# DRAINAGE SUMMARY

**for**

®USRD

## McDonald's Corporation
## L/C #29-1553

**Block 385, Lot 2.07**
**940 Easton Avenue (CR 527) & John F. Kennedy Boulevard**
**Township of Franklin**
**Somerset County, New Jersey 08873**

**Prepared by:**


DYNAMIC ENGINEERING

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**June 2022**
**DEC #0114-99-192**

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**APPENDIX**

## I. PROJECT DESCRIPTION

The subject site is located at 940 Easton Avenue (CR 527) and John F. Kennedy Boulevard in the Township of Franklin, Somerset County, New Jersey. The site is identified as Block 385, Lot 2.07 on Tax Map Sheet #83 of the Township of Franklin Tax Maps and consists of 109,278 SF (2.51 Ac) which is developed within a 1,194,328 SF (27.42 acres). The overall site consists of a shopping center with various retail/commercial uses with a stand-alone 3,478 SF vacant restaurant and associated site amenities. The existing conditions of the subject site have been verified by the ALTA/NSPS Land Title Survey, prepared by Control Point Associates, Inc. The proposed development consists of razing the stand-alone restaurant and constructing a new 4,456 SF McDonald's restaurant with side-by-side drive-thru lanes and associated site improvements including parking, landscaping, lighting and stormwater management facilities.

This analysis has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of a proposed McDonald's on Block 385, Lot 2.07 in the Township of Franklin, Somerset County, New Jersey.

Since the project will result in more than one (1) acre of land disturbance it is classified as a "major development" as defined within NJAC 7:8., the site has been designed to meet the stormwater runoff quantity standards set forth by the Township of Franklin Land Use Ordinance and NJAC 7:8. Since the subject site is fully developed in the existing condition and is located within the Metropolitan Planning Area (PA-1), the development is exempt from the groundwater recharge standards set forth in NJAC 7:8-5.4. Since the proposed development includes a reduction in proposed motor vehicle surface onsite by 11,296 SF (0.26 Ac), the subject development is also exempt from the stormwater quality standards set forth in NJAC 7:8-5.5.

Accordingly, the following items are addressed within this report:

- Groundwater recharge standards (7:8-5.4)
- Stormwater runoff quality standards (7:8-5.5)
- Stormwater runoff quantity standards (7:8-5.6)

## II. EXISTING SITE CONDITIONS

The project area to be analyzed consists of approximately 1.3 acres within the overall site. Currently, the majority of stormwater runoff generated by the site sheet flows overland into conveyance structures that ultimately discharges into Seeley's Brook located along the eastern property line. The

remaining stormwater runoff generated by the site flows off-site onto Easton Avenue and John F. Kennedy Boulevard Right-of-Ways via overland flow.

The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included within the Appendix of this report:

**Study Area Easton Avenue (DA-1):** This area consists of grass covered open space in the northwest corner of the site. Under existing conditions, stormwater runoff generated by this area flows offsite via overland flow onto Easton Avenue to the existing inlet located in the area of the property.

**Study Area John F. Kennedy Boulevard (DA-2):** This area consists of grass covered open space along the western portion of the property. Under existing conditions, stormwater runoff generated by this area flows offsite via overland flow to an existing inlet located at the corner of Easton Avenue and John F. Kennedy Boulevard.

**Study Area Seeley's Brook (DA-3):** This area consists of the entire building, as well as the entire parking area and grass covered space. The stormwater runoff generated by the roof and majority of the parking area are collected via roof leaders and inlets, and conveyed to an existing flared end section outfall within Seeley's Brook.

Based on Somerset County soils survey information, the soil types native to the site include:

| Somerset County Soil Survey Information | | |
|---|---|---|
| **Soil Type (Symbol)** | **Soil Type (Name)** | **Hydrologic Soil Group** |
| KkoC | Klinesville Channery loam, 6 to 12 percent slopes | D |
| RehA | Reaville silt loam, 0 to 2 percent slopes | C |
| RorAt* | Rowland silt loam, 0 to 2 percent slopes, frequently flooded | C |

*RorAt soil only found along the eastern lot line of the plaza property

## III. PROPOSED SITE CONDITIONS

The proposed site improvements include the demolition of an existing vacant fast food restaurant and construction of a new McDonald's fast food restaurant, side-by-side drive-thru lanes, and associated site improvements including off street parking, landscaping, lighting, and stormwater management facilities. The proposed stormwater management facilities include associated collection and conveyance facilities. The proposed site improvements will result in a decrease of overall impervious coverage by 11,296 SF, decreasing the percentage of impervious coverage on-site from 66.9% to 56.6%.

The existing drainage patterns on-site shall remain unchanged, allowing runoff generated by the site to continue to drain in the northeastern direction where it will be collected by the aforementioned inlets and continue to be conveyed to Easton Avenue.

The proposed site conditions have been evaluated using the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map included within the Appendix of this report:

**Study Area Easton Avenue (DA-1):** This area consists of grass covered open space in the northwest corner of the site. Under existing conditions, stormwater runoff generated by this area flows offsite via overland flow onto Easton Avenue to the existing inlet located in the area of the property.

**Study Area John F. Kennedy Boulevard (DA-2):** This area consists of grass covered open space along the western portion of the property. Under existing conditions, stormwater runoff generated by this area flows offsite via overland flow to an existing inlet located at the corner of Easton Avenue and John F. Kennedy Boulevard.

**Study Area Seeley's Brook (DA-3):** This area consists of the entire building, as well as the entire parking area and grass covered space. The stormwater runoff generated by the roof and majority of the parking area are collected via roof leaders and inlets, and conveyed to an existing flared end section outfall within Seeley's Brook.

## IV. DESIGN METHODOLOGY

The stormwater management design intent for this project is to provide measures as required to address applicable aspects of the Township of Franklin Land Use Ordinance and NJAC 7:8. In

order to prepare the stormwater management design for the subject project, extensive initial investigation of the property and topography was performed. On-site review of the tract was performed by Control Point Associates, Inc. to verify existing site conditions and land cover characteristics. Control Point Associates, Inc. was contracted to prepare the ALTA/NSPS Land Title Survey with topography to depict the existing site conditions.

Based on our review of the existing site conditions and survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. A grading plan was developed for the proposed site improvements with consideration to the existing drainage patterns. The plan was designed to ensure runoff from the proposed development could be directed to the proposed stormwater management system in order to address the applicable sections of the Township of Franklin Use Ordinance and NJAC 7:8. Furthermore, Whitestone Associates, Inc. performed soil borings within the site to establish the seasonal high-water table.

The rainfall data utilized for the analysis of the existing and proposed site conditions is based upon the New Jersey 24 Hour Rainfall Frequency Data for Somerset County as published by the USDA NRCS utilizing the NOAA Region D rainfall distribution.

Under proposed conditions, the majority of stormwater runoff from the subject site is conveyed via overland flow and collected by the on-site stormwater conveyance system. The stormwater runoff quantity requirements set forth by the Township of Franklin and NJAC 7:8 have been satisfied by reducing the impervious coverage by 11,296 SF, decreasing the percentage of impervious coverage on-site from 66.9% to 56.6%. This reduction in impervious coverage ensures that the post construction stormwater runoff volume from the 2,10,100-year design storm event, does not exceed pre-construction runoff rates at any time.

Further, since the project does not generate more than ¼ acre of impervious surface, the project is exempt from stormwater quality standards per NJAC 7:8. However, the site has been designed to provide two (2) manufactured treatment devices comply with water quality standards set forth by the Delaware and Raritan Canal Commission. Both manufactured treatment devices have been designed with a TSS Removal Rate of 80% meaning the site meets water quality requirements.

As was mentioned previously, the proposed development is exempt from the groundwater recharge criteria set forth by NJAC 7:8.(b)2 by being located within a "urban redevelopment area" of Metropolitan Planning Area (PA-1).

## V. RUNOFF RATES

The following is a comparison of pre and post-development runoff rates:

| Existing and Proposed Conditions Peak Runoff Results Summary for Total Site | | | |
|---|---|---|---|
| **Design Storm** | **Existing Runoff Rate** | **Proposed Runoff Rate** | **Difference** |
| **2 Year** | 6.63 CFS | 6.21 CFS | -0.42 CFS |
| **10 Year** | 10.70 CFS | 10.29 CFS | -0.41 CFS |
| **100 Year** | 18.44 CFS | 18.11 CFS | -0.33 CFS |

As can be seen above, the proposed improvements will result in a decrease (-0.33 CFS) in post-development runoff rates when compared to existing conditions for the given design storms. Existing offsite stormwater management features will not be impacted; therefore, the same features will have adequate capacity for post-development runoff rates and further stormwater management measures are not warranted.

## VI. NON-STRUCTURAL STORMWATER MANAGEMENT STRATEGIES

The site design has been prepared to implement non-structural stormwater management strategies in accordance with NJAC 7:8-5.3 to the maximum extent practicable. The following is a detailed narrative on how this application addresses each of the nine (9) nonstructural strategies established in NJAC 7:8-5.3 to the maximum extent practicable. The strategies implemented at this site location include the following:

**Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss:** The existing development area consists of a vacant building with associated site improvements lot surrounding it. Stormwater runoff traverses the site via overland flow to an existing storm sewer system before discharging into Easton Avenue (CR 527). In proposed conditions, new areas of pervious coverage are proposed to meet the water quality standards set forth in NJAC 7:8. Therefore, the proposed stormwater management design provides water quality benefits that are not provided in existing conditions.

**Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces:** As noted previously, the site is currently developed with a significant area of impervious coverage. The development has been designed to minimize impervious surface and reduces the

amount of vehicular traveled surfaces on the site. Furthermore, per the Township of Franklin, the maximum impervious coverage is 70% while the proposed impervious coverage for the site is only 53.0%. The proposed development has been designed to be in accordance with this standard.

**Maximize the protection of natural drainage features and vegetation:** The majority of the site has previously been disturbed. The proposed development was designed with consideration to the existing drainage patterns and developed areas. Environmentally sensitive areas along Easton Avenue (CR 527) and John F. Kennedy Boulevard are proposed to remain undisturbed or be revegetated.

**Minimize the decrease in the pre-development "time of concentration":** The proposed development was designed to minimize the decrease in the pre-development "time of concentration" to the maximum extent feasible. The development is designed with more pervious coverage that satisfy the water quality regulations set forth by NJAC 7:8 and the Delaware and Raritan Canal Commission. In all cases, the post construction time of concentration either remains the same or is proposed to increase in comparison to pre-construction conditions.

**Minimize land disturbance including clearing and grading:** The proposed grading was designed to meet existing topography to the maximum extent practical and has been focused on previously disturbed areas of the site.

**Minimize soil compaction:** The proposed development proposes to minimize soil compaction to the maximum extent practicable by utilizing lightweight construction equipment for landscaped areas of the site.

**Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawn fertilizers and pesticides:** The proposed landscaping design has been prepared to provide an aesthetic improvement to the interior and perimeter of the site through use of a variety of native tree and shrub species that encourage retention.

**Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas:** The majority of the site was previously developed with no open channel conveyance. There are no vegetated open-channel conveyance systems proposed on-site.

**Provide other source control to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into the stormwater:** The site has been designed with inlets with eco-curb heads to limit trash and debris from entering the system. It is anticipated that the fast food restaurant will not process, store, or handle any hazardous materials. The applicant intends to apply fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act. Furthermore, regularly scheduled maintenance of the stormwater management facilities as described in an Operations and Maintenance Manual will remove any trash and debris that may have entered the stormwater management facilities.

In addition to meeting the low impact development techniques described above, the DRCC utilizes the New Jersey Nonstructural Stormwater Management Strategies Point System (NSPS) as a tool to assist engineers, planners and regulators to demonstrate that the site incorporates the strategies to the maximum extent feasible. The NSPS spreadsheet has been included in the Appendix of this report demonstrating compliance with the DRCC regulations.

## VII. WATER QUALITY

Per DRCC regulations, where existing impervious surfaces are being reconstructed, these areas are considered new impervious surfaces and therefore will require water quality treatment to provide 80% TSS removal. The design for the subject development meets the obligation for TSS removal by incorporating more landscaped areas on site to meet the TSS removal rate of 80% for impervious surfaces on site. Therefore, the stormwater management design for the proposed development satisfies the water quality aspect of the Township of Franklin's Land Use Ordinance, NJAC 7:8, and the Delaware and Raritan Canal Commission.

## VIII. GROUNDWATER RECHARGE ANALYSIS

Pursuant to NJAC 7:8-5.4 and NJAC 7:45-8.5, through hydrologic and hydraulic analysis, the site and its

stormwater management measures maintain 100 percent of the average annual preconstruction groundwater recharge volume for the site due to the proposed increase in pervious area within the property.

## IX. CONCLUSION

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels.

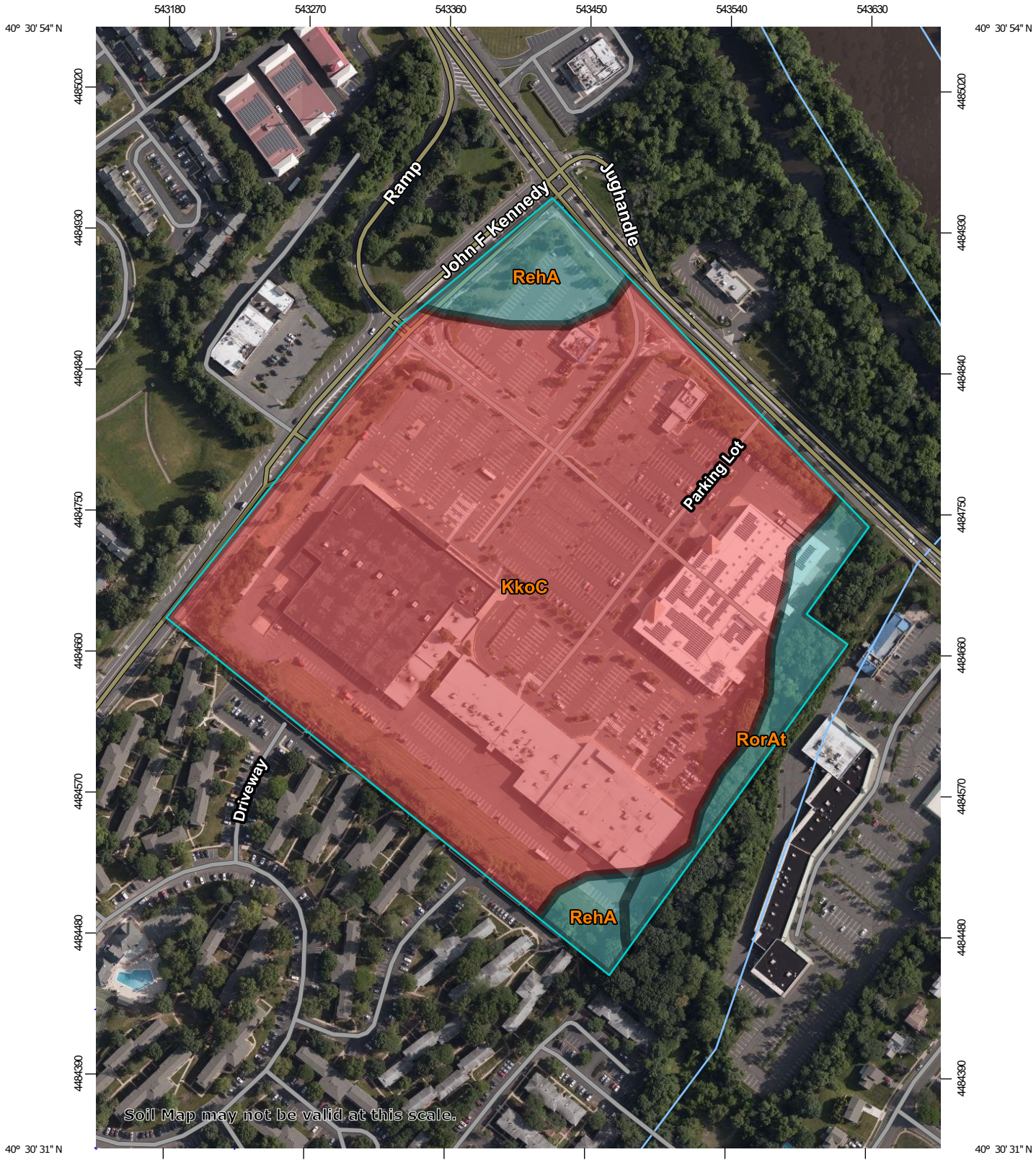
The Regulations for the Review Zone A of the Delaware and Raritan Canal State Park (NJAC 7:45) require stormwater discharges to the Raritan River to be treated to a TSS Removal Rate of 80% for runoff being discharged.

Furthermore, the stormwater management design shall reduce peak flow rates for the proposed development area and meets the minimum peak flow reduction for the 2, 10, and 10-year storm frequencies as dictated by NJAC 7:8.

With this stated, it is evident that the proposed development will not have a negative impact on the existing stormwater management system, water quality, or groundwater recharge on site nor within the vicinity of the subject parcel.

# APPENDIX

# NRCS WEB SOIL SURVEY




Map Scale: 1:3,490 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Lines**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Points**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Somerset County, New Jersey
Survey Area Data: Version 18, Jun 1, 2020

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

Date(s) aerial images were photographed: Jun 22, 2019—Jul 13, 2019

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 |
|---|---|---|---|---|
| KkoC | Klinesville channery loam, 6 to 12 percent slopes | D | 25.7 | 87.2% |
| RehA | Reaville silt loam, 0 to 2 percent slopes | C | 2.1 | 7.0% |
| RorAt | Rowland silt loam, 0 to 2 percent slopes, frequently flooded | C | 1.7 | 5.8% |
| **Totals for Area of Interest** | | | **29.5** | **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

# TIME OF CONCENTRATION (TC) CALCULATIONS – EXISTING & PROPOSED CONDITIONS

DYNAMIC ENGINEERING
1904 Main Street, Lake Como, NJ 07719
(732) 974-0198

Date: 4/15/2022
Project: Proposed McDonald's Restaurant
Project No: 0114-99-192

Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Existing
**Drainage Area:** DA-1

- ***Sheet Flow*** **:**

| | | AB | | | | |
|---|---|---|---|---|---|---|
| 1. | Surface Description | Short Grass, Prairie | | | | |
| 2. | Manning's Roughness Coefficient, $n$ | 0.15 | | | | |
| 3. | Flow Length, $L$ { total $L \le 100$ ft } | 39.0 ft | | | | |
| 4. | Two-Year 24-hour Rainfall, $p_2$ for . . . Somerset County | 3.34 in | 3.34 in | 3.34 in | | |
| 5. | Land Slope, $s$ (ft/ft) | 0.290 ft/ft | | | | |
| 6. | Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.026 hr | + 0.000 hr | + 0.000 hr | = | 0.026 hr |

- ***Shallow Concentrated Flow*** **:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 7. | Surface Description | | | | | |
| 8. | Flow Length, $L$ | | | | | |
| 9. | Watercourse Slope, $s$ | | | | | |
| 10. | Average velocity, $V$ { see Figure 3.1) | | | | | |
| 11. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + 0.000 hr | + 0.000 hr | = | 0.000 hr |

- ***Channel Flow*** **:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 12. | Pipe Diameter, $D$ | | | | | |
| 13. | Cross-Sectional Flow Area, $A$ | | | | | |
| 14. | Wetted Perimeter, $p_w$ | | | | | |
| 15. | Hydraulic Radius, $r = A / p_w$ | | | | | |
| 16. | Channel Slope, $s$ | | | | | |
| 17. | Pipe Material | | | | | |
| 18. | Manning's Roughness Coefficient, $n$ | | | | | |
| 19. | Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | | | | | |
| 20. | Flow Length, $L$ | | | | | |
| 21. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + 0.000 hr | + 0.000 hr | = | 0.000 hr |
| 22. | Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 and 21 } | | | | | 0.026 hr |
| | | | | | | **1.5 min** |

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Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Existing
**Drainage Area:** DA-2

- ***Sheet Flow*** **:**

| | | AB | | | | |
|---|---|---|---|---|---|---|
| 1. | Surface Description | Short Grass, Prairie | | | | |
| 2. | Manning's Roughness Coefficient, $n$ | 0.15 | | | | |
| 3. | Flow Length, $L$ { total $L \le 100$ ft } | 67.0 ft | | | | |
| 4. | Two-Year 24-hour Rainfall, $p_2$ for . . . Somerset County | 3.34 in | 3.34 in | 3.34 in | | |
| 5. | Land Slope, $s$ (ft/ft) | 0.060 ft/ft | | | | |
| 6. | Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.075 hr | + 0.000 hr | + 0.000 hr | = | 0.075 hr |

- ***Shallow Concentrated Flow*** **:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 7. | Surface Description | | | | | |
| 8. | Flow Length, $L$ | | | | | |
| 9. | Watercourse Slope, $s$ | | | | | |
| 10. | Average velocity, $V$ { see Figure 3.1) | | | | | |
| 11. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + 0.000 hr | + 0.000 hr | = | 0.000 hr |

- ***Channel Flow*** **:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 12. | Pipe Diameter, $D$ | | | | | |
| 13. | Cross-Sectional Flow Area, $A$ | | | | | |
| 14. | Wetted Perimeter, $p_w$ | | | | | |
| 15. | Hydraulic Radius, $r = A / p_w$ | | | | | |
| 16. | Channel Slope, $s$ | | | | | |
| 17. | Pipe Material | | | | | |
| 18. | Manning's Roughness Coefficient, $n$ | | | | | |
| 19. | Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | | | | | |
| 20. | Flow Length, $L$ | | | | | |
| 21. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + 0.000 hr | + 0.000 hr | = | 0.000 hr |
| 22. | Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 and 21 } | | | | | 0.075 hr |
| | | | | | | **4.5 min** |

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Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Existing
**Drainage Area:** DA-3

