= 17.1 min (1,026.1 - 1,009.0)

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 174

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	60.0" Round Culvert L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

Primary OutFlow Max=231.42 cfs @ 15.17 hrs HW=146.95' TW=132.86' (Dynamic Tailwater)
1=Culvert (Barrel Controls 231.42 cfs @ 11.79 fps)

Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH

Inflow Area = 853.400 ac, 12.10% Impervious, Inflow Depth > 5.21" for 100-year event
Inflow = 398.68 cfs @ 13.14 hrs, Volume= 370.594 af
Outflow = 388.08 cfs @ 13.47 hrs, Volume= 370.555 af, Atten= 3%, Lag= 19.7 min
Primary = 157.63 cfs @ 13.47 hrs, Volume= 133.126 af
Secondary = 230.45 cfs @ 13.47 hrs, Volume= 237.429 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 133.12' @ 13.47 hrs Surf.Area= 78,814 sf Storage= 171,053 cf

Plug-Flow detention time= 5.8 min calculated for 370.555 af (100% of inflow)
Center-of-Mass det. time= 5.5 min (1,152.7 - 1,147.2)

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 175

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	60.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 ' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	72.0" Round Culvert L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 ' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	10.0' long x 20.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=157.63 cfs @ 13.47 hrs HW=133.12' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 157.63 cfs @ 8.07 fps)

Secondary OutFlow Max=230.45 cfs @ 13.47 hrs HW=133.12' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 230.45 cfs @ 8.58 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** (Controls 0.00 cfs)

Summary for Pond ZIP: PROPOSED PHASE 1 BASIN

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth = 5.46" for 100-year event
 Inflow = 232.37 cfs @ 12.14 hrs, Volume= 51.293 af
 Outflow = 59.57 cfs @ 19.75 hrs, Volume= 45.564 af, Atten= 74%, Lag= 456.8 min
 Primary = 59.57 cfs @ 19.75 hrs, Volume= 33.812 af
 Secondary = 39.63 cfs @ 15.62 hrs, Volume= 11.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.16' @ 15.30 hrs Surf.Area= 170,290 sf Storage= 1,166,595 cf

Plug-Flow detention time= 369.2 min calculated for 45.564 af (89% of inflow)
 Center-of-Mass det. time= 306.2 min (1,205.3 - 899.1)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Page 176

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	36.0" W x 10.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	142.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	144.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.66 cfs @ 19.75 hrs HW=145.33' TW=142.26' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 59.66 cfs @ 8.44 fps)
 2=Orifice/Grate (Passes < 21.10 cfs potential flow)
 3=Orifice/Grate (Passes < 22.02 cfs potential flow)
 4=Orifice/Grate (Passes < 50.05 cfs potential flow)

Secondary OutFlow Max=39.73 cfs @ 15.62 hrs HW=147.14' TW=146.91' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Weir Controls 39.73 cfs @ 1.74 fps)

Summary for Pond 2JP: PROPOSED BASIN

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 6.35" for 100-year event
 Inflow = 111.75 cfs @ 12.08 hrs, Volume= 8.322 af
 Outflow = 26.81 cfs @ 12.47 hrs, Volume= 7.976 af, Atten= 76%, Lag= 23.2 min
 Primary = 26.81 cfs @ 12.47 hrs, Volume= 7.976 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 165.14' @ 12.47 hrs Surf.Area= 38,103 sf Storage= 139,715 cf

Plug-Flow detention time= 111.8 min calculated for 7.976 af (96% of inflow)
 Center-of-Mass det. time= 87.8 min (873.2 - 785.4)

SWNAS - Proposed Watershed

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Page 177

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	24.0" Round Culvert L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 ' /' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	164.50'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.81 cfs @ 12.47 hrs HW=165.14' TW=145.70' (Dynamic Tailwater)

1=Culvert (Inlet Controls 26.81 cfs @ 8.53 fps)
 2=Orifice/Grate (Passes < 25.58 cfs potential flow)
 3=Orifice/Grate (Passes < 20.17 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2KP: PROPOSED BASIN

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 6.00" for 100-year event
 Inflow = 143.23 cfs @ 12.09 hrs, Volume= 10.499 af
 Outflow = 33.75 cfs @ 12.48 hrs, Volume= 9.494 af, Atten= 76%, Lag= 23.7 min
 Primary = 33.75 cfs @ 12.48 hrs, Volume= 9.494 af
 Secondary = 0.00 cfs @ 12.48 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 152.50' @ 12.48 hrs Surf.Area= 56,254 sf Storage= 220,968 cf

Plug-Flow detention time= 198.6 min calculated for 9.493 af (90% of inflow)
 Center-of-Mass det. time= 151.9 min (945.4 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 178

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	36.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	150.75'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	152.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.75 cfs @ 12.48 hrs HW=152.50' TW=131.68' (Dynamic Tailwater)

1=Culvert (Passes 33.75 cfs of 58.96 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 13.02 cfs @ 8.68 fps)
 3=Orifice/Grate (Orifice Controls 11.44 cfs @ 5.72 fps)
 4=Orifice/Grate (Weir Controls 9.29 cfs @ 2.32 fps)

Secondary OutFlow Max=0.00 cfs @ 12.48 hrs HW=152.50' TW=131.68' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.10 fps)

Summary for Pond 2LP: PROPOSED BASIN

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 6.47" for 100-year event
 Inflow = 76.93 cfs @ 12.08 hrs, Volume= 5.764 af
 Outflow = 24.21 cfs @ 12.39 hrs, Volume= 5.538 af, Atten= 69%, Lag= 18.3 min
 Primary = 24.21 cfs @ 12.39 hrs, Volume= 5.538 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 158.56' @ 12.39 hrs Surf.Area= 26,494 sf Storage= 81,164 cf

Plug-Flow detention time= 87.2 min calculated for 5.537 af (96% of inflow)
 Center-of-Mass det. time= 64.5 min (847.0 - 782.5)

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

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Page 179

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	157.00'	36.0" W x 8.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	158.50'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	10.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.21 cfs @ 12.39 hrs HW=158.56' TW=131.42' (Dynamic Tailwater)

1=Culvert (Inlet Controls 24.21 cfs @ 7.71 fps)
 2=Orifice/Grate (Passes < 23.09 cfs potential flow)
 3=Orifice/Grate (Passes < 10.64 cfs potential flow)
 4=Orifice/Grate (Passes < 0.41 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2MP: PROPOSED BASIN

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 6.47" for 100-year event
 Inflow = 139.25 cfs @ 12.08 hrs, Volume= 10.434 af
 Outflow = 89.94 cfs @ 12.18 hrs, Volume= 10.264 af, Atten= 35%, Lag= 5.5 min
 Primary = 82.52 cfs @ 12.18 hrs, Volume= 10.189 af
 Secondary = 7.42 cfs @ 12.18 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 181.92' @ 12.18 hrs Surf.Area= 21,869 sf Storage= 87,767 cf

Plug-Flow detention time= 47.0 min calculated for 10.264 af (98% of inflow)
 Center-of-Mass det. time= 36.7 min (819.2 - 782.5)

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	Custom Stage Data (Prismatic) Listed below

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 180

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	42.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	36.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	178.50'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	180.00'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=82.50 cfs @ 12.18 hrs HW=181.92' TW=153.37' (Dynamic Tailwater)

1=Culvert (Inlet Controls 82.50 cfs @ 8.58 fps)
 2=Orifice/Grate (Passes < 14.75 cfs potential flow)
 3=Orifice/Grate (Passes < 24.66 cfs potential flow)
 4=Orifice/Grate (Passes < 60.07 cfs potential flow)

Secondary OutFlow Max=7.39 cfs @ 12.18 hrs HW=181.92' TW=153.37' (Dynamic Tailwater)

5=Broad-Crested Rectangular Weir (Weir Controls 7.39 cfs @ 1.75 fps)

Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 5.30" for 100-year event
 Inflow = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af
 Outflow = 105.51 cfs @ 13.38 hrs, Volume= 27.291 af, Atten= 20%, Lag= 24.6 min
 Primary = 69.92 cfs @ 13.38 hrs, Volume= 23.972 af
 Secondary = 35.59 cfs @ 13.38 hrs, Volume= 3.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.92' @ 13.38 hrs Surf.Area= 137,190 sf Storage= 114,298 cf