### • Sheet Flow:

| | AB | BC | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Surface Description | Smooth Surfaces | Short Grass, Prairie | | | | | |
| 2. Manning's Roughness Coefficient, $n$ | 0.011 | 0.15 | | | | | |
| 3. Flow Length, $L$ { total $L \le 100$ ft } | 5.0 ft | 95.0 ft | | | | | |
| 4. Two-Year 24-hour Rainfall, $p_2$ for Somerset County | 3.34 in | 3.34 in | 3.34 in | | | | |
| 5. Land Slope, $s$ (ft/ft) | 0.032 ft/ft | 0.032 ft/ft | | | | | |
| 6. Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.001 hr | + 0.127 hr | + 0.000 hr | = | 0.129 hr | | |

### • Shallow Concentrated Flow:

| | CD | DE | | | | | |
|---|---|---|---|---|---|---|---|
| 7. Surface Description | Unpaved | Paved | | | | | |
| 8. Flow Length, $L$ | 134.0 ft | 100.0 ft | | | | | |
| 9. Watercourse Slope, $s$ | 0.032 ft/ft | 0.050 ft/ft | | | | | |
| 10. Average velocity, $V$ { see Figure 3.1) | 2.89 ft/s | 4.55 ft/s | | | | | |
| 11. Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.013 hr | + 0.006 hr | + 0.000 hr | = | 0.019 hr | | |

### • Channel Flow:

| | EF | | | | | | |
|---|---|---|---|---|---|---|---|
| 12. Pipe Diameter, $D$ | 15 in | | | | | | |
| 13. Cross-Sectional Flow Area, $A$ | 1.227 sf | | | | | | |
| 14. Wetted Perimeter, $p_w$ | 3.9 ft | | | | | | |
| 15. Hydraulic Radius, $r = A / p_w$ | 0.3 ft | | | | | | |
| 16. Channel Slope, $s$ | 0.017 ft/ft | | | | | | |
| 17. Pipe Material | HDPE | | | | | | |
| 18. Manning's Roughness Coefficient, $n$ | 0.010 | | | | | | |
| 19. Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | 9.00 ft/s | | | | | | |
| 20. Flow Length, $L$ | 269.0 | | | | | | |
| 21. Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.008 hr | + 0.000 hr | + 0.000 hr | = | 0.008 hr | | |
| 22. Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 and 21 } | | | | | 0.156 hr | | |
| | | | | | **9.4 min** | | |

DYNAMIC ENGINEERING

1904 Main Street, Lake Como, NJ 07719
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Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Proposed
**Drainage Area:** DA-1

- ***Sheet Flow*:**

| | | AB | | | | |
|---|---|---|---|---|---|---|
| 1. | Surface Description | Short Grass, Prairie | | | | |
| 2. | Manning's Roughness Coefficient, $n$ | 0.15 | | | | |
| 3. | Flow Length, $L$ { total $L \le 100$ ft } | 100.0 ft | | | | |
| 4. | Two-Year 24-hour Rainfall, $p_2$ for Somerset County | 3.34 in | 3.34 in | 3.34 in | | |
| 5. | Land Slope, $s$ (ft/ft) | 0.062 ft/ft | | | | |
| 6. | Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.102 hr | + 0.000 hr | + ###### | = | 0.102 hr |

- ***Shallow Concentrated Flow*:**

| | | BC | | | | |
|---|---|---|---|---|---|---|
| 7. | Surface Description | Unpaved | | | | |
| 8. | Flow Length, $L$ | 140.0 ft | | | | |
| 9. | Watercourse Slope, $s$ | 0.062 ft/ft | | | | |
| 10. | Average velocity, $V$ { see Figure 3.1) | 4.02 ft/s | | | | |
| 11. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.010 hr | + 0.000 hr | + ###### | = | 0.010 hr |

- ***Channel Flow*:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 12. | Pipe Diameter, $D$ | | | | | |
| 13. | Cross-Sectional Flow Area, $A$ | | | | | |
| 14. | Wetted Perimeter, $p_w$ | | | | | |
| 15. | Hydraulic Radius, $r = A / p_w$ | | | | | |
| 16. | Channel Slope, $s$ | | | | | |
| 17. | Pipe Material | | | | | |
| 18. | Manning's Roughness Coefficient, $n$ | | | | | |
| 19. | Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | | | | | |
| 20. | Flow Length, $L$ | | | | | |
| 21. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + 0.000 hr | + ###### | = | 0.000 hr |
| 22. | Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 and 21 } | | | | | 0.111 hr |
| | | | | | | **6.7 min** |

DYNAMIC ENGINEERING

1904 Main Street, Lake Como, NJ 07719
(732) 974-0198

Date: 4/15/2022
Project: Proposed McDonald's Restaurant
Project No: 0114-99-192

Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Proposed
**Drainage Area:** DA-2

| | AB | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **• *Sheet Flow:*** | | | | | | | | |
| 1. Surface Description | Short Grass, Prairie | | | | | | | |
| 2. Manning's Roughness Coefficient, $n$ | 0.15 | | | | | | | |
| 3. Flow Length, $L$ { *total L ≤ 100 ft* } | 67.0 ft | | | | | | | |
| 4. Two-Year 24-hour Rainfall, $p_2$ for Somerset County | 3.34 in | 3.34 in | | 3.34 in | | | | |
| 5. Land Slope, $s$ *(ft/ft)* | 0.060 ft/ft | | | | | | | |
| 6. Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.075 hr | + | 0.000 hr | + | ###### | = | 0.075 hr | |
| **• *Shallow Concentrated Flow:*** | | | | | | | | |
| 7. Surface Description | | | | | | | | |
| 8. Flow Length, $L$ | | | | | | | | |
| 9. Watercourse Slope, $s$ | | | | | | | | |
| 10. Average velocity, $V$ *{ see Figure 3.1)* | | | | | | | | |
| 11. Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + | 0.000 hr | + | ###### | = | 0.000 hr | |
| **• *Channel Flow:*** | | | | | | | | |
| 12. Pipe Diameter, $D$ | | | | | | | | |
| 13. Cross-Sectional Flow Area, $A$ | | | | | | | | |
| 14. Wetted Perimeter, $p_w$ | | | | | | | | |
| 15. Hydraulic Radius, $r = A / p_w$ | | | | | | | | |
| 16. Channel Slope, $s$ | | | | | | | | |
| 17. Pipe Material | | | | | | | | |
| 18. Manning's Roughness Coefficient, $n$ | | | | | | | | |
| 19. Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | | | | | | | | |
| 20. Flow Length, $L$ | | | | | | | | |
| 21. Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.000 hr | + | 0.000 hr | + | ###### | = | 0.000 hr | |
| 22. Watershed or subarea Time of Concentration, $T_c$ { *add $T_t$ in steps 6, 11 and 21* } | | | | | | | 0.075 hr | |
| | | | | | | | **4.5 min** | |

DYNAMIC ENGINEERING

1904 Main Street, Lake Como, NJ 07719
(732) 974-0198

Date: 4/15/2022
Project: Proposed McDonald's Restaurant
Project No: 0114-99-192

Calculated By: ANV
Checked By: TD

## Worksheet 3: Time of Concentration ($T_c$) Calculations

**Land Condition:** Proposed
**Drainage Area:** DA-3

- ***Sheet Flow*:**

| | | AB | BC | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1. | Surface Description | Smooth Surfaces | Short Grass, Prairie | | | | | |
| 2. | Manning's Roughness Coefficient, $n$ | 0.011 | 0.15 | | | | | |
| 3. | Flow Length, $L$ { *total* $L \le 100$ *ft* } | 5.0 ft | 95.0 ft | | | | | |
| 4. | Two-Year 24-hour Rainfall, $p_2$ for Somerset County | 3.34 in | 3.34 in | 3.34 in | | | | |
| 5. | Land Slope, $s$ *(ft/ft)* | 0.032 ft/ft | 0.032 ft/ft | | | | | |
| 6. | Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$ | 0.001 hr | + 0.127 hr | + ###### | = | 0.129 hr | | |

- ***Shallow Concentrated Flow*:**

| | | CD | DE | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7. | Surface Description | Unpaved | Paved | | | | | |
| 8. | Flow Length, $L$ | 118.0 ft | 72.0 ft | | | | | |
| 9. | Watercourse Slope, $s$ | 0.032 ft/ft | 0.050 ft/ft | | | | | |
| 10. | Average velocity, $V$ { *see Figure 3.1)* | 2.89 ft/s | 4.55 ft/s | | | | | |
| 11. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.011 hr | + 0.004 hr | + ###### | = | 0.016 hr | | |

- ***Channel Flow*:**

| | | EF | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12. | Pipe Diameter, $D$ | 15 in | | | | | | |
| 13. | Cross-Sectional Flow Area, $A$ | 1.227 sf | | | | | | |
| 14. | Wetted Perimeter, $p_w$ | 3.9 ft | | | | | | |
| 15. | Hydraulic Radius, $r = A / p_w$ | 0.3 ft | | | | | | |
| 16. | Channel Slope, $s$ | 0.010 ft/ft | | | | | | |
| 17. | Pipe Material | HDPE | | | | | | |
| 18. | Manning's Roughness Coefficient, $n$ | 0.010 | | | | | | |
| 19. | Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ | 6.86 ft/s | | | | | | |
| 20. | Flow Length, $L$ | 302.0 | | | | | | |
| 21. | Travel Time, $T_t = \frac{L}{3600\,V}$ | 0.012 hr | + 0.000 hr | + ###### | = | 0.012 hr | | |
| 22. | Watershed or subarea Time of Concentration, $T_c$ { *add* $T_t$ *in steps 6, 11 and 21* } | | | | | 0.157 hr | | |
| | | | | | | **9.4 min** | | |

# RUNOFF CURVE NUMBER (CN) CALCULATIONS – EXISTING & PROPOSED CONDITIONS

DYNAMIC ENGINEERING

# EXISTING DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

| | | | |
|---|---|---|---|
| Project: | Proposed McDonald's Restaurant | Computed By: | ANV |
| Job #: | 0114-99-192 | Checked By: | TD |
| Location: | 940 Easton Avenue, Somerset, NJ | Date: | 4/15/2022 |

| Drainage Area | Impervious Area (acre) | Impervious Area (sf) | Curve Number (CN) Used | HSG C - Open Space Area (acre) | HSG C - Open Space Area (sf) | Curve Number (CN) Used | HSG D - Open Space Area (acre) | HSG D - Open Space Area (sf) | Curve Number (CN) Used | Avg. Perv. Curve Number | Total Pervious Area (acres) | Total Area (acres) | TC (Min.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DA-1 | 0.00 | 89 | 98 | 0.14 | 6,167 | 74 | 0.05 | 2,064 | 80 | 76 | 0.19 | 0.19 | 6 |
| DA-2 | 0.00 | - | 98 | 0.08 | 3,672 | 74 | 0.00 | - | 80 | 74 | 0.08 | 0.08 | 6 |
| DA-3 | 1.68 | 73,095 | 98 | 0.28 | 12,068 | 74 | 0.28 | 12,123 | 80 | 77 | 0.56 | 2.23 | 6 |
| **Total** | **1.68** | **73184.00** | | **0.50** | **21907.00** | | **0.33** | **14187.00** | | | **0.83** | **2.51** | |

| | | | | | |
|---|---|---|---|---|---|
| Per County Soil Survey - | RehA | HSG | C | Soil | Reaville silt loam, 0 to 2 percent slopes |
| Per County Soil Survey - | KkoC | HSG | D | Soil | Klinesville channery loam, 6 to 12 percent slopes |

| Description | Runoff Curve Number (CN) (HSG C) | Runoff Curve Number (CN) (HSG D) |
|---|---|---|
| Impervious Surface | 98 | 98 |
| Open Space (lawn) (good) | 74 | 80 |
| Woods (good) | 70 | 77 |

DYNAMIC ENGINEERING

# PROPOSED DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

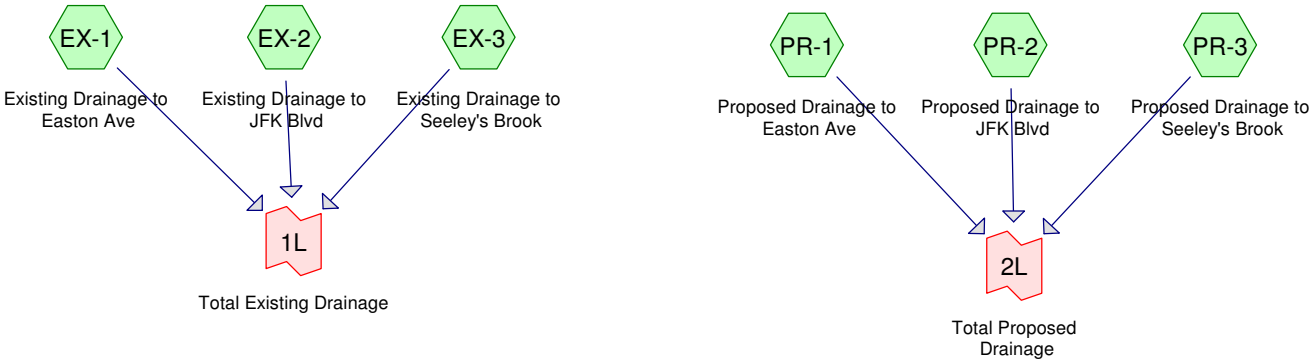
| | | | |
|---|---|---|---|
| Project: | Proposed McDonald's Restaurant | Computed By: | ANV |
| Job #: | 0114-99-192 | Checked By: | TD |
| Location: | 940 Easton Avenue, Somerset, NJ | Date: | 4/15/2022 |

| Drainage Area | Impervious Area (acre) | Impervious Area (sf) | Curve Number (CN) Used | HSG C - Open Space Area (acre) | HSG C - Open Space Area (sf) | Curve Number (CN) Used | HSG D - Open Space Area (acre) | HSG D - Open Space Area (sf) | Curve Number (CN) Used | Avg. Perv. Curve Number | Total PerviousArea (acres) | Total Area (acres) | TC (Min.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DA-1 | 0.00 | 88 | 98 | 0.32 | 13,838 | 74 | 0.06 | 2,423 | 80 | 75 | 0.37 | 0.38 | 6 |
| DA-2 | 0.00 | - | 98 | 0.08 | 3,672 | 74 | 0.00 | - | 80 | 74 | 0.08 | 0.08 | 6 |
| DA-3 | 1.42 | 61,800 | 98 | 0.23 | 9,940 | 74 | 0.40 | 17,504 | 80 | 78 | 0.63 | 2.05 | 6 |
| **Total** | **1.42** | **61888.00** | | **0.63** | **27450.00** | | **0.46** | **19927.00** | | | **1.09** | **2.51** | |

| | | | | | |
|---|---|---|---|---|---|
| Per County Soil Survey - | RehA | HSG | C | Soil | Reaville silt loam, 0 to 2 percent slopes |
| Per County Soil Survey - | KkoC | HSG | D | Soil | Klinesville channery loam, 6 to 12 percent slopes |

| Description | Runoff Curve Number (CN) (HSG C) | Runoff Curve Number (CN) (HSG D) |
|---|---|---|
| Impervious Surface | 98 | 98 |
| Open Space (lawn) (good) | 74 | 80 |
| Woods (good) | 70 | 77 |

# HYDROGRAPH SUMMARY REPORTS –
# EXISTING & PROPOSED CONDITIONS 2YR, 10YR & 100YR
# (HYDROGRAPHS CREATED USING HYDROCAD BY HYDROCAD SOFTWARE SOLUTIONS LLC)




Subcat Reach Pond Link

**Routing Diagram for 2022-04-11 Drainage Design**
Prepared by Dynamic Engineering, Printed 5/10/2022

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 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 EX-1: Existing Drainage to** Runoff Area=8,320 sf 1.05% Impervious Runoff Depth=1.25"
Tc=6.0 min CN=76 Runoff=0.30 cfs 867 cf

**Subcatchment EX-2: Existing Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=1.13"
Tc=6.0 min CN=74 Runoff=0.12 cfs 346 cf

**Subcatchment EX-3: Existing Drainage to** Runoff Area=2.233 ac 75.15% Impervious Runoff Depth=2.58"
Tc=9.4 min CN=93 Runoff=6.23 cfs 20,917 cf

**Subcatchment PR-1: Proposed Drainage to** Runoff Area=16,378 sf 0.53% Impervious Runoff Depth=1.19"
Tc=6.7 min CN=75 Runoff=0.55 cfs 1,624 cf

**Subcatchment PR-2: Proposed Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=1.13"
Tc=6.0 min CN=74 Runoff=0.12 cfs 346 cf

**Subcatchment PR-3: Proposed Drainage to** Runoff Area=2.049 ac 69.25% Impervious Runoff Depth=2.48"
Tc=9.4 min CN=92 Runoff=5.56 cfs 18,475 cf

**Link 1L: Total Existing Drainage** Inflow=6.63 cfs 22,130 cf
Primary=6.63 cfs 22,130 cf

**Link 2L: Total Proposed Drainage** Inflow=6.21 cfs 20,445 cf
Primary=6.21 cfs 20,445 cf

**Total Runoff Area = 218,566 sf Runoff Volume = 42,575 cf Average Runoff Depth = 2.34"**
**38.20% Pervious = 83,487 sf 61.80% Impervious = 135,079 sf**

## Summary for Subcatchment EX-1: Existing Drainage to Easton Ave

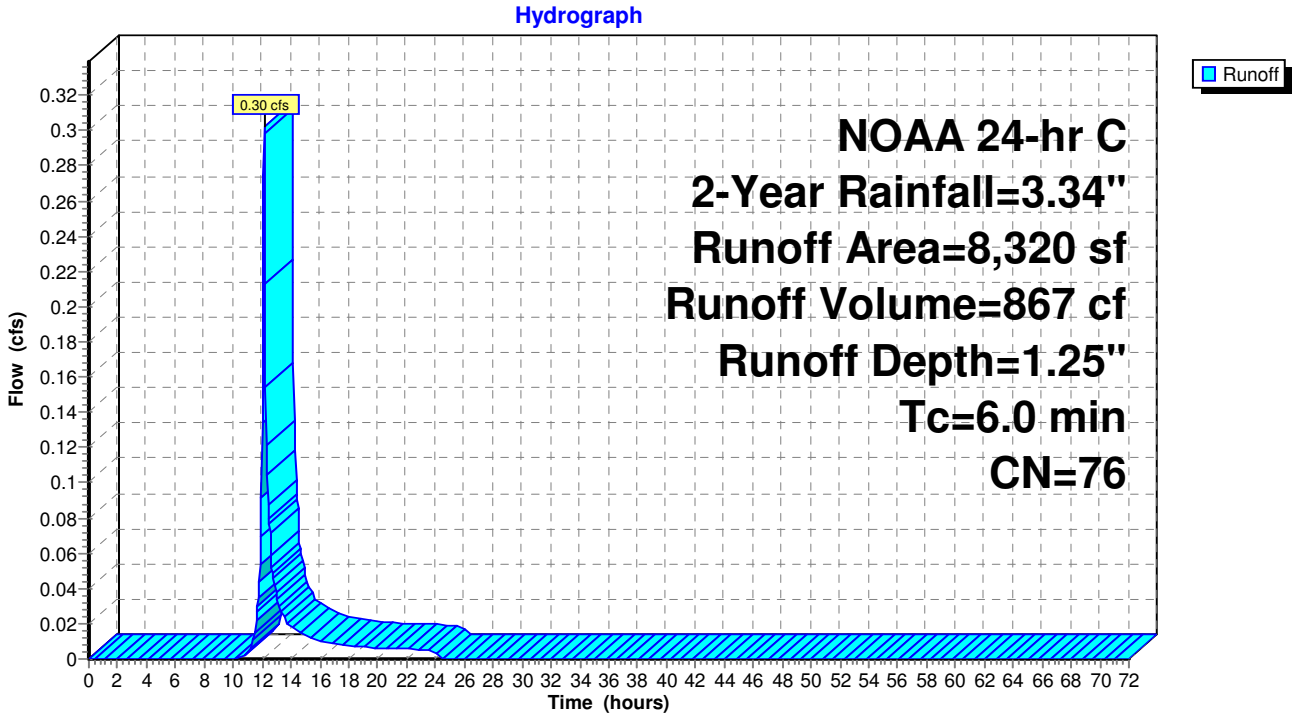
Runoff = 0.30 cfs @ 12.14 hrs, Volume= 867 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (sf) | CN | Description |
|---|---|---|
| 2,047 | 80 | >75% Grass cover, Good, HSG D |
| 6,186 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 8,320 | 76 | Weighted Average |
| 8,233 | | 98.95% Pervious Area |
| 87 | | 1.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.5 | | | | | **Direct Entry, Direct Entry** |
| 1.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EX-1: Existing Drainage to Easton Ave



## Summary for Subcatchment EX-2: Existing Drainage to JFK Blvd

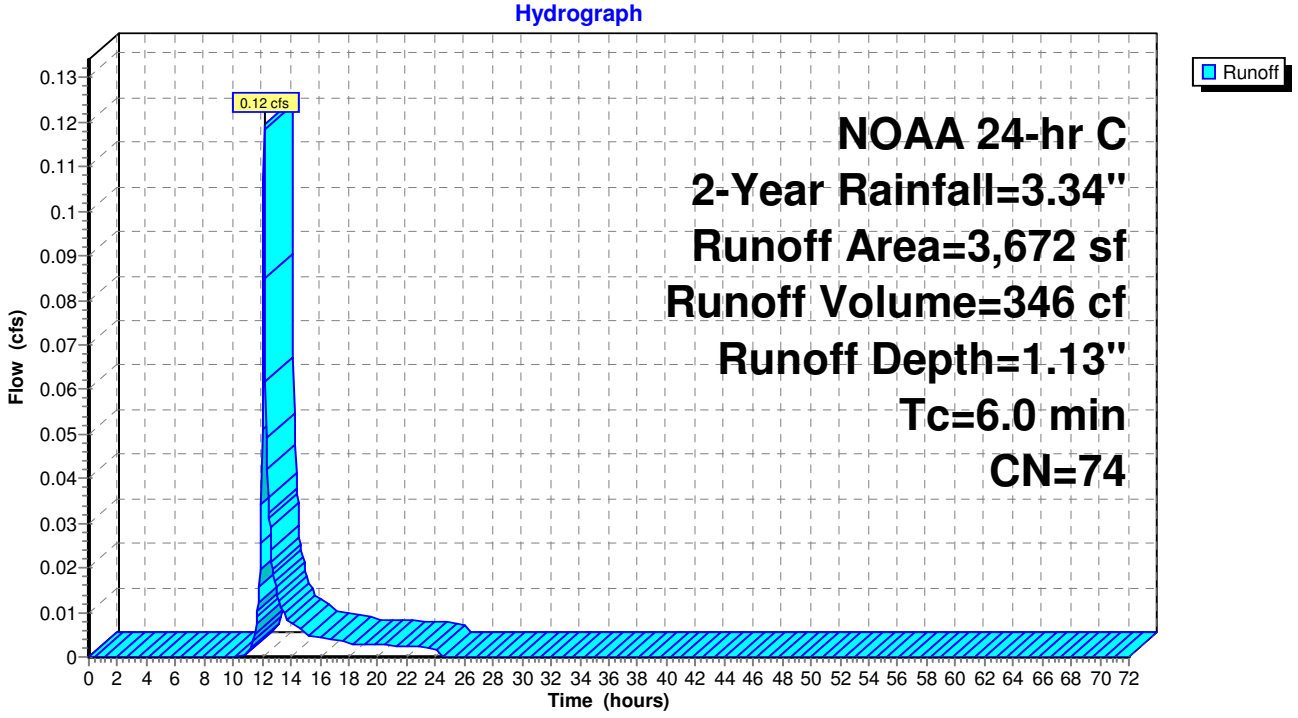
Runoff = 0.12 cfs @ 12.14 hrs, Volume= 346 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

### Subcatchment EX-2: Existing Drainage to JFK Blvd



## Summary for Subcatchment EX-3: Existing Drainage to Seeley's Brook

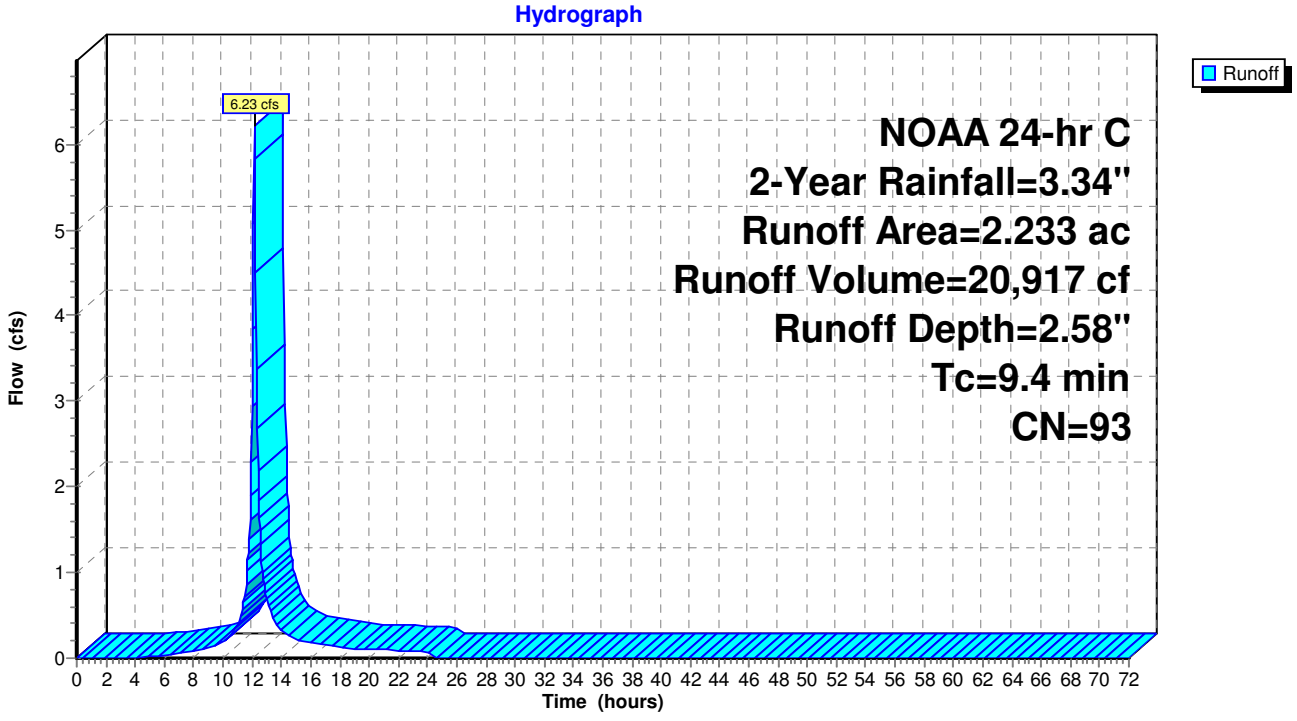
Runoff = 6.23 cfs @ 12.16 hrs, Volume= 20,917 cf, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 0.278 | 80 | >75% Grass cover, Good, HSG D |
| 0.277 | 74 | >75% Grass cover, Good, HSG C |
| 1.678 | 98 | Paved parking, HSG D |
| 2.233 | 93 | Weighted Average |
| 0.555 | | 24.85% Pervious Area |
| 1.678 | | 75.15% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment EX-3: Existing Drainage to Seeley's Brook



## Summary for Subcatchment PR-1: Proposed Drainage to Easton Ave

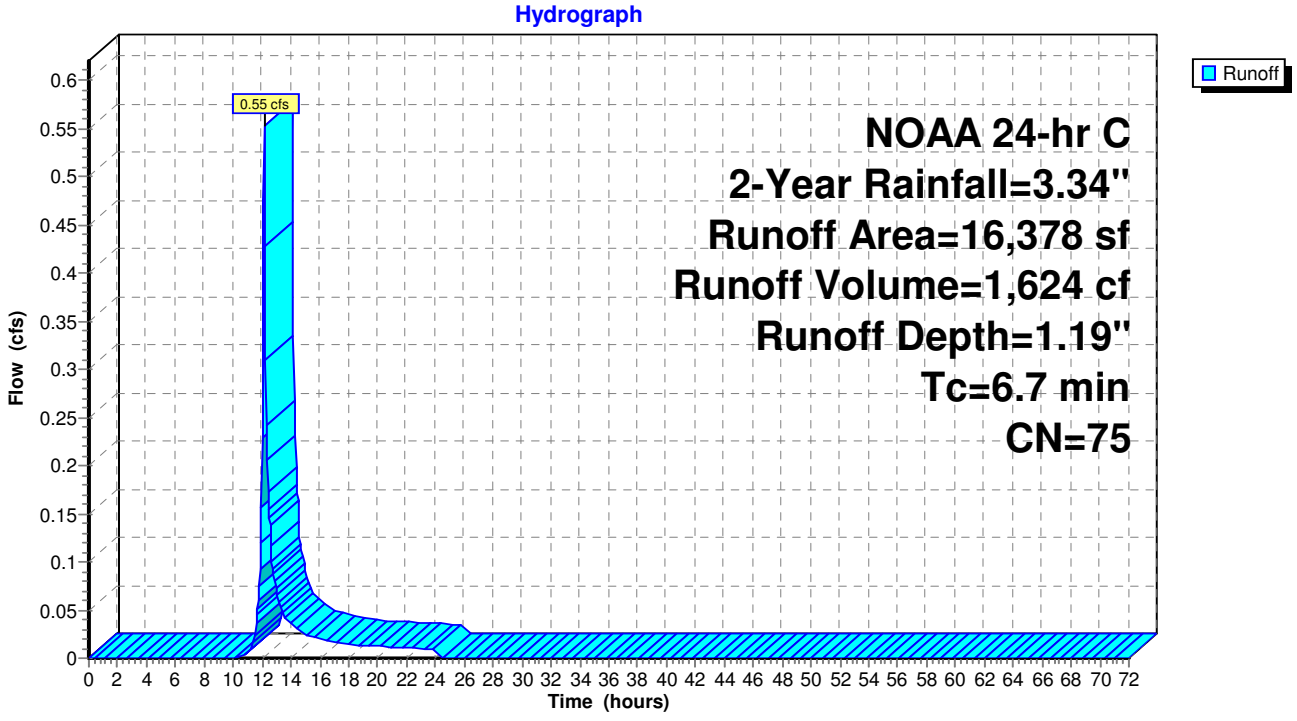
Runoff = 0.55 cfs @ 12.14 hrs, Volume= 1,624 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (sf) | CN | Description |
|---|---|---|
| 2,439 | 80 | >75% Grass cover, Good, HSG D |
| 13,852 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 16,378 | 75 | Weighted Average |
| 16,291 | | 99.47% Pervious Area |
| 87 | | 0.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.7 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-1: Proposed Drainage to Easton Ave



## Summary for Subcatchment PR-2: Proposed Drainage to JFK Blvd

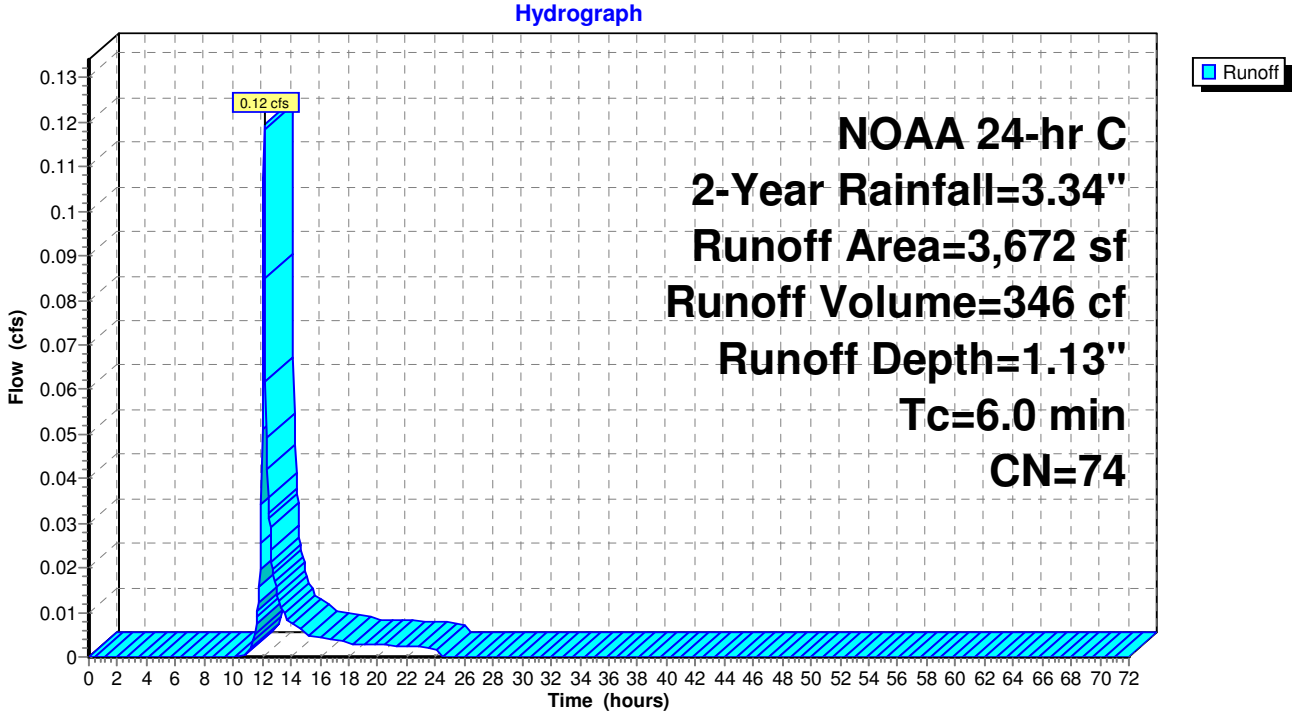
Runoff = 0.12 cfs @ 12.14 hrs, Volume= 346 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

### Subcatchment PR-2: Proposed Drainage to JFK Blvd



## Summary for Subcatchment PR-3: Proposed Drainage to Seeley's Brook

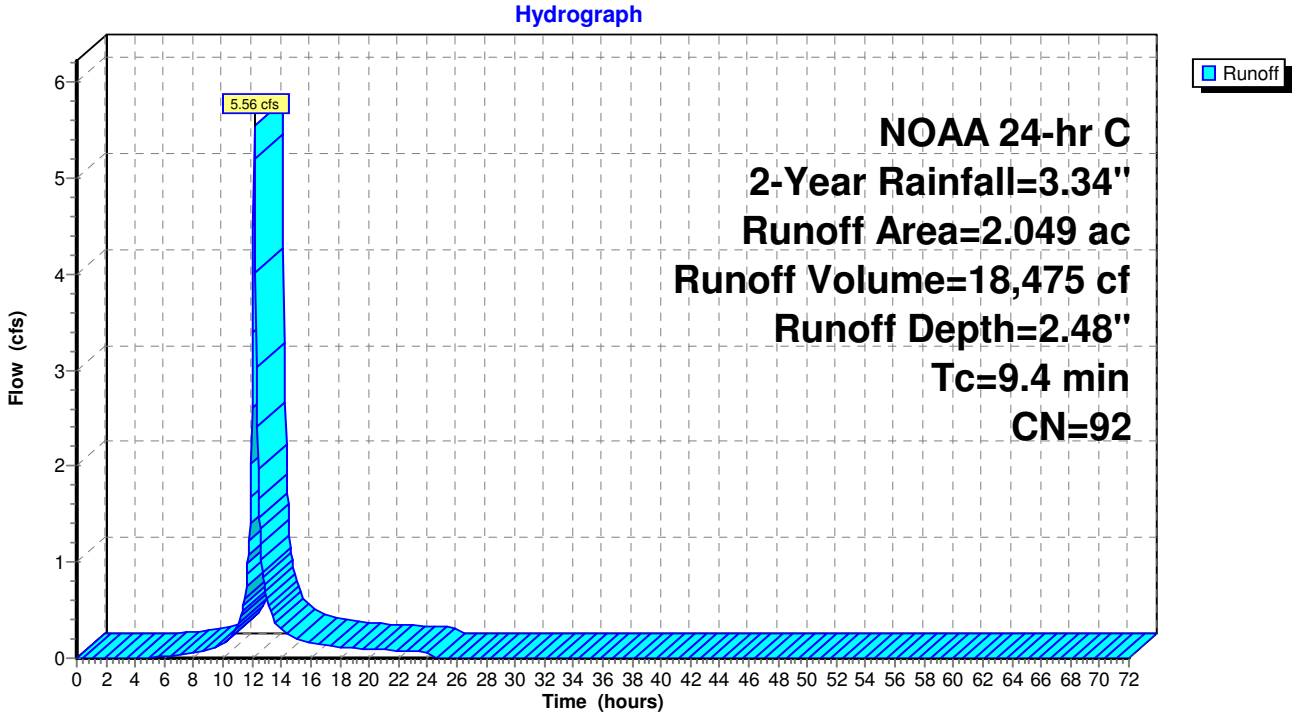
Runoff = 5.56 cfs @ 12.16 hrs, Volume= 18,475 cf, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 0.402 | 80 | >75% Grass cover, Good, HSG D |
| 0.228 | 74 | >75% Grass cover, Good, HSG C |
| 1.419 | 98 | Paved parking, HSG D |
| 2.049 | 92 | Weighted Average |
| 0.630 | | 30.75% Pervious Area |
| 1.419 | | 69.25% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-3: Proposed Drainage to Seeley's Brook

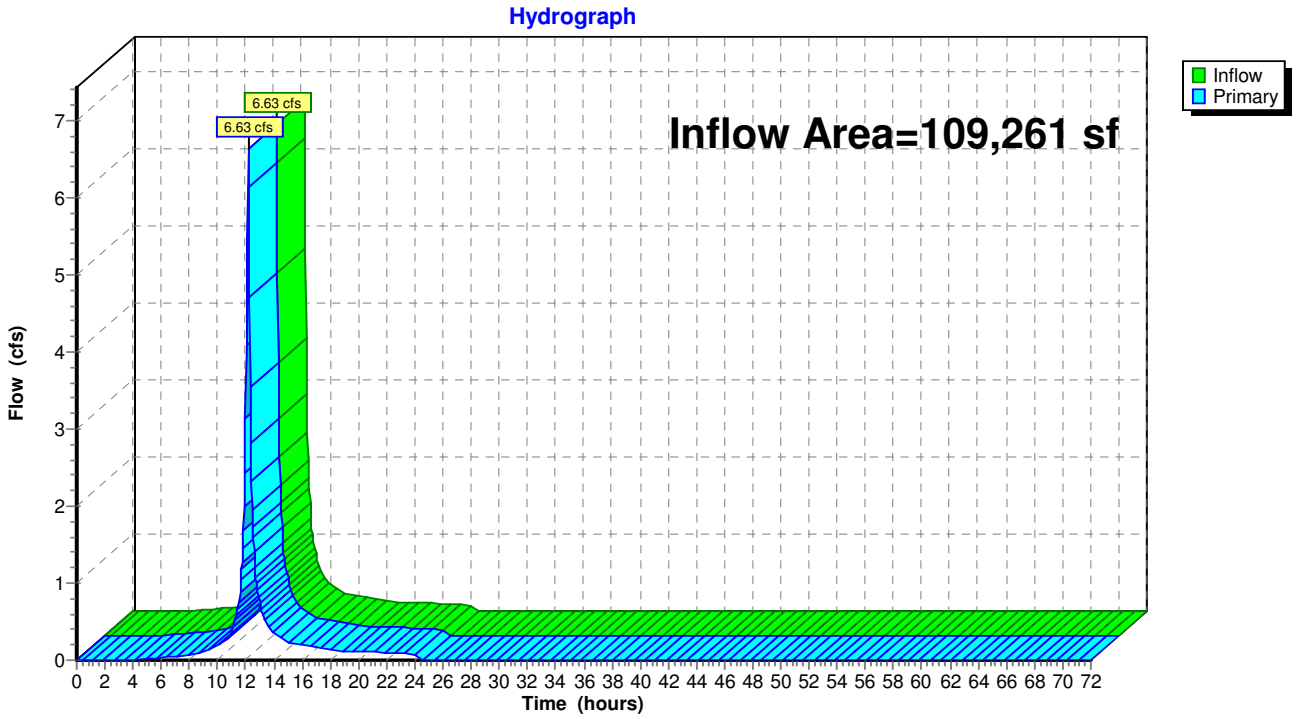


## Summary for Link 1L: Total Existing Drainage

Inflow Area = 109,261 sf, 66.98% Impervious, Inflow Depth = 2.43" for 2-Year event
Inflow = 6.63 cfs @ 12.16 hrs, Volume= 22,130 cf
Primary = 6.63 cfs @ 12.16 hrs, Volume= 22,130 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 1L: Total Existing Drainage

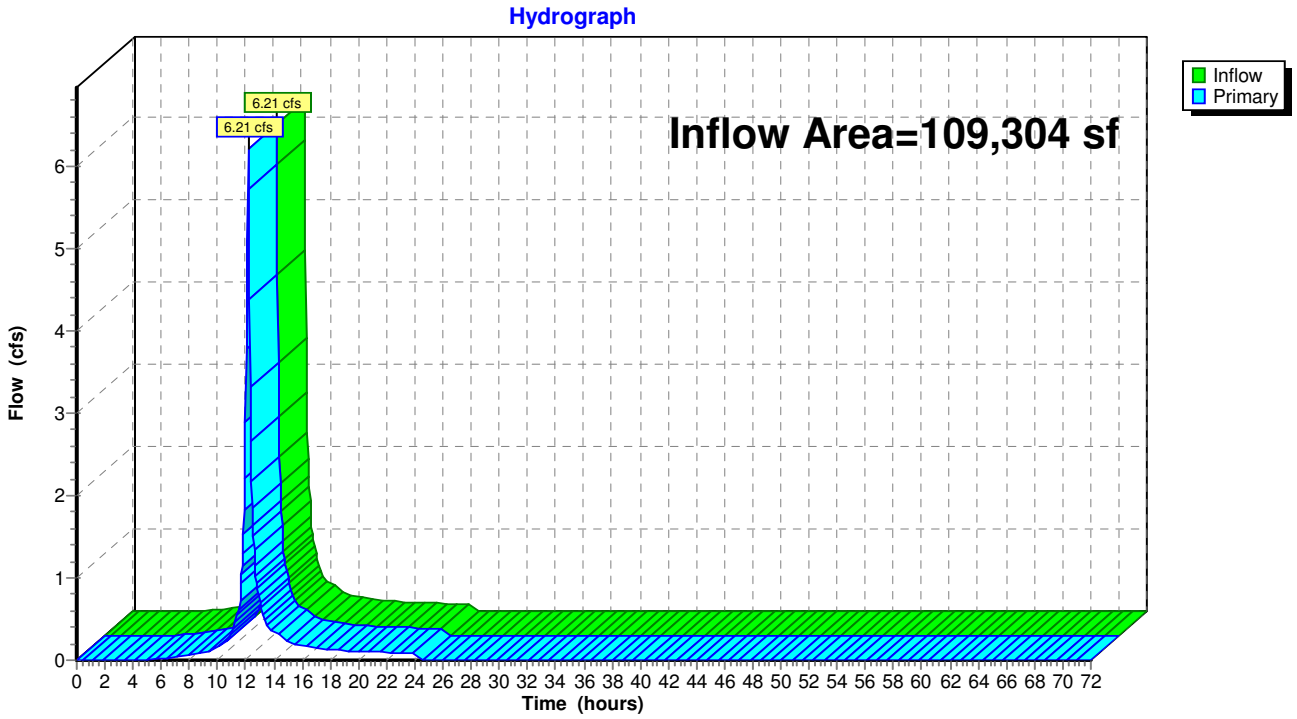


## Summary for Link 2L: Total Proposed Drainage

Inflow Area = 109,304 sf, 56.63% Impervious, Inflow Depth = 2.24" for 2-Year event
Inflow = 6.21 cfs @ 12.16 hrs, Volume= 20,445 cf
Primary = 6.21 cfs @ 12.16 hrs, Volume= 20,445 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 2L: Total Proposed Drainage



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 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 EX-1: Existing Drainage to** Runoff Area=8,320 sf 1.05% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=76 Runoff=0.62 cfs 1,764 cf

**Subcatchment EX-2: Existing Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=74 Runoff=0.26 cfs 726 cf

**Subcatchment EX-3: Existing Drainage to** Runoff Area=2.233 ac 75.15% Impervious Runoff Depth=4.21"
Tc=9.4 min CN=93 Runoff=9.87 cfs 34,107 cf