Plug-Flow detention time= 9.2 min calculated for 27.291 af (100% of inflow)
 Center-of-Mass det. time= 8.9 min (880.7 - 871.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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Page 181

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	36.0" Round Culvert L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 ' S= -0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	10.0' long x 15.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=69.92 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 69.92 cfs @ 9.89 fps)

Secondary OutFlow Max=35.58 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)

↑**2=Spillway over Path** (Weir Controls 35.58 cfs @ 2.92 fps)

Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event
 Inflow = 318.31 cfs @ 13.43 hrs, Volume= 82.986 af
 Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 1%, Lag= 5.0 min
 Primary = 184.83 cfs @ 13.51 hrs, Volume= 70.933 af
 Secondary = 129.49 cfs @ 13.51 hrs, Volume= 12.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 136.34' @ 13.51 hrs Surf.Area= 73,867 sf Storage= 242,197 cf

Plug-Flow detention time= 12.5 min calculated for 82.974 af (100% of inflow)
 Center-of-Mass det. time= 12.5 min (910.3 - 897.8)

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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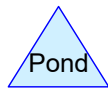
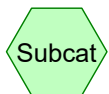
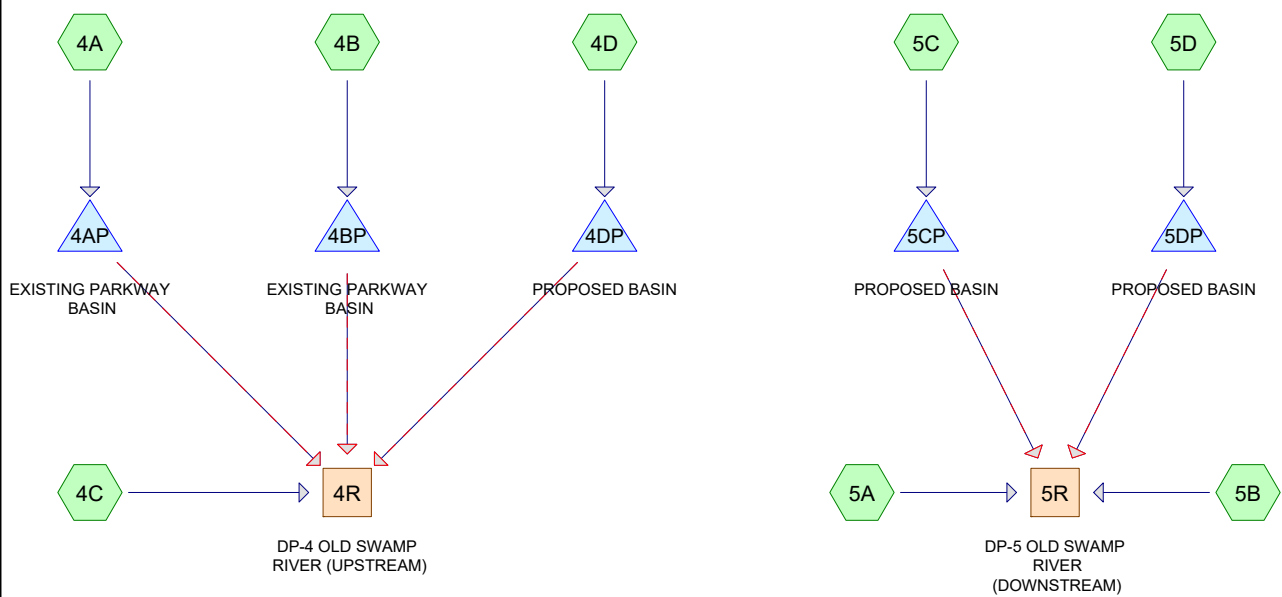
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Page 182

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	60.0" Round Culvert L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	35.0' long x 10.0' breadth Spillway over Path Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=184.83 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 184.83 cfs @ 9.41 fps)**Secondary OutFlow** Max=129.49 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)↑ **2=Spillway over Path** (Weir Controls 129.49 cfs @ 2.99 fps)



Routing Diagram for SWNAS - Proposed Watershed Swamp River

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SWNAS - Proposed Watershed Swamp River

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.120	61	>75% Grass cover, Good, HSG B (4C, 5B)
1.500	74	>75% Grass cover, Good, HSG C (4C, 4D)
1.350	80	>75% Grass cover, Good, HSG D (4C)
5.360	48	Brush, Good, HSG B (4A, 4B, 4C)
1.360	73	Brush, Good, HSG D (4C)
7.470	98	Pavement (4A, 4B, 4C)
112.680	88	Proposed Development Area (4D, 5C, 5D)
0.600	100	Water - Basin Area (4A, 4B)
33.570	55	Woods, Good, HSG B (4C, 5A, 5B)
2.630	70	Woods, Good, HSG C (4C)
58.720	77	Woods, Good, HSG D (4C, 5A, 5C)
237.360	78	TOTAL AREA

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=0.79"
Tc=6.0 min CN=67 Runoff=3.20 cfs 0.264 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=92 Runoff=11.77 cfs 0.860 af

Subcatchment4C: Runoff Area=57.820 ac 5.19% Impervious Runoff Depth=1.11"
Flow Length=3,308' Tc=120.0 min CN=73 Runoff=17.58 cfs 5.362 af

Subcatchment4D: Runoff Area=6.450 ac 0.00% Impervious Runoff Depth=2.01"
Tc=6.0 min CN=86 Runoff=15.19 cfs 1.080 af

Subcatchment5A: Runoff Area=14.400 ac 0.00% Impervious Runoff Depth=1.11"
Tc=6.0 min CN=73 Runoff=17.84 cfs 1.336 af

Subcatchment5B: Runoff Area=31.930 ac 0.00% Impervious Runoff Depth=0.38"
Flow Length=1,595' Slope=0.0100 '/' Tc=97.7 min CN=57 Runoff=2.57 cfs 1.009 af

Subcatchment5C: Runoff Area=56.030 ac 0.00% Impervious Runoff Depth=2.01"
Tc=6.0 min CN=86 Runoff=131.98 cfs 9.385 af

Subcatchment5D: Runoff Area=62.690 ac 0.00% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=88 Runoff=159.25 cfs 11.377 af

Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM) Inflow=18.79 cfs 6.160 af
Outflow=18.79 cfs 6.160 af

Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM) Inflow=47.93 cfs 22.008 af
Outflow=47.93 cfs 22.008 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=146.52' Storage=2,898 cf Inflow=3.20 cfs 0.264 af
Primary=1.08 cfs 0.263 af Secondary=0.00 cfs 0.000 af Outflow=1.08 cfs 0.263 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=136.57' Storage=37,451 cf Inflow=11.77 cfs 0.860 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 4DP: PROPOSED BASIN Peak Elev=137.62' Storage=30,764 cf Inflow=15.19 cfs 1.080 af
Primary=0.76 cfs 0.534 af Secondary=0.00 cfs 0.000 af Outflow=0.76 cfs 0.534 af

Pond 5CP: PROPOSED BASIN Peak Elev=174.07' Storage=199,330 cf Inflow=131.98 cfs 9.385 af
Primary=18.26 cfs 8.836 af Secondary=0.00 cfs 0.000 af Outflow=18.26 cfs 8.836 af

Pond 5DP: PROPOSED BASIN Peak Elev=144.48' Storage=240,820 cf Inflow=159.25 cfs 11.377 af
Primary=24.94 cfs 10.827 af Secondary=0.00 cfs 0.000 af Outflow=24.94 cfs 10.827 af

Total Runoff Area = 237.360 ac Runoff Volume = 30.672 af Average Runoff Depth = 1.55"
96.60% Pervious = 229.290 ac 3.40% Impervious = 8.070 ac

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 4

Summary for Subcatchment 4A:

Runoff = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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Page 5

Summary for Subcatchment 4C:

Runoff = 17.58 cfs @ 13.73 hrs, Volume= 5.362 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 4D:

Runoff = 15.19 cfs @ 12.09 hrs, Volume= 1.080 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 2-year Rainfall=3.40"

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Page 6

Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

Runoff = 17.84 cfs @ 12.10 hrs, Volume= 1.336 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5B:

Runoff = 2.57 cfs @ 13.68 hrs, Volume= 1.009 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.40"
49.8	1,495	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
97.7	1,595	Total			

Summary for Subcatchment 5C:

Runoff = 131.98 cfs @ 12.09 hrs, Volume= 9.385 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

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Type III 24-hr 2-year Rainfall=3.40"

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Page 7

Area (ac)	CN	Description
* 44.390	88	Proposed Development Area
11.640	77	Woods, Good, HSG D
56.030	86	Weighted Average
56.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5D:

Runoff = 159.25 cfs @ 12.09 hrs, Volume= 11.377 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 62.690	88	Proposed Development Area
62.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 1.02" for 2-year event
Inflow = 18.79 cfs @ 13.73 hrs, Volume= 6.160 af
Outflow = 18.79 cfs @ 13.73 hrs, Volume= 6.160 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Inflow Area = 165.050 ac, 0.00% Impervious, Inflow Depth > 1.60" for 2-year event
Inflow = 47.93 cfs @ 12.47 hrs, Volume= 22.008 af
Outflow = 47.93 cfs @ 12.47 hrs, Volume= 22.008 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 0.79" for 2-year event
Inflow = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af
Outflow = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af, Atten= 66%, Lag= 23.3 min
Primary = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 2-year Rainfall=3.40"

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Page 8

Peak Elev= 146.52' @ 12.49 hrs Surf.Area= 5,925 sf Storage= 2,898 cf

Plug-Flow detention time= 85.7 min calculated for 0.263 af (100% of inflow)

Center-of-Mass det. time= 85.7 min (967.6 - 881.9)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.08 cfs @ 12.49 hrs HW=146.52' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.08 cfs @ 2.50 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 2.54" for 2-year event
 Inflow = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 136.57' @ 24.34 hrs Surf.Area= 14,463 sf Storage= 37,451 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 9

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 ' S= 0.0170 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4DP: PROPOSED BASIN

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event
 Inflow = 15.19 cfs @ 12.09 hrs, Volume= 1.080 af
 Outflow = 0.76 cfs @ 14.84 hrs, Volume= 0.534 af, Atten= 95%, Lag= 165.2 min
 Primary = 0.76 cfs @ 14.84 hrs, Volume= 0.534 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 137.62' @ 14.84 hrs Surf.Area= 13,474 sf Storage= 30,764 cf

Plug-Flow detention time= 390.3 min calculated for 0.534 af (49% of inflow)
 Center-of-Mass det. time= 275.3 min (1,095.3 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	66,765 cf	Custom Stage Data (Prismatic) Listed below

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Type III 24-hr 2-year Rainfall=3.40"

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Page 10

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	9,930	0	0
136.00	11,200	10,565	10,565
137.00	12,600	11,900	22,465
138.00	14,000	13,300	35,765
139.00	15,500	14,750	50,515
140.00	17,000	16,250	66,765

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	137.10'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	138.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.76 cfs @ 14.84 hrs HW=137.62' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.76 cfs of 18.82 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.76 cfs @ 3.03 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5CP: PROPOSED BASIN

Inflow Area = 56.030 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event
 Inflow = 131.98 cfs @ 12.09 hrs, Volume= 9.385 af
 Outflow = 18.26 cfs @ 12.64 hrs, Volume= 8.836 af, Atten= 86%, Lag= 33.4 min
 Primary = 18.26 cfs @ 12.64 hrs, Volume= 8.836 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 174.07' @ 12.64 hrs Surf.Area= 100,645 sf Storage= 199,330 cf

Plug-Flow detention time= 242.2 min calculated for 8.836 af (94% of inflow)
 Center-of-Mass det. time= 210.8 min (1,030.7 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 11

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	172.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	173.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	175.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=18.26 cfs @ 12.64 hrs HW=174.07' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 18.26 cfs of 32.19 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 16.50 cfs @ 5.50 fps)
- 3=Orifice/Grate (Orifice Controls 1.76 cfs @ 1.82 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5DP: PROPOSED BASIN

Inflow Area = 62.690 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-year event
 Inflow = 159.25 cfs @ 12.09 hrs, Volume= 11.377 af
 Outflow = 24.94 cfs @ 12.58 hrs, Volume= 10.827 af, Atten= 84%, Lag= 29.7 min
 Primary = 24.94 cfs @ 12.58 hrs, Volume= 10.827 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 144.48' @ 12.58 hrs Surf.Area= 102,386 sf Storage= 240,820 cf

Plug-Flow detention time= 226.1 min calculated for 10.826 af (95% of inflow)
 Center-of-Mass det. time= 199.7 min (1,012.3 - 812.6)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2-year Rainfall=3.40"

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Page 12

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,826	0	0
143.00	96,055	93,941	93,941
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	142.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	143.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	145.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.94 cfs @ 12.58 hrs HW=144.48' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 24.94 cfs of 43.89 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 18.93 cfs @ 6.31 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 6.01 cfs @ 2.74 fps)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 13

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=67 Runoff=8.47 cfs 0.621 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=4.19"
Tc=6.0 min CN=92 Runoff=18.89 cfs 1.417 af

Subcatchment4C: Runoff Area=57.820 ac 5.19% Impervious Runoff Depth=2.36"
Flow Length=3,308' Tc=120.0 min CN=73 Runoff=39.18 cfs 11.367 af

Subcatchment4D: Runoff Area=6.450 ac 0.00% Impervious Runoff Depth=3.56"
Tc=6.0 min CN=86 Runoff=26.53 cfs 1.914 af

Subcatchment5A: Runoff Area=14.400 ac 0.00% Impervious Runoff Depth=2.36"
Tc=6.0 min CN=73 Runoff=39.60 cfs 2.831 af

Subcatchment5B: Runoff Area=31.930 ac 0.00% Impervious Runoff Depth=1.16"
Flow Length=1,595' Slope=0.0100 '/' Tc=97.7 min CN=57 Runoff=10.56 cfs 3.082 af

Subcatchment5C: Runoff Area=56.030 ac 0.00% Impervious Runoff Depth=3.56"
Tc=6.0 min CN=86 Runoff=230.45 cfs 16.624 af

Subcatchment5D: Runoff Area=62.690 ac 0.00% Impervious Runoff Depth=3.76"
Tc=6.0 min CN=88 Runoff=269.95 cfs 19.664 af

Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM) Inflow=42.66 cfs 13.793 af
Outflow=42.66 cfs 13.793 af

Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM) Inflow=118.69 cfs 41.101 af
Outflow=118.69 cfs 41.101 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=147.16' Storage=7,049 cf Inflow=8.47 cfs 0.621 af
Primary=3.12 cfs 0.621 af Secondary=0.00 cfs 0.000 af Outflow=3.12 cfs 0.621 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=137.30' Storage=48,608 cf Inflow=18.89 cfs 1.417 af
Primary=0.63 cfs 0.438 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.438 af

Pond 4DP: PROPOSED BASIN Peak Elev=138.40' Storage=41,658 cf Inflow=26.53 cfs 1.914 af
Primary=7.91 cfs 1.367 af Secondary=0.00 cfs 0.000 af Outflow=7.91 cfs 1.367 af

Pond 5CP: PROPOSED BASIN Peak Elev=175.44' Storage=341,548 cf Inflow=230.45 cfs 16.624 af
Primary=42.71 cfs 16.074 af Secondary=0.00 cfs 0.000 af Outflow=42.71 cfs 16.074 af

Pond 5DP: PROPOSED BASIN Peak Elev=145.88' Storage=388,745 cf Inflow=269.95 cfs 19.664 af
Primary=63.72 cfs 19.114 af Secondary=0.00 cfs 0.000 af Outflow=63.72 cfs 19.114 af