**Subcatchment PR-1: Proposed Drainage to** Runoff Area=16,378 sf 0.53% Impervious Runoff Depth=2.46"
Tc=6.7 min CN=75 Runoff=1.16 cfs 3,354 cf

**Subcatchment PR-2: Proposed Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=74 Runoff=0.26 cfs 726 cf

**Subcatchment PR-3: Proposed Drainage to** Runoff Area=2.049 ac 69.25% Impervious Runoff Depth=4.10"
Tc=9.4 min CN=92 Runoff=8.91 cfs 30,488 cf

**Link 1L: Total Existing Drainage** Inflow=10.70 cfs 36,596 cf
Primary=10.70 cfs 36,596 cf

**Link 2L: Total Proposed Drainage** Inflow=10.29 cfs 34,568 cf
Primary=10.29 cfs 34,568 cf

**Total Runoff Area = 218,566 sf Runoff Volume = 71,165 cf Average Runoff Depth = 3.91"**
**38.20% Pervious = 83,487 sf 61.80% Impervious = 135,079 sf**

## Summary for Subcatchment EX-1: Existing Drainage to Easton Ave

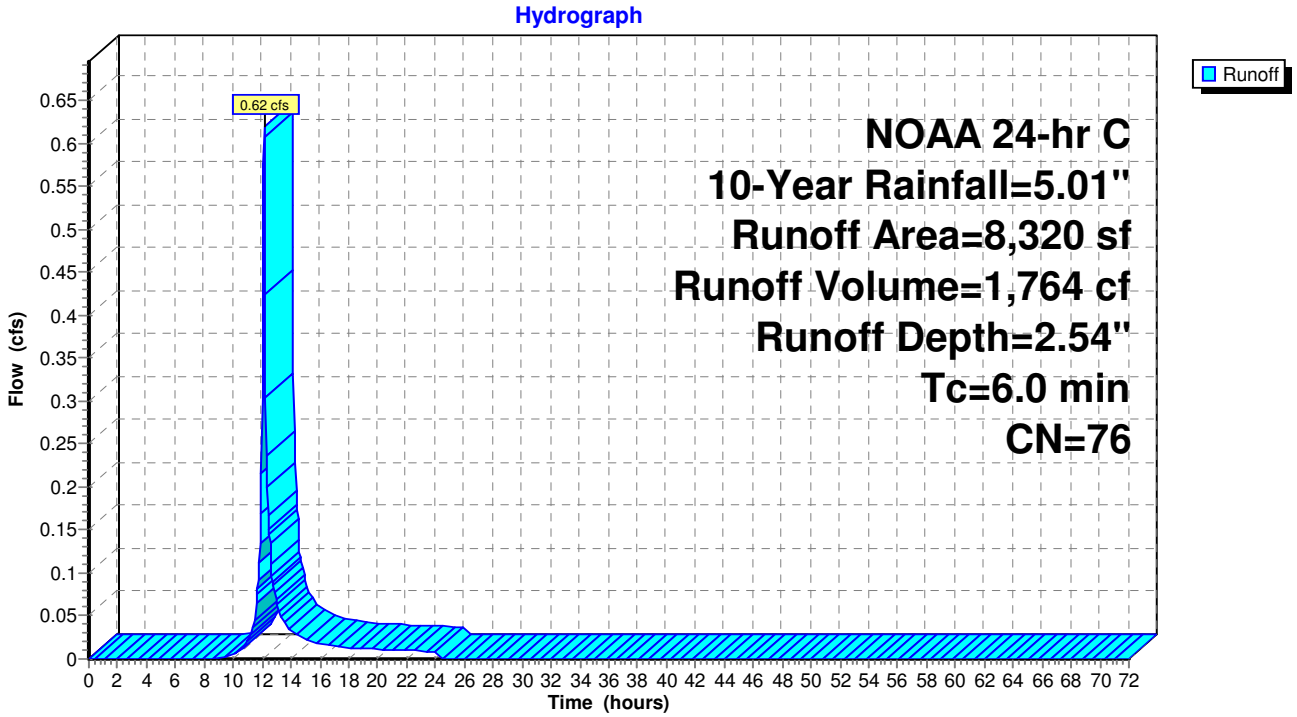
Runoff = 0.62 cfs @ 12.13 hrs, Volume= 1,764 cf, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (sf) | CN | Description |
|---|---|---|
| 2,047 | 80 | >75% Grass cover, Good, HSG D |
| 6,186 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 8,320 | 76 | Weighted Average |
| 8,233 | | 98.95% Pervious Area |
| 87 | | 1.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.5 | | | | | **Direct Entry, Direct Entry** |
| 1.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EX-1: Existing Drainage to Easton Ave



## Summary for Subcatchment EX-2: Existing Drainage to JFK Blvd

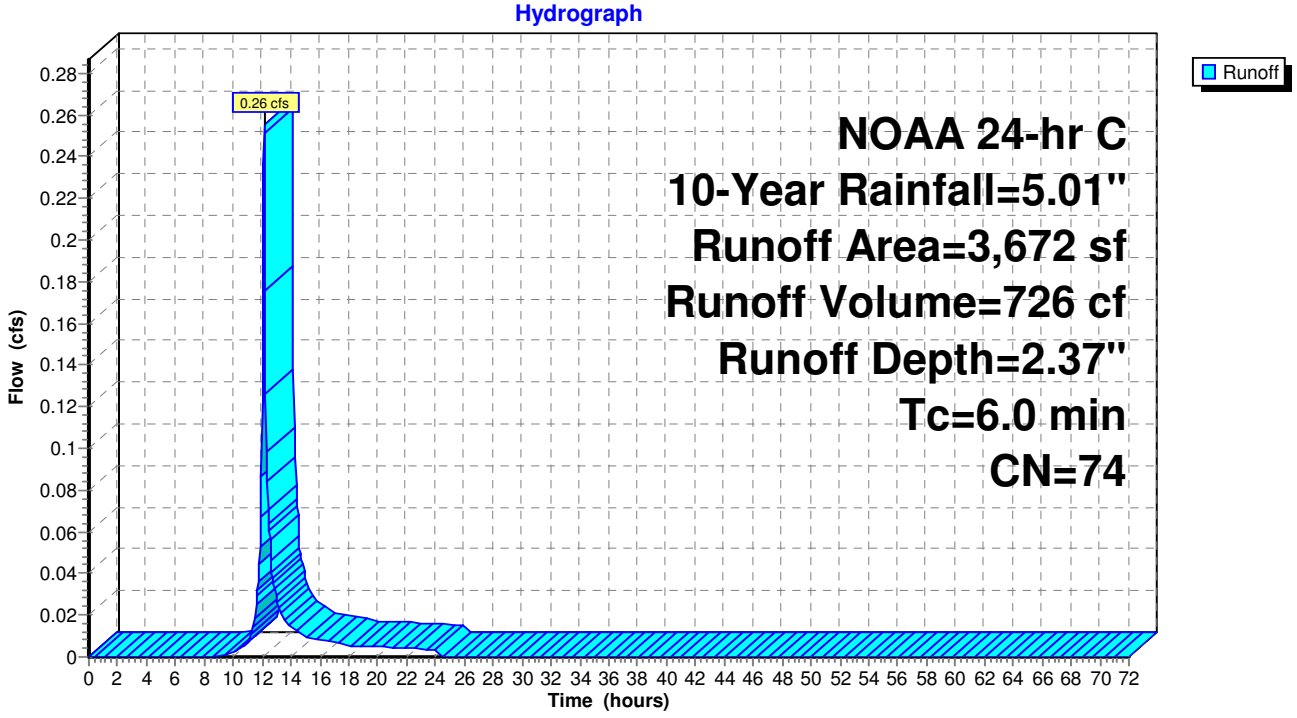
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 726 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

### Subcatchment EX-2: Existing Drainage to JFK Blvd



## Summary for Subcatchment EX-3: Existing Drainage to Seeley's Brook

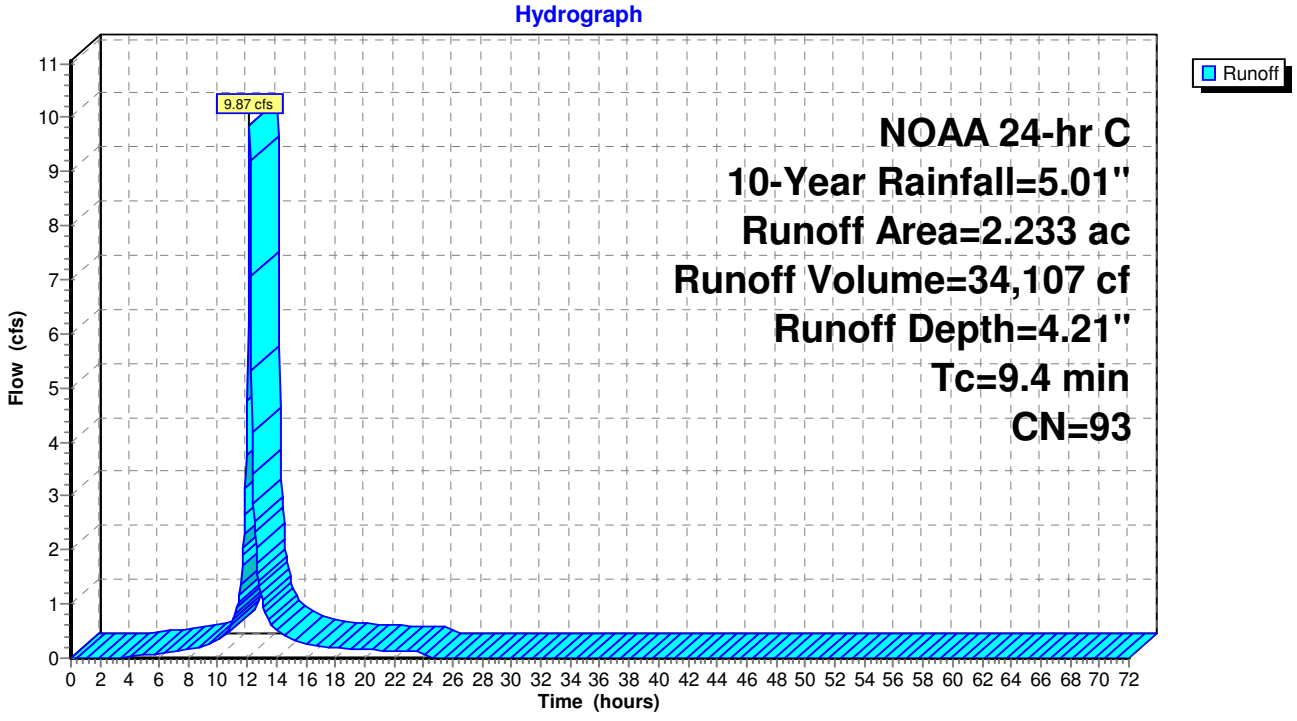
Runoff = 9.87 cfs @ 12.16 hrs, Volume= 34,107 cf, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|---|---|---|
| 0.278 | 80 | >75% Grass cover, Good, HSG D |
| 0.277 | 74 | >75% Grass cover, Good, HSG C |
| 1.678 | 98 | Paved parking, HSG D |
| 2.233 | 93 | Weighted Average |
| 0.555 | | 24.85% Pervious Area |
| 1.678 | | 75.15% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment EX-3: Existing Drainage to Seeley's Brook



## Summary for Subcatchment PR-1: Proposed Drainage to Easton Ave

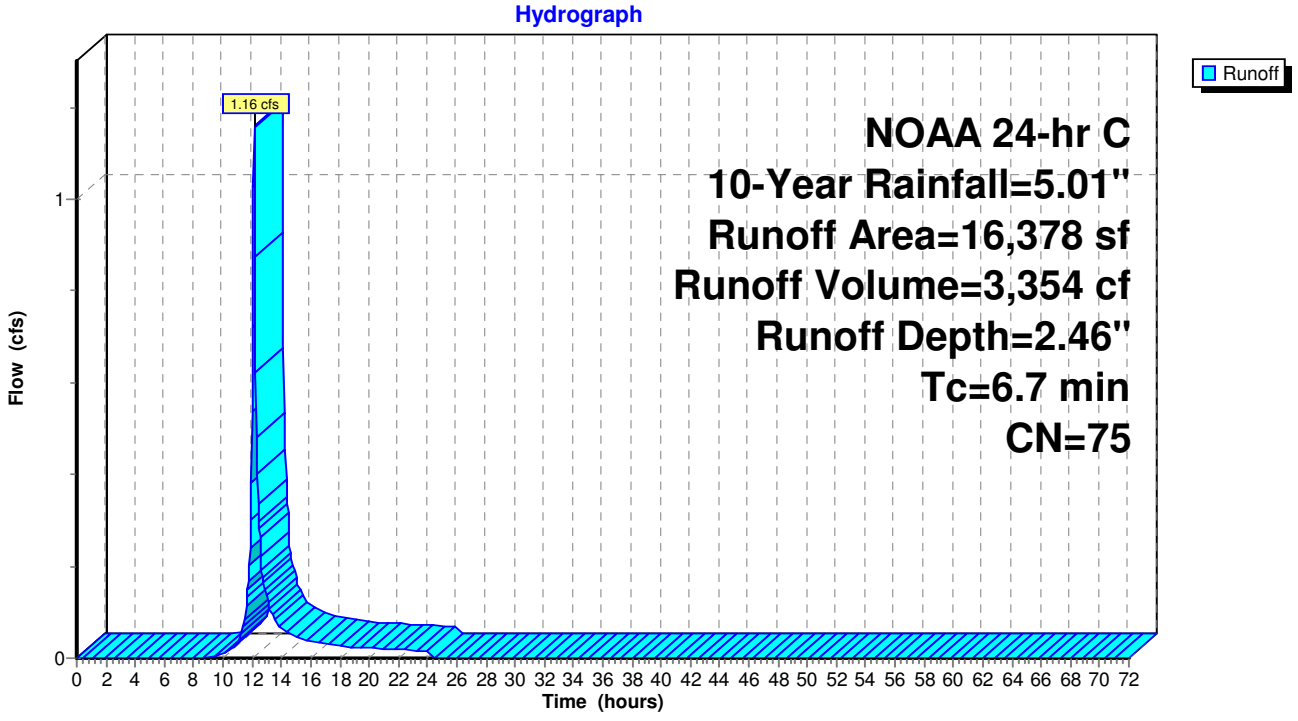
Runoff = 1.16 cfs @ 12.14 hrs, Volume= 3,354 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (sf) | CN | Description |
|---|---|---|
| 2,439 | 80 | >75% Grass cover, Good, HSG D |
| 13,852 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 16,378 | 75 | Weighted Average |
| 16,291 | | 99.47% Pervious Area |
| 87 | | 0.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.7 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-1: Proposed Drainage to Easton Ave



## Summary for Subcatchment PR-2: Proposed Drainage to JFK Blvd

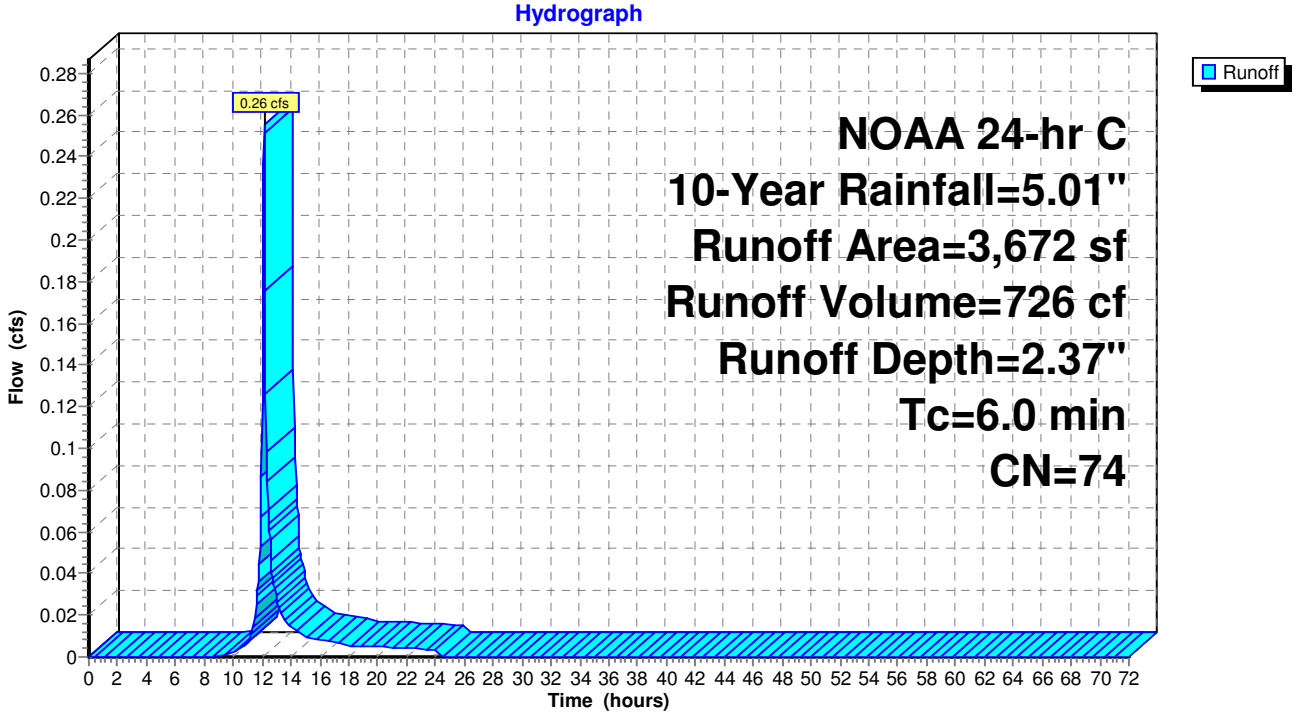
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 726 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PR-2: Proposed Drainage to JFK Blvd



## Summary for Subcatchment PR-3: Proposed Drainage to Seeley's Brook

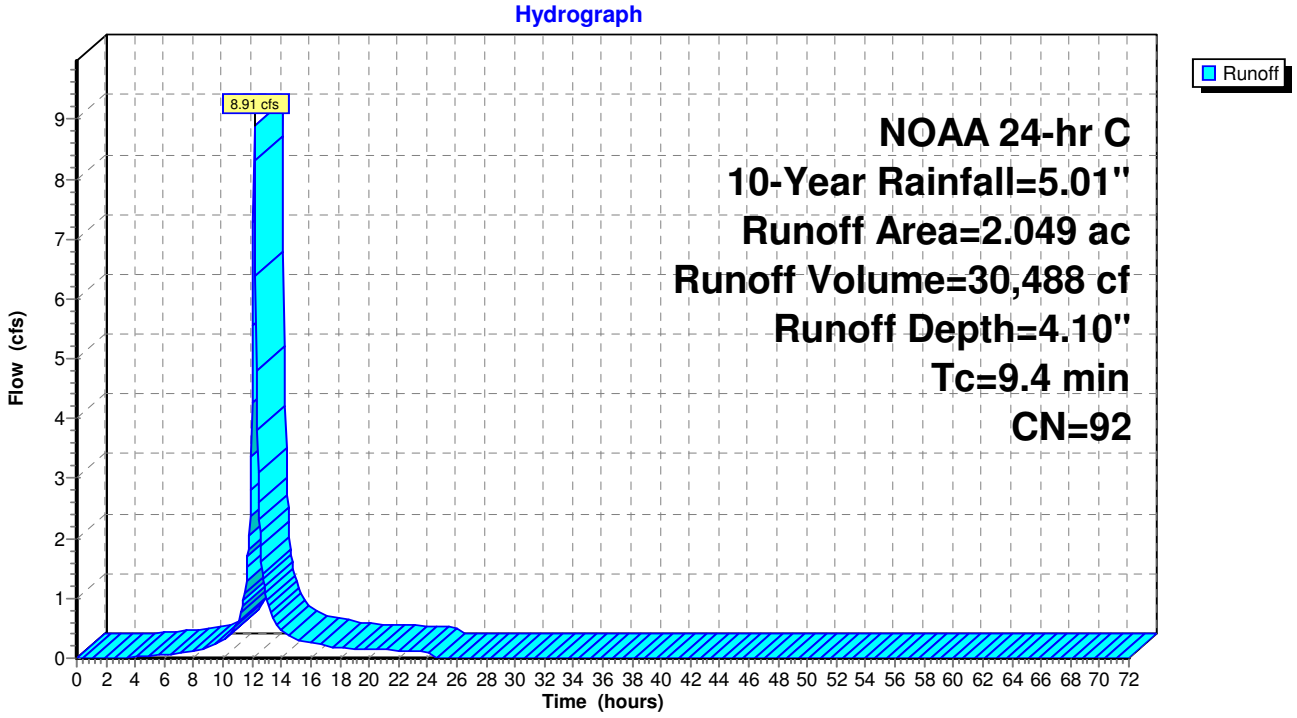
Runoff = 8.91 cfs @ 12.16 hrs, Volume= 30,488 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|---|---|---|
| 0.402 | 80 | >75% Grass cover, Good, HSG D |
| 0.228 | 74 | >75% Grass cover, Good, HSG C |
| 1.419 | 98 | Paved parking, HSG D |
| 2.049 | 92 | Weighted Average |
| 0.630 | | 30.75% Pervious Area |
| 1.419 | | 69.25% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-3: Proposed Drainage to Seeley's Brook

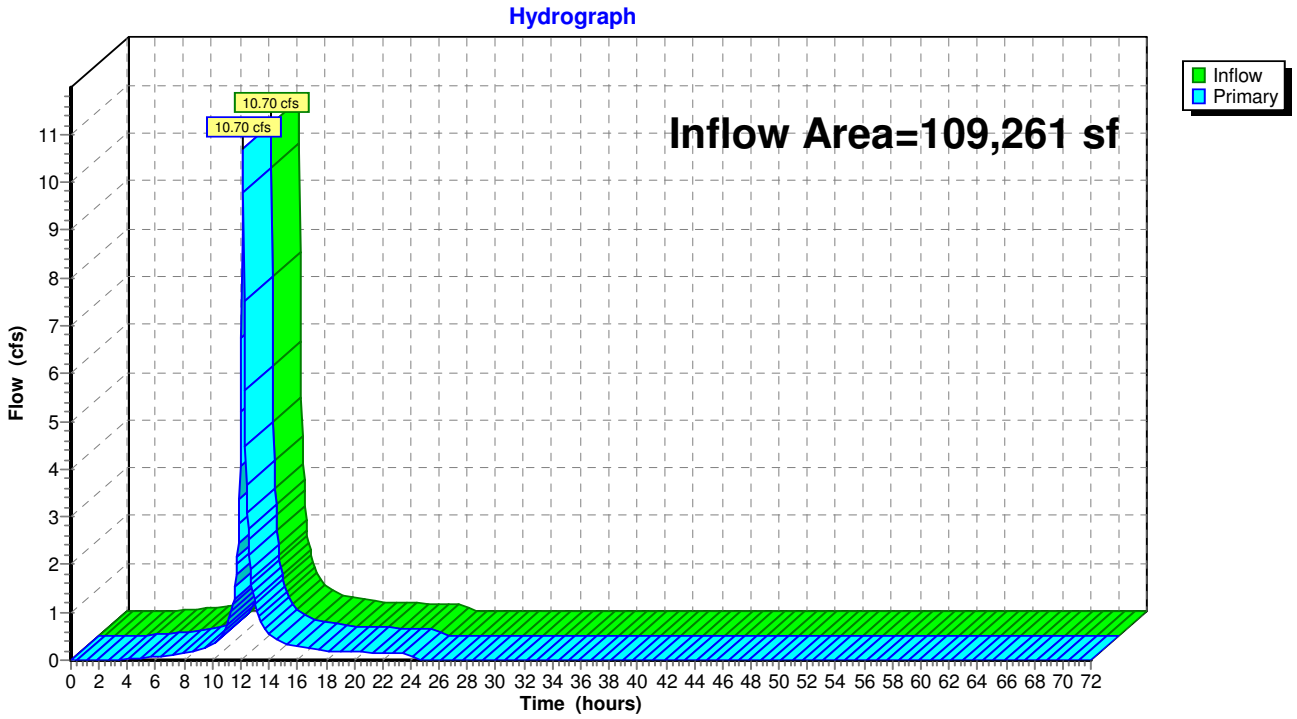


## Summary for Link 1L: Total Existing Drainage

Inflow Area = 109,261 sf, 66.98% Impervious, Inflow Depth = 4.02" for 10-Year event
Inflow = 10.70 cfs @ 12.16 hrs, Volume= 36,596 cf
Primary = 10.70 cfs @ 12.16 hrs, Volume= 36,596 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 1L: Total Existing Drainage

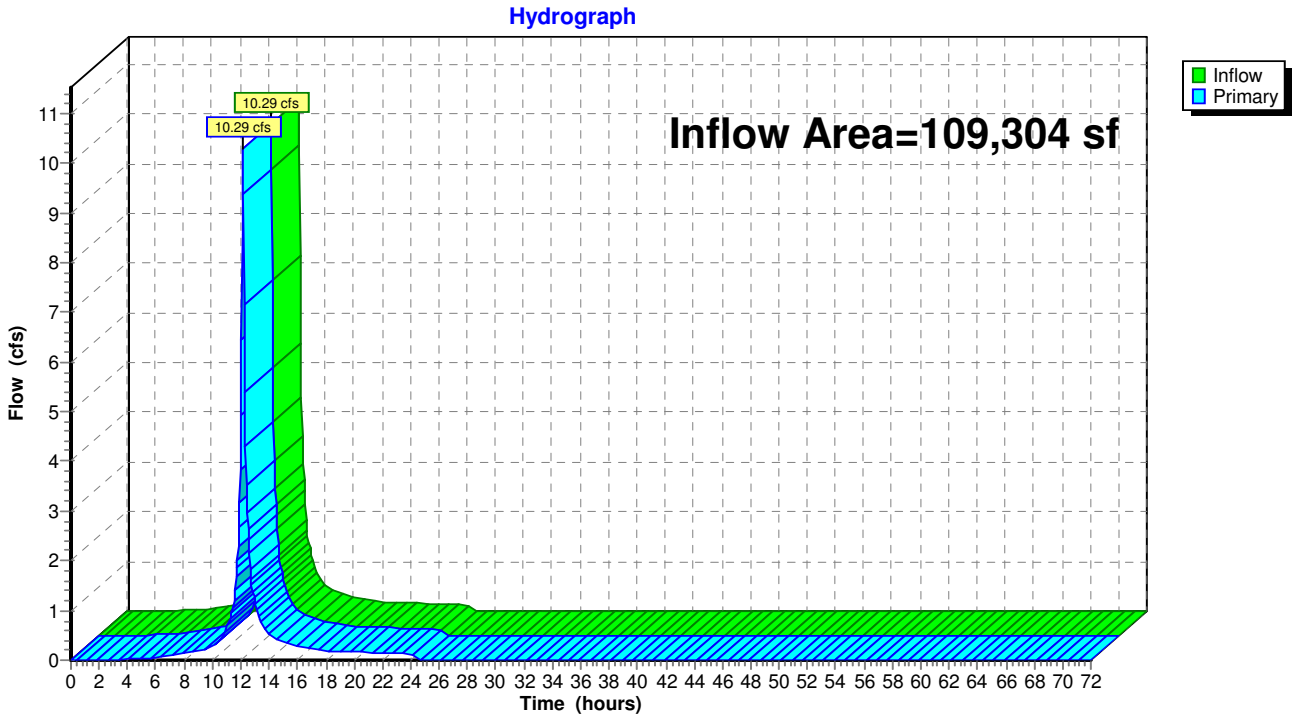


## Summary for Link 2L: Total Proposed Drainage

Inflow Area = 109,304 sf, 56.63% Impervious, Inflow Depth = 3.80" for 10-Year event
Inflow = 10.29 cfs @ 12.16 hrs, Volume= 34,568 cf
Primary = 10.29 cfs @ 12.16 hrs, Volume= 34,568 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 2L: Total Proposed Drainage



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 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 EX-1: Existing Drainage to** Runoff Area=8,320 sf 1.05% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=76 Runoff=1.28 cfs 3,709 cf

**Subcatchment EX-2: Existing Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=5.11"
Tc=6.0 min CN=74 Runoff=0.54 cfs 1,565 cf

**Subcatchment EX-3: Existing Drainage to** Runoff Area=2.233 ac 75.15% Impervious Runoff Depth=7.37"
Tc=9.4 min CN=93 Runoff=16.72 cfs 59,748 cf

**Subcatchment PR-1: Proposed Drainage to** Runoff Area=16,378 sf 0.53% Impervious Runoff Depth=5.23"
Tc=6.7 min CN=75 Runoff=2.43 cfs 7,140 cf

**Subcatchment PR-2: Proposed Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=5.11"
Tc=6.0 min CN=74 Runoff=0.54 cfs 1,565 cf

**Subcatchment PR-3: Proposed Drainage to** Runoff Area=2.049 ac 69.25% Impervious Runoff Depth=7.25"
Tc=9.4 min CN=92 Runoff=15.23 cfs 53,935 cf

**Link 1L: Total Existing Drainage** Inflow=18.44 cfs 65,022 cf
Primary=18.44 cfs 65,022 cf

**Link 2L: Total Proposed Drainage** Inflow=18.11 cfs 62,640 cf
Primary=18.11 cfs 62,640 cf

**Total Runoff Area = 218,566 sf Runoff Volume = 127,662 cf Average Runoff Depth = 7.01"**
**38.20% Pervious = 83,487 sf 61.80% Impervious = 135,079 sf**

## Summary for Subcatchment EX-1: Existing Drainage to Easton Ave

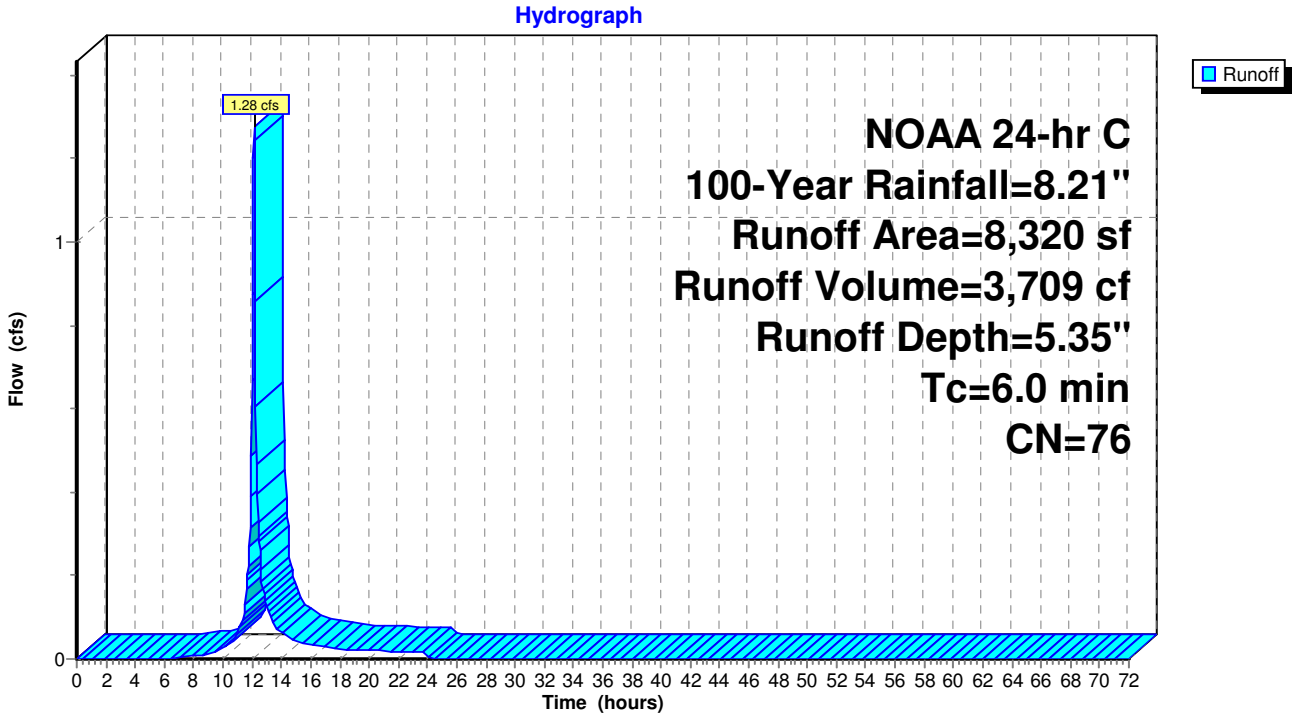
Runoff = 1.28 cfs @ 12.13 hrs, Volume= 3,709 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (sf) | CN | Description |
|---|---|---|
| 2,047 | 80 | >75% Grass cover, Good, HSG D |
| 6,186 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 8,320 | 76 | Weighted Average |
| 8,233 | | 98.95% Pervious Area |
| 87 | | 1.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.5 | | | | | **Direct Entry, Direct Entry** |
| 1.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EX-1: Existing Drainage to Easton Ave



## Summary for Subcatchment EX-2: Existing Drainage to JFK Blvd

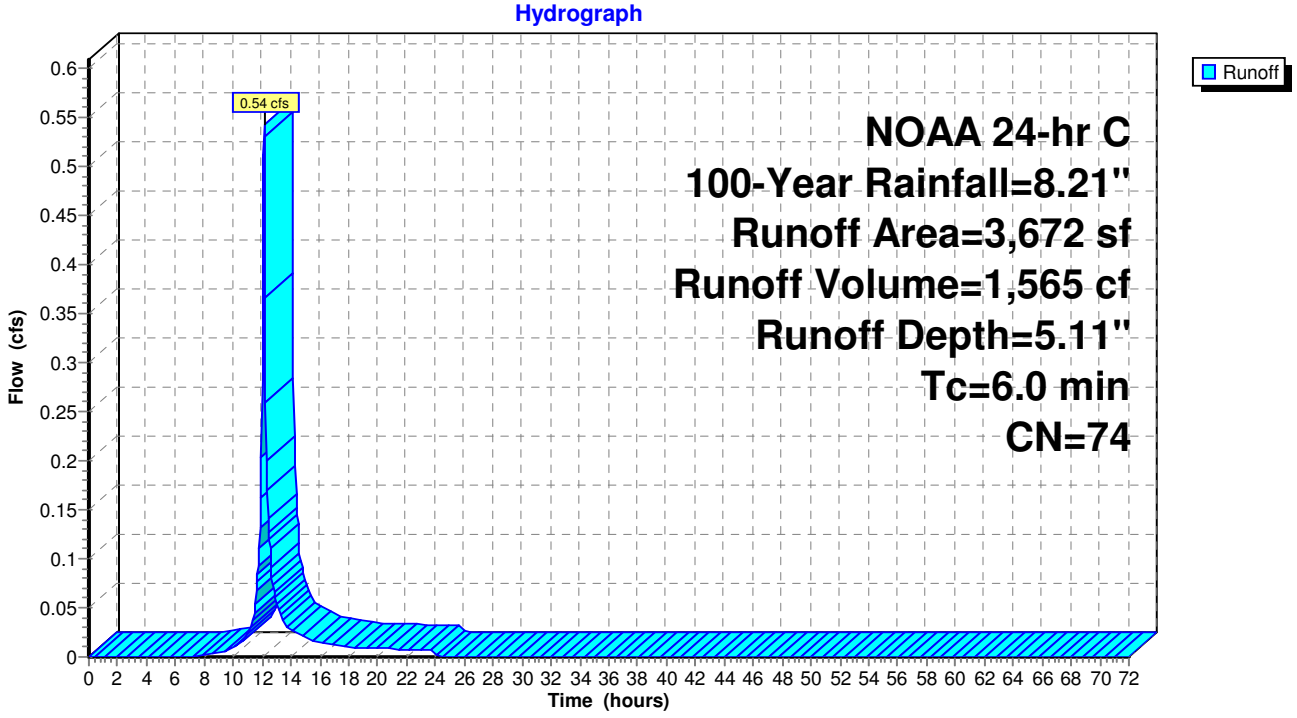
Runoff = 0.54 cfs @ 12.13 hrs, Volume= 1,565 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

### Subcatchment EX-2: Existing Drainage to JFK Blvd



## Summary for Subcatchment EX-3: Existing Drainage to Seeley's Brook

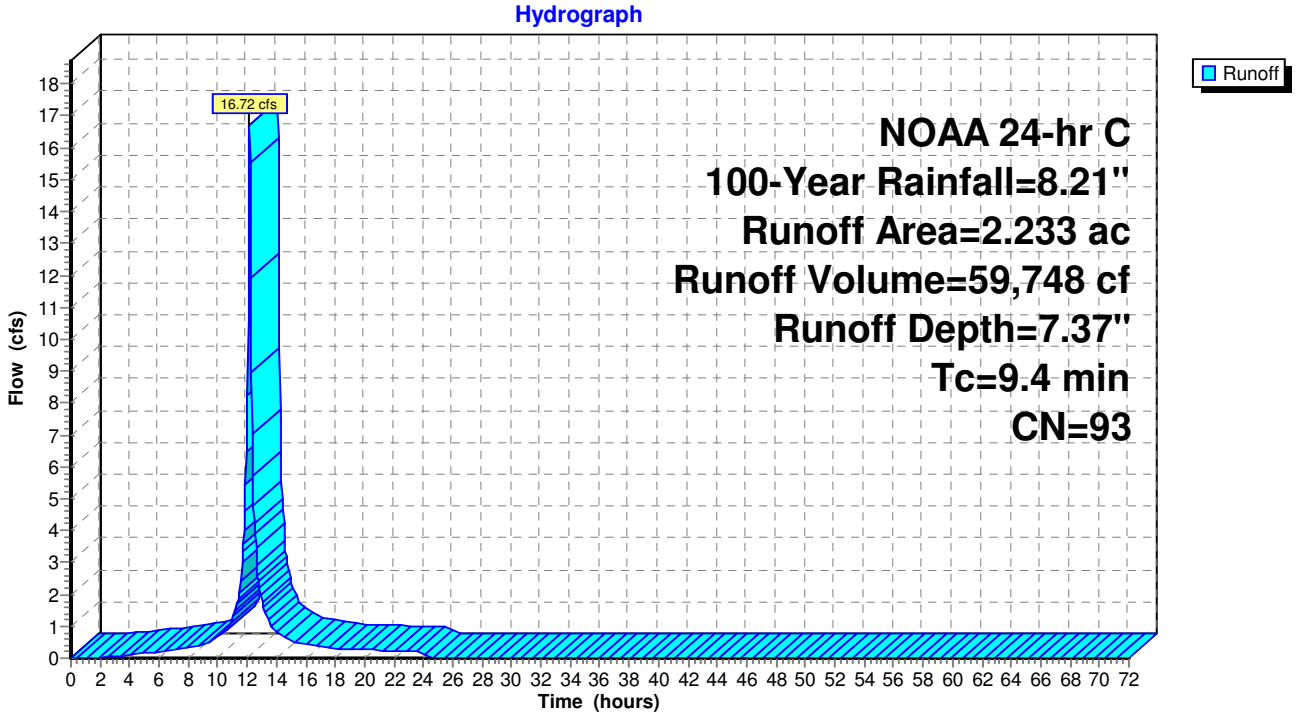
Runoff = 16.72 cfs @ 12.16 hrs, Volume= 59,748 cf, Depth= 7.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (ac) | CN | Description |
|---|---|---|
| 0.278 | 80 | >75% Grass cover, Good, HSG D |
| 0.277 | 74 | >75% Grass cover, Good, HSG C |
| 1.678 | 98 | Paved parking, HSG D |
| 2.233 | 93 | Weighted Average |
| 0.555 | | 24.85% Pervious Area |
| 1.678 | | 75.15% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment EX-3: Existing Drainage to Seeley's Brook



## Summary for Subcatchment PR-1: Proposed Drainage to Easton Ave

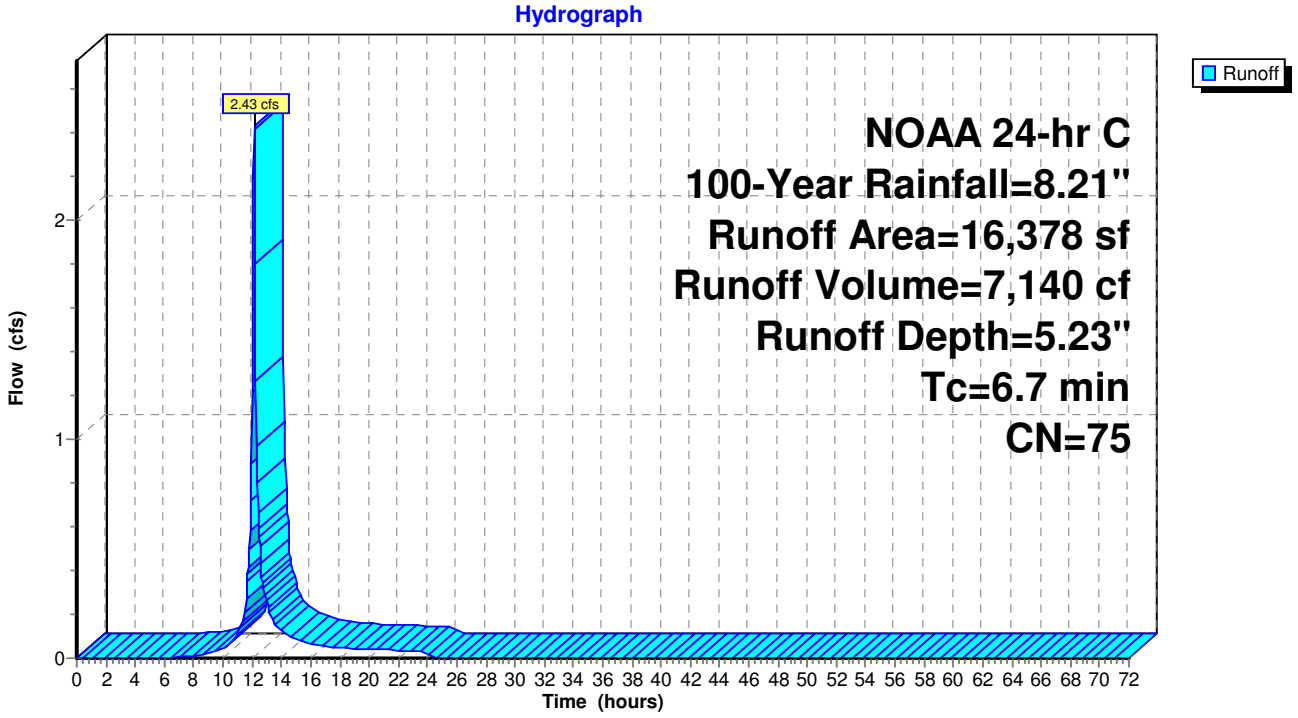
Runoff = 2.43 cfs @ 12.14 hrs, Volume= 7,140 cf, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (sf) | CN | Description |
|---|---|---|
| 2,439 | 80 | >75% Grass cover, Good, HSG D |
| 13,852 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 16,378 | 75 | Weighted Average |
| 16,291 | | 99.47% Pervious Area |
| 87 | | 0.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.7 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-1: Proposed Drainage to Easton Ave