Total Runoff Area = 237.360 ac Runoff Volume = 57.519 af Average Runoff Depth = 2.91"
96.60% Pervious = 229.290 ac 3.40% Impervious = 8.070 ac

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Type III 24-hr 10-year Rainfall=5.10"

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Page 14

Summary for Subcatchment 4A:

Runoff = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 10-year Rainfall=5.10"

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Page 15

Summary for Subcatchment 4C:

Runoff = 39.18 cfs @ 13.61 hrs, Volume= 11.367 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 4D:

Runoff = 26.53 cfs @ 12.09 hrs, Volume= 1.914 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 10-year Rainfall=5.10"

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Page 16

Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

Runoff = 39.60 cfs @ 12.09 hrs, Volume= 2.831 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5B:

Runoff = 10.56 cfs @ 13.46 hrs, Volume= 3.082 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
49.8	1,495	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
97.7	1,595	Total			

Summary for Subcatchment 5C:

Runoff = 230.45 cfs @ 12.09 hrs, Volume= 16.624 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

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Type III 24-hr 10-year Rainfall=5.10"

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Page 17

Area (ac)	CN	Description
* 44.390	88	Proposed Development Area
11.640	77	Woods, Good, HSG D
56.030	86	Weighted Average
56.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5D:

Runoff = 269.95 cfs @ 12.09 hrs, Volume= 19.664 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 62.690	88	Proposed Development Area
62.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 2.29" for 10-year event
Inflow = 42.66 cfs @ 13.60 hrs, Volume= 13.793 af
Outflow = 42.66 cfs @ 13.60 hrs, Volume= 13.793 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Inflow Area = 165.050 ac, 0.00% Impervious, Inflow Depth > 2.99" for 10-year event
Inflow = 118.69 cfs @ 12.46 hrs, Volume= 41.101 af
Outflow = 118.69 cfs @ 12.46 hrs, Volume= 41.101 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 1.87" for 10-year event
Inflow = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af
Outflow = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af, Atten= 63%, Lag= 19.1 min
Primary = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-year Rainfall=5.10"

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Page 18

Peak Elev= 147.16' @ 12.41 hrs Surf.Area= 7,002 sf Storage= 7,049 cf

Plug-Flow detention time= 58.8 min calculated for 0.621 af (100% of inflow)

Center-of-Mass det. time= 59.1 min (913.4 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.12 cfs @ 12.41 hrs HW=147.16' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.12 cfs @ 3.97 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 4.19" for 10-year event
 Inflow = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af
 Outflow = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af, Atten= 97%, Lag= 214.3 min
 Primary = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 137.30' @ 15.66 hrs Surf.Area= 16,042 sf Storage= 48,608 cf

Plug-Flow detention time= 590.5 min calculated for 0.438 af (31% of inflow)

Center-of-Mass det. time= 439.8 min (1,221.9 - 782.1)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 19

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 ' S= 0.0170 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.63 cfs @ 15.66 hrs HW=137.30' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.63 cfs @ 2.15 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 3.56" for 10-year event
 Inflow = 26.53 cfs @ 12.09 hrs, Volume= 1.914 af
 Outflow = 7.91 cfs @ 12.42 hrs, Volume= 1.367 af, Atten= 70%, Lag= 20.0 min
 Primary = 7.91 cfs @ 12.42 hrs, Volume= 1.367 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 138.40' @ 12.42 hrs Surf.Area= 14,599 sf Storage= 41,658 cf

Plug-Flow detention time= 271.2 min calculated for 1.367 af (71% of inflow)
 Center-of-Mass det. time= 180.5 min (984.2 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	66,765 cf	Custom Stage Data (Prismatic) Listed below

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Type III 24-hr 10-year Rainfall=5.10"

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Page 20

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	9,930	0	0
136.00	11,200	10,565	10,565
137.00	12,600	11,900	22,465
138.00	14,000	13,300	35,765
139.00	15,500	14,750	50,515
140.00	17,000	16,250	66,765

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	137.10'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	138.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.91 cfs @ 12.42 hrs HW=138.40' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 7.91 cfs of 23.43 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.30 cfs @ 5.22 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 6.61 cfs @ 2.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 56.030 ac, 0.00% Impervious, Inflow Depth = 3.56" for 10-year event
 Inflow = 230.45 cfs @ 12.09 hrs, Volume= 16.624 af
 Outflow = 42.71 cfs @ 12.54 hrs, Volume= 16.074 af, Atten= 81%, Lag= 27.1 min
 Primary = 42.71 cfs @ 12.54 hrs, Volume= 16.074 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 175.44' @ 12.54 hrs Surf.Area= 106,556 sf Storage= 341,548 cf

Plug-Flow detention time= 197.7 min calculated for 16.074 af (97% of inflow)
 Center-of-Mass det. time= 178.4 min (982.1 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 21

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	172.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	173.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	175.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.71 cfs @ 12.54 hrs HW=175.44' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 42.71 cfs of 72.73 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 23.68 cfs @ 7.89 fps)
 3=Orifice/Grate (Orifice Controls 15.67 cfs @ 5.22 fps)
 4=Orifice/Grate (Weir Controls 3.37 cfs @ 1.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5DP: PROPOSED BASIN

Inflow Area = 62.690 ac, 0.00% Impervious, Inflow Depth = 3.76" for 10-year event
 Inflow = 269.95 cfs @ 12.09 hrs, Volume= 19.664 af
 Outflow = 63.72 cfs @ 12.48 hrs, Volume= 19.114 af, Atten= 76%, Lag= 23.7 min
 Primary = 63.72 cfs @ 12.48 hrs, Volume= 19.114 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 145.88' @ 12.48 hrs Surf.Area= 108,488 sf Storage= 388,745 cf

Plug-Flow detention time= 183.9 min calculated for 19.114 af (97% of inflow)
 Center-of-Mass det. time= 167.2 min (964.4 - 797.2)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-year Rainfall=5.10"

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Page 22

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,826	0	0
143.00	96,055	93,941	93,941
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	142.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	143.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	145.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=63.72 cfs @ 12.48 hrs HW=145.88' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 63.72 cfs of 83.61 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 25.54 cfs @ 8.51 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 18.39 cfs @ 6.13 fps)
- ↑ **4=Orifice/Grate** (Weir Controls 19.79 cfs @ 2.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 23

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=67 Runoff=12.38 cfs 0.890 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=5.27"
Tc=6.0 min CN=92 Runoff=23.45 cfs 1.782 af

Subcatchment4C: Runoff Area=57.820 ac 5.19% Impervious Runoff Depth=3.26"
Flow Length=3,308' Tc=120.0 min CN=73 Runoff=54.71 cfs 15.685 af

Subcatchment4D: Runoff Area=6.450 ac 0.00% Impervious Runoff Depth=4.60"
Tc=6.0 min CN=86 Runoff=33.91 cfs 2.472 af

Subcatchment5A: Runoff Area=14.400 ac 0.00% Impervious Runoff Depth=3.26"
Tc=6.0 min CN=73 Runoff=54.97 cfs 3.906 af

Subcatchment5B: Runoff Area=31.930 ac 0.00% Impervious Runoff Depth=1.80"
Flow Length=1,595' Slope=0.0100 '/' Tc=97.7 min CN=57 Runoff=17.61 cfs 4.786 af

Subcatchment5C: Runoff Area=56.030 ac 0.00% Impervious Runoff Depth=4.60"
Tc=6.0 min CN=86 Runoff=294.53 cfs 21.477 af

Subcatchment5D: Runoff Area=62.690 ac 0.00% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=88 Runoff=341.43 cfs 25.174 af

Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM) Inflow=60.72 cfs 19.303 af
Outflow=60.72 cfs 19.303 af

Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM) Inflow=194.33 cfs 54.242 af
Outflow=194.33 cfs 54.242 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=147.66' Storage=10,737 cf Inflow=12.38 cfs 0.890 af
Primary=4.11 cfs 0.889 af Secondary=0.00 cfs 0.000 af Outflow=4.11 cfs 0.889 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=137.55' Storage=52,744 cf Inflow=23.45 cfs 1.782 af
Primary=1.49 cfs 0.803 af Secondary=0.00 cfs 0.000 af Outflow=1.49 cfs 0.803 af