## Summary for Subcatchment PR-2: Proposed Drainage to JFK Blvd

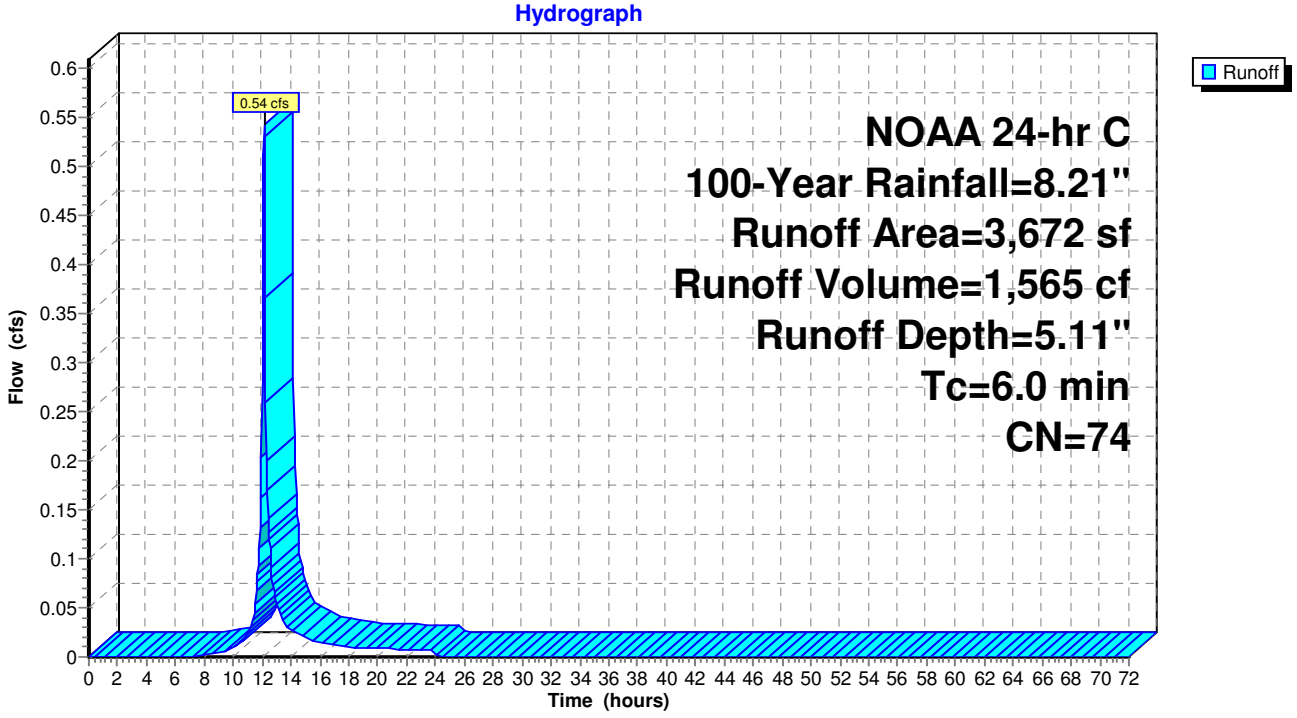
Runoff = 0.54 cfs @ 12.13 hrs, Volume= 1,565 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PR-2: Proposed Drainage to JFK Blvd



## Summary for Subcatchment PR-3: Proposed Drainage to Seeley's Brook

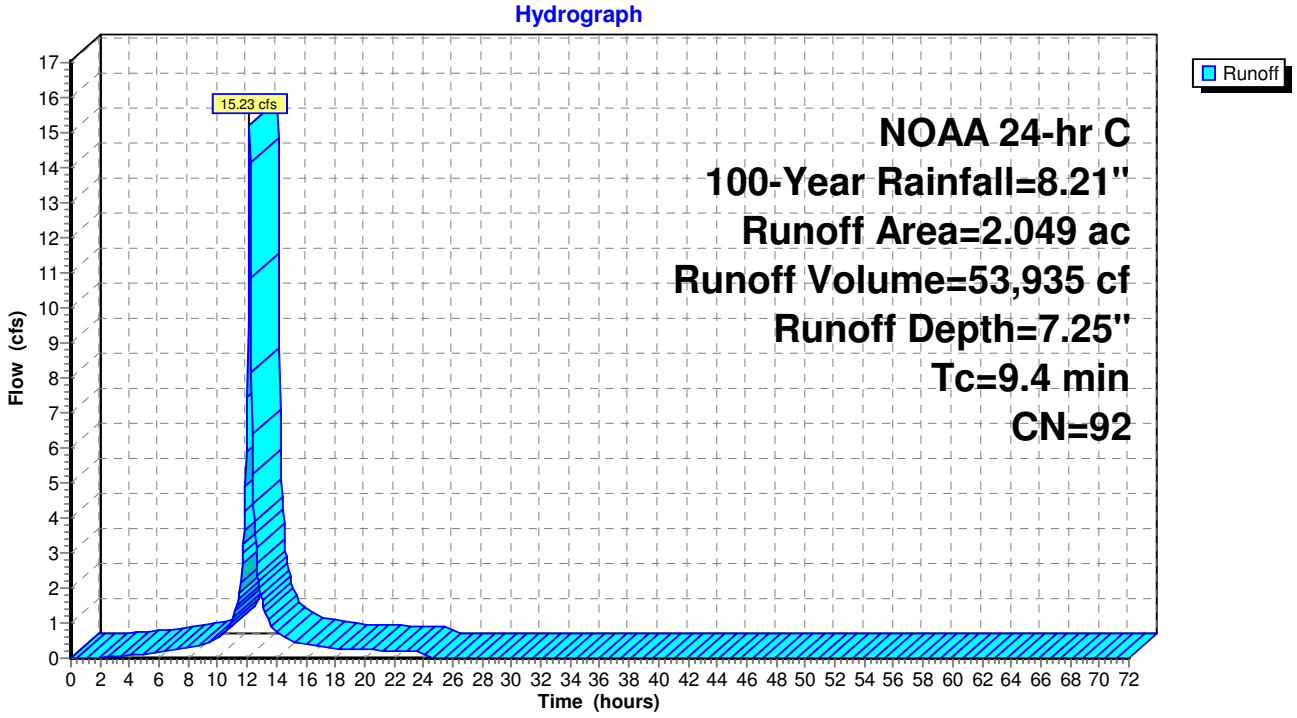
Runoff = 15.23 cfs @ 12.16 hrs, Volume= 53,935 cf, Depth= 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

| Area (ac) | CN | Description |
|---|---|---|
| 0.402 | 80 | >75% Grass cover, Good, HSG D |
| 0.228 | 74 | >75% Grass cover, Good, HSG C |
| 1.419 | 98 | Paved parking, HSG D |
| 2.049 | 92 | Weighted Average |
| 0.630 | | 30.75% Pervious Area |
| 1.419 | | 69.25% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-3: Proposed Drainage to Seeley's Brook

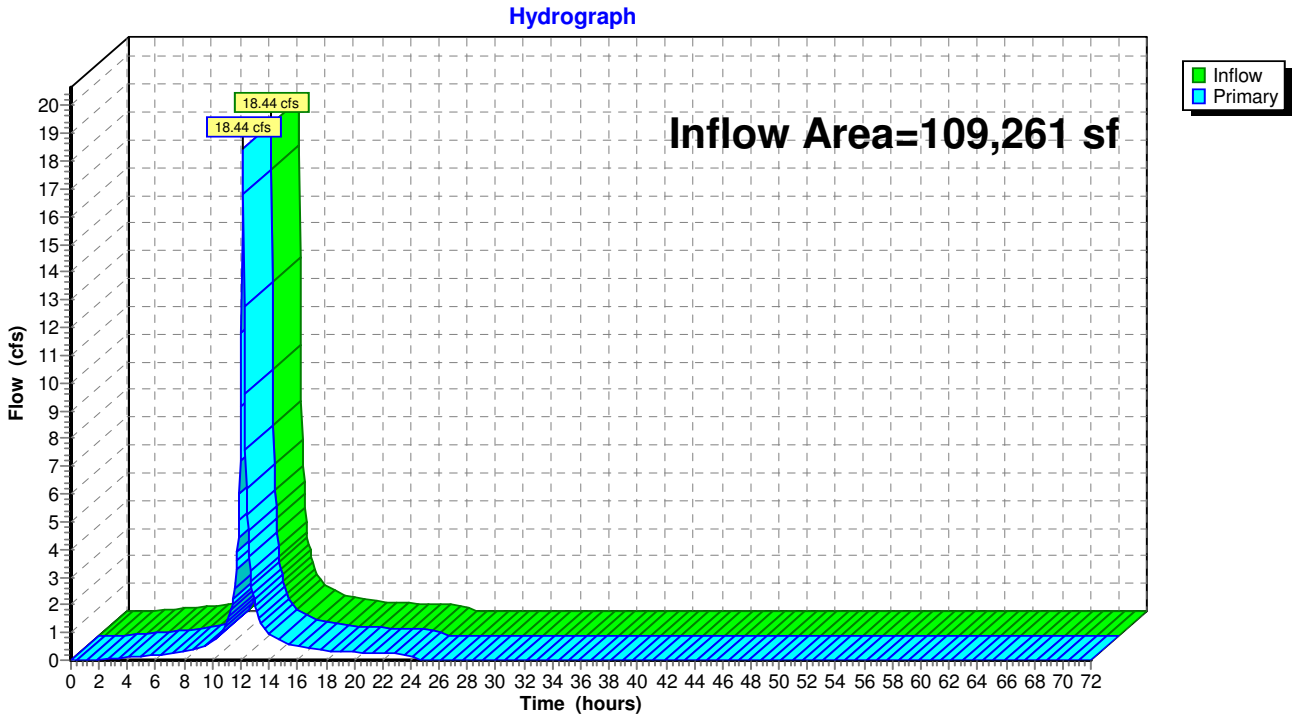


## Summary for Link 1L: Total Existing Drainage

Inflow Area = 109,261 sf, 66.98% Impervious, Inflow Depth = 7.14" for 100-Year event
Inflow = 18.44 cfs @ 12.16 hrs, Volume= 65,022 cf
Primary = 18.44 cfs @ 12.16 hrs, Volume= 65,022 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 1L: Total Existing Drainage

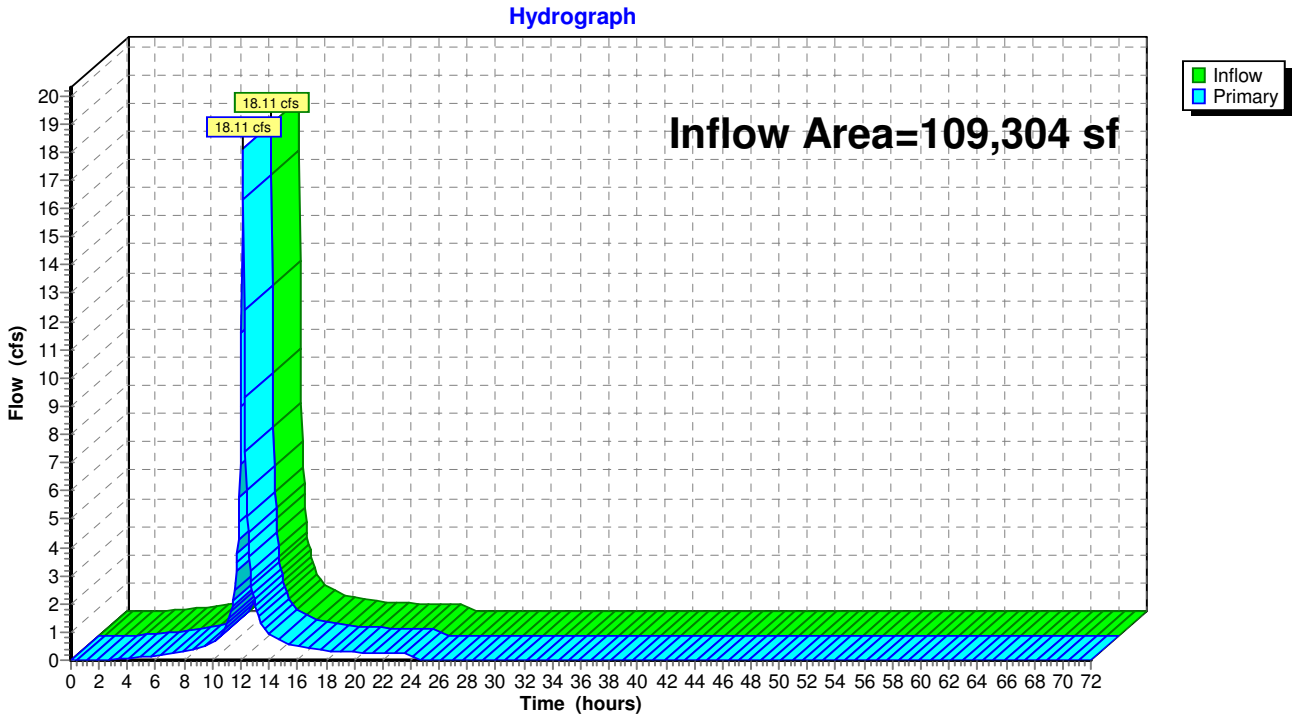


## Summary for Link 2L: Total Proposed Drainage

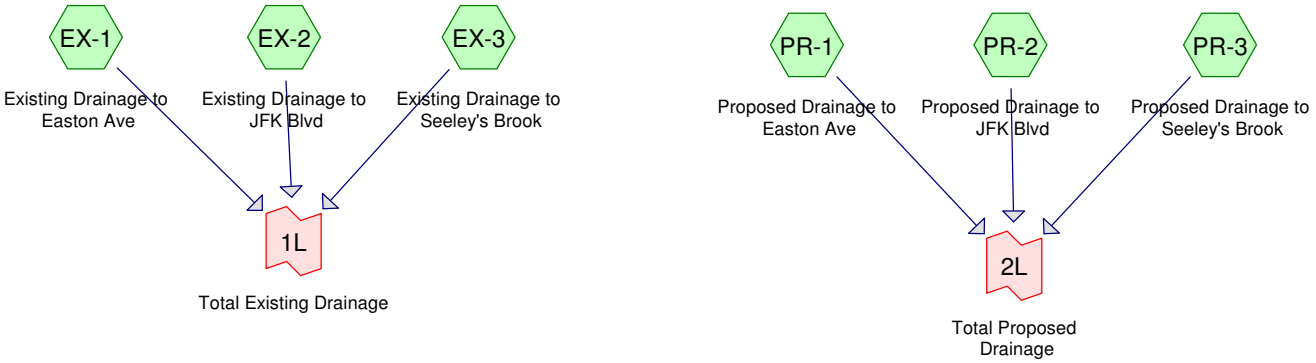
Inflow Area = 109,304 sf, 56.63% Impervious, Inflow Depth = 6.88" for 100-Year event
Inflow = 18.11 cfs @ 12.16 hrs, Volume= 62,640 cf
Primary = 18.11 cfs @ 12.16 hrs, Volume= 62,640 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 2L: Total Proposed Drainage



# HYDROGRAPH SUMMARY REPORTS – WATER QUALITY STORM (HYDROGRAPHS CREATED USING HYDROCAD BY HYDROCAD SOFTWARE SOLUTIONS LLC)




Subcat Reach Pond Link

**Routing Diagram for 2022-04-11 Drainage Design**
Prepared by Dynamic Engineering, Printed 5/10/2022

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 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 EX-1: Existing Drainage to** Runoff Area=8,320 sf 1.05% Impervious Runoff Depth=0.10"
Tc=6.0 min CN=76 Runoff=0.05 cfs 70 cf

**Subcatchment EX-2: Existing Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=0.07"
Tc=6.0 min CN=74 Runoff=0.01 cfs 23 cf

**Subcatchment EX-3: Existing Drainage to** Runoff Area=2.233 ac 75.15% Impervious Runoff Depth=0.65"
Tc=9.4 min CN=93 Runoff=3.94 cfs 5,290 cf

**Subcatchment PR-1: Proposed Drainage to** Runoff Area=16,378 sf 0.53% Impervious Runoff Depth=0.09"
Tc=6.7 min CN=75 Runoff=0.07 cfs 119 cf

**Subcatchment PR-2: Proposed Drainage to** Runoff Area=3,672 sf 0.00% Impervious Runoff Depth=0.07"
Tc=6.0 min CN=74 Runoff=0.01 cfs 23 cf

**Subcatchment PR-3: Proposed Drainage to** Runoff Area=2.049 ac 69.25% Impervious Runoff Depth=0.60"
Tc=9.4 min CN=92 Runoff=3.30 cfs 4,427 cf

**Link 1L: Total Existing Drainage** Inflow=3.99 cfs 5,383 cf
Primary=3.99 cfs 5,383 cf

**Link 2L: Total Proposed Drainage** Inflow=3.37 cfs 4,568 cf
Primary=3.37 cfs 4,568 cf

**Total Runoff Area = 218,566 sf Runoff Volume = 9,951 cf Average Runoff Depth = 0.55"**
**38.20% Pervious = 83,487 sf 61.80% Impervious = 135,079 sf**

## Summary for Subcatchment EX-1: Existing Drainage to Easton Ave

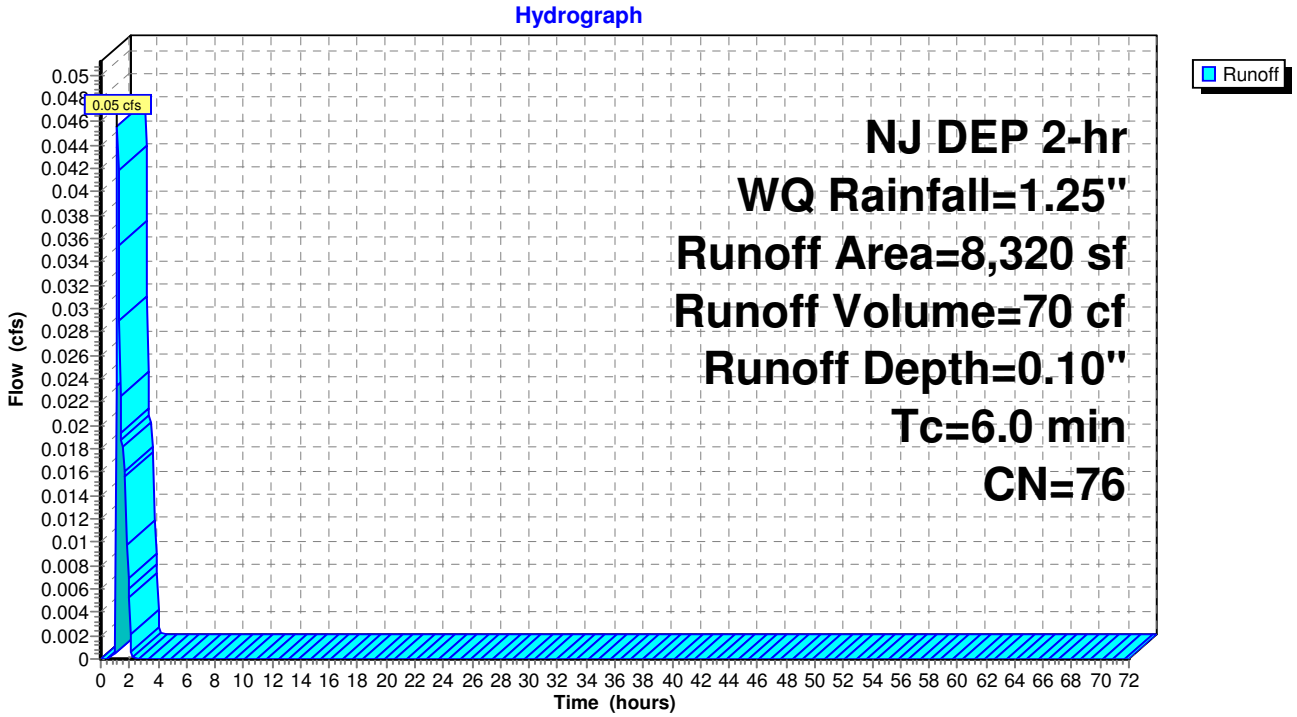
Runoff = 0.05 cfs @ 1.17 hrs, Volume= 70 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (sf) | CN | Description |
|---|---|---|
| 2,047 | 80 | >75% Grass cover, Good, HSG D |
| 6,186 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 8,320 | 76 | Weighted Average |
| 8,233 | | 98.95% Pervious Area |
| 87 | | 1.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.5 | | | | | **Direct Entry, Direct Entry** |
| 1.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EX-1: Existing Drainage to Easton Ave



## Summary for Subcatchment EX-2: Existing Drainage to JFK Blvd

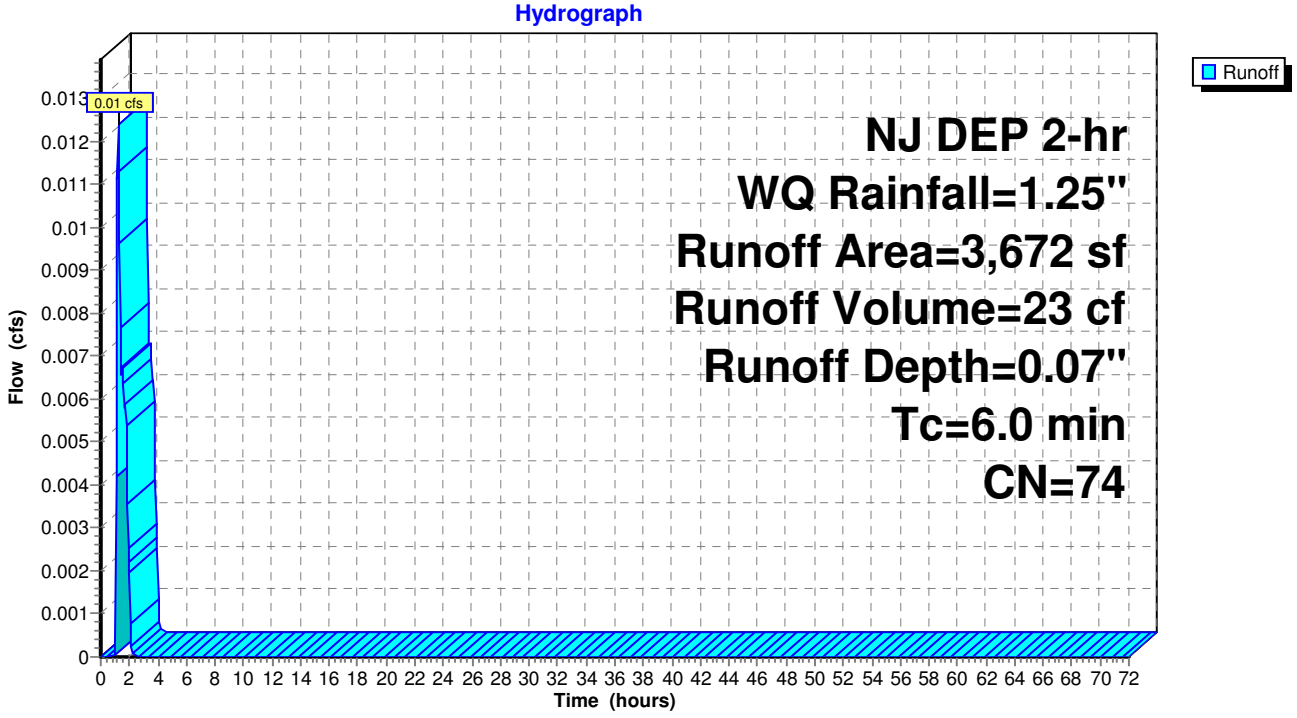
Runoff = 0.01 cfs @ 1.20 hrs, Volume= 23 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EX-2: Existing Drainage to JFK Blvd