Pond 4DP: PROPOSED BASIN Peak Elev=138.70' Storage=46,087 cf Inflow=33.91 cfs 2.472 af
Primary=16.78 cfs 1.926 af Secondary=0.00 cfs 0.000 af Outflow=16.78 cfs 1.926 af

Pond 5CP: PROPOSED BASIN Peak Elev=176.10' Storage=412,676 cf Inflow=294.53 cfs 21.477 af
Primary=76.95 cfs 20.927 af Secondary=0.00 cfs 0.000 af Outflow=76.95 cfs 20.927 af

Pond 5DP: PROPOSED BASIN Peak Elev=146.56' Storage=462,611 cf Inflow=341.43 cfs 25.174 af
Primary=96.72 cfs 24.623 af Secondary=0.00 cfs 0.000 af Outflow=96.72 cfs 24.623 af

Total Runoff Area = 237.360 ac Runoff Volume = 76.172 af Average Runoff Depth = 3.85"
96.60% Pervious = 229.290 ac 3.40% Impervious = 8.070 ac

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Type III 24-hr 25-year Rainfall=6.20"

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Page 24

Summary for Subcatchment 4A:

Runoff = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 25-year Rainfall=6.20"

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Page 25

Summary for Subcatchment 4C:

Runoff = 54.71 cfs @ 13.60 hrs, Volume= 15.685 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 4D:

Runoff = 33.91 cfs @ 12.09 hrs, Volume= 2.472 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 25-year Rainfall=6.20"

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Page 26

Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

Runoff = 54.97 cfs @ 12.09 hrs, Volume= 3.906 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5B:

Runoff = 17.61 cfs @ 13.36 hrs, Volume= 4.786 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
49.8	1,495	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
97.7	1,595	Total			

Summary for Subcatchment 5C:

Runoff = 294.53 cfs @ 12.09 hrs, Volume= 21.477 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

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Type III 24-hr 25-year Rainfall=6.20"

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Page 27

Area (ac)	CN	Description
* 44.390	88	Proposed Development Area
11.640	77	Woods, Good, HSG D
56.030	86	Weighted Average
56.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5D:

Runoff = 341.43 cfs @ 12.09 hrs, Volume= 25.174 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 62.690	88	Proposed Development Area
62.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 3.20" for 25-year event
Inflow = 60.72 cfs @ 13.60 hrs, Volume= 19.303 af
Outflow = 60.72 cfs @ 13.60 hrs, Volume= 19.303 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)Inflow Area = 165.050 ac, 0.00% Impervious, Inflow Depth = 3.94" for 25-year event
Inflow = 194.33 cfs @ 12.40 hrs, Volume= 54.242 af
Outflow = 194.33 cfs @ 12.40 hrs, Volume= 54.242 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASINInflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 2.68" for 25-year event
Inflow = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af
Outflow = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af, Atten= 67%, Lag= 20.3 min
Primary = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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Page 28

Peak Elev= 147.66' @ 12.43 hrs Surf.Area= 7,752 sf Storage= 10,737 cf

Plug-Flow detention time= 54.0 min calculated for 0.889 af (100% of inflow)

Center-of-Mass det. time= 54.3 min (897.9 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' S= 0.3830 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.11 cfs @ 12.43 hrs HW=147.66' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 4.11 cfs @ 5.23 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 5.27" for 25-year event
 Inflow = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af
 Outflow = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af, Atten= 94%, Lag= 92.1 min
 Primary = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 137.55' @ 13.62 hrs Surf.Area= 16,545 sf Storage= 52,744 cf

Plug-Flow detention time= 430.2 min calculated for 0.802 af (45% of inflow)

Center-of-Mass det. time= 306.4 min (1,082.6 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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Page 29

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.49 cfs @ 13.62 hrs HW=137.55' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.49 cfs @ 2.75 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event
 Inflow = 33.91 cfs @ 12.09 hrs, Volume= 2.472 af
 Outflow = 16.78 cfs @ 12.24 hrs, Volume= 1.926 af, Atten= 51%, Lag= 9.0 min
 Primary = 16.78 cfs @ 12.24 hrs, Volume= 1.926 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 138.70' @ 12.24 hrs Surf.Area= 15,050 sf Storage= 46,087 cf

Plug-Flow detention time= 226.2 min calculated for 1.925 af (78% of inflow)
 Center-of-Mass det. time= 146.7 min (943.3 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	66,765 cf	Custom Stage Data (Prismatic) Listed below

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Type III 24-hr 25-year Rainfall=6.20"

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Page 30

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	9,930	0	0
136.00	11,200	10,565	10,565
137.00	12,600	11,900	22,465
138.00	14,000	13,300	35,765
139.00	15,500	14,750	50,515
140.00	17,000	16,250	66,765

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	137.10'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	138.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=16.77 cfs @ 12.24 hrs HW=138.70' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 16.77 cfs of 24.85 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.46 cfs @ 5.85 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 15.31 cfs @ 2.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 56.030 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event
 Inflow = 294.53 cfs @ 12.09 hrs, Volume= 21.477 af
 Outflow = 76.95 cfs @ 12.45 hrs, Volume= 20.927 af, Atten= 74%, Lag= 22.1 min
 Primary = 76.95 cfs @ 12.45 hrs, Volume= 20.927 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 176.10' @ 12.45 hrs Surf.Area= 109,467 sf Storage= 412,676 cf

Plug-Flow detention time= 175.6 min calculated for 20.924 af (97% of inflow)
 Center-of-Mass det. time= 160.6 min (957.2 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 31

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	172.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	173.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	175.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=76.95 cfs @ 12.45 hrs HW=176.10' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 76.95 cfs of 87.75 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 26.43 cfs @ 8.81 fps)
- 3=Orifice/Grate (Orifice Controls 19.60 cfs @ 6.53 fps)
- 4=Orifice/Grate (Weir Controls 30.92 cfs @ 3.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5DP: PROPOSED BASIN

Inflow Area = 62.690 ac, 0.00% Impervious, Inflow Depth = 4.82" for 25-year event
 Inflow = 341.43 cfs @ 12.09 hrs, Volume= 25.174 af
 Outflow = 96.72 cfs @ 12.43 hrs, Volume= 24.623 af, Atten= 72%, Lag= 20.5 min
 Primary = 96.72 cfs @ 12.43 hrs, Volume= 24.623 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 146.56' @ 12.43 hrs Surf.Area= 111,515 sf Storage= 462,611 cf

Plug-Flow detention time= 163.2 min calculated for 24.620 af (98% of inflow)
 Center-of-Mass det. time= 150.2 min (940.5 - 790.4)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25-year Rainfall=6.20"

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Page 32

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,826	0	0
143.00	96,055	93,941	93,941
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	142.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	143.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	145.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=96.72 cfs @ 12.43 hrs HW=146.55' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Inlet Controls 96.72 cfs @ 7.70 fps)
 - ↑ **2=Orifice/Grate** (Passes < 28.16 cfs potential flow)
 - ↑ **3=Orifice/Grate** (Passes < 21.89 cfs potential flow)
 - ↑ **4=Orifice/Grate** (Passes < 49.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 100-year Rainfall=7.90"

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Page 33

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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

Subcatchment4A: Runoff Area=3.980 ac 38.69% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=67 Runoff=18.83 cfs 1.339 af

Subcatchment4B: Runoff Area=4.060 ac 86.95% Impervious Runoff Depth=6.94"
Tc=6.0 min CN=92 Runoff=30.44 cfs 2.350 af

Subcatchment4C: Runoff Area=57.820 ac 5.19% Impervious Runoff Depth=4.72"
Flow Length=3,308' Tc=120.0 min CN=73 Runoff=79.82 cfs 22.749 af

Subcatchment4D: Runoff Area=6.450 ac 0.00% Impervious Runoff Depth=6.23"
Tc=6.0 min CN=86 Runoff=45.26 cfs 3.351 af

Subcatchment5A: Runoff Area=14.400 ac 0.00% Impervious Runoff Depth=4.72"
Tc=6.0 min CN=73 Runoff=79.64 cfs 5.666 af

Subcatchment5B: Runoff Area=31.930 ac 0.00% Impervious Runoff Depth=2.93"
Flow Length=1,595' Slope=0.0100 '/' Tc=97.7 min CN=57 Runoff=30.35 cfs 7.800 af

Subcatchment5C: Runoff Area=56.030 ac 0.00% Impervious Runoff Depth=6.23"
Tc=6.0 min CN=86 Runoff=393.14 cfs 29.110 af

Subcatchment5D: Runoff Area=62.690 ac 0.00% Impervious Runoff Depth=6.47"
Tc=6.0 min CN=88 Runoff=451.15 cfs 33.803 af

Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM) Inflow=89.66 cfs 28.263 af
Outflow=89.66 cfs 28.263 af

Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM) Inflow=285.08 cfs 75.276 af
Outflow=285.08 cfs 75.276 af

Pond 4AP: EXISTING PARKWAY BASIN Peak Elev=148.47' Storage=17,483 cf Inflow=18.83 cfs 1.339 af
Primary=5.33 cfs 1.339 af Secondary=0.00 cfs 0.000 af Outflow=5.33 cfs 1.339 af

Pond 4BP: EXISTING PARKWAY BASIN Peak Elev=138.19' Storage=63,713 cf Inflow=30.44 cfs 2.350 af
Primary=3.36 cfs 1.370 af Secondary=0.00 cfs 0.000 af Outflow=3.36 cfs 1.370 af

Pond 4DP: PROPOSED BASIN Peak Elev=139.25' Storage=54,652 cf Inflow=45.26 cfs 3.351 af
Primary=23.29 cfs 2.756 af Secondary=3.45 cfs 0.048 af Outflow=26.74 cfs 2.804 af

Pond 5CP: PROPOSED BASIN Peak Elev=177.10' Storage=524,297 cf Inflow=393.14 cfs 29.110 af
Primary=106.57 cfs 28.423 af Secondary=5.63 cfs 0.136 af Outflow=112.20 cfs 28.559 af

Pond 5DP: PROPOSED BASIN Peak Elev=147.67' Storage=589,908 cf Inflow=451.15 cfs 33.803 af
Primary=115.94 cfs 32.373 af Secondary=23.30 cfs 0.879 af Outflow=139.23 cfs 33.252 af

Total Runoff Area = 237.360 ac Runoff Volume = 106.167 af Average Runoff Depth = 5.37"
96.60% Pervious = 229.290 ac 3.40% Impervious = 8.070 ac

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Type III 24-hr 100-year Rainfall=7.90"

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Page 34

Summary for Subcatchment 4A:

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4B:

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 100-year Rainfall=7.90"

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Page 35

Summary for Subcatchment 4C:

Runoff = 79.82 cfs @ 13.60 hrs, Volume= 22.749 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
120.0	3,308	Total			

Summary for Subcatchment 4D:

Runoff = 45.26 cfs @ 12.08 hrs, Volume= 3.351 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 100-year Rainfall=7.90"

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Page 36

Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

Runoff = 79.64 cfs @ 12.09 hrs, Volume= 5.666 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5B:

Runoff = 30.35 cfs @ 13.35 hrs, Volume= 7.800 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.40"
49.8	1,495	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
97.7	1,595	Total			

Summary for Subcatchment 5C:

Runoff = 393.14 cfs @ 12.08 hrs, Volume= 29.110 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

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Type III 24-hr 100-year Rainfall=7.90"

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Page 37

Area (ac)	CN	Description
* 44.390	88	Proposed Development Area
11.640	77	Woods, Good, HSG D
56.030	86	Weighted Average
56.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 5D:

Runoff = 451.15 cfs @ 12.08 hrs, Volume= 33.803 af, Depth= 6.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 62.690	88	Proposed Development Area
62.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 4.69" for 100-year event
Inflow = 89.66 cfs @ 13.47 hrs, Volume= 28.263 af
Outflow = 89.66 cfs @ 13.47 hrs, Volume= 28.263 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Inflow Area = 165.050 ac, 0.00% Impervious, Inflow Depth = 5.47" for 100-year event
Inflow = 285.08 cfs @ 12.36 hrs, Volume= 75.276 af
Outflow = 285.08 cfs @ 12.36 hrs, Volume= 75.276 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 4AP: EXISTING PARKWAY BASIN

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 4.04" for 100-year event
Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af
Outflow = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af, Atten= 72%, Lag= 22.3 min
Primary = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 38

Peak Elev= 148.47' @ 12.46 hrs Surf.Area= 8,987 sf Storage= 17,483 cf

Plug-Flow detention time= 52.7 min calculated for 1.339 af (100% of inflow)

Center-of-Mass det. time= 52.9 min (884.6 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	12.0" Round Culvert L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.33 cfs @ 12.46 hrs HW=148.47' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.33 cfs @ 6.79 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 6.94" for 100-year event
 Inflow = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af
 Outflow = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af, Atten= 89%, Lag= 39.2 min
 Primary = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 138.19' @ 12.74 hrs Surf.Area= 17,819 sf Storage= 63,713 cf

Plug-Flow detention time= 341.6 min calculated for 1.370 af (58% of inflow)

Center-of-Mass det. time= 234.3 min (1,003.8 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 39

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	12.0" Round Culvert L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 ' S= 0.0170 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.36 cfs @ 12.74 hrs HW=138.19' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.36 cfs @ 4.28 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event
 Inflow = 45.26 cfs @ 12.08 hrs, Volume= 3.351 af
 Outflow = 26.74 cfs @ 12.19 hrs, Volume= 2.804 af, Atten= 41%, Lag= 6.4 min
 Primary = 23.29 cfs @ 12.19 hrs, Volume= 2.756 af
 Secondary = 3.45 cfs @ 12.19 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 139.25' @ 12.19 hrs Surf.Area= 15,882 sf Storage= 54,652 cf

Plug-Flow detention time= 187.7 min calculated for 2.804 af (84% of inflow)
 Center-of-Mass det. time= 121.1 min (909.3 - 788.2)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	66,765 cf	Custom Stage Data (Prismatic) Listed below

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 40

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	9,930	0	0
136.00	11,200	10,565	10,565
137.00	12,600	11,900	22,465
138.00	14,000	13,300	35,765
139.00	15,500	14,750	50,515
140.00	17,000	16,250	66,765

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	24.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	137.10'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	138.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.28 cfs @ 12.19 hrs HW=139.25' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 23.28 cfs of 27.29 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.71 cfs @ 6.86 fps)
 3=Orifice/Grate (Orifice Controls 21.57 cfs @ 5.39 fps)

Secondary OutFlow Max=3.44 cfs @ 12.19 hrs HW=139.25' TW=0.00' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 3.44 cfs @ 1.35 fps)

Summary for Pond 5CP: PROPOSED BASIN

Inflow Area = 56.030 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event
 Inflow = 393.14 cfs @ 12.08 hrs, Volume= 29.110 af
 Outflow = 112.20 cfs @ 12.42 hrs, Volume= 28.559 af, Atten= 71%, Lag= 20.3 min
 Primary = 106.57 cfs @ 12.42 hrs, Volume= 28.423 af
 Secondary = 5.63 cfs @ 12.42 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 177.10' @ 12.42 hrs Surf.Area= 113,987 sf Storage= 524,297 cf

Plug-Flow detention time= 153.3 min calculated for 28.555 af (98% of inflow)
 Center-of-Mass det. time= 142.0 min (930.2 - 788.2)

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 41

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	172.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	173.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	175.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=106.57 cfs @ 12.42 hrs HW=177.10' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 106.57 cfs @ 8.48 fps)
 2=Orifice/Grate (Passes < 30.12 cfs potential flow)
 3=Orifice/Grate (Passes < 24.36 cfs potential flow)
 4=Orifice/Grate (Passes < 58.97 cfs potential flow)

Secondary OutFlow Max=5.63 cfs @ 12.42 hrs HW=177.10' TW=0.00' (Dynamic Tailwater)

- 5=Broad-Crested Rectangular Weir (Weir Controls 5.63 cfs @ 1.60 fps)