## Summary for Subcatchment EX-3: Existing Drainage to Seeley's Brook

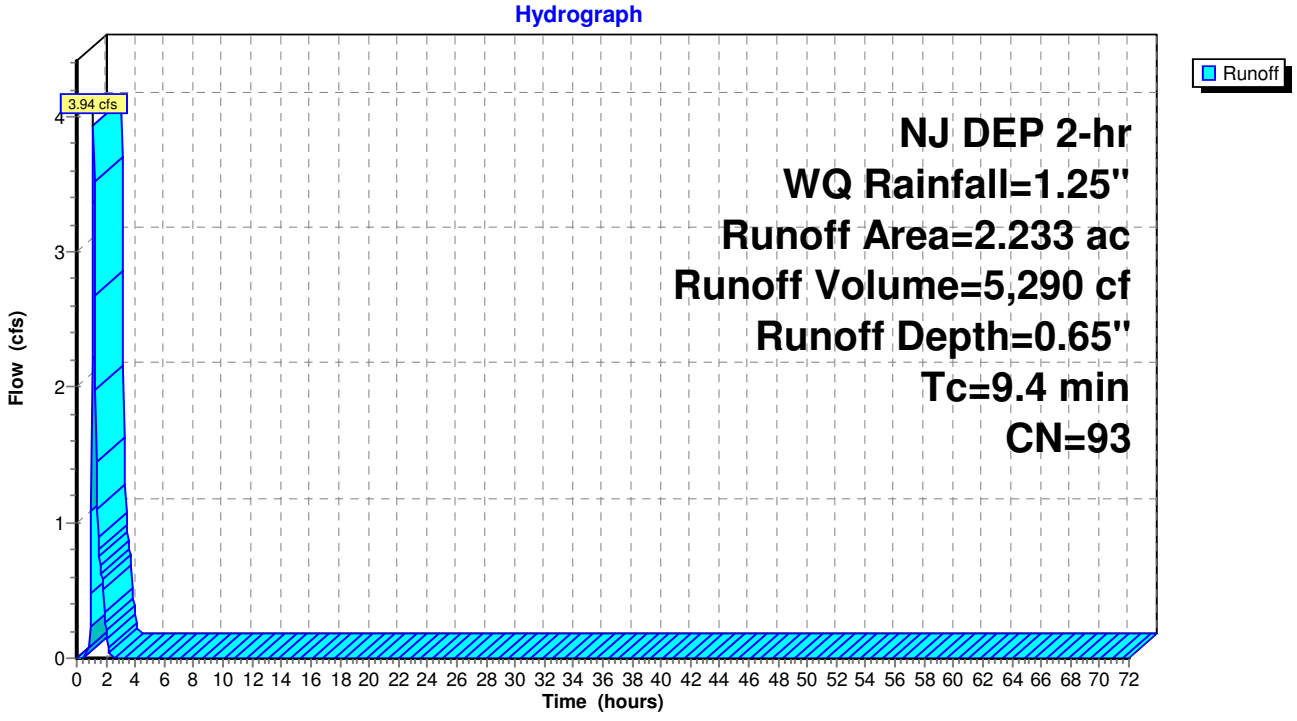
Runoff = 3.94 cfs @ 1.15 hrs, Volume= 5,290 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (ac) | CN | Description |
|---|---|---|
| 0.278 | 80 | >75% Grass cover, Good, HSG D |
| 0.277 | 74 | >75% Grass cover, Good, HSG C |
| 1.678 | 98 | Paved parking, HSG D |
| 2.233 | 93 | Weighted Average |
| 0.555 | | 24.85% Pervious Area |
| 1.678 | | 75.15% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment EX-3: Existing Drainage to Seeley's Brook



## Summary for Subcatchment PR-1: Proposed Drainage to Easton Ave

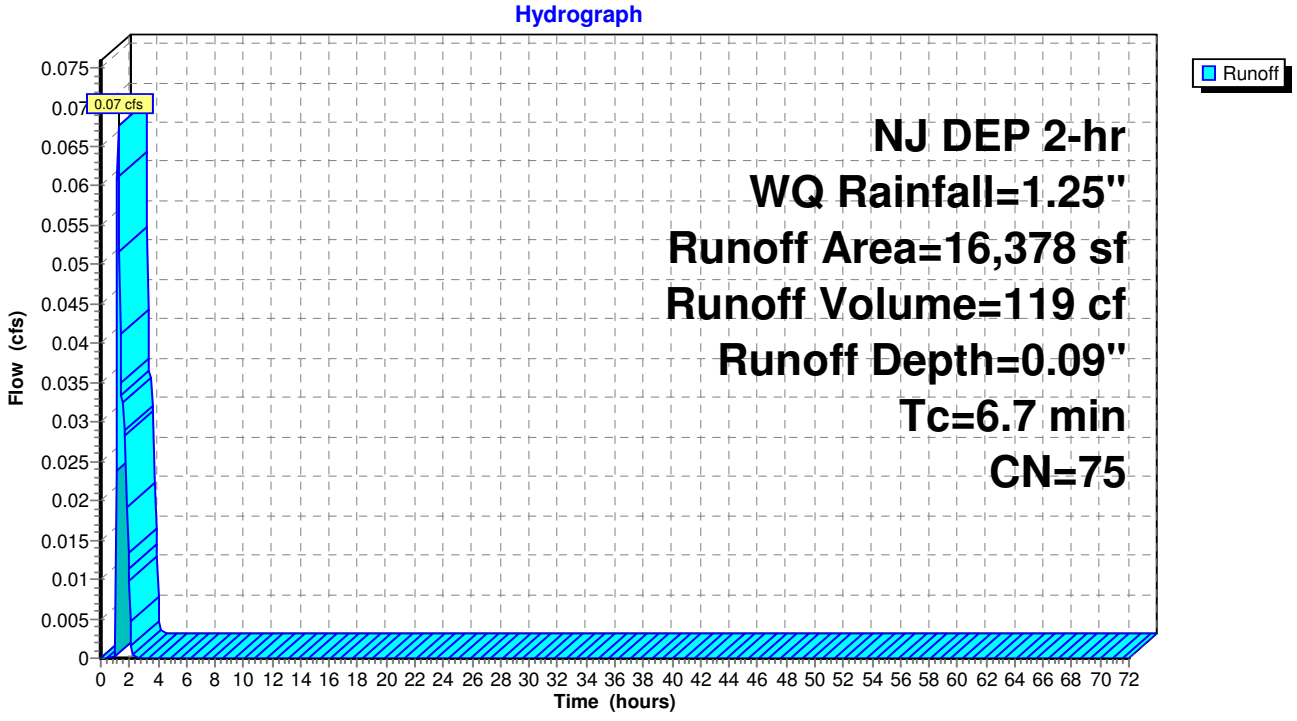
Runoff = 0.07 cfs @ 1.20 hrs, Volume= 119 cf, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (sf) | CN | Description |
|---|---|---|
| 2,439 | 80 | >75% Grass cover, Good, HSG D |
| 13,852 | 74 | >75% Grass cover, Good, HSG C |
| 87 | 98 | Paved parking, HSG D |
| 16,378 | 75 | Weighted Average |
| 16,291 | | 99.47% Pervious Area |
| 87 | | 0.53% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.7 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-1: Proposed Drainage to Easton Ave



## Summary for Subcatchment PR-2: Proposed Drainage to JFK Blvd

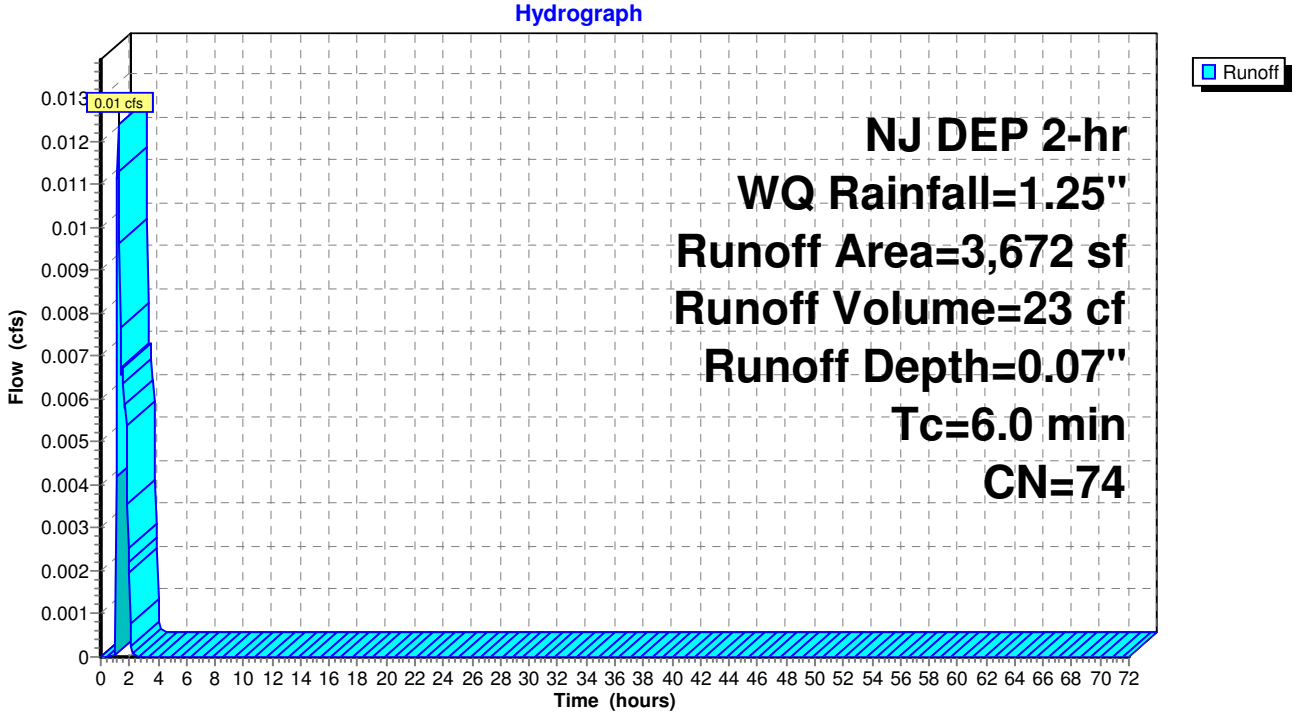
Runoff = 0.01 cfs @ 1.20 hrs, Volume= 23 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (sf) | CN | Description |
|---|---|---|
| 3,672 | 74 | >75% Grass cover, Good, HSG C |
| 0 | 98 | Paved parking, HSG D |
| 3,672 | 74 | Weighted Average |
| 3,672 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Direct Entry** |
| 4.5 | 0 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PR-2: Proposed Drainage to JFK Blvd



## Summary for Subcatchment PR-3: Proposed Drainage to Seeley's Brook

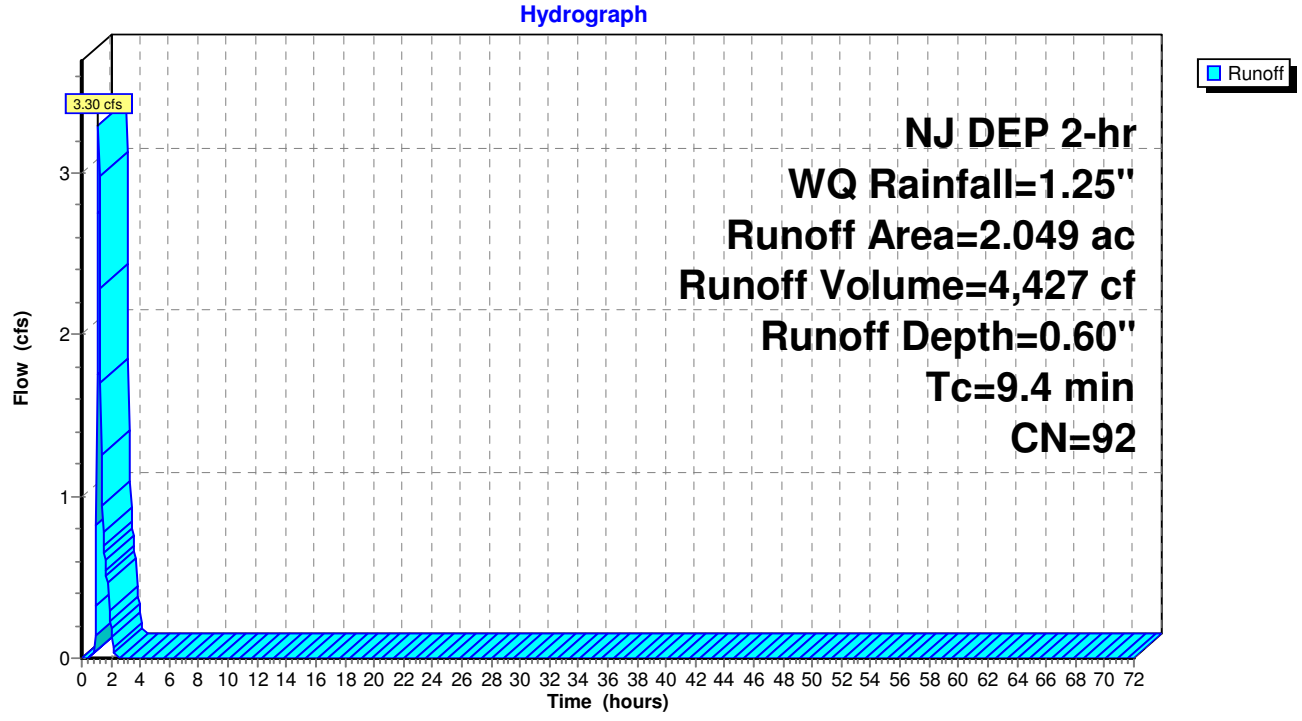
Runoff = 3.30 cfs @ 1.16 hrs, Volume= 4,427 cf, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

| Area (ac) | CN | Description |
|---|---|---|
| 0.402 | 80 | >75% Grass cover, Good, HSG D |
| 0.228 | 74 | >75% Grass cover, Good, HSG C |
| 1.419 | 98 | Paved parking, HSG D |
| 2.049 | 92 | Weighted Average |
| 0.630 | | 30.75% Pervious Area |
| 1.419 | | 69.25% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.4 | | | | | **Direct Entry, Direct Entry** |

## Subcatchment PR-3: Proposed Drainage to Seeley's Brook

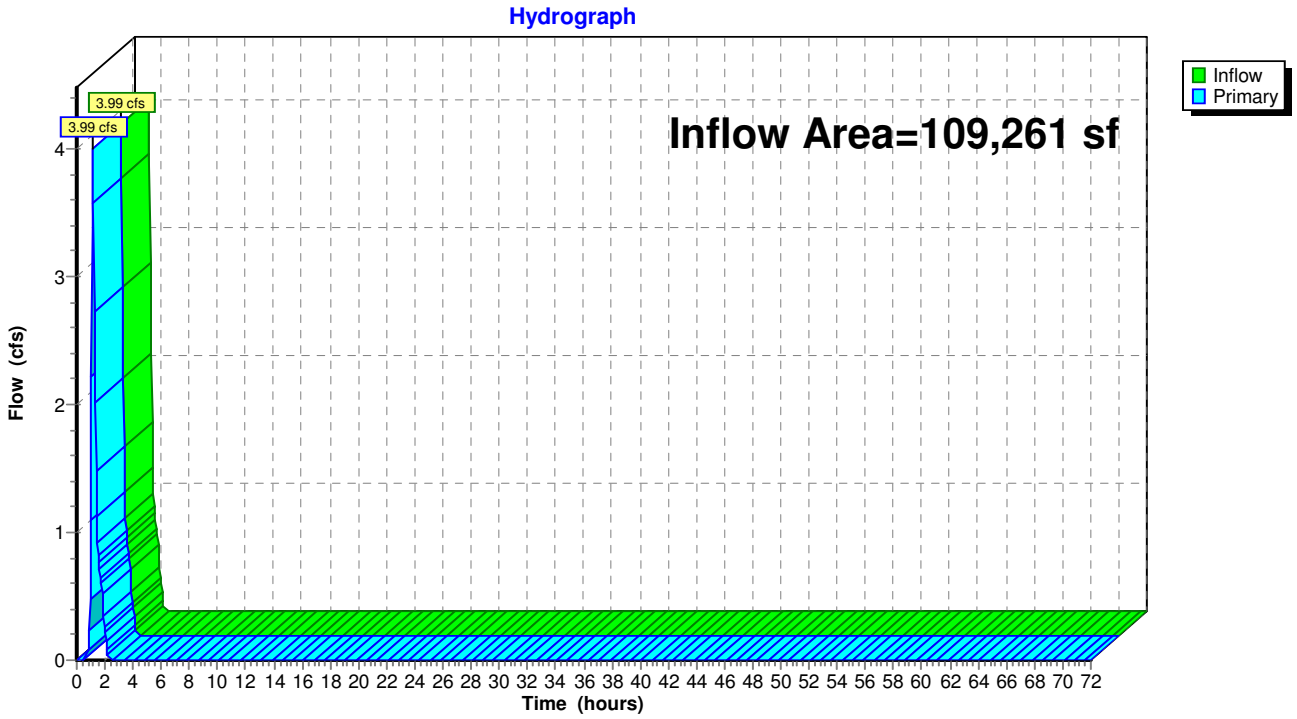


## Summary for Link 1L: Total Existing Drainage

Inflow Area = 109,261 sf, 66.98% Impervious, Inflow Depth = 0.59" for WQ event
Inflow = 3.99 cfs @ 1.15 hrs, Volume= 5,383 cf
Primary = 3.99 cfs @ 1.15 hrs, Volume= 5,383 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 1L: Total Existing Drainage

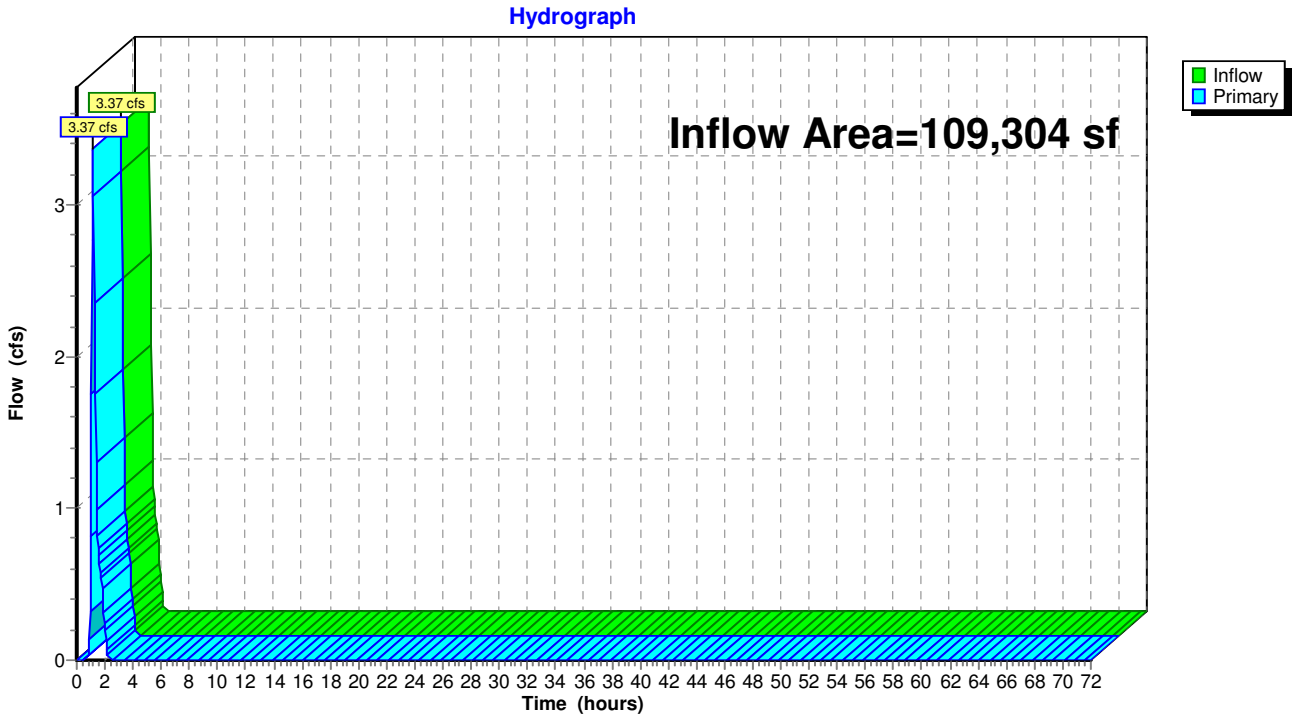


## Summary for Link 2L: Total Proposed Drainage

Inflow Area = 109,304 sf, 56.63% Impervious, Inflow Depth = 0.50" for WQ event
Inflow = 3.37 cfs @ 1.16 hrs, Volume= 4,568 cf
Primary = 3.37 cfs @ 1.16 hrs, Volume= 4,568 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Link 2L: Total Proposed Drainage



# STORMWATER COLLECTION SYSTEM CALCULATIONS
# (PIPE SIZING)

DYNAMIC ENGINEERING

# Stormwater Collection System Calculations

Project: Proposed Mcdonald's Restaurant
Job #: 0114-99-192
Location: Franklin, NJ
Design Storm: 25 yr

Computed By: ANV
Checked By: KO
Date: 5/4/2022

NOTES:
1) Design method used is Rational Method, unless otherwise noted.
2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

| PIPE SECTION | | SUBCATCHMENT AREA | INCREMENTAL | | CUMULATIVE | TIME OF CONCENTRATION | | | I | PEAK RUNOFF | | PIPING INPUT | | | PIPING DATA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | Area (Acres) | "C" | A x C Ac | A x C (acres) | Tc to Inlet (min) | Tc in Pipe (min.) | Final Tc (min) | (In/Hr) | Q to Inlet (CFS) | Q cum. for Pipe (CFS) | Dia. (In) | Length (Ft) | Man. "n" | Slope (ft/ft) | Pipe Capacity (cfs) | Pipe Velocity (fps) |
| INLET 13 | INLET 15 | 0.40 | 0.95 | 0.38 | 0.38 | 6.00 | 0.33 | 6.00 | 7.70 | 2.93 | 2.93 | 15 | 114.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| INLET 15 | INLET 16 | 0.36 | 0.95 | 0.34 | 0.72 | 6.00 | 0.22 | 6.33 | 7.70 | 2.62 | 5.54 | 15 | 76.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| INLET 16 | INLET 17 | 0.03 | 0.95 | 0.03 | 0.75 | 6.00 | 0.12 | 6.55 | 7.59 | 0.23 | 5.69 | 15 | 41.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| INLET 17 | MTD 2 | 0.19 | 0.95 | 0.18 | 0.93 | 6.00 | 0.01 | 6.67 | 7.59 | 1.37 | 7.06 | 18 | 3.0 | 0.012 | 0.0100 | 11.38 | 6.44 |
| MTD 2 | MH 12 | 0.00 | 0.95 | 0.00 | 0.93 | 6.00 | 0.08 | 6.68 | 7.59 | 0.00 | 7.06 | 18 | 32.0 | 0.012 | 0.0100 | 11.38 | 6.44 |
| ROOF | MH 12 | 0.10 | 0.95 | 0.10 | 0.10 | 6.00 | 0.48 | 6.00 | 7.70 | 0.77 | 0.77 | 15 | 163.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| INLET 18 | INLET 19 | 0.17 | 0.95 | 0.16 | 0.16 | 6.00 | 0.21 | 6.00 | 7.70 | 1.23 | 1.23 | 15 | 73.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| INLET 19 | MH 12 | 0.07 | 0.95 | 0.07 | 0.23 | 6.00 | 0.28 | 6.21 | 7.70 | 0.54 | 1.77 | 15 | 97.0 | 0.012 | 0.0100 | 7.00 | 5.71 |
| MH 12 | EX INLET | 0.00 | 0.95 | 0.00 | 1.26 | 6.00 | 0.09 | 6.76 | 7.59 | 0.00 | 9.56 | 24 | 54.5 | 0.013 | 0.0220 | 33.55 | 10.68 |

# NJDEP NONSTRUCTURAL STRATEGIES POINTS SYSTEM (NSPS)

**NJDEP Nonstructural Strategies Points System (NSPS)**

**Version: January 31, 2006**

**Note: Input Values in Yellow Cells Only**

| | |
|---|---|
| **Project:** | Proposed McDonald's Restaurant - 940 Easton Avenue, Franklin, NJ |
| **Date:** | April 13, 2022 |
| **User:** | ANV |
| **Notes:** | |

## Step 1 - Provide Basic Major Development Site Information

**A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 =** 2.5 **Acres**

**B. Specify by Percent the Various Planning Areas Located within the Development Site:**

| State Plan Planning Area: | PA-1 | PA-2 | PA-3 | PA-4 | PA-4B | PA-5 | Total % Area |
|---|---|---|---|---|---|---|---|
| Percent of Each Planning Area within Site: | 100.0% | | | | | | 100.0% |

**Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts**

## Step 2 - Describe Existing or Pre-Developed Site Conditions

**A. Specify Existing Land Use/Land Cover Descriptions and Areas:**

| Site Segment | Land Use/Land Cover Description | Specify Land Use/Land Cover in Acres for Each HSG | | | | Use/Cover Subtotals | | Points |
|---|---|---|---|---|---|---|---|---|
| | | HSG A | HSG B | HSG C | HSG D | | | |
| 1 | Wetlands and Undisturbed Stream Buffers | | | | | 0.0 | | 0 |
| 2 | Lawn and Open Space | | | 0.5 | 0.3 | 0.8 | | 68 |
| 3 | Brush and Shrub | | | | | 0.0 | | 0 |
| 4 | Meadow, Pasture, Grassland, or Range | | | | | 0.0 | | 0 |
| 5 | Row Crop | | | | | 0.0 | | 0 |
| 6 | Small Grain and Legumes | | | | | 0.0 | | 0 |
| 7 | Woods - Indigenous | | | | | 0.0 | | 0 |
| 8 | Woods - Planted | | | | | 0.0 | | 0 |
| 9 | Woods and Grass Combination | | | | | 0.0 | | 0 |
| 10 | Ponds, Lakes, and Other Open Water | | | | | 0.0 | | 0 |
| 11 | Gravel and Dirt | | | | | 0.0 | | 0 |
| 12 | Porous and Permeable Paving | | | | | 0.0 | | 0 |
| 13 | Directly Connected Impervious | | | 0.5 | 1.2 | 1.7 | | 0 |
| 14 | Unconnected Impervious with Small D/S Pervious | | | | | 0.0 | | 0 |
| 15 | Unconnected Impervious with Large D/S Pervious | | | | | 0.0 | | 0 |
| | **HSG Subtotals (Acres):** | 0.0 | 0.0 | 1.0 | 1.5 | | **Total Area:** | 2.5 |
| | **HSG Subtotals (%):** | 0.0% | 0.0% | 40.0% | 60.0% | | **Total % Area:** | 100.0% |

**Points Subtotal:** **68**

**Total Existing Site Points:** **68**

## Step 3 - Describe Proposed or Post-Developed Site Conditions

**A. Specify Proposed Land Use/Land Cover Descriptions and Areas:**

| Site Segment | Land Use/Land Cover Description | Specify Land Use/Land Cover in Acres for Each HSG | | | | Use/Cover Subtotals | Points |
|---|---|---|---|---|---|---|---|
| | | HSG A | HSG B | HSG C | HSG D | | |
| 1 | Wetlands and Undisturbed Stream Buffers | | | | | 0.0 | 0 |
| 2 | Lawn and Open Space | | | 0.6 | 0.5 | 1.1 | 91 |
| 3 | Brush and Shrub | | | | | 0.0 | 0 |
| 4 | Meadow, Pasture, Grassland, or Range | | | | | 0.0 | 0 |
| 5 | Row Crop | | | | | 0.0 | 0 |
| 6 | Small Grain and Legumes | | | | | 0.0 | 0 |
| 7 | Woods - Indigenous | | | | | 0.0 | 0 |
| 8 | Woods - Planted | | | | | 0.0 | 0 |
| 9 | Woods and Grass Combination | | | | | 0.0 | 0 |
| 10 | Ponds, Lakes, and Other Open Water | | | | | 0.0 | 0 |
| 11 | Gravel and Dirt | | | | | 0.0 | 0 |
| 12 | Porous and Permeable Paving | | | | | 0.0 | 0 |
| 13 | Directly Connected Impervious | | | 0.4 | 1.0 | 1.4 | 0 |
| 14 | Unconnected Impervious with Small D/S Pervious | | | | | 0.0 | 0 |
| 15 | Unconnected Impervious with Large D/S Pervious | | | | | 0.0 | 0 |
| | **HSG Subtotals (Acres):** | 0.0 | 0.0 | 1.0 | 1.5 | **Total Area:** | 2.5 |
| | **HSG Subtotals (%):** | 0.0% | 0.0% | 40.0% | 60.0% | **Total % Area:** | 100.0% |

**Points Subtotal:** **91**

**B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:**

| | | |
|---|---|---|
| Total Directly Connected Impervious Coverage = | 56% | % of Site |
| Total Unconnected Impervious Coverage with Small D/S Pervious = | 0% | % of Site |
| Total Unconnected Impervious Coverage with Large D/S Pervious = | 0% | % of Site |
| Total Site Impervious Coverage = | 56% | % of Site |
| Effective Site Impervious Coverage = | 56% | % of Site |
| Specify Source of Maximum Allowable Impervious Coverage: | Table | (None or Table) |
| Allowable Site Impervious Cover from Maximum Impervious Cover Table: | 85% | |

Note: See Maximum Impervious Cover Table Worksheet for Details

**Points Subtotal:** 14

**C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:**

| | | |
|---|---|---|
| Total Proposed Site Disturbance = | 52% | % of Site |
| Maximum Allowable Site Disturbance by Municipal Ordinance = | | % of Site |

**Points Subtotal:** 0

**D. Describe Proposed Runoff Conveyance System:**

| | | |
|---|---|---|
| Total Length of Runoff Conveyance System = | 558 | Feet |
| Length of Vegetated Runoff Conveyance System = | 0 | Feet |
| % of Total Runoff Conveyance System That is Vegetated = | 0% | |

**Points Subtotal:** 0

**E. Residential Lot Clustering:**

| | | |
|---|---|---|
| Percent of Total Site Area that will be Clustered = | | % of Site |
| Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) = | | Acres |
| Maximum Proposed Cluster Lot Size (Note:1/4 Acre or Less) = | | Acres |
| Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space = | | % of Clustered Site Portion |

**Points Subtotal:** 0

**F. Will the Following be Utilized to Minimize Soil Compaction?**

| | | |
|---|---|---|
| Proposed Lawn Areas will be Graded with Lightweight Construction Equipment: | No | (Yes or No) |
| Percent of Proposed Lawn Areas to be Graded with Such Equipment: | | % of Lawn Areas |

**Points Subtotal:** 0

**G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?**

| | | |
|---|---|---|
| Groundwater Recharge Standards (NJAC 7:8-5.4-a-2): | No | (Yes or No) |
| Stormwater Runoff Quality Standards (NJAC 7:8-5.5): | No | (Yes or No) |
| Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3): | Yes | (Yes or No) |

**Points Subtotal:** 16

**Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.**

**Total Proposed Site Points:** 121

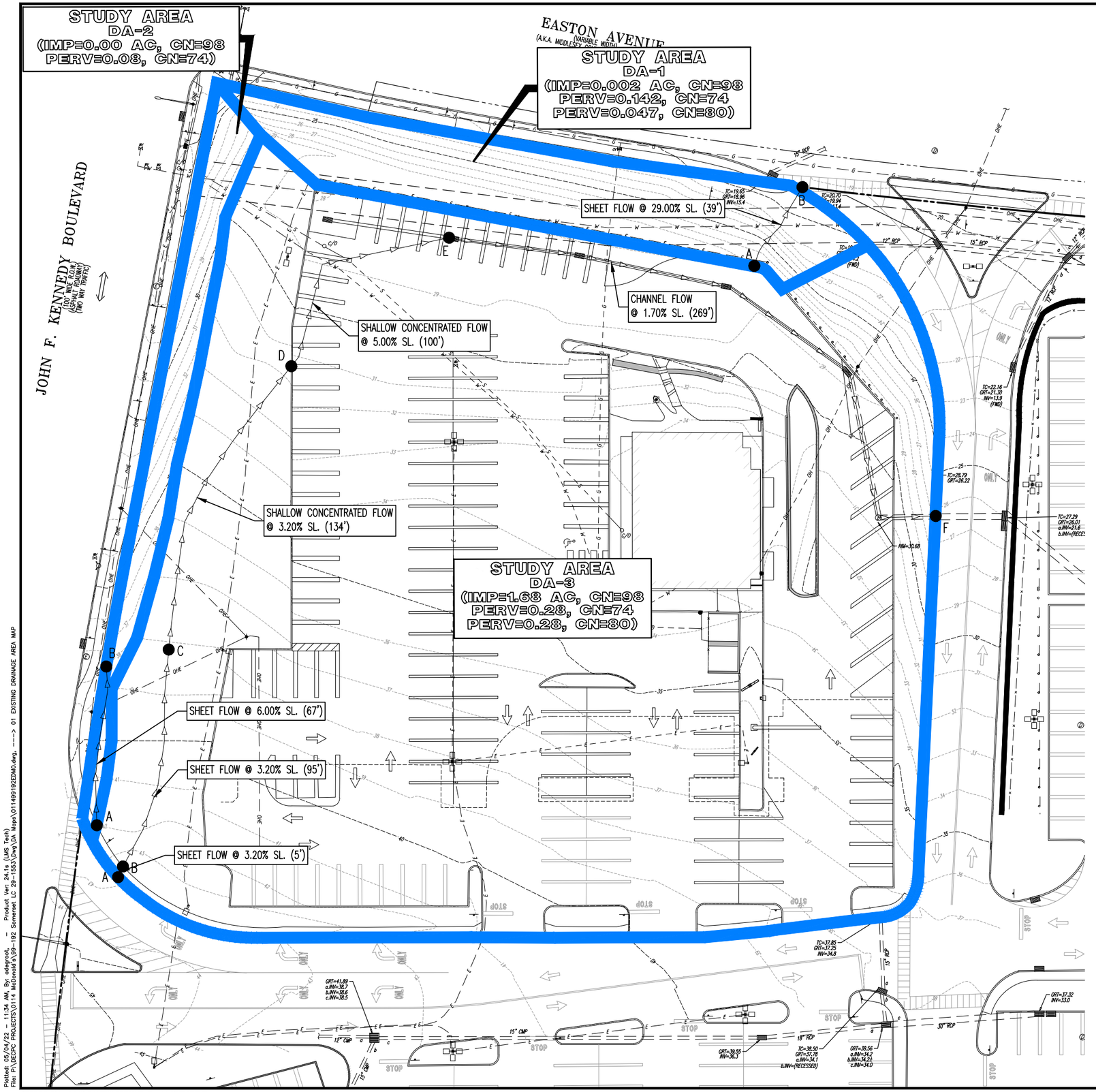
**Ratio of Proposed to Existing Site Points:** 178%

**Required Site Points Ratio:** 70%

**Nonstructural Point System Results:** Proposed Nonstructural Measures are Adequate

# DRAINAGE AREA MAPS

THIS PLAN TO BE UTILIZED FOR STORMWATER/DRAINAGE ANALYSIS PURPOSES ONLY




N

W E

S

GRAPHIC SCALE

-20 0 10 20 40 80

( IN FEET )
1 INCH = 20 FT.

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION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50 Park Place - Mezzanine Level
Newark, NJ 07102
T: 973.755.7200
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TITLE: EXISTING DRAINAGE AREA MAP

PROJECT: **PROPOSED McDONALD'S RESTAURANT**
*BUILDING TYPE 4597*
BLOCK 385, LOT 2.07
940 EASTON AVENUE (CR 527) & JOHN. F. KENNEDY BOULEVARD
TOWNSHIP OF FRANKLIN, SOMERSET COUNTY, NEW JERSEY

| | |
|---|---|
| JOB No: | 01114-99-192 |
| DRAWN BY: | ANV |
| DESIGNED BY: | ANV |
| CHECKED BY: | TFD |
| CHECKED BY: | – |
| DATE: | 04/14/22 |
| SCALE: (H) 1"=20' (V) | |
| SHEET No: | 1 OF 3 |
| Rev. # | 0 |

JOSEPH C. SPARONE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 47204

TIAGO F. DUARTE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52588

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

Rev. | Date | Comments | By

Plotted: 05/04/22 – 11:34 AM By: cdeprot – Product Ver: 24.1s (LMS Tech)
File: P:\DE2PC PROJECTS\01114 McDonald's\99-192 Somerset LC 20-155\Dwg\DA Maps\01114991922EDMD.dwg, ----> 01 EXISTING DRAINAGE AREA MAP

THIS PLAN TO BE UTILIZED FOR STORMWATER/DRAINAGE ANALYSIS PURPOSES ONLY

STUDY AREA
DA-2
(IMP=0.00 AC, CN=98
PERV=0.08, CN=74)

STUDY AREA
DA-1
(IMP=0.002 AC, CN=98
PERV=0.32, CN=74
PERV=0.06, CN=80)

STUDY AREA
DA-3
(IMP=1.42 AC, CN=98
PERV=0.23, CN=74
PERV=0.40, CN=80)

EASTON AVENUE
(A.K.A. MIDDLESEX CR-527)
(VARIABLE WIDTH)

JOHN F. KENNEDY BOULEVARD
(100' WIDE R.O.W.)
(SEPARATE ROADWAYS)
(TWO WAY TRAFFIC)

SHALLOW CONCENTRATED FLOW
@ 6.20% SL. (140')

CHANNEL FLOW
@ 1.00% SL. (302')

SHALLOW CONCENTRATED FLOW
@ 5.00% SL. (72')

SHEET FLOW @ 6.20% SL. (100')

SHALLOW CONCENTRATED FLOW
@ 3.20% SL. (118')

SHEET FLOW @ 6.00% SL. (67')

SHEET FLOW @ 3.20% SL. (95')

SHEET FLOW @ 3.20% SL. (5')

McDonald's
45-97 BUILDING
(4,456 SF PROPOSED)

DRIVE THRU

STOP

MEET EXIST.
TC: 41.19
G: 40.69

MEET EXIST
TC: 33.91
G: 33.41

N
W
E
S

GRAPHIC SCALE
−10 0 5 10 20 40
( IN FEET )
1 INCH = 10 FT.

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION


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Newtown, Pennsylvania T: 267.685.0276 | Philadelphia, Pennsylvania T: 215.233.4885 | Bethlehem, Pennsylvania T: 610.395.4400


TITLE: PROPOSED DRAINAGE AREA MAP

PROJECT: **PROPOSED McDONALD'S RESTAURANT**
***BUILDING TYPE 4597***
BLOCK 385, LOT 2.07
940 EASTON AVENUE (CR 527) & JOHN. F. KENNEDY BOULEVARD
TOWNSHIP OF FRANKLIN, SOMERSET COUNTY, NEW JERSEY

| | |
|---|---|
| JOB No: | 01114-99-192 |
| DATE: | 04/14/22 |
| DRAWN BY: | ANV |
| SCALE: (H) 1"=20' (V) | |
| DESIGNED BY: | ANV |
| CHECKED BY: | TFD |
| CHECKED BY: | – |
| SHEET No: | 2 OF 3 |
| Rev. # | 0 |

JOSEPH C. SPARONE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 47204

TIAGO F. DUARTE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52588

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, AND OWNERS PREPARING TO EXCAVATE TO REPORT PLANNED EXCAVATION IN ANY AREA.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

Rev. | Date | Comments | By



Plotted: 05/04/22 – 11:34 AM By: adegroot, — Product Ver: 24.1s (LMS Tech)
File: P:\DEC\PC PROJECTS\01114 McDonald's\99-192 Somerset LC 29-1553\Dwg\DA Maps\01114992192PDMO.dwg, ----> 02 PROPOSED DRAINAGE AREA MAP

THIS PLAN TO BE UTILIZED FOR STORMWATER/DRAINAGE ANALYSIS PURPOSES ONLY

EASTON AVENUE
(VARIABLE WIDTH)
(A.K.A. MIDDLESEX COUNTY ROUTE #527)
(ASPHALT ROADWAY)
(TWO WAY TRAFFIC)

JOHN F. KENNEDY BOULEVARD
(150' WIDE R.O.W.)
(ASPHALT ROADWAY)
(TWO WAY TRAFFIC)

STUDY AREA
INLET #13
(IMP=0.18 AC, CN=98
PERV=0.04, CN=80
PERV=0.18, CN=74)

STUDY AREA
INLET #15
(IMP=0.27 AC, CN=98
PERV=0.03, CN=80
PERV=0.06, CN=74)

STUDY AREA
INLET #16
(IMP=0.02 AC, CN=98
PERV=0.01, CN=80)

STUDY AREA
INLET #17
(IMP=0.18 AC, CN=98
PERV=0.01, CN=80)

STUDY AREA
INLET #18
(IMP=0.10 AC, CN=98
PERV=0.07, CN=80)

STUDY AREA
INLET #19
(IMP=0.06 AC, CN=98
PERV=0.01, CN=80)

PROP. 'B' INLET
STORM STR. #13
GRT: 29.34
INV OUT (15"):25.57

PROP. 'B' INLET
STORM STR. #15
GRT: 29.40
INV IN (15"): 24.44
INV OUT (15"):24.44

PROP. 'B' INLET
STORM STR. #16
GRT: 31.52
INV IN (15"): 23.67
INV OUT (15"):23.67

PROP. 'B' INLET
STORM STR. #17
GRT: 31.78
INV IN (15"): 23.26
INV OUT (15"):23.26

PROP. 'E' INLET
STORM STR. #18
GRT: 33.90
INV OUT (15"):24.50

PROP. 'E' INLET
STORM STR. #19
GRT: 33.90
INV IN (15"): 23.77
INV OUT (15"):23.77

15" HDPE 114 LF @ 1.00% SL. STM SEWER
15" HDPE 76 LF @ 1.00% SL. STM SEWER
15" HDPE 66 LF @ 1.00% SL. STM SEWER
15" HDPE 54 LF @ 1.00% SL. STM SEWER
15" HDPE 41 LF @ 1.00% SL. STM SEWER
15" HDPE 24 LF @ 1.00% SL. STM SEWER
15" HDPE 23 LF @ 1.00% SL. STM SEWER
15" HDPE 12 LF @ 1.00% SL. STM SEWER
15" HDPE 3 LF @ 1.00% SL. STM SEWER
15" HDPE 85 LF @ 1.00% SL. STM SEWER

PROP. CLEANOUT
PROP. BUILDING CONNECTION
INV (OUT): 30.50

PROP. 4'ø STM. VECTOR MH
STORM STR. #12
RIM: 32.60
INV IN (15" HDPE): 28.83
INV IN (A): 22.80
INV IN (B): 22.80

N
W E
S

GRAPHIC SCALE
-10 0 5 10 20 40
( IN FEET )
1 INCH = 10 FT.

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Comments | By | Date | Rev.

Plotted: 05/04/22 – 11:34 AM, By: sdeyoso
File: P:_DEDPC' PROJECTS\01114 McDonald's\99-192 Somerset, LC 29-1553\Dwg\DA Maps\01114991920M0.dwg, ---> 03 INLET DRAINAGE AREA MAP