Summary for Pond 5DP: PROPOSED BASIN

Inflow Area = 62.690 ac, 0.00% Impervious, Inflow Depth = 6.47" for 100-year event
 Inflow = 451.15 cfs @ 12.08 hrs, Volume= 33.803 af
 Outflow = 139.23 cfs @ 12.40 hrs, Volume= 33.252 af, Atten= 69%, Lag= 18.7 min
 Primary = 115.94 cfs @ 12.40 hrs, Volume= 32.373 af
 Secondary = 23.30 cfs @ 12.40 hrs, Volume= 0.879 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 147.67' @ 12.40 hrs Surf.Area= 116,531 sf Storage= 589,908 cf

Plug-Flow detention time= 144.8 min calculated for 33.252 af (98% of inflow)
 Center-of-Mass det. time= 134.6 min (917.1 - 782.5)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

SWNAS - Proposed Watershed Swamp River

Type III 24-hr 100-year Rainfall=7.90"

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Page 42

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,826	0	0
143.00	96,055	93,941	93,941
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	48.0" Round Culvert L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#2	Device 1	142.25'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	143.75'	36.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	145.25'	36.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.75'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=115.93 cfs @ 12.40 hrs HW=147.67' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Inlet Controls 115.93 cfs @ 9.23 fps)
- ↑ **2=Orifice/Grate** (Passes < 32.03 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 26.69 cfs potential flow)
- ↑ **4=Orifice/Grate** (Passes < 67.43 cfs potential flow)

Secondary OutFlow Max=23.29 cfs @ 12.40 hrs HW=147.67' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 23.29 cfs @ 2.53 fps)

Appendix C
Supporting Documentation



NOAA Atlas 14, Volume 10, Version 3
Location name: Town of Rockland,
Massachusetts, USA*
Latitude: 42.1521°, Longitude: -70.93°
Elevation: 150.61 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.302 (0.231-0.392)	0.376 (0.287-0.488)	0.497 (0.378-0.646)	0.597 (0.452-0.780)	0.735 (0.543-1.00)	0.837 (0.608-1.16)	0.948 (0.674-1.36)	1.08 (0.723-1.56)	1.28 (0.828-1.90)	1.46 (0.921-2.19)
10-min	0.428 (0.327-0.555)	0.533 (0.407-0.691)	0.704 (0.536-0.916)	0.847 (0.641-1.11)	1.04 (0.769-1.42)	1.19 (0.862-1.65)	1.34 (0.955-1.93)	1.53 (1.02-2.21)	1.82 (1.17-2.70)	2.06 (1.31-3.11)
15-min	0.504 (0.385-0.653)	0.627 (0.479-0.813)	0.829 (0.630-1.08)	0.996 (0.754-1.30)	1.23 (0.904-1.67)	1.40 (1.01-1.94)	1.58 (1.12-2.27)	1.80 (1.21-2.60)	2.14 (1.38-3.17)	2.43 (1.54-3.65)
30-min	0.700 (0.535-0.907)	0.872 (0.665-1.13)	1.15 (0.877-1.50)	1.39 (1.05-1.81)	1.71 (1.26-2.32)	1.94 (1.41-2.69)	2.20 (1.56-3.16)	2.51 (1.68-3.62)	2.98 (1.92-4.42)	3.38 (2.14-5.09)
60-min	0.896 (0.685-1.16)	1.12 (0.852-1.45)	1.48 (1.12-1.92)	1.77 (1.34-2.32)	2.19 (1.61-2.97)	2.49 (1.81-3.45)	2.82 (2.00-4.05)	3.22 (2.15-4.64)	3.82 (2.47-5.66)	4.33 (2.74-6.53)
2-hr	1.14 (0.872-1.46)	1.44 (1.10-1.85)	1.92 (1.47-2.48)	2.33 (1.77-3.02)	2.88 (2.14-3.90)	3.29 (2.40-4.54)	3.74 (2.68-5.34)	4.29 (2.88-6.13)	5.13 (3.33-7.54)	5.86 (3.72-8.74)
3-hr	1.32 (1.01-1.69)	1.66 (1.28-2.13)	2.23 (1.71-2.86)	2.69 (2.05-3.48)	3.34 (2.48-4.50)	3.81 (2.79-5.24)	4.33 (3.11-6.17)	4.97 (3.34-7.07)	5.96 (3.87-8.70)	6.81 (4.33-10.1)
6-hr	1.73 (1.33-2.20)	2.15 (1.66-2.73)	2.83 (2.18-3.62)	3.40 (2.61-4.36)	4.19 (3.13-5.59)	4.77 (3.50-6.49)	5.40 (3.88-7.60)	6.17 (4.16-8.69)	7.36 (4.79-10.6)	8.38 (5.35-12.3)
12-hr	2.26 (1.76-2.86)	2.75 (2.13-3.48)	3.55 (2.74-4.50)	4.21 (3.24-5.36)	5.12 (3.83-6.77)	5.79 (4.26-7.79)	6.52 (4.70-9.07)	7.40 (5.01-10.3)	8.73 (5.71-12.5)	9.86 (6.31-14.3)
24-hr	2.77 (2.16-3.48)	3.35 (2.61-4.21)	4.31 (3.35-5.43)	5.10 (3.94-6.45)	6.19 (4.65-8.12)	7.00 (5.17-9.34)	7.87 (5.69-10.8)	8.92 (6.06-12.3)	10.5 (6.88-14.8)	11.8 (7.59-17.0)
2-day	3.16 (2.47-3.94)	3.88 (3.04-4.84)	5.06 (3.94-6.33)	6.04 (4.68-7.58)	7.38 (5.58-9.61)	8.38 (6.22-11.1)	9.46 (6.87-12.9)	10.8 (7.34-14.7)	12.7 (8.38-17.9)	14.4 (9.30-20.5)
3-day	3.46 (2.71-4.29)	4.23 (3.32-5.26)	5.50 (4.30-6.85)	6.55 (5.09-8.19)	7.99 (6.05-10.4)	9.06 (6.74-11.9)	10.2 (7.44-13.9)	11.6 (7.94-15.8)	13.7 (9.06-19.1)	15.6 (10.0-22.0)
4-day	3.73 (2.94-4.63)	4.53 (3.56-5.62)	5.83 (4.57-7.25)	6.92 (5.39-8.62)	8.40 (6.37-10.9)	9.51 (7.08-12.5)	10.7 (7.79-14.5)	12.1 (8.31-16.4)	14.3 (9.46-19.9)	16.2 (10.5-22.7)
7-day	4.50 (3.55-5.54)	5.32 (4.20-6.56)	6.67 (5.25-8.24)	7.79 (6.09-9.66)	9.34 (7.10-12.0)	10.5 (7.83-13.6)	11.7 (8.54-15.7)	13.2 (9.05-17.7)	15.4 (10.2-21.1)	17.3 (11.2-24.0)
10-day	5.21 (4.12-6.39)	6.05 (4.79-7.44)	7.44 (5.86-9.16)	8.59 (6.73-10.6)	10.2 (7.75-13.0)	11.4 (8.49-14.7)	12.6 (9.19-16.7)	14.1 (9.70-18.8)	16.2 (10.8-22.2)	18.1 (11.7-25.0)
20-day	7.27 (5.78-8.86)	8.20 (6.51-10.0)	9.73 (7.70-11.9)	11.0 (8.65-13.5)	12.7 (9.71-16.0)	14.1 (10.5-17.9)	15.4 (11.2-20.0)	16.9 (11.7-22.3)	18.8 (12.6-25.4)	20.4 (13.3-27.9)
30-day	8.99 (7.16-10.9)	9.99 (7.95-12.1)	11.6 (9.22-14.1)	13.0 (10.2-15.8)	14.8 (11.3-18.5)	16.3 (12.2-20.5)	17.7 (12.8-22.7)	19.1 (13.3-25.1)	21.0 (14.0-28.1)	22.3 (14.6-30.4)
45-day	11.1 (8.91-13.5)	12.2 (9.76-14.8)	14.0 (11.1-17.0)	15.4 (12.2-18.8)	17.5 (13.3-21.6)	19.0 (14.2-23.8)	20.6 (14.8-26.1)	22.0 (15.3-28.6)	23.7 (15.9-31.5)	24.8 (16.2-33.6)
60-day	13.0 (10.4-15.6)	14.1 (11.3-17.0)	16.0 (12.7-19.3)	17.5 (13.9-21.2)	19.6 (15.0-24.2)	21.3 (15.9-26.5)	22.9 (16.5-28.9)	24.3 (17.0-31.5)	25.9 (17.4-34.4)	27.0 (17.7-36.3)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

Water Features

-  Streams and Canals

Transportation

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

Background

-  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:25,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts

Survey Area Data: Version 17, Sep 3, 2021

Soil Survey Area: Plymouth County, Massachusetts

Survey Area Data: Version 14, Sep 2, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Aug 26, 2014—Oct 15, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Scarboro and Birdsall soils, 0 to 3 percent slopes	A/D	4.5	0.1%
31A	Walpole sandy loam, 0 to 3 percent slopes	B/D	8.8	0.3%
51	Swansea muck, 0 to 1 percent slopes	B/D	67.1	2.1%
52	Freetown muck, 0 to 1 percent slopes	B/D	76.2	2.4%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	41.3	1.3%
245B	Hinckley loamy sand, 3 to 8 percent slopes	A	10.6	0.3%
245C	Hinckley loamy sand, 8 to 15 percent slopes	A	2.8	0.1%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	158.0	5.0%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	B	31.6	1.0%
302B	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	C	2.7	0.1%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	29.8	0.9%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	84.5	2.7%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	C/D	0.4	0.0%
317B	Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	C	37.7	1.2%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	5.7	0.2%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B	5.0	0.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
424B	Canton fine sandy loam, 3 to 8 percent slopes, extremely bouldery	A	0.4	0.0%
602	Urban land, 0 to 15 percent slopes		202.6	6.4%
623C	Woodbridge-Urban land complex, 3 to 15 percent slopes	C/D	35.3	1.1%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.0	0.1%
652	Udorthents, refuse substratum	A	10.7	0.3%
653	Udorthents, sandy	A	38.6	1.2%
654	Udorthents, loamy	A	65.7	2.1%
655	Udorthents, wet substratum		82.0	2.6%
Subtotals for Soil Survey Area			1,004.1	31.7%
Totals for Area of Interest			3,172.0	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		9.6	0.3%
6A	Scarboro muck, coastal lowland, 0 to 3 percent slopes	A/D	9.8	0.3%
11A	Rainberry coarse sand, 0 to 3 percent slopes	A/D	1.2	0.0%
23A	Tihonet coarse sand, 0 to 3 percent slopes	A/D	7.5	0.2%
37A	Massasoit - Mashpee complex, 0 to 3 percent slopes	D	35.4	1.1%
48A	Brockton sandy loam, 0 to 3 percent slopes, extremely stony	C/D	15.8	0.5%
49A	Norwell mucky fine sandy loam, 0 to 3 percent slopes, extremely stony	D	61.3	1.9%
49B	Norwell mucky fine sandy loam, 3 to 8 percent slopes, extremely stony	D	6.4	0.2%
51A	Swansea muck, 0 to 1 percent slopes	B/D	68.0	2.1%
52A	Freetown muck, 0 to 1 percent slopes	B/D	80.3	2.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
53A	Freetown muck, ponded, 0 to 1 percent slopes	B/D	22.0	0.7%
69B	Mattapoisett loamy sand, 3 to 8 percent slopes, extremely stony	D	12.8	0.4%
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	D	2.7	0.1%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	D	103.9	3.3%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	4.9	0.2%
72A	Whitman fine sandy loam, 0 to 3 percent slopes	D	7.7	0.2%
110B	Canton-Chatfield-Rock outcrop complex, 0 to 8 percent slopes, very stony	B	24.6	0.8%
110C	Canton-Chatfield-Rock outcrop complex, 8 to 15 percent slopes, very stony	B	189.0	6.0%
110E	Canton-Chatfield-Rock outcrop complex, 15 to 35 percent slopes, very stony	B	1.4	0.0%
253B	Hinckley loamy sand, 3 to 8 percent slopes	A	35.6	1.1%
253C	Hinckley loamy sand, 8 to 15 percent slopes	A	9.0	0.3%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	91.6	2.9%
256B	Deerfield loamy fine sand, 3 to 8 percent slopes	A	28.9	0.9%
259B	Carver loamy coarse sand, 3 to 8 percent slopes	A	8.4	0.3%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	A/D	0.0	0.0%
289B	Hinckley gravelly sandy loam, 3 to 8 percent slopes, bouldery	A	37.7	1.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
289C	Hinckley gravelly sandy loam, 8 to 15 percent slopes, bouldery	A	1.0	0.0%
306B	Paxton fine sandy loam, 0 to 8 percent slopes, very stony	C	14.8	0.5%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	6.4	0.2%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	13.1	0.4%
311A	Woodbridge fine sandy loam, 0 to 3 percent slopes, very stony	C/D	5.1	0.2%
311B	Woodbridge fine sandy loam, 3 to 8 percent slopes, very stony	C/D	75.2	2.4%
316B	Scituate gravelly sandy loam, 3 to 8 percent slopes, very stony	C/D	13.3	0.4%
320B	Birchwood sand, 3 to 8 percent slopes	B/D	3.5	0.1%
420A	Canton very fine sandy loam, 0 to 3 percent slopes	A	0.9	0.0%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	98.7	3.1%
420C	Canton fine sandy loam, 8 to 15 percent slopes	B	2.6	0.1%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	51.0	1.6%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	B	7.1	0.2%
424B	Canton very fine sandy loam, 3 to 8 percent slopes, extremely bouldery	A	104.5	3.3%
424C	Canton very fine sandy loam, 8 to 15 percent slopes, extremely bouldery	A	9.5	0.3%
426A	Newfields fine sandy loam, 0 to 3 percent slopes	B	3.6	0.1%
426B	Newfields fine sandy loam, 3 to 8 percent slopes	B	13.5	0.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
427A	Newfields fine sandy loam, 0 to 3 percent slopes, extremely stony	B	53.3	1.7%
427B	Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony	B	30.5	1.0%
435B	Plymouth loamy coarse sand, 3 to 8 percent slopes	A	1.8	0.1%
453B	Gloucester - Canton complex, 3 to 8 percent slopes, extremely bouldery	A	12.2	0.4%
453C	Gloucester - Canton complex, 8 to 15 percent slopes, extremely bouldery	A	9.4	0.3%
600	Pits, gravel		20.3	0.6%
602B	Urban land, 0 to 8 percent slopes		87.2	2.7%
603A	Urban land, wet substratum, 0 to 3 percent slopes		3.9	0.1%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.9	0.1%
628B	Canton - Urban land complex, 0 to 8 percent slopes	A	11.9	0.4%
640B	Urban land, till substratum, 0 to 8 percent slopes		101.1	3.2%
641B	Urban land, outwash substratum, 0 to 8 percent slopes		51.9	1.6%
652E	Udorthents, refuse substratum, 8 to 35 percent slopes	B	4.4	0.1%
654B	Udorthents, loamy, 0 to 8 percent slopes	B	220.1	6.9%
655A	Udorthents, wet substratum, 0 to 3 percent slopes	B/D	49.9	1.6%
656B	Udorthents - Urban land complex, 0 to 8 percent slopes	B	2.7	0.1%
657A	Aquepts, 0 to 3 percent slopes	D	99.6	3.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
659B	Udorthents, 0 to 8 percent slopes, gravelly	B	99.4	3.1%
660C	Udorthents, 8 to 15 percent slopes, gravelly	B	0.8	0.0%
665B	Udipsamments, 0 to 8 percent slopes	A	3.3	0.1%
700A	Udipsamments, wet substratum, 0 to 3 percent slopes	A/D	2.3	0.1%
Subtotals for Soil Survey Area			2,167.8	68.3%
Totals for Area of Interest			3,172.0	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher