PRELIMINARY
STORMWATER POLLUTION PREVENTION PLAN

RIVER PARK CENTER PROJECT
CITY OF YONKERS, NY

Prepared for:

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1.0 SCOPE OF REPORT

This Report has been prepared to provide the Preliminary Stormwater Pollution Prevention Plan (SWPPP) for the River Park Center Project (the Project) that is located in the City of Yonkers, Westchester County, New York. This Report addresses the requirements set forth in the New York State Department of Environmental Protection's (NYSDEC) Pollution Discharge Elimination System (SPDES) for discharges fro construction activities General Permit GP-02-01 (General Permit), and the City of Yonkers' Stormwater Management Program. The General Permit covers discharges that are associated with construction activity, specifically activities that result in the disturbance of one (1) acre or more of total land area.

To be covered under the General Permit, the project would be required to conform to the technical standards for stormwater quantity and quality controls presented in the New York State Stormwater Management Design Manual ("DEC Design Manual"). Since this is a redevelopment project, stormwater management and water quality for portions of the Project with existing impervious area will also be governed Chapter 9, "Redevelopment Projects" of the DEC Design Manual. The provision of stormwater management practices in redevelopment follow an approach to balance between 1) maximizing improvements in site design that can reduce the impacts of stormwater runoff, and 2) providing a maximum level of on-site treatment that is feasible given the redevelopment project site constraints. The primary focus of the chapter is to identify alternative practices and their sizing criteria.

As a Municipal Separate Stormwater System, the City has developed a Stormwater Management Program ("SWMP") as required for coverage under the General Permit. The SWMP includes a listing of the Best Management Practices ("BMPs") that will be implemented by the City to achieve the regulatory standard of reducing pollutants in the City's stormwater to the maximum extent possible. With respect to construction activities, the BMPs include implementation of education and training of construction site operators; implementation of site plan review that includes ensuring that sediment and erosion control are part of the construction process; conducting site inspections and enforcing compliance with the issued building permit, approved site plans and the City Erosion and Sediment Control Code. Compliance with the General Permit will meet the objectives of the City SWMP.

1.1 Responsibilities of the Participants

It is the responsibility of the Owner, General Contractor, and subcontractors to comply with the measures set forth in this SWPPP and implement pollutant control measures which retain surface water quality and prevent sediment laden runoff from entering rivers, streams, estuaries, wetlands and other sensitive environments. The following outlines the responsibilities of all participants.

1.1.1 Owner's Engineer

1. Prepare the SWPPP using good Engineering practices, best management practices and in compliance with the General Permit.

2. Prepare Notice of Intent (NOI) for the Owner for submission to the NYSDEC.

3. Provide copies of the SWPPP and the "Acknowledgement of Notice of Intent" to the local government agencies having jurisdiction or regulatory control over the project.

4. Review the site prior to the beginning of construction and certify in an inspection report that the appropriate pre-construction erosion and sediment control measures outlined herein and that are required by the General Permit have been installed and will operate as designed.

5. Conduct on-site inspections every 7 days and within 24 hours of 0.5 inches or greater of rainfall for general compliance with the SWPPP and the General Permit. Inspection reports will be provided to the Owner within 24 hours of the field inspection. Any problem areas of areas in need of additional stabilization shall be made clear to the Owner.

6. Review onsite Contractor's SWPPP records to ensure compliance and update them as required or necessary.

7. Update the SWPPP each time there is a significant modification to the design or construction that may have a significant effect on the potential for discharge of pollutants into receiving waters.

8. When construction is complete, provide the Owner with certification that an inspection has been completed verifying that the site has undergone final stabilization.

9. When the site has undergone final stabilization, prepare the Notice of Termination (NOT) for the Owner for submission to the NYSDEC.

1.1.2 Owner/Operator/Permittee

The following is a summary of the Owner's responsibilities:

1. Sign the NOI and certify the SWPPP by signing the Owner's Certification statement. Submit the NOI to NYSDEC.

2. When the Owner receives a letter of "Acknowledgement of Notice of Intent" from the NYSDEC, post a copy of this letter at the site in a prominent place for the public viewing.

3. In accordance with the requirements of the General Permit, the Owner/Operator shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on site and be made available to the permitting authority upon request. The site logbook shall contain the following documents:

    a. NYSDEC Notice of Intent
    b. NYSDEC Notice of Acknowledgement
    c. Stormwater Pollution Prevention Plan (SWPPP)
    d. Owner/Operator SPDES Permit Certification (Signed copy)
    e. Contractor/Subcontractor SPDES Permit Certification (Signed copy)
    f. Pre Construction Site Assessment Report
    g. Site Assessment Reports
    h. Monthly Assessment Logs – The Operator shall post at the site, in a publicly- accessible location, a summary of the site inspection activities on a monthly basis.
    i. Quarterly Reports
    j. Final Certification

k. SWPPP Modifications
l. SDPES General Permit GP-02-01 for Stormwater Discharges from Construction Activity

4. Ensure the SWPPP report, inspection reports and inspection quarterly summaries are certified by an authorized person who has responsibility for the overall operation of the site such as a project manager or site superintendent. Certification of these documents is executed by signing the certifying statements and at the end of the inspection reports.

5. Require the General Contractor and all Sub Contractors involved with construction activity that disturbs site to fully implement the SWPPP and the requirements set forth in the General Permit. The SWPPP should be certified by the General Contractor and all Sub Contractors involved with earth disturbance during construction by signing the certifying statement.

6. Upon project completion and when the site has reached final stabilization, the Owner should sign the Notice of Termination (NOT) prepared by the Owner's Engineer and submit to NYSDEC.

7. Retain all site records and documentation including Engineering reports, SWPPP reports, SWPPP inspection reports and all records of data used to complete the NOI for a minimum of 3 years from the date the site reached final stabilization.

8. Provide an Operation & Maintenance (O&M) manual to any future Owners.

1.1.3 Contractors and Sub-Contractors

The following is summary of the Contractor's responsibilities:

1. Implement fully the SWPPP and the requirements set forth in the SPDES General Permit. Certify the SWPPP by signing the Contractor's Certification statement.

2. Provide the names and addresses of all sub-contractors involved in construction activities that disturb site soils for inclusion in the SWPPP.

3. Ensure all sub-contractors involved in construction activities that disturb site soils to implement fully the SWPPP and the requirements set forth in the SPDES General Permit. All sub-contractors must certify the SWPPP by signing the Contractor's Certification statement contained in (Appendix A) of this report.

4. Conduct inspections on a regular basis of the erosion and sedimentation controls installed at the site. Maintain and repair as necessary all erosion and sedimentation controls.

2.0 SITE DESCRIPTION

This section briefly describes existing site conditions on and adjacent to the project site as they relate to Surface Water Management planning considerations. Subsequent sections contain a description of the manner in which site runoff will be managed to minimize impacts on areas adjacent to the site and the compliance with the referenced regulations.

2.1 Locations

For the purpose of the description of the stormwater infrastructure and the analysis of the existing and proposed stormwater runoff and impacts, the Project site and the surrounding area has been defined as four (4) study areas (See Drawing No. 1). The study areas include the following:

- River Park Center - The area is bounded by Elm Street, Palisades Avenue, New Main Street and Nepperhan Avenue.

- Government Center - This area is located at the northwest corner of the intersection of New Main Street and Nepperhan Avenue.

- The Cacace Center - The area is bounded by South Broadway, New Main Street and Nepperhan Avenue. This area includes the existing parking lots north of the Cacace Justice Center that will be developed as part of this Project.

- Elm and Palisades Center – The area is located at the northeast corner of Elm Street and Palisades Avenue. This area includes existing buildings, and parking areas behind the buildings, adjacent to the Saw Mill River.

The existing stormwater runoff within the project area is collected by the City of Yonkers (the City) combined storm and sanitary collection system, the New York State Department of Transportation (NYSDOT) storm drain system within Nepperhan Avenue and direct runoff to the Saw Mill (Nepperhan) River. A description of the existing stormwater infrastructure in the project area is as follows:

- River Park Center
  The combined sewers are located within the surrounding streets as follows:
  - *Elm Street* - Combined sewers from north and north east of Elm Street are conveyed south along Elm Street, toward Palisades Avenue, by 36-inch to 48-inch brick sewers. A 36-inch cast iron sewer is located beneath the Elm Street Bridge over the Saw Mill River.

  - *John, James & School Street and Engine Place Parking Area - Within this area, 8-*inch to 18-inch combined sewers convey flow to the Palisades Avenue combined sewer. At the present time only the buildings on School Street and several inlets convey stormwater to these sewers. Prior buildings in the area of Engine Place were historically connected to these combined sewers. Currently, the runoff from the grass area between Palisades Avenue and Engine Place and the Engine Place parking lot are collected by inlets that flow to the Saw Mill River.

  - *Palisades Avenue – A 36-inch cast iron and 48-inch brick combined sewers are located along Palisades Avenue and flow toward Getty Square.*

  - *Nepperhan Avenue- The combined sewer in Nepperhan Avenue conveys flows from northeast. At the intersection of Elm Street, an 18-inch clay and a 24-inch by 36-inch brick sewer flows southwest toward New Main Street and conveys flows from* the south and east of Nepperhan Avenue. A 12-inch and 18-inch clay sewer begins west of New Main Street, south of the City Hall Government Center. This sewer conveys flows from the Government Center and prior buildings south of Nepperhan Avenue.

  - *New Main Street*- 36-inch and 48-inch brick combined sewers convey the flow from Nepperhan Avenue and along New Main Street to Getty Square.

Within Getty Square a regulator allows the City trunk combined sewer to overflow into the Westchester County trunk sewer. The City combined sewers are tributary to the

Westchester County Main Street Pump Station located at the west end of Main Street on the west side of the railroad. Another regulator is also located at the Main Street Pump Station site that overflows directly to the Hudson River during times of heavy rainfall. From the Getty Square regulator, the 72-inch County trunk sewer flows north to the North Yonkers County Pump Station located along the Hudson River. The North Yonkers Pump station also has an overflow to the Hudson. The overflow is chlorinated prior to discharge during times of heavy rain.

A separate storm drain system was installed with Nepperhan Avenue when the roadway was previously reconstructed by the NYSDOT. This storm drain system is generally located between New Main Street and Waverly Street and discharges directly to the Saw Mill River, southwest of the Henry Herz Street Bridge.

- Government Center (see Figure) – The majority of this area drains to the combined storm sewers in New Main Street and Nepperhan Avenue. Some overland flow from the Government Center flows toward Nepperhan Avenue and into the NYSDOT storm drain system.

- The Cacace Center – Runoff from the northeastern portion of this area flows toward Nepperhan Avenue and South Broadway. There is an 18-inch clay combined sewer in Broadway that flows north toward Getty Square. The eastern portion of this area, including the Robert C. Cacace Justice Center, flow to a series of 12-inch clay pipes toward the 40-inch brick combined sewer in New Main Street. This sewer flow north across Nepperhan Avenue and to Getty Square. Portions of the parking lot in the northern portion of the area flow toward Nepperhan Avenue and are picked up by the roadway drainage system.

- Elm and Palisades Center- A portion of the runoff from the buildings along Palisades Avenue is assumed to flow to the 15-inch clay combined sewer in Palisades Avenue. The balance of the site drains directly to the River.

2.2 Watercourses/Wetlands

The Saw Mill River flows through the River Park Center, from Elm Street to Palisades Avenue. The Saw Mill River, formerly known as the Nepperhan River, is a tributary of the Hudson River and is located within Westchester County, New York. The River's headwaters are located in the Town of New Castle and it flows south along the Saw Mill

River Parkway to the discharge point in the City of Yonkers, NY. The drainage basin is approximately 23 miles long with an average width of 1.4 miles and an average slope of 22 feet/mile. The contributing watershed of approximately 26.5 square miles and encompasses portions of New Castle, North Tarrytown, Tarrytown, Pleasantville, Greenburgh, Mount Pleasant, Elmsford, Irvington, Dobbs Ferry, Ardsley, and Hastings-on Hudson.

Throughout the Project area, beginning at the Elm Street Bridge, the Saw Mill River has an open section that flows in a southwesterly direction, under the bridge at the John Street extension and enters a culvert at the School Street Bridge. The River proceeds under the Henry Herz parking facility in a westerly direction parallel to Nepperhan Avenue and re-immerges west of Henry Herz Street. The River then turns northward and entering the flume at Ann Street. The River falls approximately 13 feet in elevation along this length. The River bottom throughout this area is naturalized, with a cobble/boulder streambed. The open portions of the River have a channel width between 30 and 40 feet and steep sloping or vertical banks stabilized with concrete, stone riprap or masonry walls. The bridges over the River and the culverted sections are aligned with the river and have dimensions greater than or equal to the channel width. At Ann Street, the River enters the flume and flows in a northerly direction toward Getty Square.

In accordance with 6 NYCRR Part 859, Saw Mill River Drainage Basin, the River from the Hudson River mouth to 1,100 feet upstream is classified as Class SB saline surface water, which the best usages are primary and secondary contact recreation and fishing. These waters are also suitable for fish propagation and survival. Through the Project site to Saw Mill River is Class C, which are suitable for fish propagation and survival and for primary and secondary contact recreation.

2.3 Land Cover

The entire project area has been subject to prior development. Pervious areas are limited to lawn areas and limited areas of brush and trees along the Saw Mill River. Building, parking lots, roadways, sidewalks and gravel areas cover the balance of the area.

2.4 Soils

The USDA Natural Resources Conservation Service, National Cooperative Soil Survey indicates that there is only one type of soil present on the proposed site.

Table I below summarizes the characteristics of the soil present on the site and the respective areas.

Table 1
Soil Characteristics

Map Unit	Area (acres)	Soil Names	Water Table (ft)	Depth to Bedrock	Hydrologic Group
Uf (2)	Entire Project	Urban Lawn	5′-20′ (1)	15′ to greater than 70'	D

Source:
1. Based on borings developed for project
2. Natural Resource Conservation Center Web Soil Survey

2.5 Floodplain

The site is located within the Saw Mill River drainage basin. A review of the Flood Insurance Rate Map for the City of Yonkers (Community Panel Number 360936-0010-C), last revised January 21, 1988 indicates that the site is located within Zone A, which indicates no base flooding is determined. A separate hydraulic analysis of the Saw Mill River was prepared for the Project to determine the existing 100-year flood elevation through the site.

2.6 Rainfall Data

Rainfall data utilized in the analysis was from the NYSDEC Design Manual. The data used specific to the Project site and various 24-hour storm events are presented in Table 2 below.

Table 2
Rainfall Data

24-Hour Storm Event	Type III, 24-Hour Rainfall (inches)
Water Quality, Rainfall	1.3
2-Year	3.5
10-Year	5.0
25-Year	6.0
100-Year	7.5

3.0 METHODOLOGY

3.1 Stormwater Management

The Stormwater Management (SWM) Plan has been designed in accordance with Appendix D of the General Permit and the following publications:

- "Urban Hydrology for Small Watershed" (Technical Release No. 55), published by the United States Department of Agriculture, Soil Conservation Service, dated June 1986.
- New York State Stormwater Management Design Manual, August 2003.

The pre and post-development runoff rates provided in this Report were calculated using the computer software program entitled "WinTR-55" published by USDA National Resources Conservation Service. This program incorporates the methodology used in SCS TR-20 and TR-55 to compute flood hydrographs.

3.2 Water Quality

The Water Quality (WQ) management measures and designs described herein are in accordance with the pertinent portions of Chapters 4 through 7 of the NYSDEC Design Manual, as required in Part III.D.1 of the General Permit. The objective of a WQ management system is to meet the pollutant removal goals by capturing and treating 90% of the average annual stormwater runoff volume, otherwise known as the Water Quality Volume (WQ_v). By meeting the WQ_v requirements through employment of acceptable Stormwater Management Practices (SMP) listed in the NYSDEC Design Manual, the project will, by default, meet water quality objectives.

Acceptable SMP for water quality treatment must meet the following criteria:

- Capture and teat the full water quality volume (WQ_v).
- 80% TSS removal and 40% TP removal.
- Acceptable longevity in the field.
- Incorporate a pretreatment mechanism.

3.3 Channel Protection Volume

Stream Channel Protection Volume Requirements (Cpv), as stated in Section 4.3 of the NYSDEC Design Manual, are designed to protect stream channels from erosion. This goal is accomplished by providing 24-hour extended detention of the one (1)-year, 24-hour storm event. However, Cpv is not required if discharge is to a tidal water or a fourth order stream. The Saw Mill River in Yonkers is greater than a fourth order stream and the project will not require Channel Protection Volume. In addition, the analysis of the impact of runoff on the Saw Mill River floodplain has indicated that there will be no downstream impact.

4.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

4.1 Existing Conditions

A detailed investigation of the existing site and surrounding area was undertaken to allow an understanding of the surface runoff patterns on, and adjacent to the project site. Following a review of existing topography and site conditions four (4) separate study areas were defined for the Project site and surrounding area for the stormwater management analysis. The study areas include the following:

- River Park Center – This entire area has been subject to prior development and disturbance. Currently it is comprised of approximately 9.69 acres of buildings, roads and parking, 3.95 acres of lawn, grass and the wooded and brush area adjacent to the River and 0.36 acres the existing river watercourse. Stormwater runoff from approximately 4.36 acres of this area, (designated Drainage Area A-3), currently drains directly to the Saw Mill River by overland flow (See Drawing No.4). Approximately 6.68 acres drain to storm drain systems that outlet to the Saw Mill River, designated Drainage Area A-2 (See Drawing No.3). Historically, the majority of this area discharged to the combined sewers. However, after demolition of prior buildings most of the area from Palisades Avenue to John Street now goes to the River. The remaining 2.96 acres of this area discharges to the City of Yonkers combined sewer system, designated Drainage Area A-1 (See Drawing No.2).

- Government Center - This area, designated Drainage Area B, is comprised of approximately 1.79 acres of buildings, road and parking and 1.03 acres of lawn and grass (See Drawing No.5). Stormwater runoff from small portions of this site flow

toward the Nepperhan Avenue and the balance of the runoff flows toward New Main Street where it is collected by the City of Yonkers combined sewer system. However, for the runoff calculations, all flows are assumed to be directed to the combined sewers.

- The Cacace Center - This entire area has been subject to prior development and disturbance. Currently it is comprised of approximately 2.55 acres of buildings roads and parking of which 2.38 acres is lawn and grass. This area has been divided into two separate drainage areas for the analysis. The western portion, designated Drainage Area C-2, flows to the intersection of South Broadway and Nepperhan Avenue where it enters the City of Yonkers combined sewer system. The eastern portion, designated Drainage Area C-1, flows to the intersection of New Main Street and Nepperhan Avenue, where portions of the overland flow enters the Nepperhan Avenue storm drain system that discharges to the Saw Mill River (See Drawing No.5).

- Elm and Palisades Center - This entire area has been subject to prior development and disturbance and is comprised of approximately 0.67 acres of buildings and parking areas and approximately 0.12 acres of trees and brush along the river. Approximately 0.64 acres of this area flows to the rear (east) portion of the site and directly into the Saw Mill River, Designated Drainage Area D-2 (See Drawing No.6).

Design Points were identified for each of the existing drainage areas. The Design Points represent the location where the majority of runoff from the respective drainage area exits the site. The same design points are also identified in post-development conditions so that a comparison can be made between the pre- and post-development conditions. The design points are shown on the above referenced drawings. A description of each of the design points follows:

(1) Design Point A – For the purpose of determining existing peak flow rates, six (6) design points were used for the analysis. The peak flows from each Design Point was combined to determine the total flow to the Hudson River and the total flow from the River Park Center area.

(2) Design Point B – The combined runoff from the existing Government Center Parking Garage, building and landscape area.

(3) Design Point C – Drainage Area C is divided into two (2) sub areas with separate Design Points. Design Point C-1 has been established for the runoff toward New

Main Street and Design Point C-2 for the runoff toward the combined sewer in Broadway.

(4) Design Point D –Runoff from the entire Palisades Avenue Center site flows toward the combined sewer in Palisade Avenue, designated Design Point D-1.

A summary of the existing peak discharge rates from the Project Site is shown in Table 3.

Table 3
Table of Existing Peak Stormwater Discharge Rates

Location	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
River Park Center (Drainage Area A)				
• Design Point A-2A	14.0	21.5	26.5	33.9
• Design Point A- 3A	8.7	13.8	17.2	22.2
• Design Point A-3B	1.4	2.2	2.7	3.5
Sub-total to Saw Mill River (1)	*22.0*	*34.3*	*42.4*	*54.5*
• Design Point A-1A	5.2	7.7	9.3	11.7
• Design Point A-1B	2.4	3.5	4.2	5.2
• Design Point A-1C	1.4	2.1	2.5	3.1
Sub-total to Combined Sewer (1)	*9.0*	*13.2*	*16.0*	*20.1*
Total Drainage Area A (1)	*30.7*	*42.3*	*58.2*	*74.6*
Government Center (Drainage Area B)				
• Design Point B-1 (*to Combined Sewer)*	*6.3*	*9.7*	*11.9*	*15.2*
• *Design Point B-2 (to Saw Mill River)*	*0.7*	*1.2*	*1.5*	*1.9*
Total Drainage Area B (1)	*7.1*	*10.9*	*13.4*	*17.2*
Cacace Center (Drainage Area C)				
Design Point C-1 (toward Nepperhan Ave/River)	6.1	9.6	11.9	15.4
Design Pont C-2 (to combined sewer)	5.6	8.8	10.9	14.0
Total Drainage Area C (1)	*11.7*	*18.4*	*22.8*	*29.4*
Palisades Avenue Center (Drainage D)				
Design Point D-1 (to Combined Sewer)	*2.4*	*3.6*	*4.3*	*5.5*
River Park Center, Government Center, Cacace Center and Palisades Avenue Center Totals				
To Saw Mill River (1)	*28.6*	*44.9*	*55.7*	*71.7*
To Combined Sewers (1)	*23.4*	*35.2*	*43.1*	*54.8*

(1) Total Discharge is based on sum of hydrographs
(2) Portions of the Government Center drain toward Nepperhan Avenue/River. For this analysis, for existing conditions, the entire area is assumed to flow to the combined sewer.

4.2 Proposed Conditions

4.2.1 Proposed Condition Stormwater Runoff

Based on the building program for the Project, an analysis of the proposed stormwater runoff conditions was performed to determine the impact of the project on the existing City combined sewer system and to the Saw Mill River. The analysis utilized the same four (4) study areas as used for the existing condition analysis.

To the extent possible, the proposed drainage from the developed area will be conveyed by new storm drains and discharged to the Saw Mill River to reduce the runoff to the City combined sewer system. A description of the impact of the development on the stormwater runoff from each of the study areas is as follows:

- River Park Center – The runoff from the proposed development will be directed to discharge directly to the Saw Mill River. The only portions of the site that will continue to discharge to the City's combined sewers will be the property on the southeast corner of New Main Street and Palisade Avenue (designated Drainage Area A-1A) and the Church property along Nepperhan Avenue (designated Drainage Area A-1C), which are not part of the Project. The area of runoff to the combined sewers is reduced from 3.2 acres to approximately 0.71 acres. The building and parking garages will be conveyed to outlets along the Riverwalk at the site. Runoff from the pedestrian areas along the Saw Mill River will drain directly to area drains and then to the River. All discharges will pass through water quality structures. The River Park Center development (designated Drainage Area A-1A) includes the turf baseball stadium on the roof of the building. This will encompass approximately 3 acres of turf area. With the construction of the stadium, the amount of impervious area within this portion of the Project will not increase over existing conditions.

- Government Center - This area (designated Drainage Area B) will include the new parking garage. Runoff form the entire garage will be conveyed in a new storm drain and outlet to the Saw Mill River. The construction of the garage will result in an increase of approximately 0.9 acres of impervious area. The runoff from the garage will pass through an underground filtering device prior to discharge to the River.

- The Cacace Center – The construction in this area will be comprised of the parking garage, Fire Department building and the office building/hotel. In order to not impact

the peak stormwater discharge toward the Broadway combined sewer, runoff from the entire garage structure will be directed to the Nepperhan Avenue and New Main Street storm drains and discharge to the Saw Mill River. As shown in Table III. D-2 below, the stormwater runoff to the combined sewer will be reduced.

Table III. D -2
Comparison of Peak Runoff to Broadway Combined Sewer from Cacace Center

Drainage Area C-2 Discharge to Broadway Combined Sewer	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
Existing Condition	5.6	8.8	10.9	14.0
Developed Condition	4.1	6.6	8.2	10.6
Difference	-1.5	-2.2	-2.7	-3.4

The total impervious area from the Cacace Center developed area will increase by approximately 0.5 acres. Runoff will be directed to water quality and underground-filtering structures prior to discharge enters the Nepperhan Avenue storm drain system and discharged to the Saw Mill River.

- Palisades Avenue Center - This entire area will discharge to the proposed storm drain system in Palisades Avenue. See Section III-H 3.b for further discussion of separation of combined sewers.

A summary of the post-development condition peak stormwater peak discharge rates from each of the sites (except Palisades Point) is provided in Table III. D-3.

Table III. D -3
Post Development Peak Stormwater Discharge Rates

Location	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
River Park Center (Drainage Area A)				
• Design Point A-2A (to Saw Mill River)	36.5	54.1	65.7	83.0
• Design Point A-1A (to combined sewer)	0.9	1.3	1.5	1.9
• Design Point A-1C (to combined sewer)	1.2	1.7	2.1	2.6
Sub-total to Combined Sewer (1)	*2.1*	*./0*	*3.6*	*4/5*
Total Drainage Area A (1)	*38.6*	*57.1*	*69.3*	*87.6*
Government Center (Drainage Area B)				
• Design Point B (to Saw Mill River)	*8.1*	*11.8*	*14.2*	*17.8*
Cacace Center (Drainage Area C)				
• Design Point C-1 (to Saw Mill River)	9.1	13.1	15.7	19.7
• Design Pont C-2 (to combined sewer)	4.1	6.6	8.2	10.7
Total Drainage Area C (1)	*13.2*	*19.7*	*24.0*	*30.4*
Palisade Avenue Office Building				
Design Pont D1 (to River)	*2.4*	*3.6*	*4.3*	*5.5*
River Park Center, Government Center, Cacace Center and Palisade Avenue Office Building Totals				
To Saw Mill River(1)	*56.1*	*82.5*	*100.0*	*126.0*
To Combined Sewers (1)	*6.1*	*9.6*	*11.8*	*15.2*

(1) Total Discharge is based on sum of hydrographs

The Project will result in a decrease in stormwater runoff to the City combined sewers; see Section III, Utilities, for a further discussion of the combined sewers impacts and mitigation.

A summary of the total existing and proposed peak discharge to the Saw Mill River is shown in Table III. D-4.

Table III. D-4
Comparison of Total Peak Runoff to the Saw Mill River from Project Site

	Design Year Storm (CFS)			
	2-Year	**10-Year**	**25-Year**	**100-Year**
Existing Condition	*28.6*	*44.9*	*55.7*	*71.7*
Proposed Condition	*56.1*	*82.5*	*100.0*	*126.0*
Difference	+27.5	+37.6	+44.3	54.3

As shown in Table III. D-4, the increase of peak discharge to the Saw Mill River ranges from approximately 27.5 CFS for a 2-year design storm to 54.3 CFS for the 100-year storm. The 29-acre drainage area studied for the Project represents 0.1 percent of the total Saw Mill Drainage Basin. Based on information contained in the ACOE study entitled "Flood Control Study, Detailed Project Report, Saw Mill River, Nepera Park/Yonkers, Westchester County, New York July 1986", the peak discharge for the Saw Mill River occurs in Yonkers approximately 38 hours after the beginning of a storm event or approximately 20-24 hours after the peak rainfall. Since the Project is located proximate to the Saw Mill River, the runoff from the Project will enter the river very quickly. This peak discharge from the Project will occur at approximately 12 hours after the beginning of the rain event or within 10 to 20 minutes after the peak rainfall. When considering the project discharge combined with the upstream flow from the Saw Mill River, there will only be an increase of approximately 19 cfs during a 100-year storm. This nominal increase (1% +/-) will result in less than 0.1 changes to the water surface elevation and less than 0.1 feet per second change in the River flow downstream of the project (See Appendix B). Therefore, the minor increase in impervious area as a result of the Project and the diversion of runoff to the Saw Mill River will not have an impact on the drainage conditions downstream or adjacent to the Project.

- Larkin Plaza - The development of Larkin Plaza will result in approximately 0.68 acres of impervious area, including the daylighted portion of the Saw Mill River. This represents a 44 % reduction of impervious area over the existing conditions. A summary of the existing and proposed development peak runoff from the project site is shown in Table III.D- 5 (See Appendix 3C for Larkin Plaza calculations)

Table III. D-5
Comparison of Total Peak Runoff for Larkin Plaza Project Site

	Design Year Storm (CFS)			
	2-Year	**10-Year**	**25-Year**	**100-Year**
Existing Condition	4.0	5.9	7.2	9.1
Proposed Condition	2.8	4.8	6.1	8.0
Difference	-1.2	-1.2	-1.1	-1.1

4.2.2 Water Quality and Channel Protection

To obtain General Permit coverage typically requires conformance with the technical standards for storm water quantity and quality controls presented in the NYSDEC Design Manual. However, since this is a redevelopment project, water quality measures for the proposed Project will also be designed in accordance with NYSDEC Design manual, Chapter 9, "Redevelopment Projects".

Peak Storm Water Discharge

As shown above, the minor increase in impervious area as a result of the project and the diversion of runoff to the Saw Mill River will not increase the peak discharge in the Saw Mill River and the culvert/flume to the Hudson River. Thus, the peak discharge within the river downstream of the Project will not increase. Therefore, NYSDEC requirements for overbank flood control (10-year storm event) and extreme flood criteria (100-year storm event) do not apply to the sites that drain to the Saw Mill River.

Stream Channel Protection Volume

Stream Channel Protection Volume requirements as stated in Section 4.3 of the DEC Design Manual are designed to protect stream channels from erosion. However, the Stream Channel Protection Volume requirements are not applicable if discharge is to a tidal water or a fourth order stream. Section 4.7 of the DEC Design Manual states that streams can be classified according to their order in the network of streams in a watershed. A stream that is identified as a "blue-line" stream on USGS topo maps, and if it has no tributaries or branches it is defined as a first-order stream. When two first-order streams combine, a second-order stream is created, and so on. Based on a review of the USGS topo maps for the Saw Mill River watershed, over 6 "blue-line" streams enter the river north of Dobbs Ferry (See Appendix B). As the Saw Mill River in Yonkers is a greater than a fourth order stream and the Hudson River is a tidal water, the Project will not be required to comply

with NYSDEC Stream Channel Protection Volume requirements for compliance with the General Permit.

Also, the analysis developed for the project has determined that project will not increase the velocity within the downstream portions of the Saw Mill River thereby not creating the potential for increase erosion.

Water Quality Requirements

Since this is a redevelopment project of previously developed area, water quality measures for the proposed Project shall be governed by the NYSDEC Chapter 9, Redevelopment Projects. The redevelopment standards require the following:

- The plan must capture and treat by implication of standard practices 25% of the water quality volume for the original impervious area, plus 100% of additional impervious area, from the disturbed site areas.
- The plan may propose use of non-standard alternate practices to treat 100% of the water quality volume from the disturbed area. The practice must be sized to capture and treat the water quality peak discharge rate associated with water quality volume.
- The use of standard practices should be targeted to treat areas with the greatest pollution potential (e.g. parking areas, roadways, etc.)

For the Project, underground treatment and/or filtration devices will be provided on all discharge points from the parking garages and site roads. . In accordance with the DEC regulations, the water quality facilities are sized to capture and treat 90% of the average annual stormwater runoff volume. Diversion structures will be provided on runoff from buildings, pedestrian plazas, walkways, etc to divert the water quality flow to hydrodynamic systems prior to discharge. All systems will be constructed in accordance with NYSDEC requirements and treat Project generated stormwater rather than allow for the direct discharge of particulates/pollutants to the Saw Mill River. A summary of the water quality volume requirements for the project sites and the anticipated type of water quality devices are shown in Table III.D.6.

Table III. D-6
Preliminary Water Quality Volume and Description of WQ Devices

	Existing Impervious Area (Ac)	Proposed Impervious Area (Ac)	Water Quality Volume (Cubic Feet)	Water Quality Device Description
River Park Center	12.4	11.0	50,200	Hydrodynamic Systems To Treat WQ Flow Rate
Government Center	1.8	2.5	5, 300	Underground Filtration Device
Cacace Center	2.6	3.3	6,600	Underground Filtration Device

. A description of the water quality devices to be used for the project is described:

- Underground Filtration Devices

  The treatment of the water quality volume by standard practices will be accomplished through the design and implementation of underground filtration device systems. The required elements of these systems will be designed in accordance with Section 6.4 of the DEC Design Manual, and the *Design of Stormwater Filtering Systems*, December 1996, published by The Center for Watershed Protection. The devices will be sand filters, Storm Filter as provided by Contech or other similar products. The devices will be designed as "offline" practices, with flow diversion structures provided to divert the water quality volume to the filters for treatment. Larger flows will bypass the filters and be conveyed by the storm drainage pipe systems. The filters will provide 80% TSS removal and 40% TP removal. As stated in Table 7.4 of the DEC Design Manual, the filters will also provide good removal of nitrogen (>30% TN) and metals (>60% Metals) such as cadmium, copper, lead and zinc. Fair removal (35-70%) of bacteria such as coliform, streptococci and E. coli is expected.

- Hydrodynamic Systems
  Hydrodynamic systems such as gravity and vortex separators are devices that move water in a circular, centrifugal manner to accelerate the separation and deposition of primary sediment from the water. These measures shall include, but not be limited to, "proprietary" oil/grit separators/hydrodynamic chambers such as devices manufactured by Stormceptor® or Vortechs® systems. These devices contain both the isolation/diversion mechanism and a treatment chamber for capturing and treating the water quality flow. These devices can be installed in line with the storm drainage

system and contain a bypass for flows in excess of the water quality flow. These devices meet the goal of the DEC criteria to provide at least 80% removal of total suspended sediment (TSS) from the first flush post-construction runoff**.** As an additional treatment measure all catch basins will be provided with sumps.

All water quality measures will be designed as part of the Site Plan Approval plans and details. With the measures outline above in place and the implementation of the sediment control plan and onsite maintenance and impaction measures, the Project will comply with the requirements of the General Permit and the objectives of the City's Stormwater Management Program and the Flood, Erosion and Sediment Control regulations.

5.0 EROSION AND SEDIMENT CONTROL

5.1 Soil Erosion and Sediment Control Measures

During construction of the Project, the potential for soil erosion and sedimentation will be controlled through the use of temporary soil erosion and sediment control measures. These measures will be designed and installed in accordance with *New York Guidelines for Urban Erosion and Sediment Control* dated October 2005, and Chapter 56, Article XIII, "Flood, Erosion and Sediment Control of the City Code." The soil erosion and sediment control plan will minimize the downstream erosion by controlling runoff at its source, minimizing runoff from disturbed areas and de-concentrating storm water runoff. Temporary and permanent stabilization methods will be implemented before construction begins and will be continuously modified throughout the project to provide the best methods for stormwater management and pollution prevention.

Phasing of activities shall be as follows:

Pre-Construction Activities

- Identify all natural resources and mark and protect them as necessary i.e. trees, vegetation.
- Identify on-site and downstream surface water bodies and install controls to protect them from sedimentation.
- Establish temporary stone construction entrance pads to capture mud and debris from the tires of construction vehicles.
- Install perimeter sediment controls such as silt fence as shown on the project plans.
- All earth disturbances during this phase should be limited to work necessary to install erosion and sedimentation controls.

During Construction Activities

- Install runoff and drainage controls as shown on the project plans and as necessary. These controls should reduce run-off flow rates and velocities as well as divert off site and clean run-off.
- Stabilize the conveyance system (i.e. ditches, swales, berms etc.) by seeding, mulching, installing rock check dams.
- Stabilize all stormwater runoff outlets as shown on the project plans and as necessary.
- Stabilization measures should be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days. Where activities will resume within 21 days in that portion of the site, measures need not be initiated.
- Limit soil disturbance and exposure of bare earth to a minimum.
- All topsoil stockpiles should be staged in an area away from surface waters and storm drains and should be protected and stabilized.
- Construction vehicles shall enter and exit the site at the stabilized construction entrance. The construction entrances will be maintained during the life of the construction and repaired and/or cleaned periodically to ensure proper function.
- Water trucks will be used as needed during construction to reduce dust generated on the site. The contractor will provide dust control in compliance with applicable local and state dust control regulations.
- At any location where surface run-off from disturbed or graded areas may flow off-site, sedimentation control measures must be installed to prevent sedimentation from being transported.
- Regular inspections and maintenance should be performed as described in the following section.

Post-Construction Activities

- Identify the permanent structural or non-structural practices that will remain on the site.
- Provide an Operation & Maintenance (O&M) manual to the Owner who is expected to conduct the necessary O&M over the life of the structures.

5.2 Other Pollutant Controls

Paints and Solvents

During construction, temporary structures such as construction trailers may be moved on site to store items such as paints, solvents and gasoline pertinent to the continuation of construction activities. The intention of these structures is to shelter such items and reduce the potential of entering the stormwater runoff due to construction activities. After use, solvents shall be disposed of in approved containers and removed from site at scheduled intervals.

Fuels

Fuel for construction equipment shall either be obtained from a licensed distributor of petroleum products or from an approved above ground storage tank on site. Fuel from construction vehicles may come into contact with stormwater when vehicles are stored outside. Good housekeeping and preventative maintenance procedures shall be implemented to ensure fuel spills and leaks are minimized during refueling and storage.

Temporary Facilities

Temporary sanitary facilities may be located on site for construction workers. This facility shall be located in an accessible and visible location. A waste management company may be contracted to arrive on site and provide the routine pumping and sanitization of the facility.

Solid Waste

No solid materials are allowed to be discharged from the site with stormwater. All solid waste shall be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the site.

5.3 Best Management Practices

Throughout construction, care shall be taken to ensure sediment does not enter surface water bodies and chemicals do not enter stormwater, potentially contaminating surface and groundwater supplies. The following Best Management Practices (BMP) shall be observed to maintain responsible environmental practices on the construction site.

Good Housekeeping

Good housekeeping is essential to reducing the risk of contaminating runoff waters during every stage of construction. The General Contractor shall ensure supervisors train each employee in good housekeeping practices as they pertain to the implementation of this SWPPP.

Immediately following mobilization, the General Contractor shall take an inventory of all equipment and containers containing hazardous or toxic materials and submit this inventory to the Owner to keep on-site with this Stormwater Pollution Prevention Plan. This inventory shall be updated regularly to reflect changes in the quantity or type of hazardous and toxic materials stored on site. In the event of a spill, the Spill Response Team can refer to the inventory if the contents of the spill are unknown.

All equipment shall be operational while it is stored on site. Inspections shall be conducted regularly to ensure all equipment is free of leaks and that oil and grease are not in contact with soils or stormwater. Portable equipment such as chain saws, drills as well as hand tools must be placed within a trailer or under cover at the end of each workday.

A storage area shall be designated on-site where all hazardous or toxic materials are stored. Each employee shall return the materials to the designated storage area following use. Chemicals, including oil, grease, solvents and detergents shall be stored on-site in approved containers only. Used chemicals shall be disposed of in refuse containers and removed periodically. Containers shall be regularly inspected to ensure the integrity of the container and seals to prevent leaks.

5.4 Construction Sequence Scheduling

A phased construction sequence schedule of the Project will limit the acreage of exposed soils at any given time. Since the project site disturbance will be greater than 5-acres, the construction sequence will require the approval of the NYSDEC prior to the filing of the NOI. Limiting the exposed soils will reduce the amount of sediments in runoff water and ultimately preserve the quality of surface waters. The construction phasing method selected will be designed to combine development with responsible land management as well as protection of sensitive environments both within the proposed Project and the surrounding area.

5.5 Implementing the SWPPP

The General Permit requires that site assessment and inspections for all construction activities in excess of one (1) acre. The site assessment and inspections insure the implementation of the SWPPP to retain surface water quality and prevent sediment-laden runoff from entering rivers, streams, estuaries, wetlands and other sensitive environments.

The site assessment and inspections required for this project will include the following:

1. The operator/owner shall have a "qualified professional" conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by the General Permit have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

2. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. During each inspection, the qualified professional shall provide a written report identifying all disturbed site areas and drainage pathways, areas of the site that have undergone temporary or permanent stabilization, indicate all disturbed site areas that have not undergone active site work during the previous 14-day period, all maintenance requirements for sediment control measures and all deficiencies that are identified with the implementation of the SWPPP.

3. Prior to filing of the Notice of Termination or the end of permit term, the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

6.0 CONCLUSION

The proposed stormwater management system reduces and/or eliminates the impacts of the proposed development by controlling and treating stormwater through the use of drainage ditches and channels, storm sewer piping, and a stormwater management basin. The stormwater management system will function adequately and will not adversely effect

adjacent or downstream properties provided it is constructed and maintained as outlined in this plan and as shown on the site plans.

This report is respectfully submitted in accordance with our contract, and is to the best of our knowledge accurate and complete. Any questions regarding its content may be directed to the undersigned.

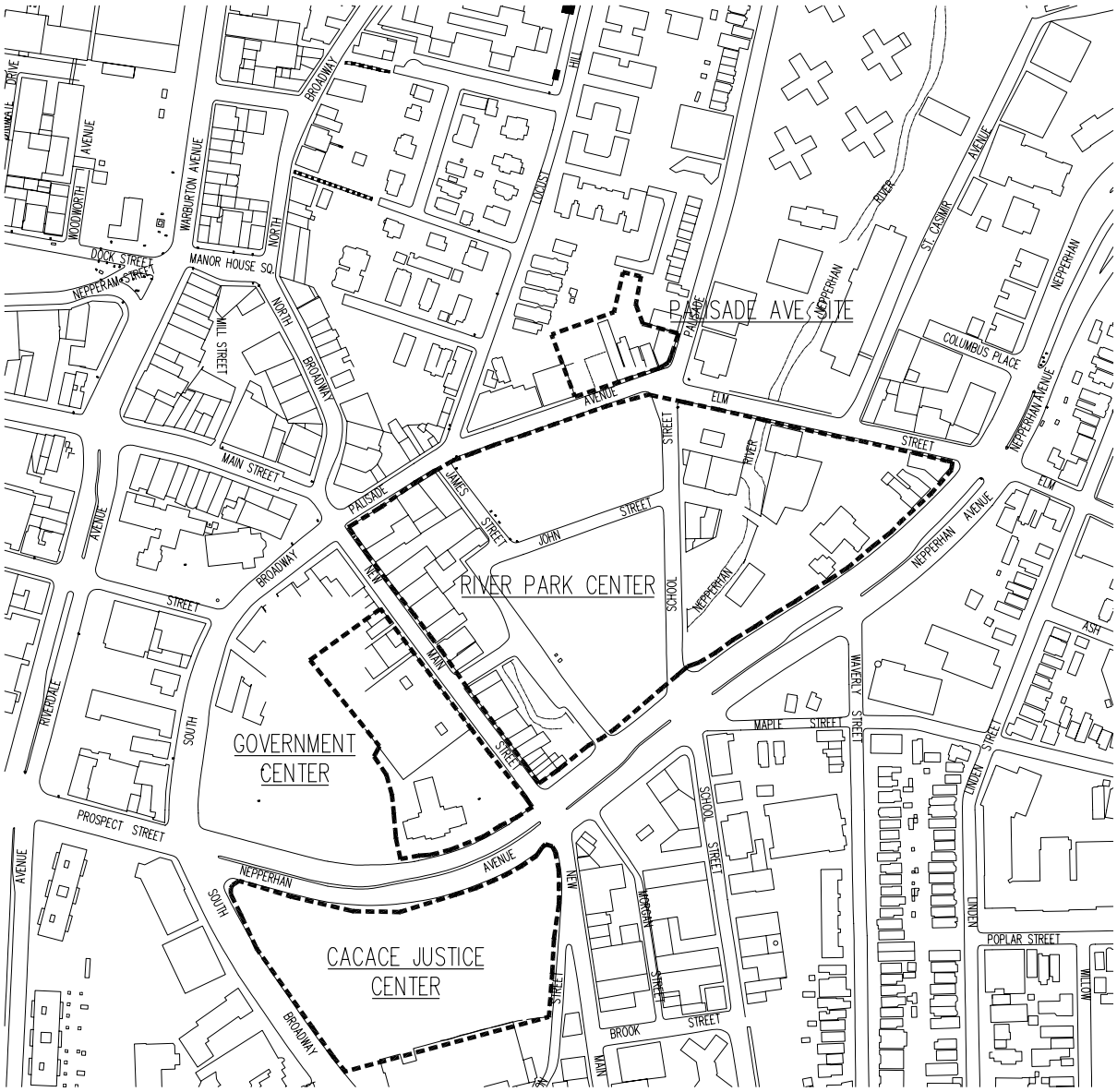
Respectfully submitted by,

The Office of
McLaren Engineering Group
M.G. McLAREN, P.C.

Steven L. Grogg, P.E.
Chief Site – Civil Division

SLG/rjk

FIGURES



LEGEND:

---------- DRAINAGE BOUNDARY

REV 02/12/07

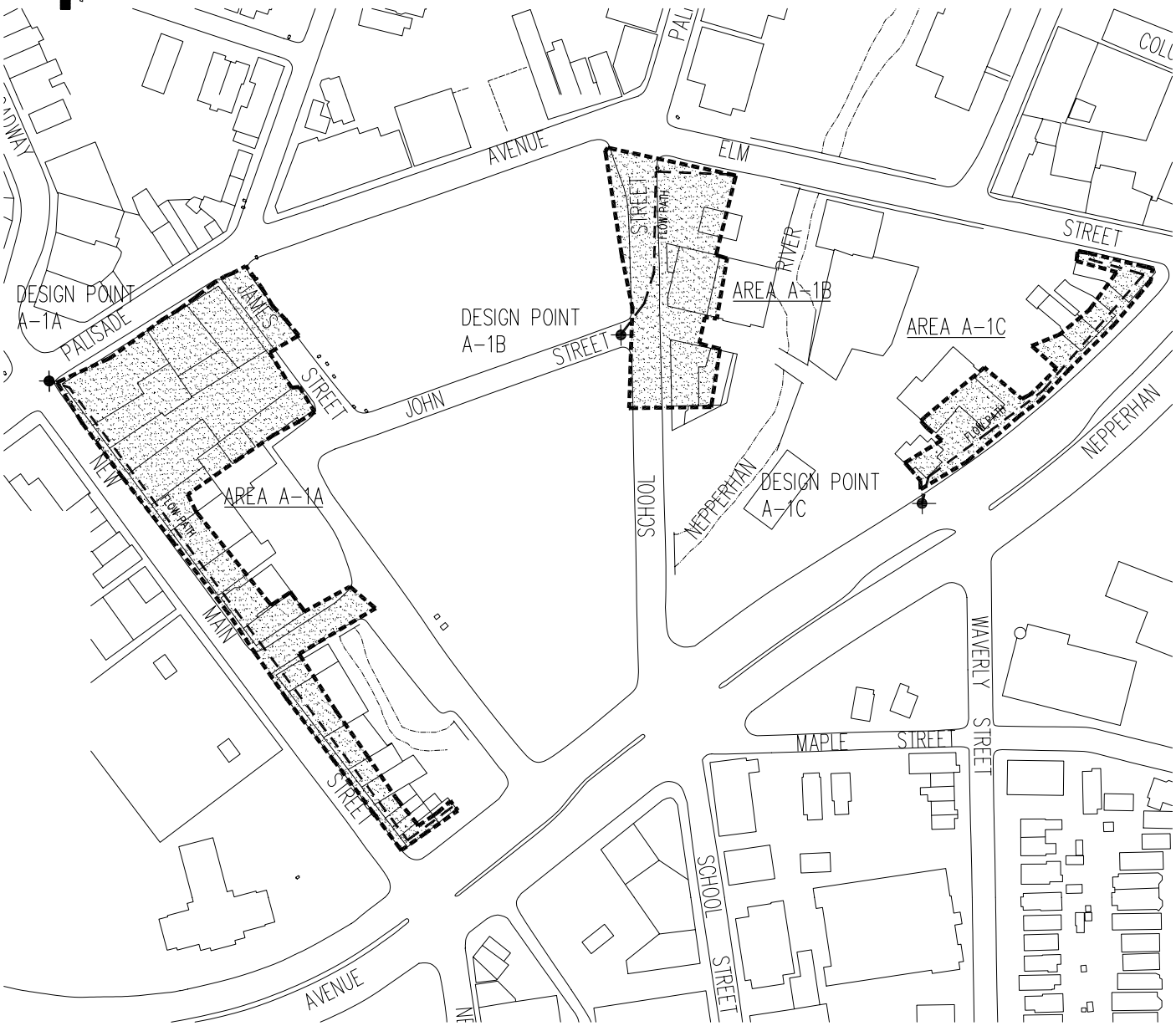
McLaren ENGINEERING GROUP
email: mgmclaren@mgmclaren.com
100 Snake Hill Road, West Nyack, NY 10994
Tel. (845) 353-6400 Fax. (845) 353-6509

SHEET TITLE
EXISTING CONDITION
OVERALL PROJECT AREA MAP

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=400'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 1



AREAS	ACRES	SURFACE TYP
A-1A	1.86	IMP
A-1B	0.84	IMP
A-1C	0.5	IMP
TOTAL	3.2	

LEGEND:

- AREA DRAINING TO COMBINED SEWERS
- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH

REV 02/12/07

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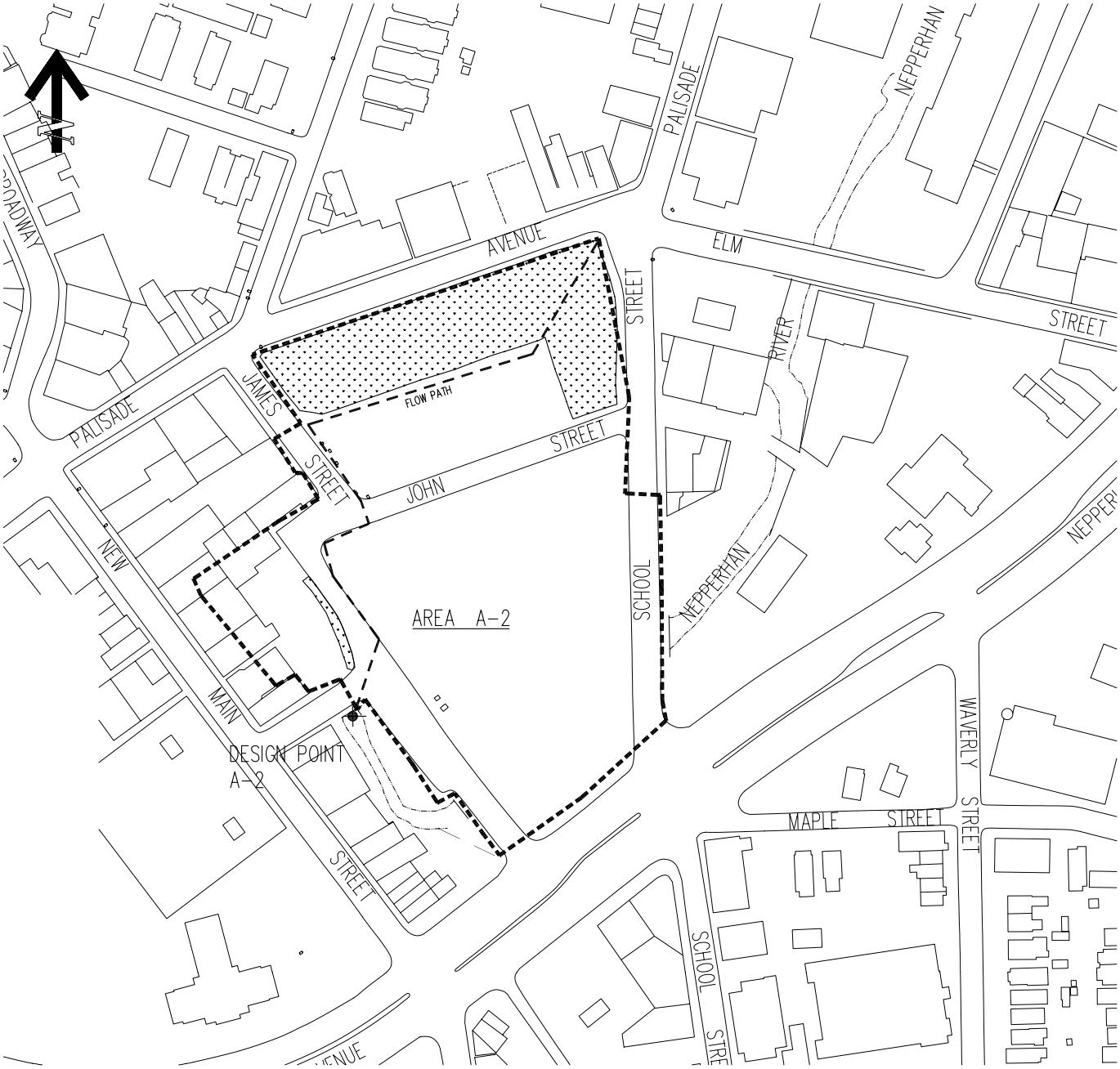
SHEET TITLE
RIVER PARK CENTER
EXISTING CONDITION
RUNOFF TO COMBINED SEWER

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 2



AREA A-2	
SURFACE TYPE	AREA (ACRES)
IMPERVIUOS	5.45
PERVIOUS	1.23
TOTAL	6.68

LEGEND:

- PERVIOUS AREA
- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH

REV 02/12/07

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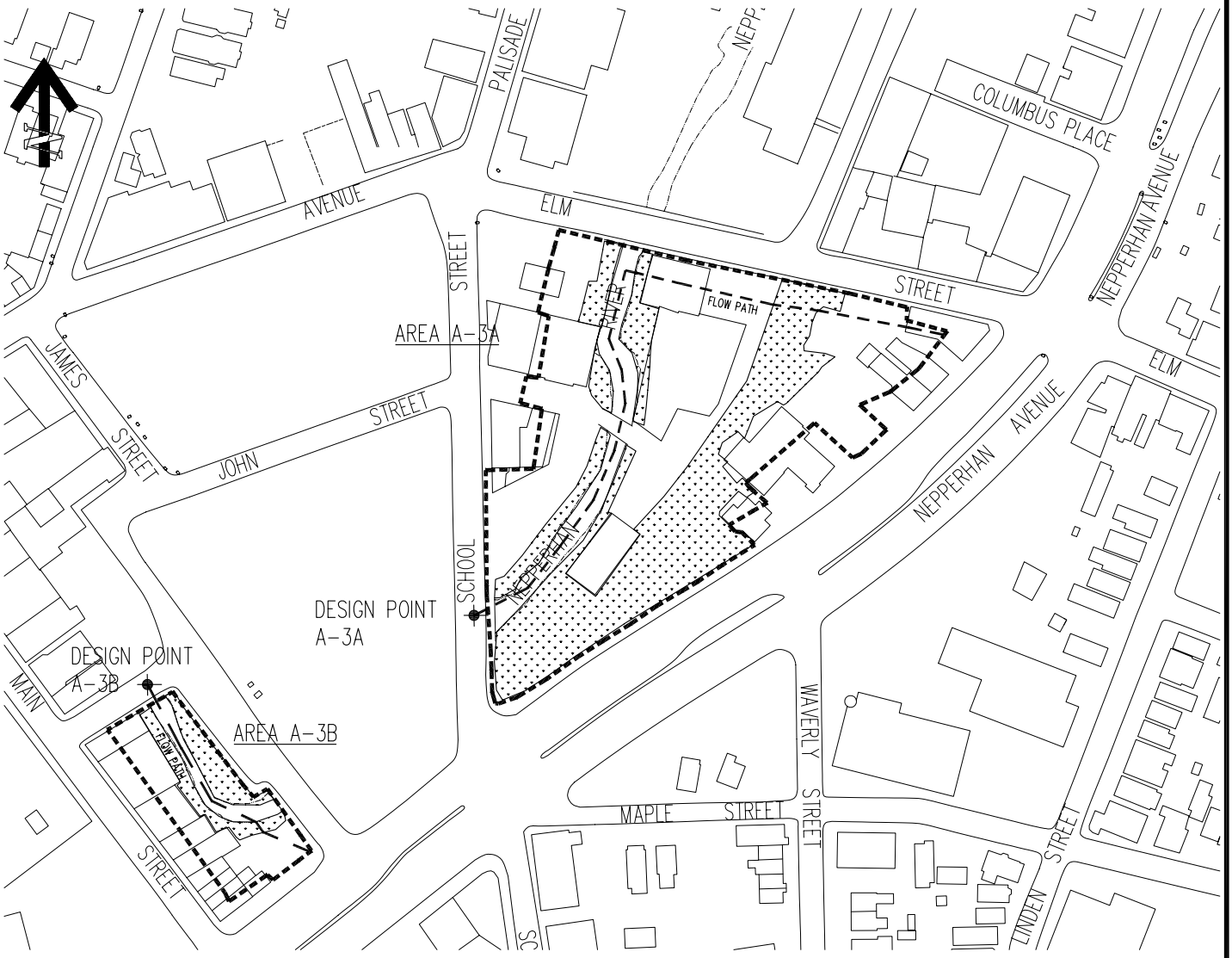
SHEET TITLE
RIVER PARK CENTER
EXISTING CONDITION
RUNOFF STORM DRAIN/RIVER

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 3

3 OF 9 SHTS



AREAS	IMPERVIUOS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
A-3A	2.32	1.45	3.77
A-3B	0.40	0.19	0.59
TOTAL			4.36

LEGEND:

- PERVIOUS AREA
- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH

REV 02/12/07

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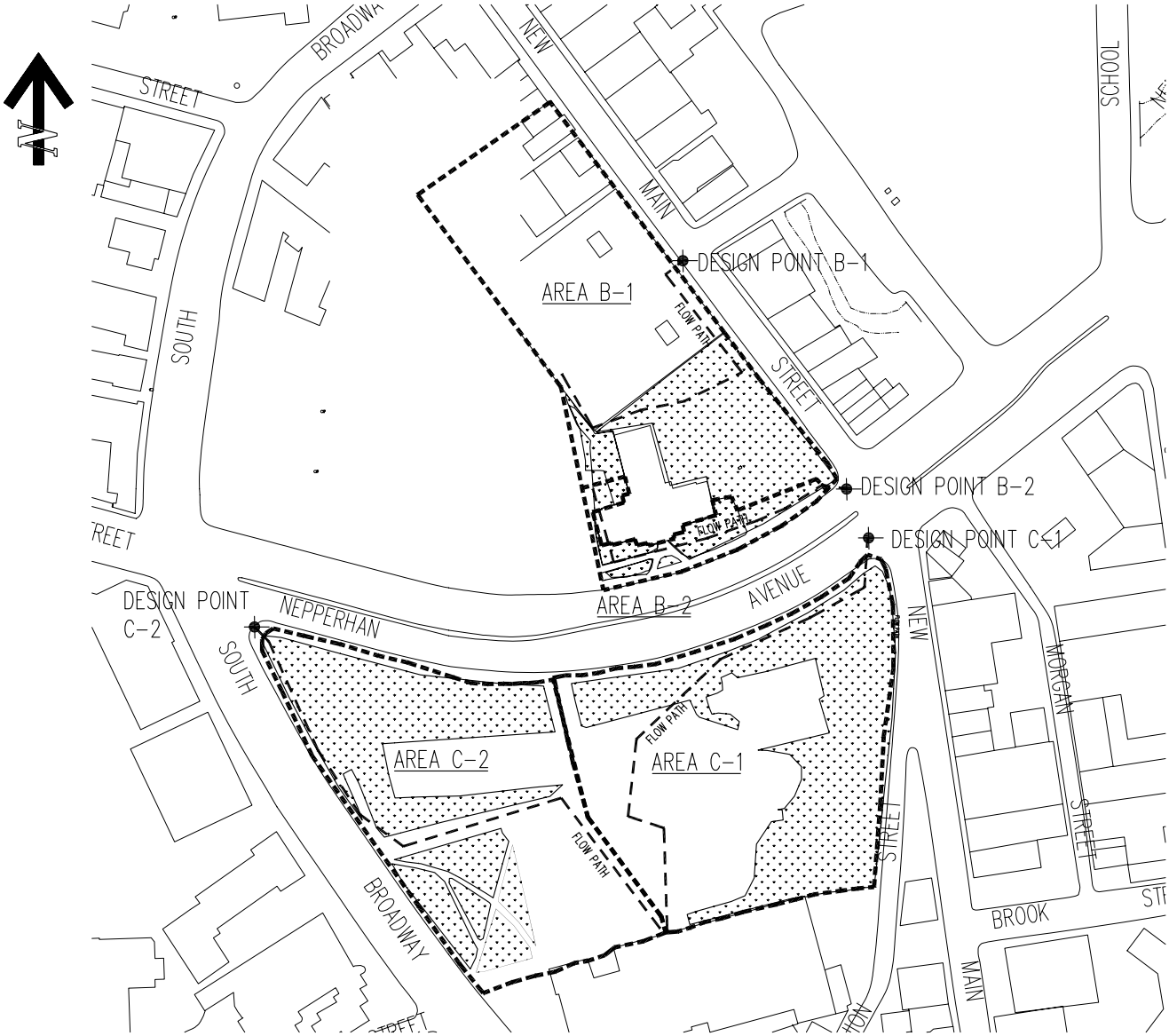
SHEET TITLE: RIVER PARK CENTER
EXISTING CONDITION
RUNOFF DIRECTLY TO RIVER

PROJECT: RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 4



AREAS	IMPERVIUOS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
B-1	1.47	1.03	2.50
B-2	0.15	0.17	0.32
C-1	1.36	1.22	2.58
C-2	1.19	1.16	2.35
TOTAL			7.75

LEGEND:

PERVIOUS AREA

DESIGN POINT

DRAINAGE BOUNDARY

FLOW PATH

REV 02/12/07

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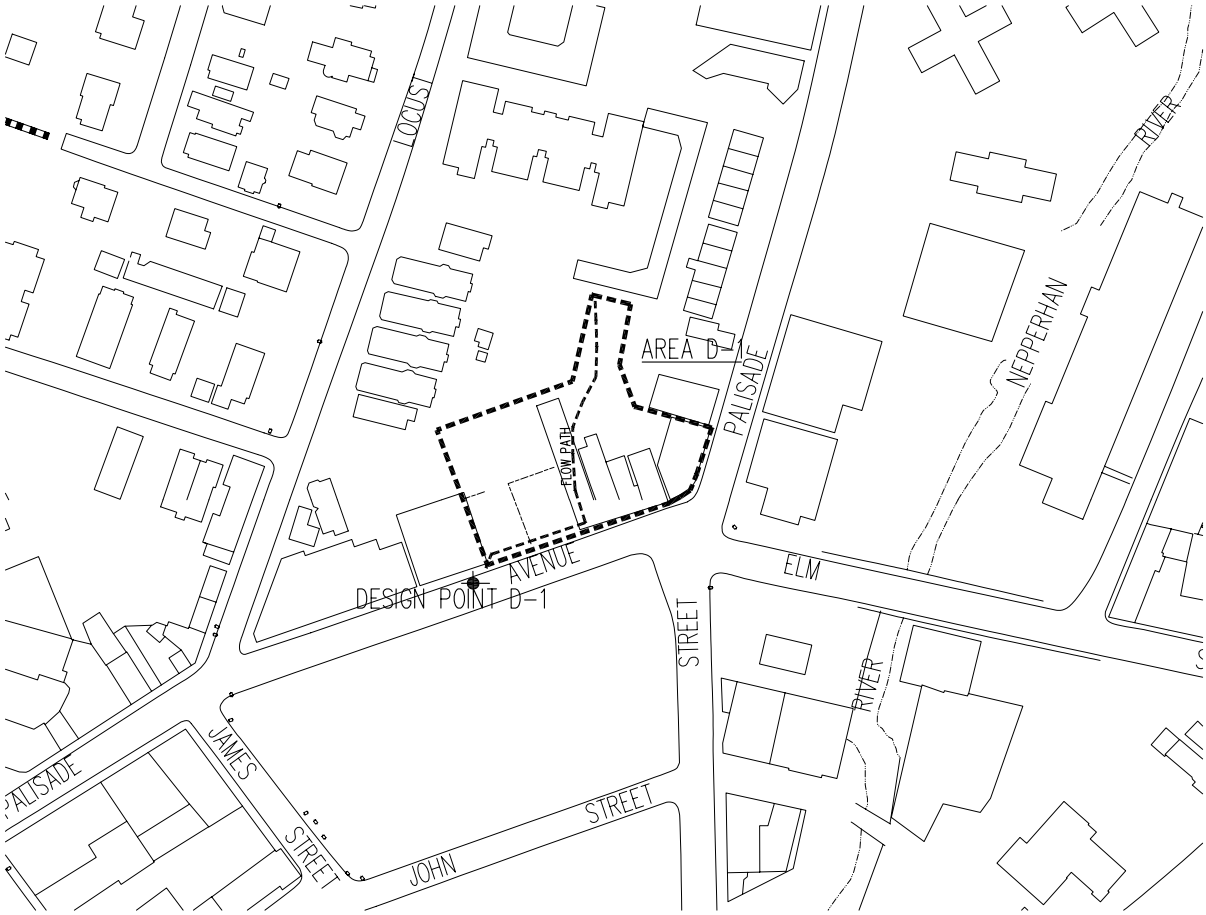
SHEET TITLE
EXISTING CONDITION
CACACE AND GOVERNMENT CENTERS

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 5



AREAS	IMPERVIUOS (Ac)	GRAVEL (Ac)	TOTAL (Ac)
D-1	0.52	0.35	0.87

LEGEND:

- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH

REV 02/12/07

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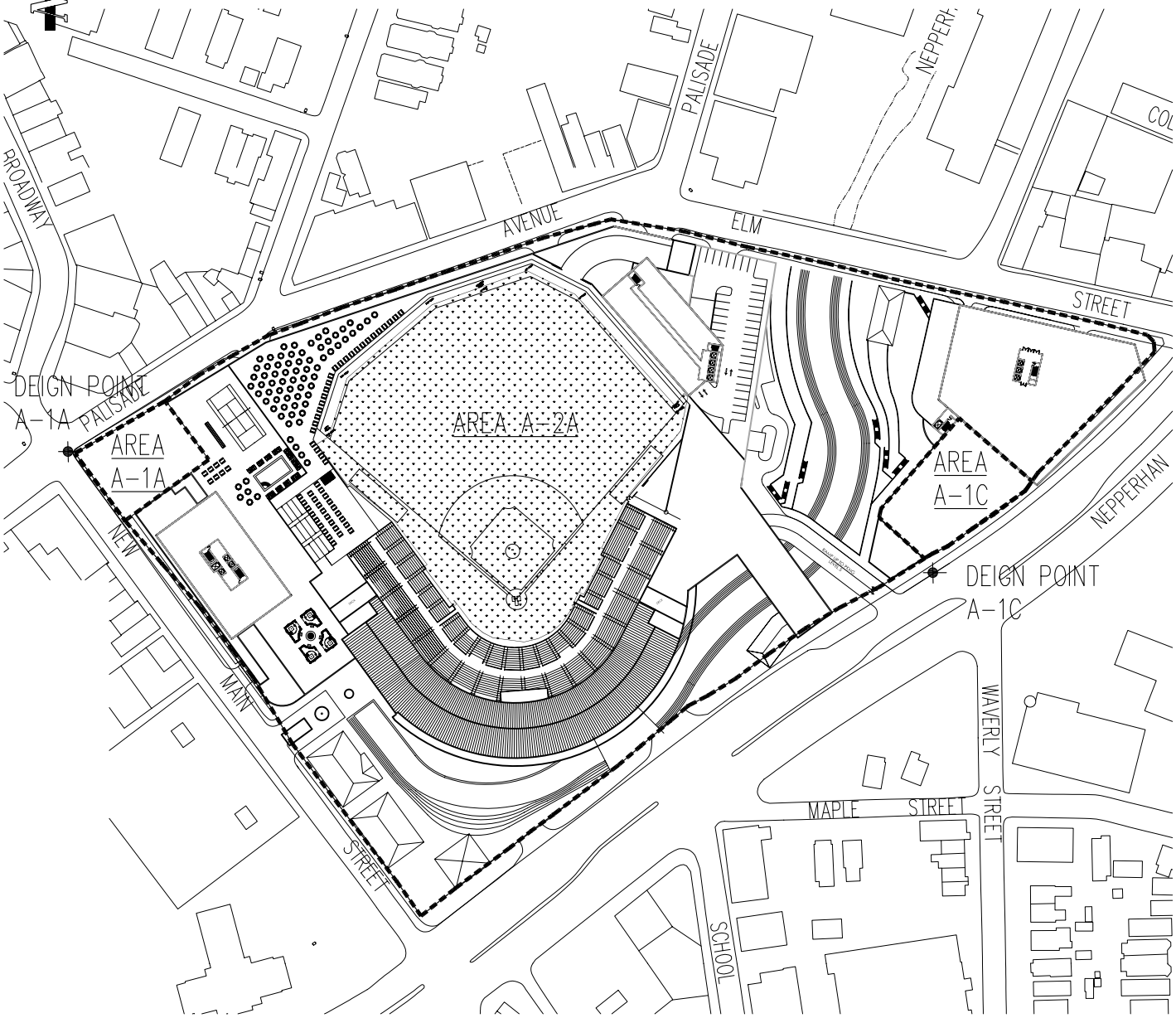
SHEET TITLE
EXISTING CONDITION
PALISADE AVENUE SITE

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 6



AREAS	IMPERVIUOS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
A-1A	0.30	0	0.30
A-1C	0.41	0	0.41
A-2A	10.33	2.96	13.29
TOTAL	11.04	2.96	14.00

LEGEND:

- PERVIOUS AREA
- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH

REV 02/12/07

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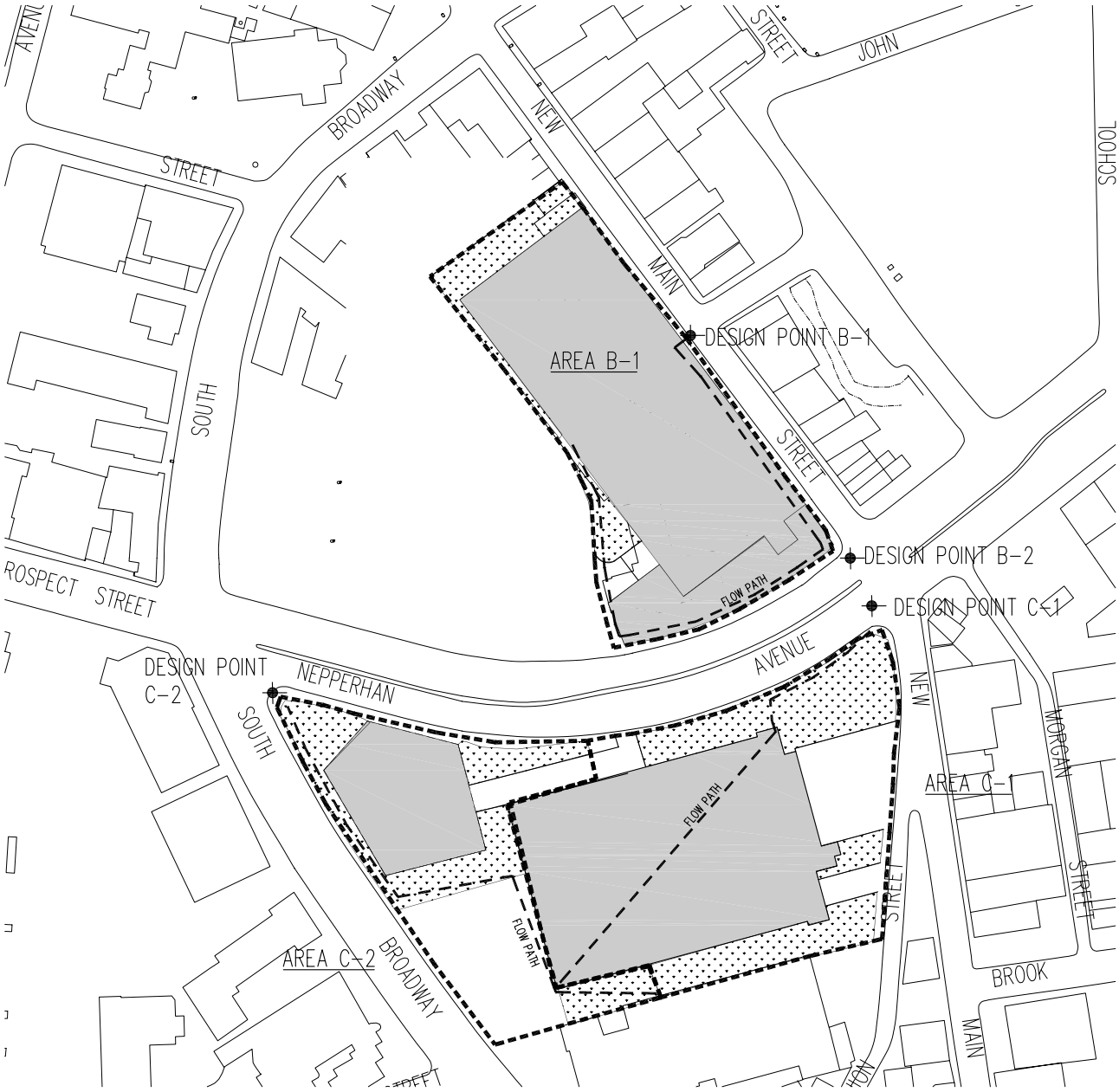
SHEET TITLE: PROPOSED CONDITION
RIVER PARK CENTER

PROJECT: RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 7



AREAS	IMPERVIUOS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
B-1	2.51	0.31	2.82
C-1	2.29	0.80	3.09
C-2	0.74	1.10	1.84
TOTAL			7.75

LEGEND:

- PERVIOUS AREA
- DESIGN POINT
- DRAINAGE BOUNDARY
- FLOW PATH
- PROPOSED BUILDING

REV 02/12/07

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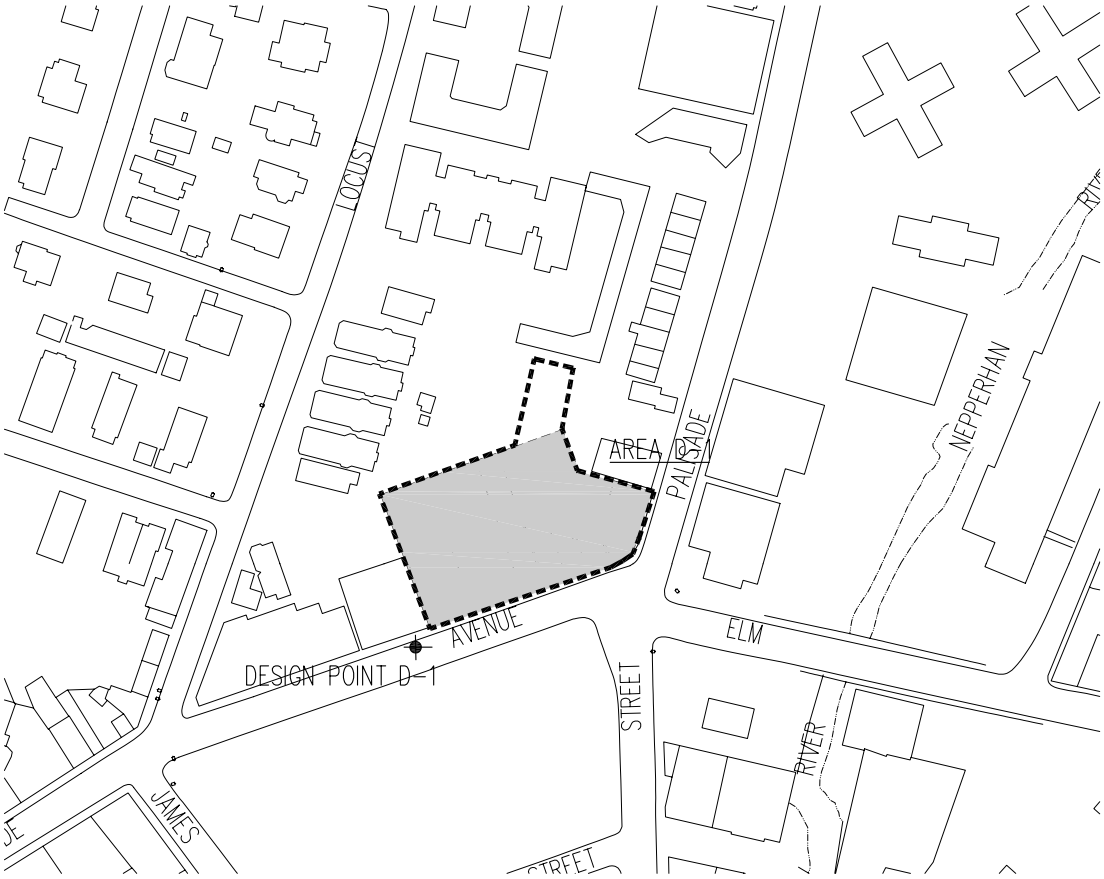
Tel. (845) 353-6400 Fax. (845) 353-6509

SHEET TITLE
PROPOSED CONDITION
CACACE AND GOVERNMENT CENTERS

PROJECT
RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 8



AREAS	IMPERVIUOS (Ac)	PERVIOUSL (Ac)	TOTAL (Ac)
D-1	0.78	0.09	0.87

LEGEND:

- DESIGN POINT
- DRAINAGE BOUNDARY
- PROPOSED BUILDING

REV 02/12/07

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Tel. (845) 353-6400 Fax. (845) 353-6509

SHEET TITLE: PROPOSED CONDITION
PALISADE AVENUE SITE

PROJECT: RIVER PARK CENTER PROJECT
YONKERS, NEW YORK

PROJ. NO.	106100
SCALE	1"=200'
DATE	10/23/06
DRAWN BY	LSS
CHECKED BY	SLG

DRAWING NO. 9

APPENDIX A
EXISTING CONDITIONS

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3054 • **FAX:** (845) 255-3042
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

October 29, 2007

PK Environmental
Attn: Patrick McNamara
205 Main Street
Chatham, NJ 07928

RE: Stream Classification/Resource Jurisdiction
Saw Mill River
Town of Yonkers
Westchester County

Dear Mr. McNamara:

Based upon our review of your inquiry dated October 16, 2007, we offer the following comments:

PROTECTION OF WATERS

☒ The following stream(s)/pond(s)/waterbody(ies) is(are) located within or near the site you indicated:

Name	Class	DEC Water Index Number	Status
Saw Mill River	[C]	H-4	[Protected, (non-protected), navigable]
	[ ]		[Protected, non-protected, navigable]

☒ A Protection of Waters permit is required to physically disturb the bed or banks (up to 50 feet from stream) of any streams identified above as "protected." A permit is not required to disturb the bed or banks of "non-protected" streams.

☐ A Protection of Waters permit is required for any excavation or filling below the mean high water line of any waterbodies identified above as "navigable."

☐ There are no waterbodies that appear on our regulatory maps at the location/project site you identified. Therefore, if there is a stream or pond outlet present at the site with year-round flow, it assumes the classification of the watercourse into which it feeds, _____, Class "_____", and a Protection of Waters permit is/is not required. If there is a stream or pond outlet present at the site that runs intermittently (seasonally), it is not protected, and a Protection of Waters permit is not required.

✳ If a permit is not required, please note, however, you are still responsible for ensuring that work shall not pollute any stream or waterbody. Care shall be taken to stabilize any disturbed areas promptly after construction, and all necessary precautions shall be taken to prevent contamination of the stream or waterbody by silt, sediment, fuels, solvents, lubricants, or any other pollutant associated with the project.

FRESHWATER WETLANDS

☐ Your project/site is near or in Freshwater Wetland _____, Class _____. Be aware that a Freshwater Wetlands permit is required for any physical disturbance within these boundaries or within the 100 foot adjacent area. To have the boundary delineated, please read the attached notice.

- OVER PLEASE -

RE: **Saw Mill River** **Date: October 29, 2007**

☒ Your project/site is not within a New York State protected Freshwater Wetland. However, please contact your town officials and the United States Army Corps of Engineers in New York City, telephone (917) 790-8511 (Westchester/Rockland Counties), or (917) 790-8411 (other counties), for any permitting they might require.

STATE-LISTED SPECIES

☐ DEC has reviewed the State's Master Habitat Databank (MHDB) records. We have determined that the site is located within or near record(s) of the following state-listed species: _____. If your inquiry is related to a specific development project, additional evaluation of the potential impacts of this project related to the sensitive resource(s) identified by this review, may be required. Please contact the person noted below.

☒ No records of sensitive resources were identified by this review.

* OTHER: Please note that stream classification is limited to the area identified on the supplied map. Stream classification changes to "protected" status further upstream & downstream of this specific location.

Please note that this letter only addresses the requirements for the following permits from the Department:
☒ Freshwater Wetlands ☒ Master Habitat Databank ☒ Other: _____
☒ Protection of Waters
and that other permits from this Department or other agencies may be required for projects conducted on this property now or in the future. Also, regulations applicable to the location subject to this determination occasionally are revised and you should, therefore, verify the need for permits if your project is delayed or postponed. This determination regarding the need for permits will remain effective for a maximum of one year unless you are otherwise notified. Applications may be downloaded from our website at www.dec.ny.gov under "Programs" then "Division of Environmental Permits."

Please contact this office if you have questions regarding the above information. Thank you.

Sincerely,

John W. Petronella
Division of Environmental Permits
Region 3, Telephone No. 845/256-3031

☒ Information/Permit Materials/Regulations/Map (Yonkers Quadrangle) Attached.
☐ Web page information
☐ NYC DEP Contact Information (this site is within the NYC Watershed).
cc: _____ _____

* **NOTE: Regarding erosion/sedimentation control requirements:**

Stormwater discharges now require a SPDES Stormwater permit from this Department if they either:
- occur at industrial facilities and contain either toxic contaminants or priority pollutants OR
- result from construction projects involving the disturbance of one (1) or more acres of land.

Your project may be covered under one of two Statewide General Permits or may require an individual permit. If you believe your project would be covered under one of the General Permits and does not require any other DEC permits you may apply for coverage by filing a Notice of Intent with NYSDEC, Division of Water, 625 Broadway, Albany NY 12233-3505, (forms & permits available from this office or DEC Website at www.dec.ny.gov or call 518-402-8109). If your project involves other DEC permits, please contact the regional Division of Environmental Permits office (see above).

Freshwater Wetlands Map

Westchester County

Map 12 of 14

This map was promulgated, to Article 24 of the Envir Conservation Law (The Fr Wetlands Act) on October 7 by the Commissioner of N State Department of Envir Conservation.

LEGEND:

- Approximate wetland boundary
- Upland inclusion
- AA-00 Wetland identification

NOTES:

This map indicates the approximat of the actual boundaries of wetlands according to the Freshwater Wetland

Map information other than the boundaries was prepared by the N State Department of Transportation United States Geological Survey. T tional information provided on the m reference only. Marsh symbols necessarily indicate the location of a wetland.

Adjacent areas of the regulated wetl those areas within 100 feet of the bou the wetland. These areas are subject t tion pursuant to the Freshwater Wetla but are not delineated on this map. cent area may be extended by special the Commissioner of the New Yor Department of Environmental Conserv the local regulatory authority.

Copies of Freshwater Wetlands Ma available from the regional offices Department of Environmental Conse Maps are available for inspection at th fices and local government clerk's offi

REVISIONS

Date	Wetland #	Description of

B. SANTOS

MEG 106100

EXIST COND RUN-1: CACACE, GOVT, AND RIVER PARK CENTERS

Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A-1A	1.86	0.109	95	Outlet	R-PARK TO COMB SEW
A-1B	.84	0.100	95	Outlet	R-PRK TO COMB SEW
A-1C	.50	0.100	95	Outlet	R-PRK TO COMB SEW
A-2	6.68	0.320	91	Outlet	R-PRK TO STORM DR
A-3A	3.77	0.100	88	Outlet	R-PRK TO RIVER
A-3B	.59	0.119	89	Outlet	R-PRK TO RIVER
B-1	2.50	0.100	91	Outlet	G-CEN GAR TO COMB SEWER
B-2	.32	0.100	88	Outlet	G-CEN GAR TO STORM DR
C-1	2.58	0.100	89	Outlet	CACACE JUS CEN TO STORM D
C-2	2.35	0.100	89	Outlet	CACACE JUS CEN SEWER

Total Area: 21.99 (ac)

B. SANTOS MEG 106100

EXIST COND RUN-1: CACACE, GOVT, AND RIVER PARK CENTERS

Westchester County, New York

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A-1A							
SHEET	50	0.0100	0.011				0.015
SHALLOW	100	0.0290	0.025				0.008
CHANNEL	620					2.000	0.086
					Time of Concentration		0.109
A-1B							
SHEET	99	0.0200	0.011				0.019
SHALLOW	125	0.0250	0.025				0.011
CHANNEL	84					2.000	0.012
					Time of Concentration		0.100
A-1C							
SHEET	96	0.0200	0.011				0.019
SHALLOW	100	0.0330	0.025				0.008
CHANNEL	328					3.000	0.030
					Time of Concentration		0.100
A-2							
SHEET	99	0.0556	0.410				0.230
SHALLOW	80	0.0500	0.050				0.006
SHALLOW	300	0.0300	0.025				0.024
CHANNEL	430					2.000	0.060
					Time of Concentration		0.320
A-3A							
SHEET	60	0.0500	0.150				0.072
SHALLOW	16	0.0500	0.050				0.001
CHANNEL	190					2.000	0.026
					Time of Concentration		0.100
A-3B							
SHEET	46	0.0100	0.011				0.014
SHALLOW	108	0.0830	0.025				0.005
SHALLOW	55	0.4300	0.050				0.001
CHANNEL	171					1.000	0.048
CHANNEL	369					2.000	0.051
					Time of Concentration		0.119
B-1							
SHEET	99	0.0200	0.011				0.019
SHALLOW	150	0.0700	0.050				0.010
CHANNEL	300					7.000	0.012
					Time of Concentration		0.1

B-2							
SHEET	99	0.0100	0.011				0.025
SHALLOW	150	0.0200	0.025				0.014
SHALLOW	150	0.2000	0.050				0.006
CHANNEL	200					10.000	0.006

Sub-Area Time of Concentration Details (continued)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
					Time of Concentration		0.1
C-1							
SHEET	99	0.0100	0.011				0.025
SHALLOW	150	0.0200	0.025				0.014
SHALLOW	200	0.7000	0.025				0.003
CHANNEL	260					7.000	0.010
					Time of Concentration		0.1
C-2							
SHEET	99	0.0200	0.011				0.019
SHALLOW	150	0.0500	0.025				0.009
CHANNEL	250					5.000	0.014
					Time of Concentration		0.1

B. SANTOS MEG 106100

EXIST COND RUN-1: CACACE, GOVT, AND RIVER PARK CENTERS

Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A-1A	Commercial & business	D	1.86	95
	Total Area / Weighted Curve Number		1.86	95
A-1B	Commercial & business	D	.84	95
	Total Area / Weighted Curve Number		.84	95
A-1C	Commercial & business	D	.5	95
	Total Area / Weighted Curve Number		.5	95
A-2	Open space; grass cover > 75% (good)	D	1.23	80
	Paved; open ditches (w/right-of-way)	D	5.45	93
	Total Area / Weighted Curve Number		6.68	91
A-3A	Open space; grass cover > 75% (good)	D	1.45	80
	Paved; open ditches (w/right-of-way)	D	2.32	93
	Total Area / Weighted Curve Number		3.77	88
A-3B	Open space; grass cover > 75% (good)	D	.19	80
	Paved; open ditches (w/right-of-way)	D	.4	93
	Total Area / Weighted Curve Number		.59	89
B-1	Open space; grass cover > 75% (good)	D	1.03	80
	Paved parking lots, roofs, driveways	D	1.47	98
	Total Area / Weighted Curve Number		2.5	91
B-2	Open space; grass cover > 75% (good)	D	.17	80
	Paved parking lots, roofs, driveways	D	.15	98
	Total Area / Weighted Curve Number		.32	88
C-1	Open space; grass cover > 75% (good)	D	1.22	80
	Paved parking lots, roofs, driveways	D	1.36	98
	Total Area / Weighted Curve Number		2.58	89
C-2	Open space; grass cover > 75% (good)	D	1.16	80
	Paved parking lots, roofs, driveways	D	1.19	98
	Total Area / Weighted Curve Number		2.35	89

B. SANTOS

MEG 106100
EXIS COND RUN-2 : Palisade Ave Site
Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
D-1	.87	0.100	95	Outlet	R-PRK GAR TO COMB SEW

Total Area: .87 (ac)

B. SANTOS

MEG 106100
EXIS COND RUN-2 : Palisade Ave Site
Westchester County, New York

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
D-1							
SHEET	40	0.0100	0.011				0.012
SHALLOW	200	0.0700	0.025				0.010
					Time of Concentration		0.100

MEG 106100
EXIS COND RUN-2 : Palisade Ave Site
Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
D-1	Commercial & business	D	.87	95
	Total Area / Weighted Curve Number		.87	95

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	5.223	-------	-------	7.668	9.284	-------	11.70	Area A-1A
2	SCS Runoff	-------	-------	2.359	-------	-------	3.463	4.193	-------	5.282	Area A-1B
3	SCS Runoff	-------	-------	1.404	-------	-------	2.061	2.496	-------	3.144	Area A-1C
4	SCS Runoff	-------	-------	14.01	-------	-------	21.51	26.48	-------	33.87	Area A-2A
5	SCS Runoff	-------	-------	8.676	-------	-------	13.77	17.15	-------	22.19	Area A-3A
6	SCS Runoff	-------	-------	1.404	-------	-------	2.201	2.729	-------	3.516	Area A-3B
7	SCS Runoff	-------	-------	6.336	-------	-------	9.697	11.92	-------	15.22	Area B-1
8	SCS Runoff	-------	-------	0.736	-------	-------	1.168	1.456	-------	1.884	Area B-2
9	SCS Runoff	-------	-------	6.141	-------	-------	9.624	11.93	-------	15.37	Area C-1
10	SCS Runoff	-------	-------	5.594	-------	-------	8.766	10.87	-------	14.00	Area C-2
11	SCS Runoff	-------	-------	2.443	-------	-------	3.587	4.343	-------	5.471	Area D-1
12	Combine	4, 5, 6,	-------	22.03	-------	-------	34.25	42.35	-------	54.45	River Park Combined to Saw Mill ri
13	Combine	1, 2, 3,	-------	8.986	-------	-------	13.19	15.97	-------	20.12	River Park Combined to Combined
14	Combine	1, 2, 3, 4, 5, ~~6,~~	----	30.73	-------	-------	47.27	58.24	-------	74.58	Total River Park Center
15	Combine	7, 8,	-------	7.072	-------	-------	10.86	13.37	-------	17.11	Total Government Center
16	Combine	9, 10,	-------	11.73	-------	-------	18.39	22.80	-------	29.38	Total Cacace Center
17	Combine	4, 5, 6, 8, 9,	-------	28.62	-------	-------	44.87	55.65	-------	71.71	Existing Combined to SMR
18	Combine	1, 2, 3, 7, 10, ~~11,~~		23.36	-------	-------	35.24	43.10	-------	54.82	Total Existing to Combined Sewer

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	5.223	3	726	0.427	----	------	------	Area A-1A
2	SCS Runoff	2.359	3	726	0.193	----	------	------	Area A-1B
3	SCS Runoff	1.404	3	726	0.115	----	------	------	Area A-1C
4	SCS Runoff	14.01	3	732	1.459	----	------	------	Area A-2A
5	SCS Runoff	8.676	3	726	0.668	----	------	------	Area A-3A
6	SCS Runoff	1.404	3	726	0.109	----	------	------	Area A-3B
7	SCS Runoff	6.336	3	726	0.496	----	------	------	Area B-1
8	SCS Runoff	0.736	3	726	0.057	----	------	------	Area B-2
9	SCS Runoff	6.141	3	726	0.475	----	------	------	Area C-1
10	SCS Runoff	5.594	3	726	0.433	----	------	------	Area C-2
11	SCS Runoff	2.443	3	726	0.200	----	------	------	Area D-1
12	Combine	22.03	3	729	2.236	4, 5, 6,	------	------	River Park Combined to Saw Mill ri
13	Combine	8.986	3	726	0.735	1, 2, 3,	------	------	River Park Combined to Combined
14	Combine	30.73	3	726	2.970	1, 2, 3, 4, 5, 6,	------	------	Total River Park Center
15	Combine	7.072	3	726	0.553	7, 8,	------	------	Total Government Center
16	Combine	11.73	3	726	0.908	9, 10,	------	------	Total Cacace Center
17	Combine	28.62	3	726	2.767	4, 5, 6, 8, 9,	------	------	Existing Combined to SMR
18	Combine	23.36	3	726	1.864	1, 2, 3, 7, 10, 11,	-----	------	Total Existing to Combined Sewer

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	7.668	3	726	0.642	----	------	------	Area A-1A
2	SCS Runoff	3.463	3	726	0.290	----	------	------	Area A-1B
3	SCS Runoff	2.061	3	726	0.173	----	------	------	Area A-1C
4	SCS Runoff	21.51	3	732	2.286	----	------	------	Area A-2A
5	SCS Runoff	13.77	3	726	1.081	----	------	------	Area A-3A
6	SCS Runoff	2.201	3	726	0.174	----	------	------	Area A-3B
7	SCS Runoff	9.697	3	726	0.778	----	------	------	Area B-1
8	SCS Runoff	1.168	3	726	0.092	----	------	------	Area B-2
9	SCS Runoff	9.624	3	726	0.760	----	------	------	Area C-1
10	SCS Runoff	8.766	3	726	0.693	----	------	------	Area C-2
11	SCS Runoff	3.587	3	726	0.300	----	------	------	Area D-1
12	Combine	34.25	3	729	3.540	4, 5, 6,	------	------	River Park Combined to Saw Mill ri
13	Combine	13.19	3	726	1.105	1, 2, 3,	------	------	River Park Combined to Combined
14	Combine	47.27	3	726	4.645	1, 2, 3, 4, 5, 6,	------	------	Total River Park Center
15	Combine	10.86	3	726	0.869	7, 8,	------	------	Total Government Center
16	Combine	18.39	3	726	1.453	9, 10,	------	------	Total Cacace Center
17	Combine	44.87	3	726	4.392	4, 5, 6, 8, 9,	------	------	Existing Combined to SMR
18	Combine	35.24	3	726	2.876	1, 2, 3, 7, 10, 11,	------	------	Total Existing to Combined Sewer

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	9.284	3	726	0.786	----	------	------	Area A-1A
2	SCS Runoff	4.193	3	726	0.355	----	------	------	Area A-1B
3	SCS Runoff	2.496	3	726	0.211	----	------	------	Area A-1C
4	SCS Runoff	26.48	3	732	2.846	----	------	------	Area A-2A
5	SCS Runoff	17.15	3	726	1.362	----	------	------	Area A-3A
6	SCS Runoff	2.729	3	726	0.218	----	------	------	Area A-3B
7	SCS Runoff	11.92	3	726	0.968	----	------	------	Area B-1
8	SCS Runoff	1.456	3	726	0.116	----	------	------	Area B-2
9	SCS Runoff	11.93	3	726	0.954	----	------	------	Area C-1
10	SCS Runoff	10.87	3	726	0.869	----	------	------	Area C-2
11	SCS Runoff	4.343	3	726	0.368	----	------	------	Area D-1
12	Combine	42.35	3	729	4.426	4, 5, 6,	------	------	River Park Combined to Saw Mill ri
13	Combine	15.97	3	726	1.353	1, 2, 3,	------	------	River Park Combined to Combined
14	Combine	58.24	3	726	5.779	1, 2, 3, 4, 5, 6,	------	------	Total River Park Center
15	Combine	13.37	3	726	1.084	7, 8,	------	------	Total Government Center
16	Combine	22.80	3	726	1.824	9, 10,	------	------	Total Cacace Center
17	Combine	55.65	3	726	5.497	4, 5, 6, 8, 9,	------	------	Existing Combined to SMR
18	Combine	43.10	3	726	3.558	1, 2, 3, 7, 10, 11,	------	------	Total Existing to Combined Sewer

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	11.70	3	726	1.003	----	------	------	Area A-1A
2	SCS Runoff	5.282	3	726	0.453	----	------	------	Area A-1B
3	SCS Runoff	3.144	3	726	0.270	----	------	------	Area A-1C
4	SCS Runoff	33.87	3	732	3.692	----	------	------	Area A-2A
5	SCS Runoff	22.19	3	726	1.791	----	------	------	Area A-3A
6	SCS Runoff	3.516	3	726	0.286	----	------	------	Area A-3B
7	SCS Runoff	15.22	3	726	1.256	----	------	------	Area B-1
8	SCS Runoff	1.884	3	726	0.152	----	------	------	Area B-2
9	SCS Runoff	15.37	3	726	1.249	----	------	------	Area C-1
10	SCS Runoff	14.00	3	726	1.138	----	------	------	Area C-2
11	SCS Runoff	5.471	3	726	0.469	----	------	------	Area D-1
12	Combine	54.45	3	726	5.768	4, 5, 6,	------	------	River Park Combined to Saw Mill ri
13	Combine	20.12	3	726	1.726	1, 2, 3,	------	------	River Park Combined to Combined
14	Combine	74.58	3	726	7.494	1, 2, 3, 4, 5, 6,	------	------	Total River Park Center
15	Combine	17.11	3	726	1.408	7, 8,	------	------	Total Government Center
16	Combine	29.38	3	726	2.387	9, 10,	------	------	Total Cacace Center
17	Combine	71.71	3	726	7.169	4, 5, 6, 8, 9,	------	------	Existing Combined to SMR
18	Combine	54.82	3	726	4.589	1, 2, 3, 7, 10, 11,	-----	------	Total Existing to Combined Sewer

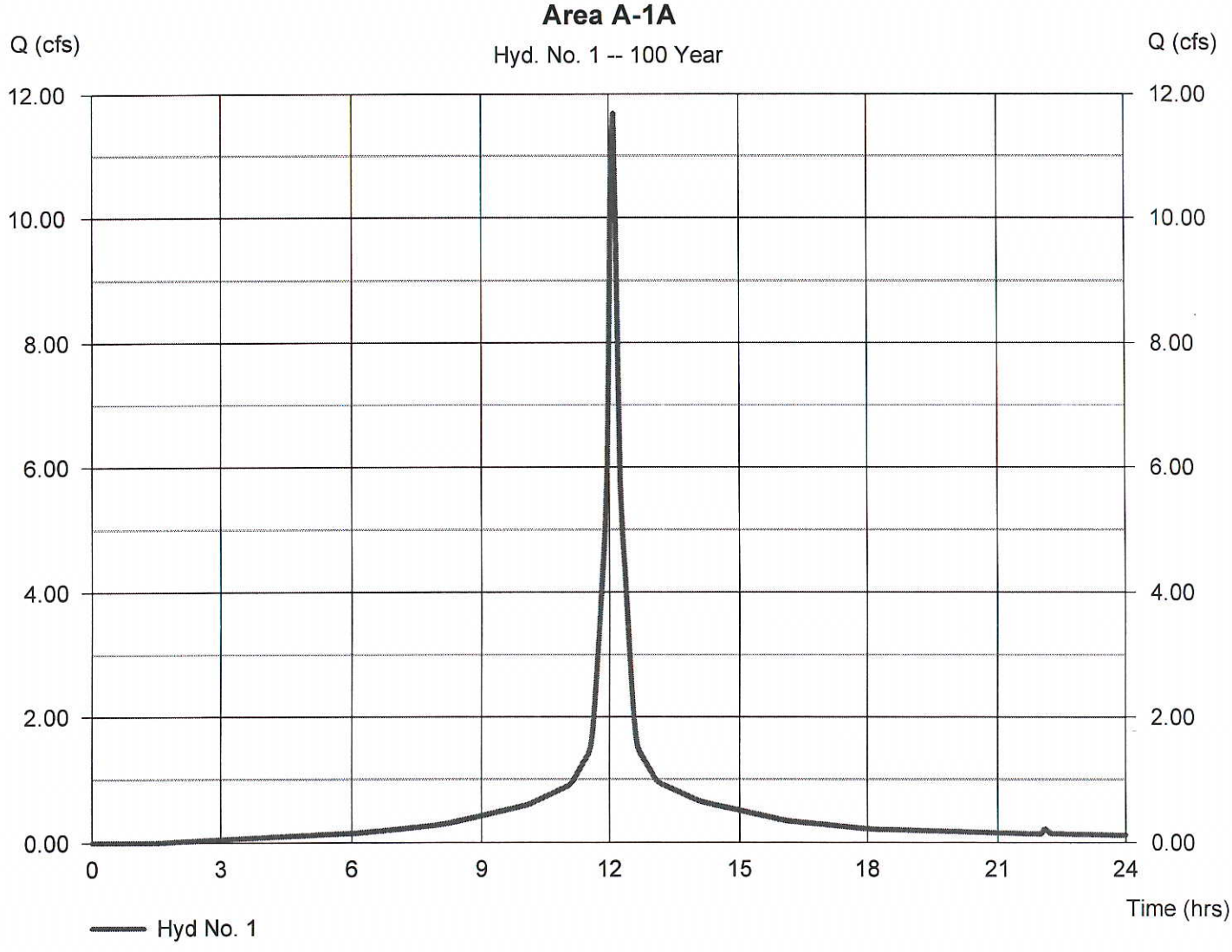
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 1

Area A-1A

Hydrograph type	= SCS Runoff	Peak discharge	= 11.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.003 acft
Drainage area	= 1.860 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.50 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



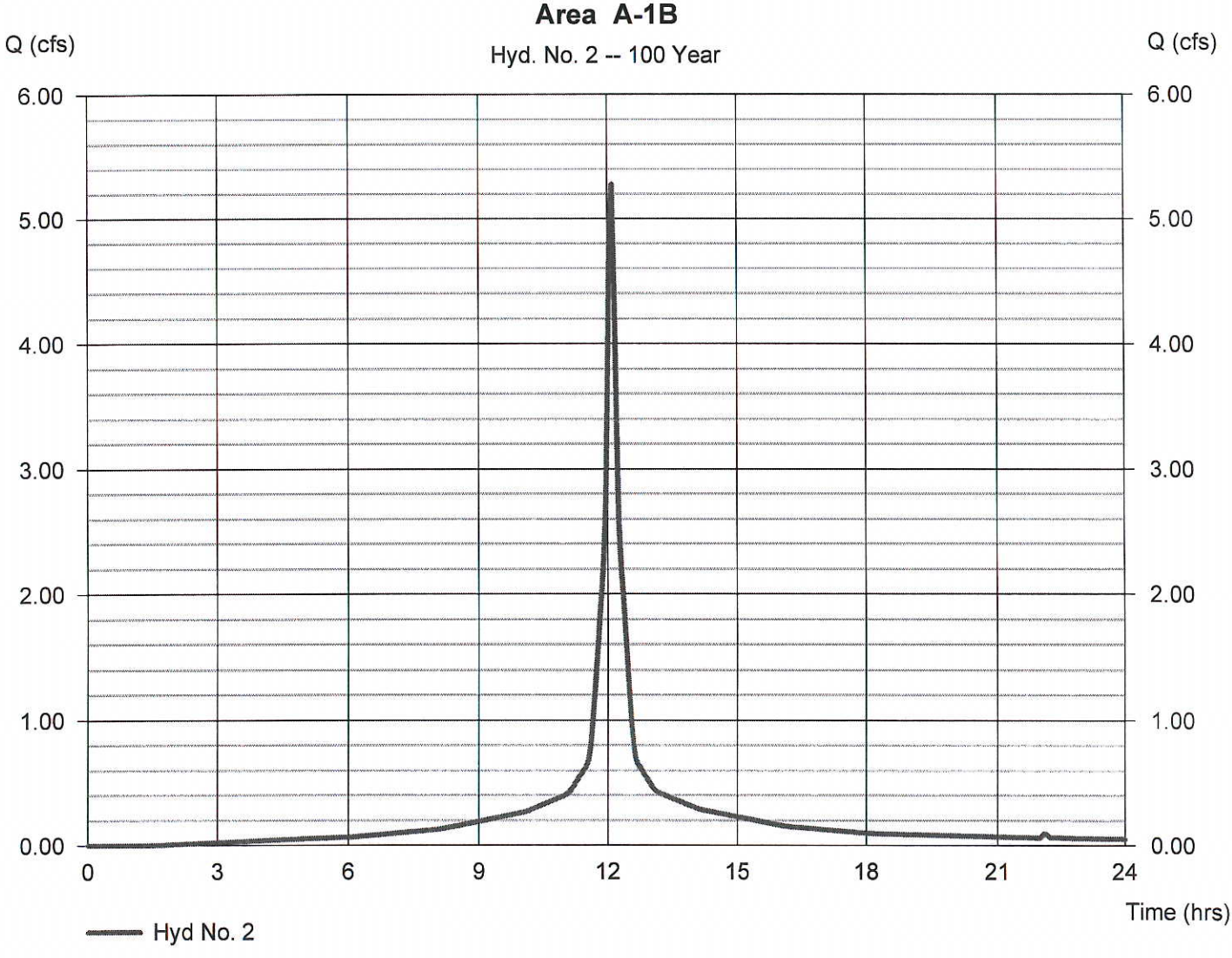
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 2

Area A-1B

Hydrograph type	= SCS Runoff	Peak discharge	= 5.282 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 0.453 acft
Drainage area	= 0.840 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



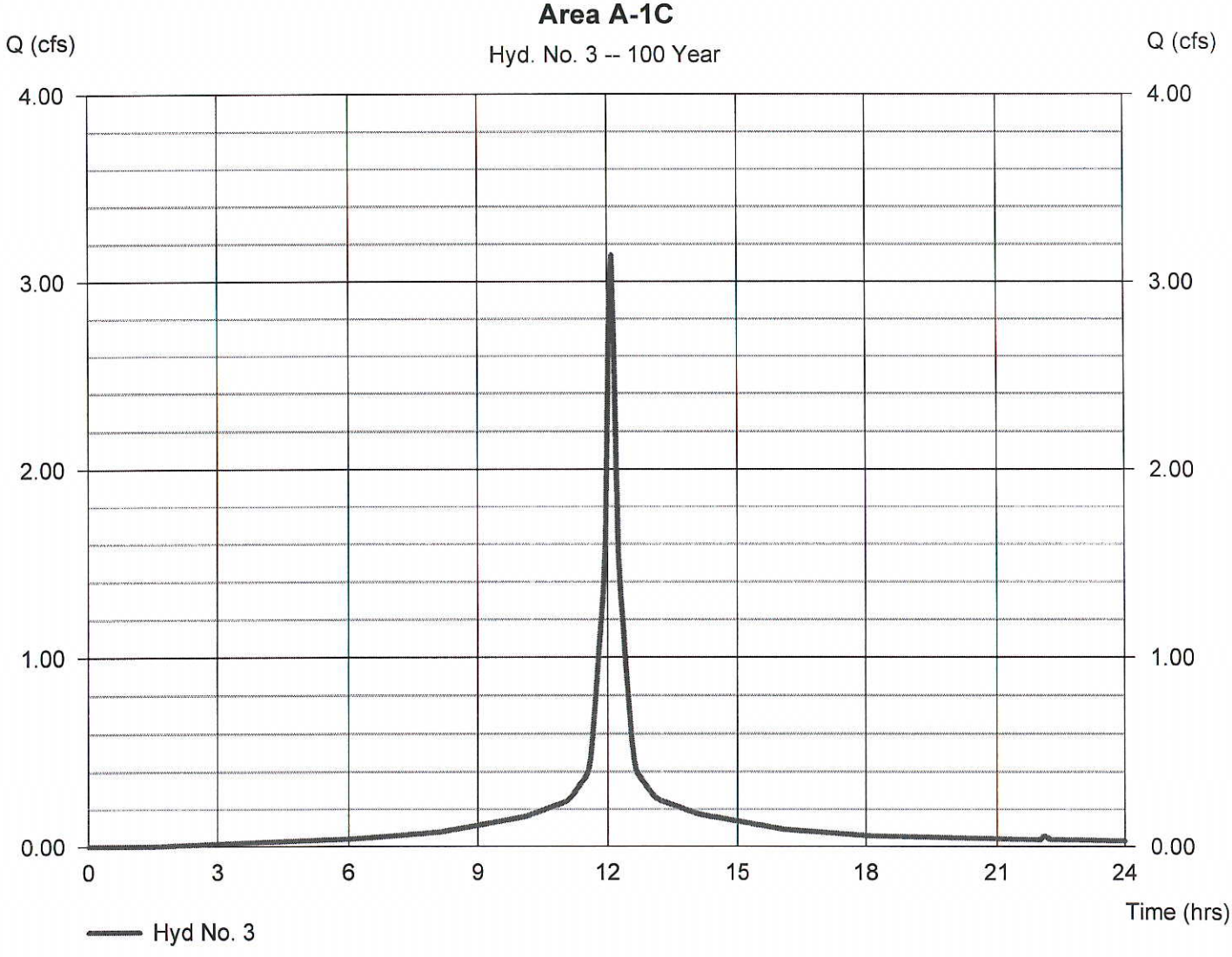
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 3

Area A-1C

Hydrograph type	= SCS Runoff	Peak discharge	= 3.144 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 0.270 acft
Drainage area	= 0.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



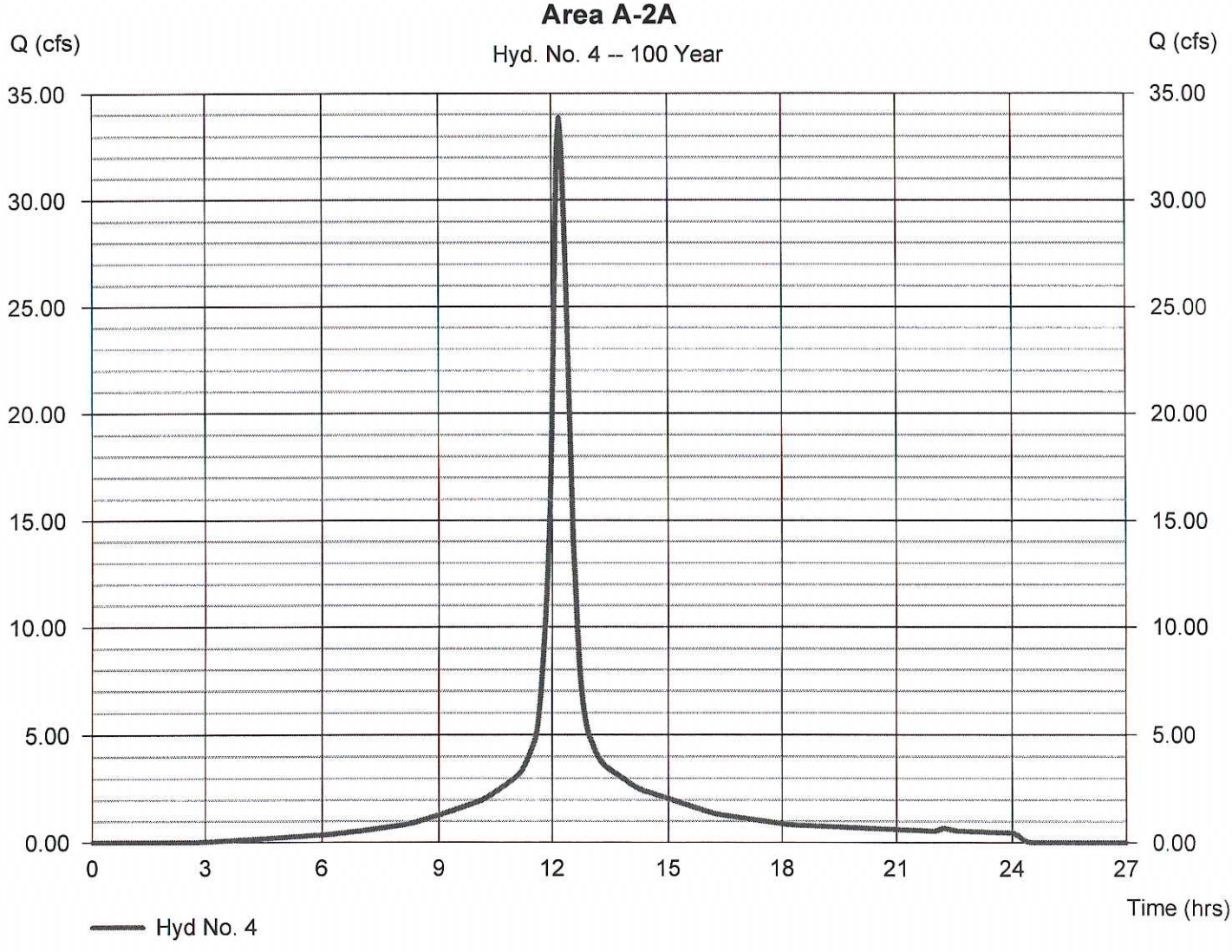
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 4

Area A-2A

Hydrograph type	= SCS Runoff	Peak discharge	= 33.87 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 3 min	Hyd. volume	= 3.692 acft
Drainage area	= 6.680 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 19.20 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



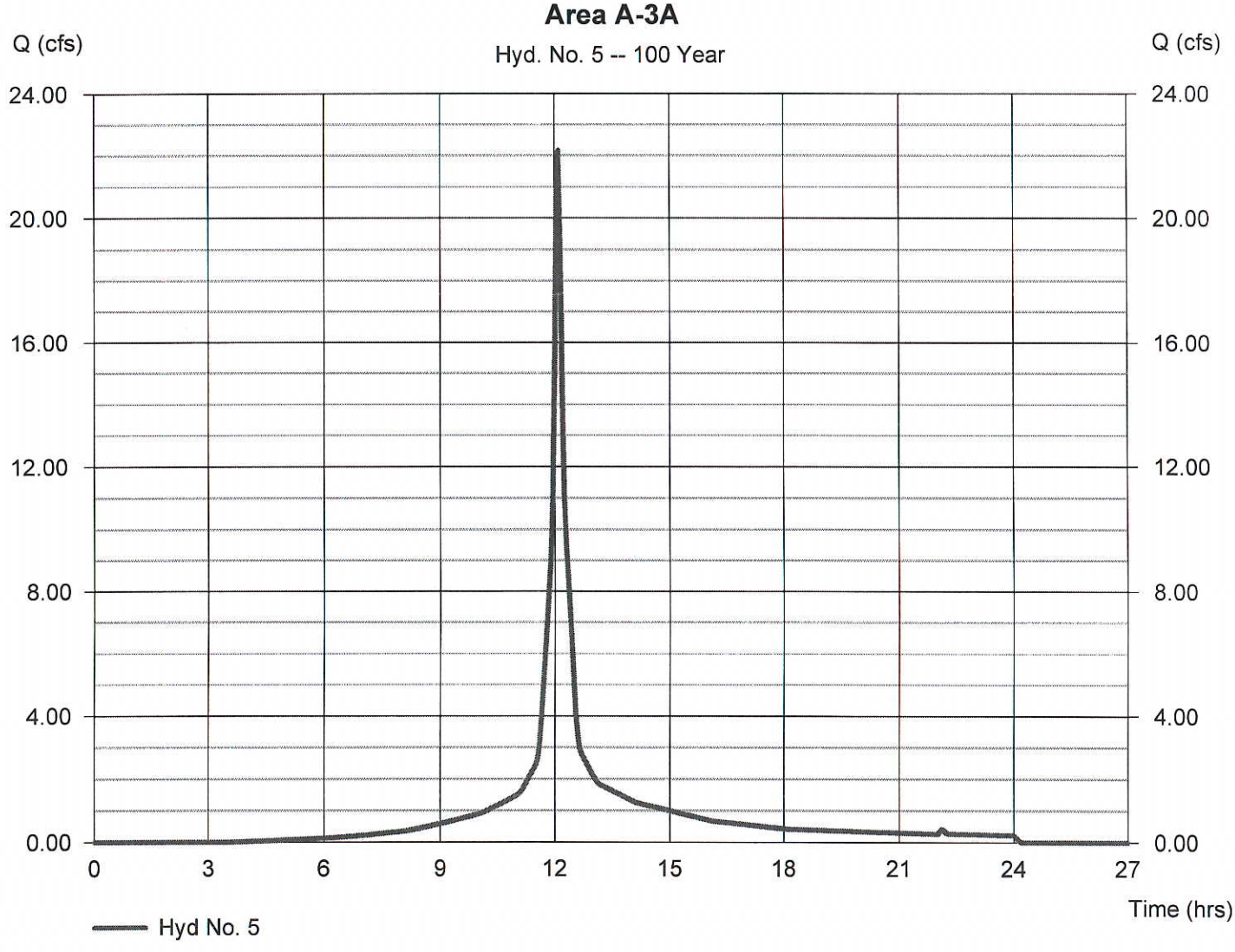
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 5

Area A-3A

Hydrograph type	= SCS Runoff	Peak discharge	= 22.19 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.791 acft
Drainage area	= 3.770 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



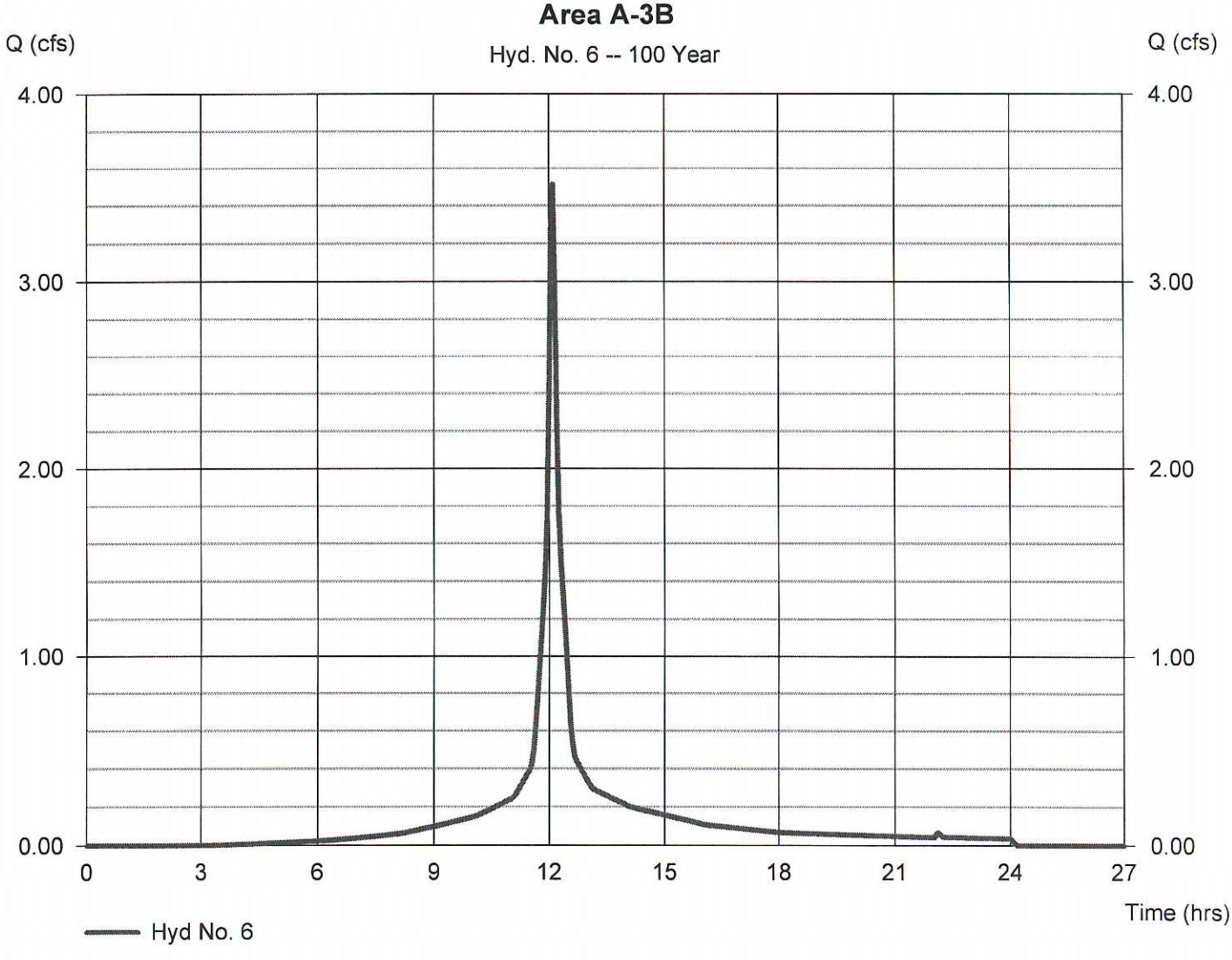
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 6

Area A-3B

Hydrograph type	= SCS Runoff	Peak discharge	= 3.516 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 0.286 acft
Drainage area	= 0.590 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 7.10 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



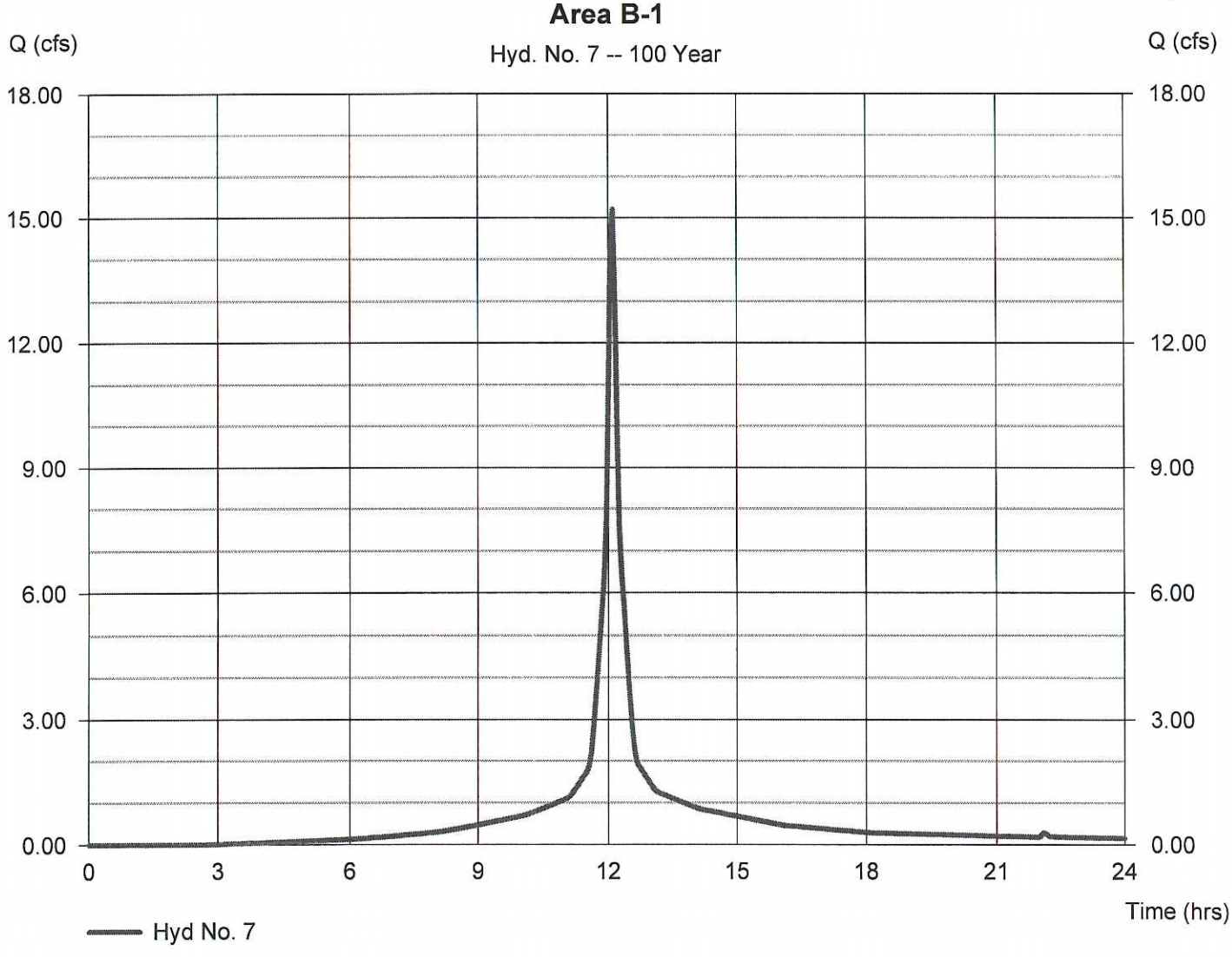
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 7

Area B-1

Hydrograph type	= SCS Runoff	Peak discharge	= 15.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.256 acft
Drainage area	= 2.500 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



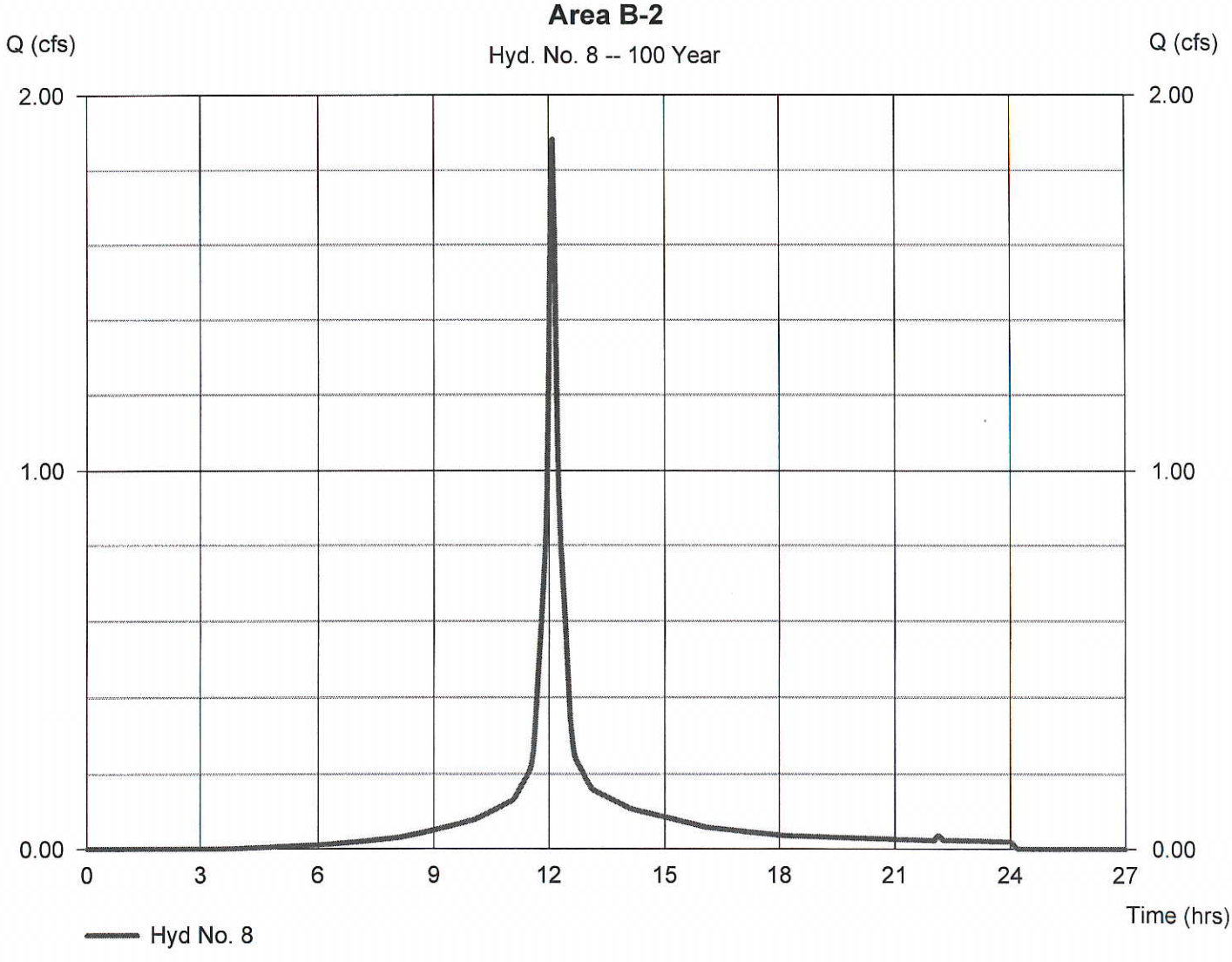
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 8

Area B-2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.884 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 0.152 acft
Drainage area	= 0.320 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



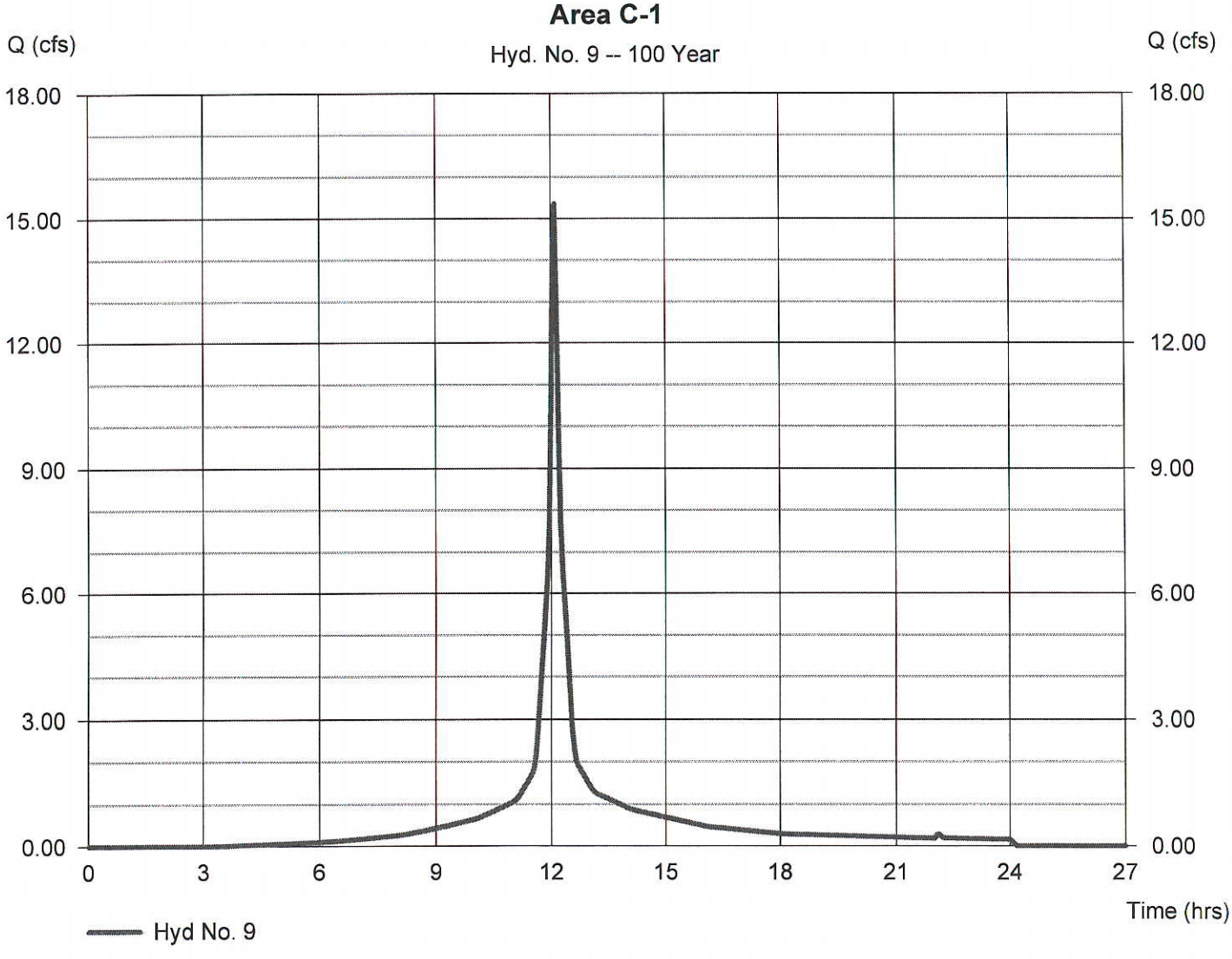
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 9

Area C-1

Hydrograph type	= SCS Runoff	Peak discharge	= 15.37 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.249 acft
Drainage area	= 2.580 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



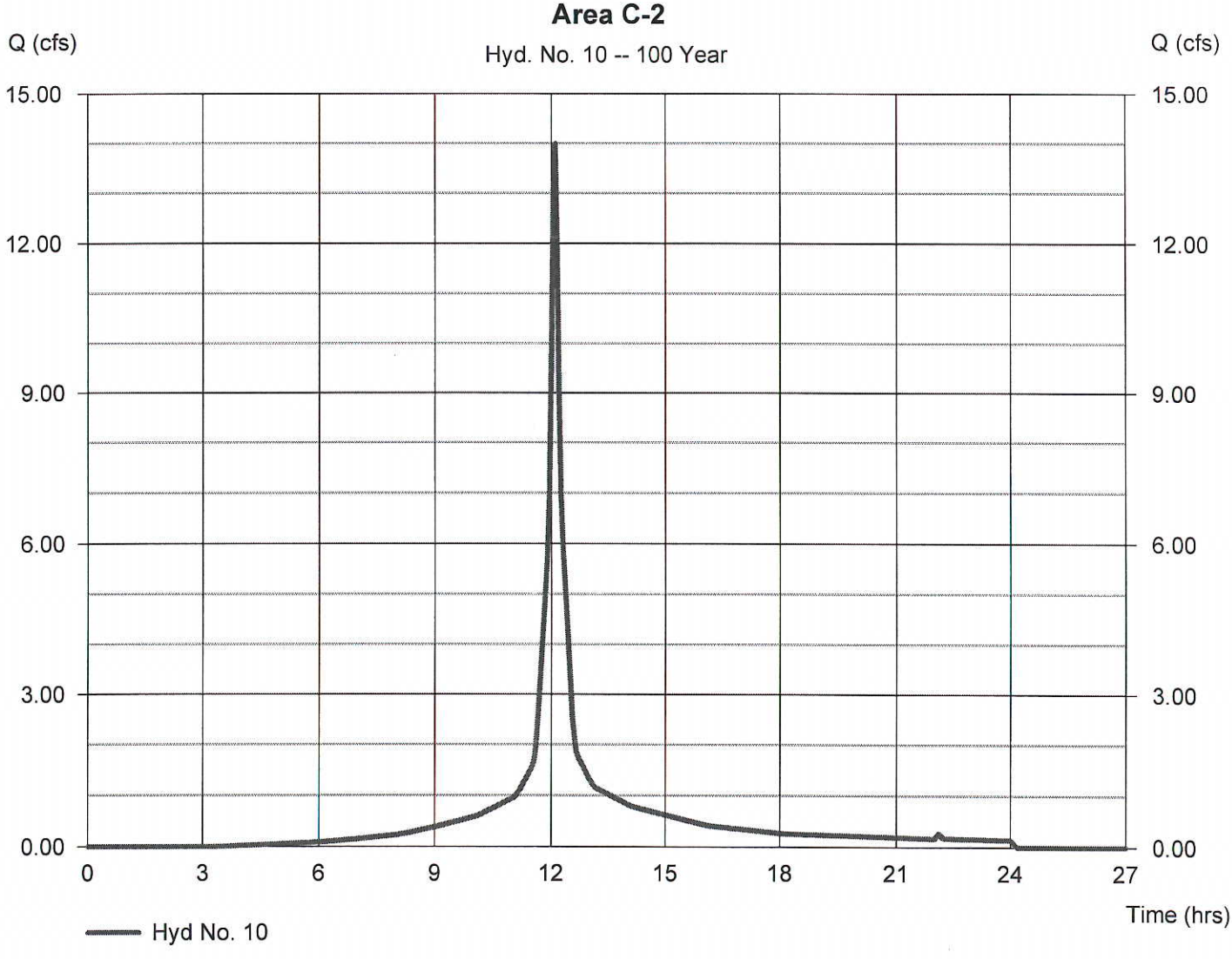
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 10

Area C-2

Hydrograph type	= SCS Runoff	Peak discharge	= 14.00 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.138 acft
Drainage area	= 2.350 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



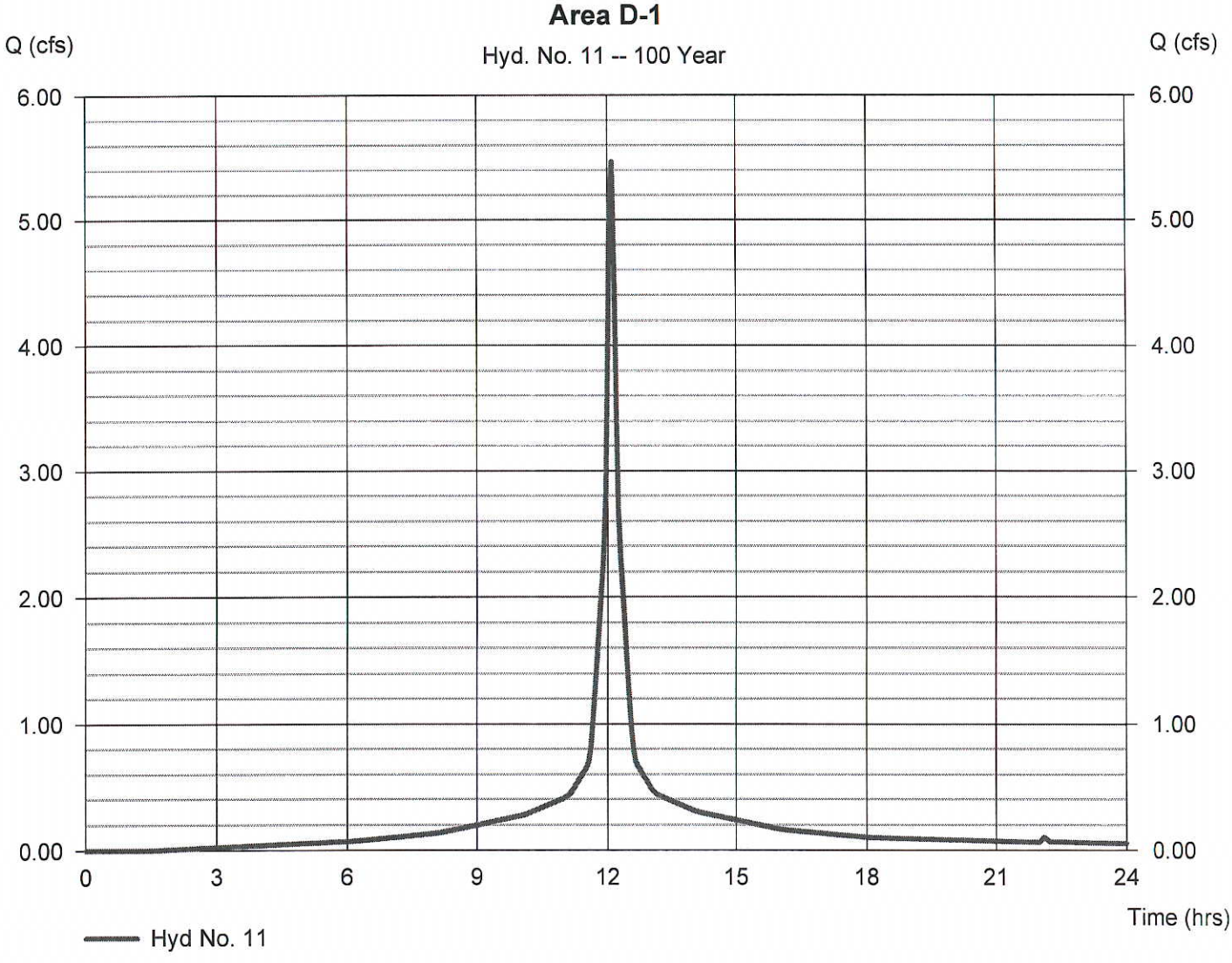
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 11

Area D-1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.471 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 0.469 acft
Drainage area	= 0.870 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



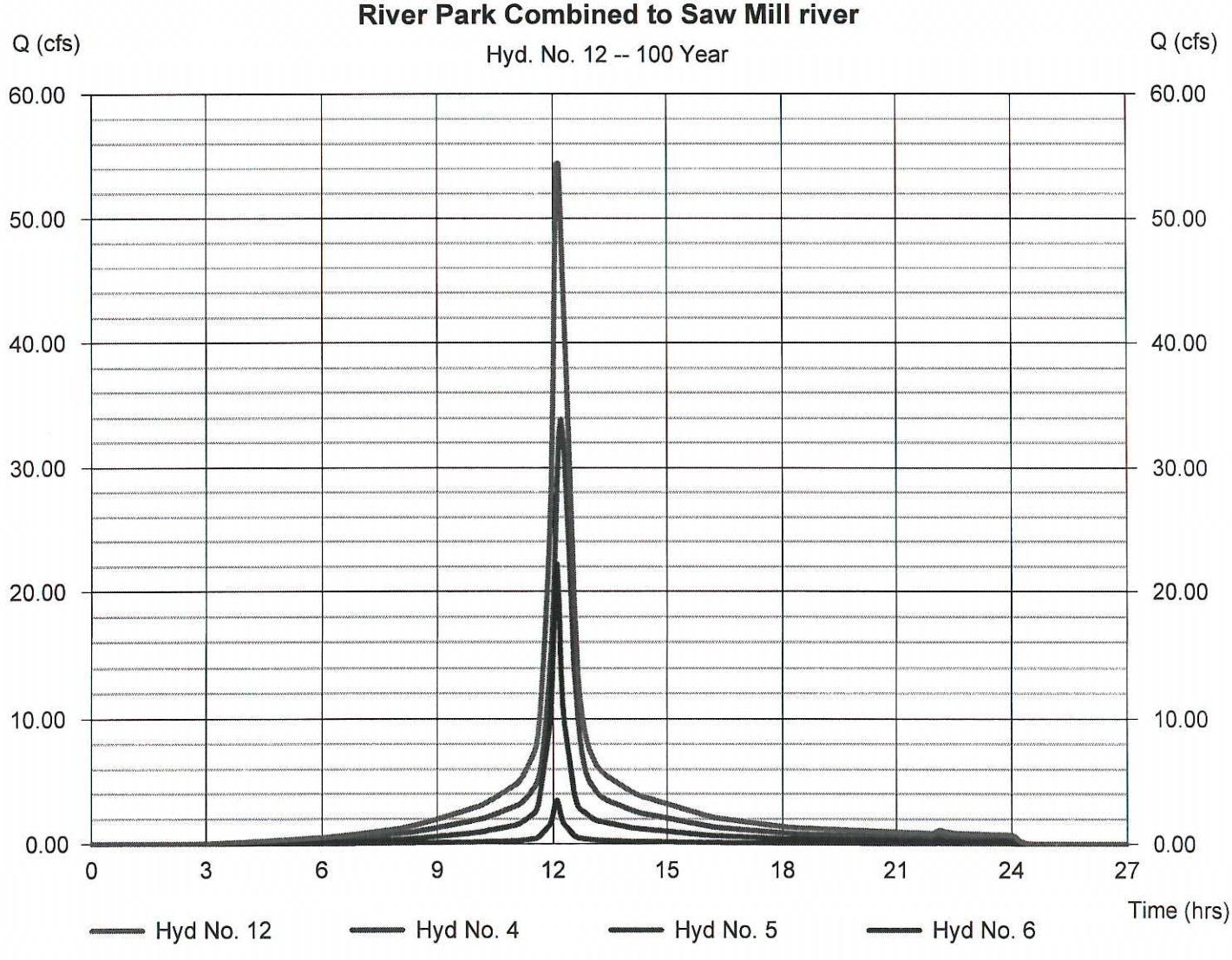
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 12

River Park Combined to Saw Mill river

Hydrograph type	= Combine	Peak discharge	= 54.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 5.768 acft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 11.040 ac



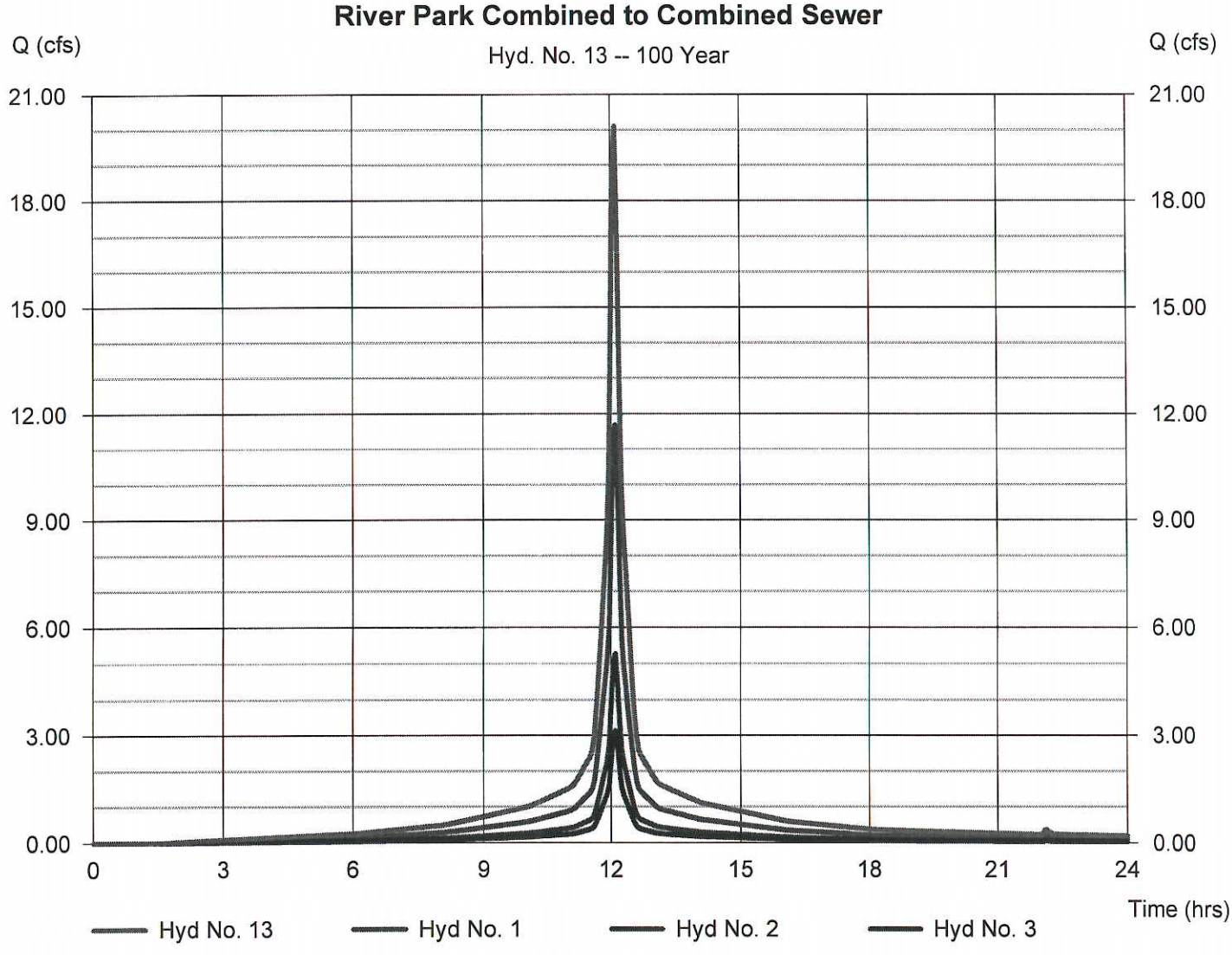
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 13

River Park Combined to Combined Sewer

Hydrograph type	= Combine	Peak discharge	= 20.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.726 acft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 3.200 ac



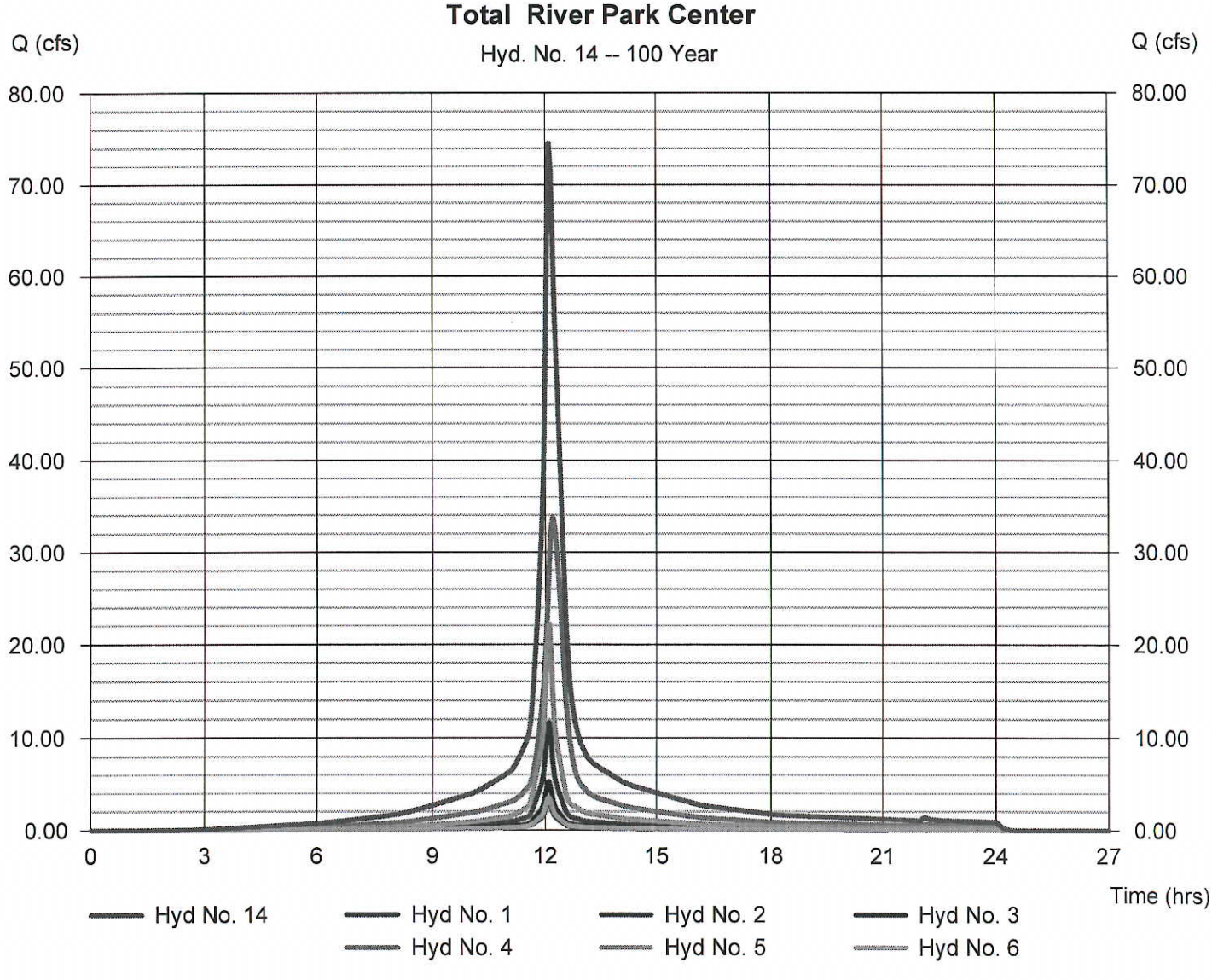
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 14

Total River Park Center

Hydrograph type	= Combine	Peak discharge	= 74.58 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 7.494 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 14.240 ac



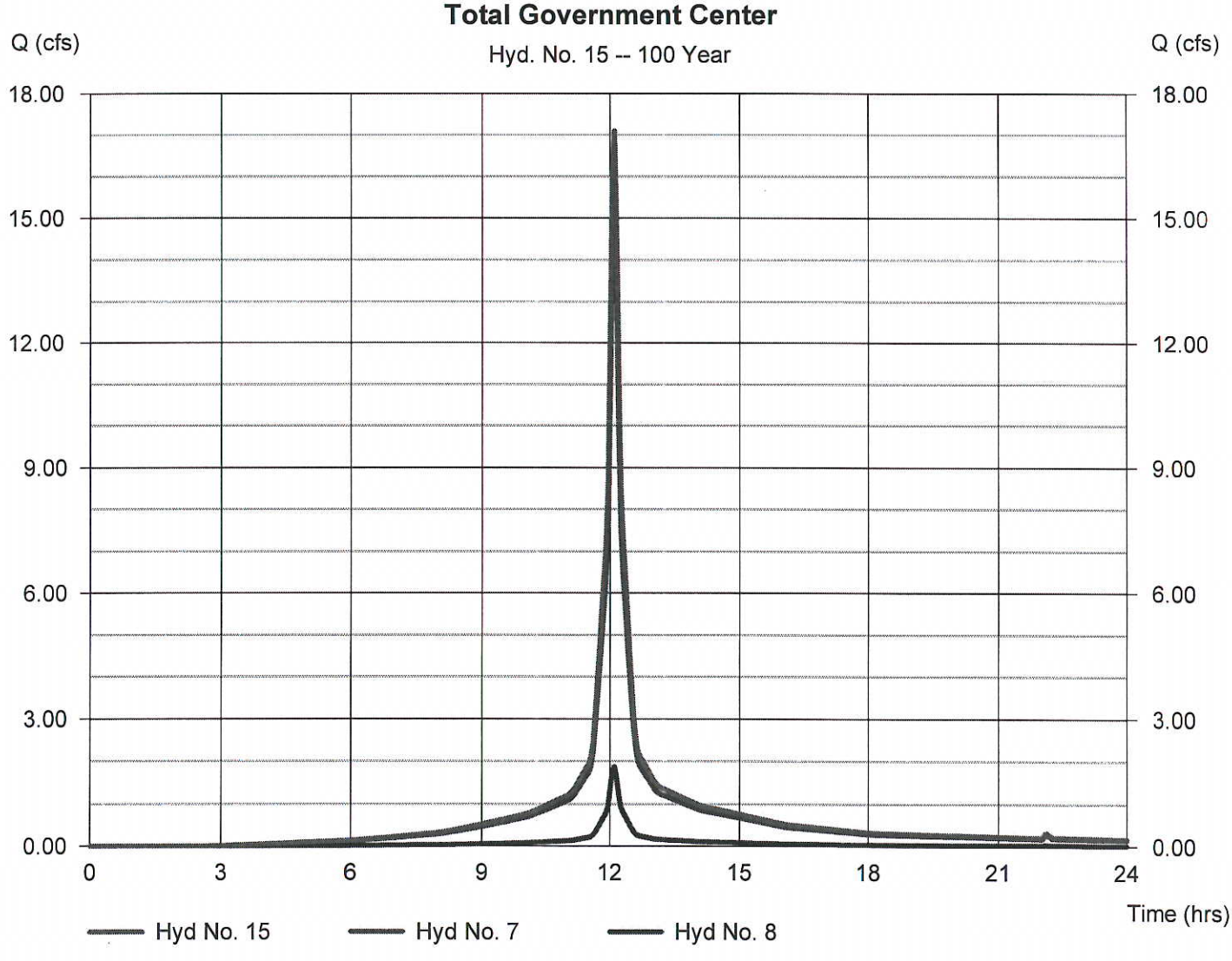
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 15

Total Government Center

Hydrograph type	= Combine	Peak discharge	= 17.11 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1.408 acft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 2.820 ac



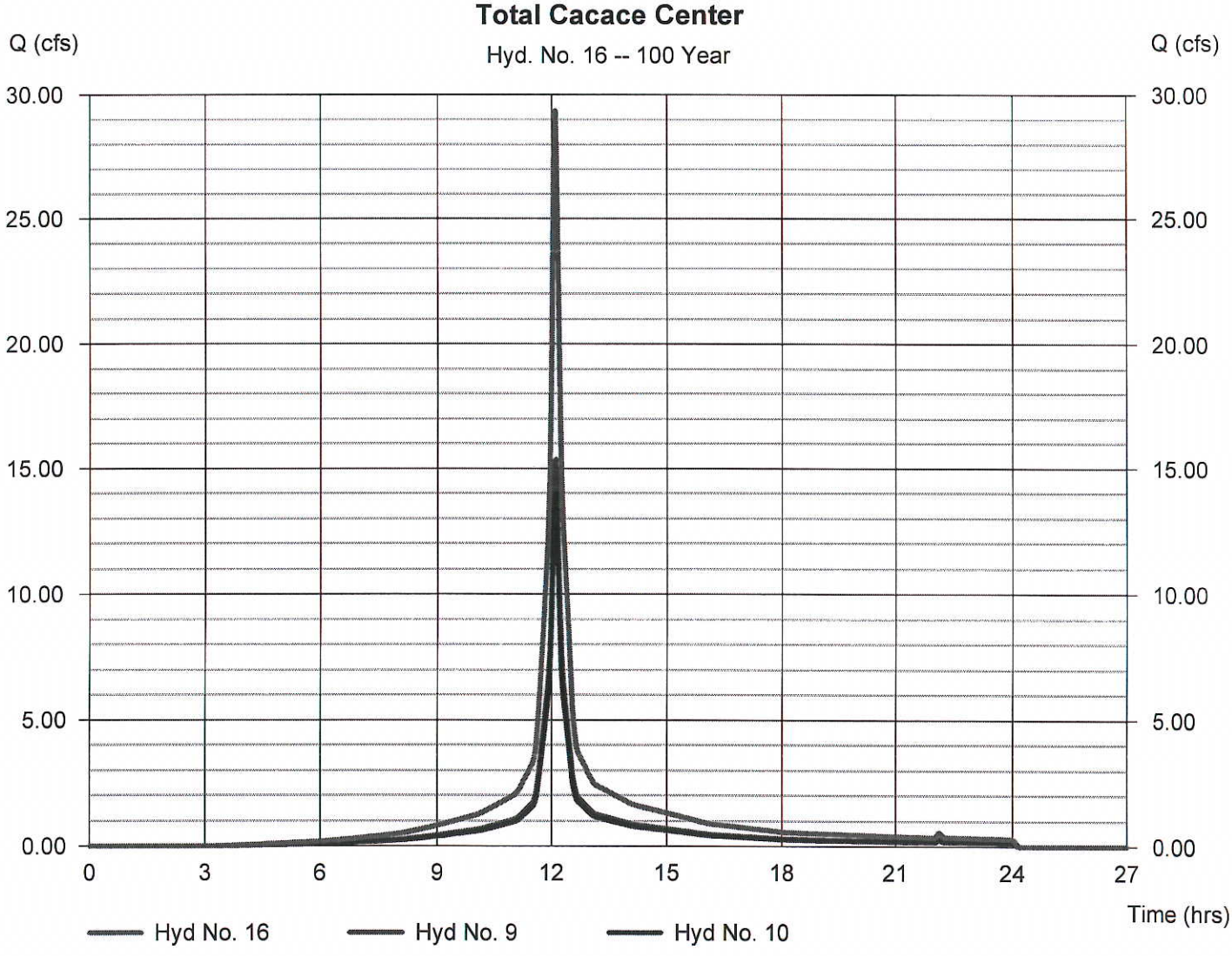
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 16

Total Cacace Center

Hydrograph type	= Combine	Peak discharge	= 29.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 2.387 acft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 4.930 ac



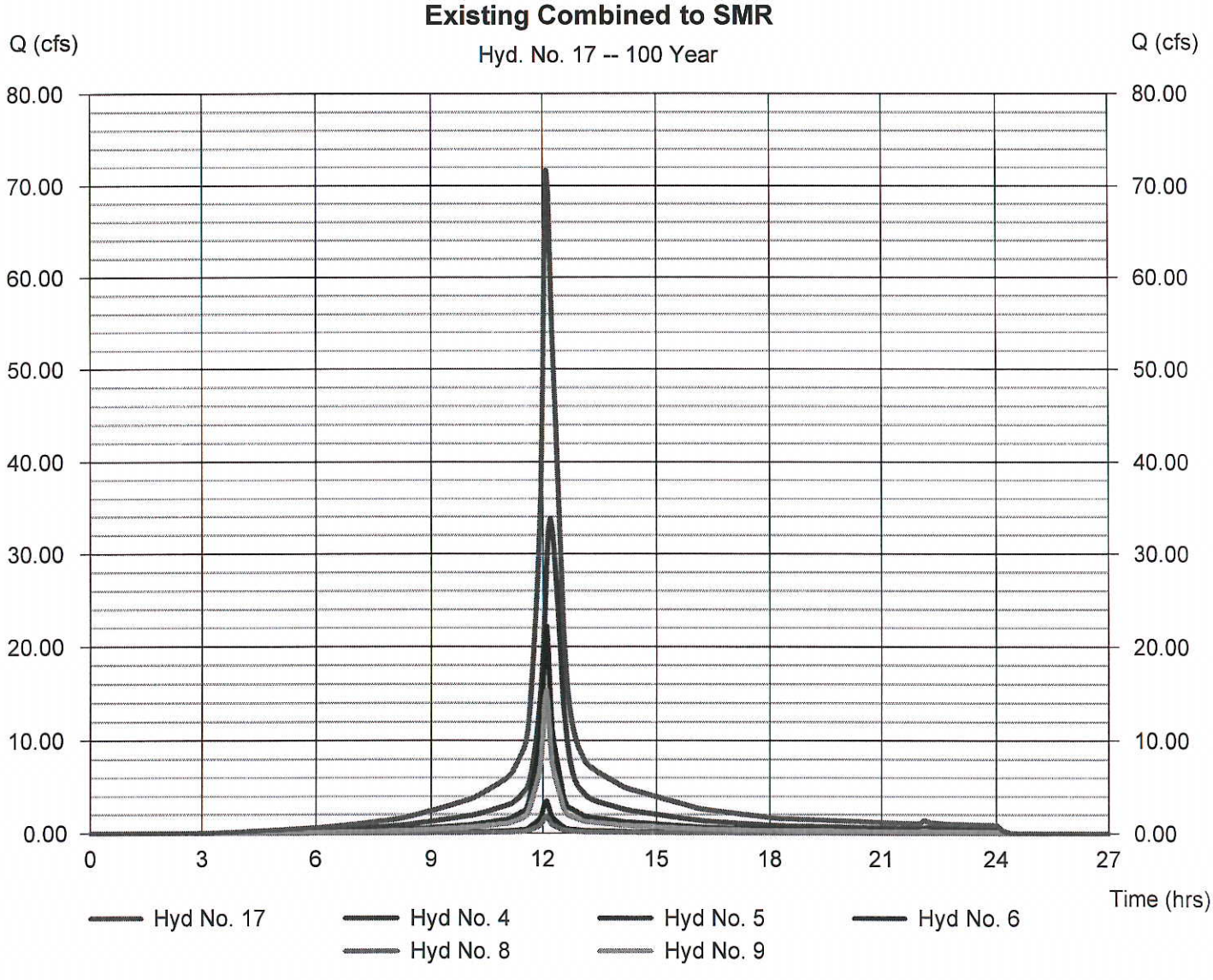
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 17

Existing Combined to SMR

Hydrograph type	= Combine	Peak discharge	= 71.71 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 7.169 acft
Inflow hyds.	= 4, 5, 6, 8, 9	Contrib. drain. area	= 13.940 ac



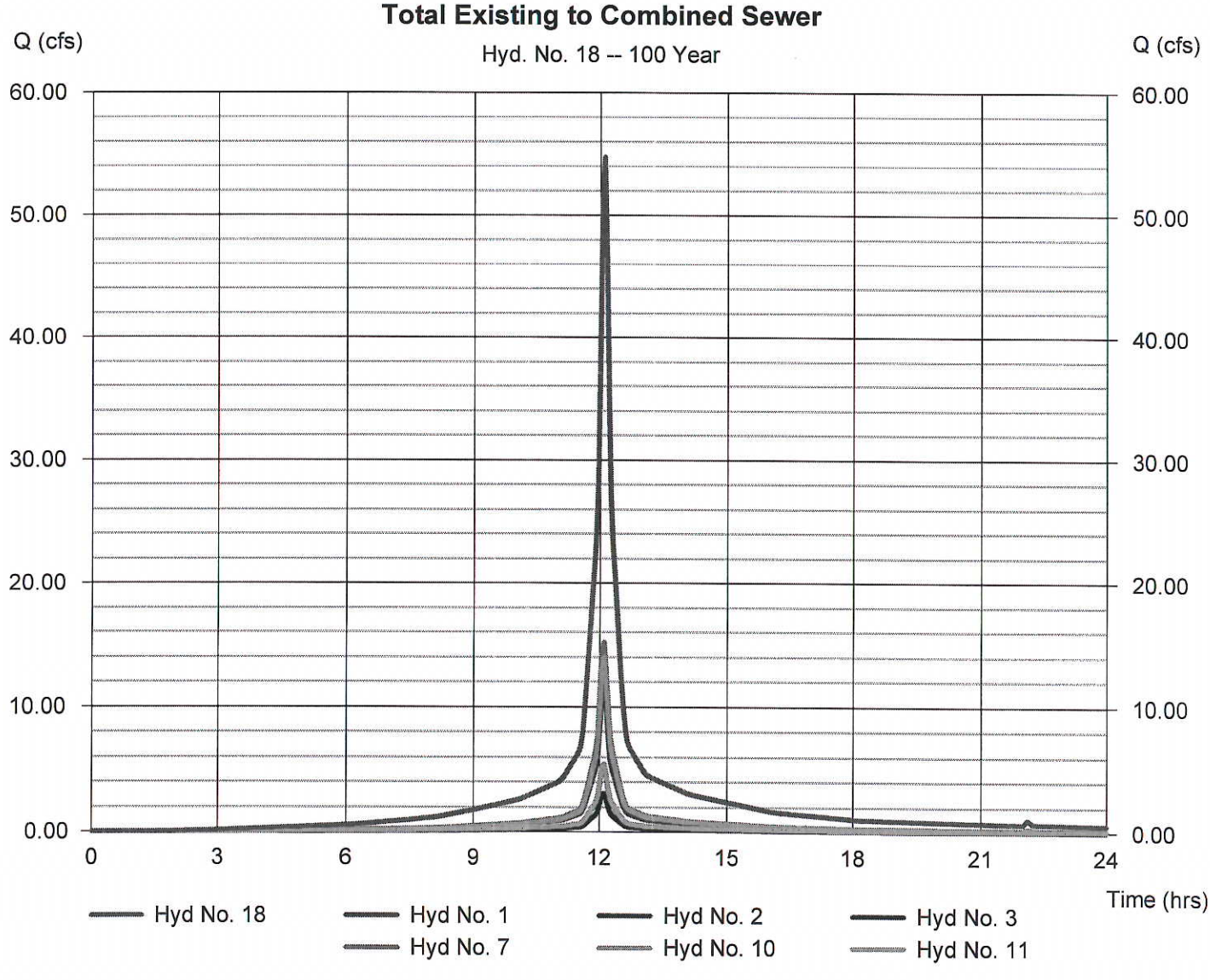
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 18

Total Existing to Combined Sewer

Hydrograph type	= Combine	Peak discharge	= 54.82 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 4.589 acft
Inflow hyds.	= 1, 2, 3, 7, 10, 11	Contrib. drain. area	= 8.920 ac



WinTR-55 Current Data Description

--- Identification Data ---

User: B. SANTOS
Project: MEG 106100.03
SubTitle: EXIST COND - Larkin Plaza
State: New York
County: Westchester
Filename: P:\Proj106\106100.03\8. Technical (Rpts, Calcs, Specs)\Calculations\Computer Analysis\Wi

Date: 11/28/2007
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
PLaza	Parking and Plaza	Outlet	1.89	94	0.353

Total area: 1.89 (ac)

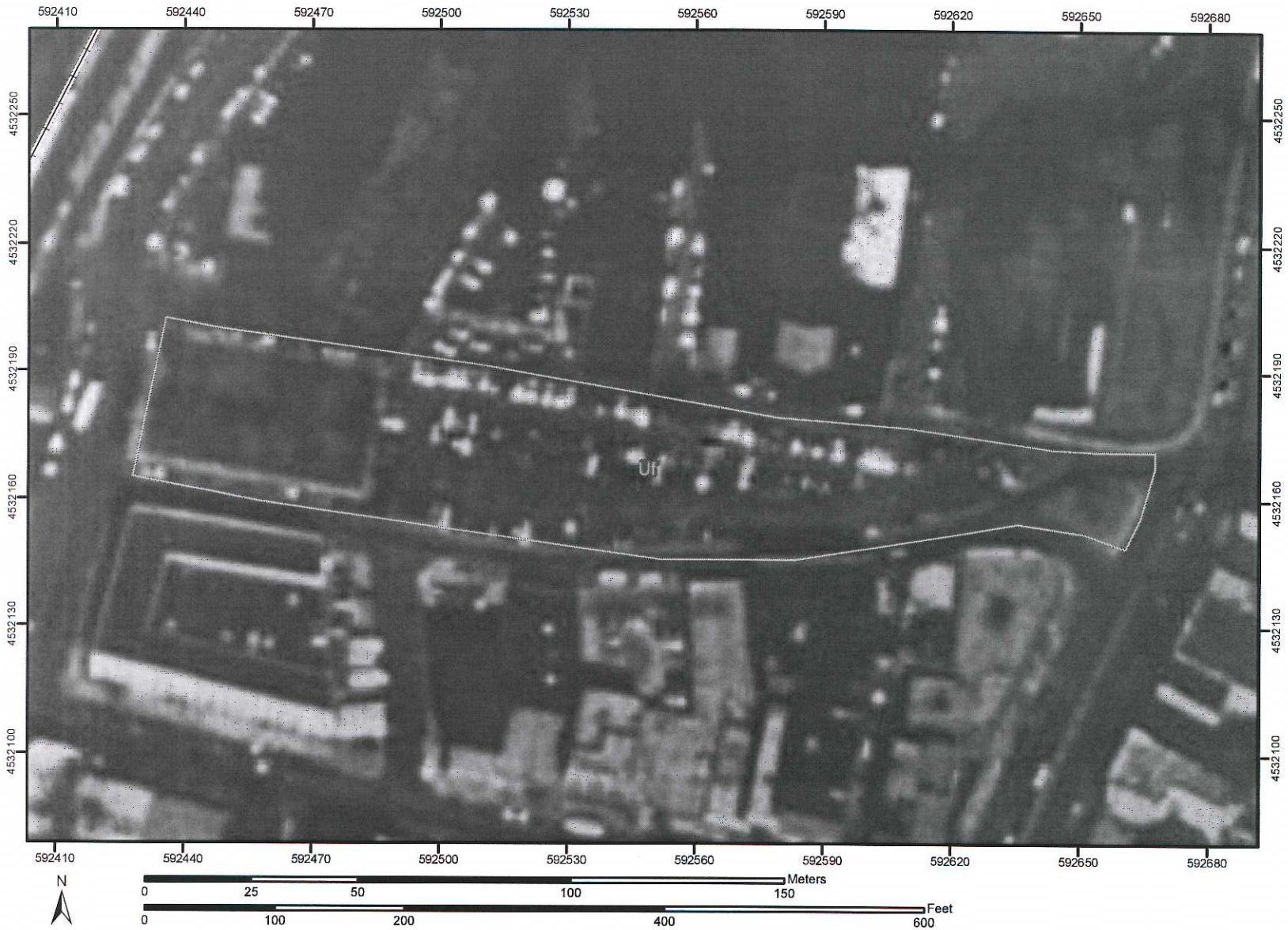
--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.5	4.5	5.0	6.0	7.0	7.5	2.8

Storm Data Source: Westchester County, NY (NRCS)
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

Soil Map–Westchester County, New York
(LARKIN PLAZA)



Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Uf	Urban land	1.9	100.0%
Totals for Area of Interest (AOI)		1.9	100.0%

B. SANTOS

MEG 106100.03
EXIST COND - Larkin Plaza
Westchester County, New York

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.5	4.5	5.0	6.0	7.0	7.5	2.8

Storm Data Source: Westchester County, NY (NRCS)
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

B. SANTOS

MEG 106100.03
EXIST COND - Larkin Plaza
Westchester County, New York

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
PLaza	3.97	5.90	7.17	9.07
REACHES				
OUTLET	3.97	5.90	7.17	9.07

B. SANTOS

MEG 106100.03
EXIST COND - Larkin Plaza
Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
PLaza	1.89	0.353	94	Outlet	Parking and Plaza

Total Area: 1.89 (ac)

B. SANTOS

MEG 106100.03
EXIST COND - Larkin Plaza
Westchester County, New York

Sub-Area Time of Concentration Details

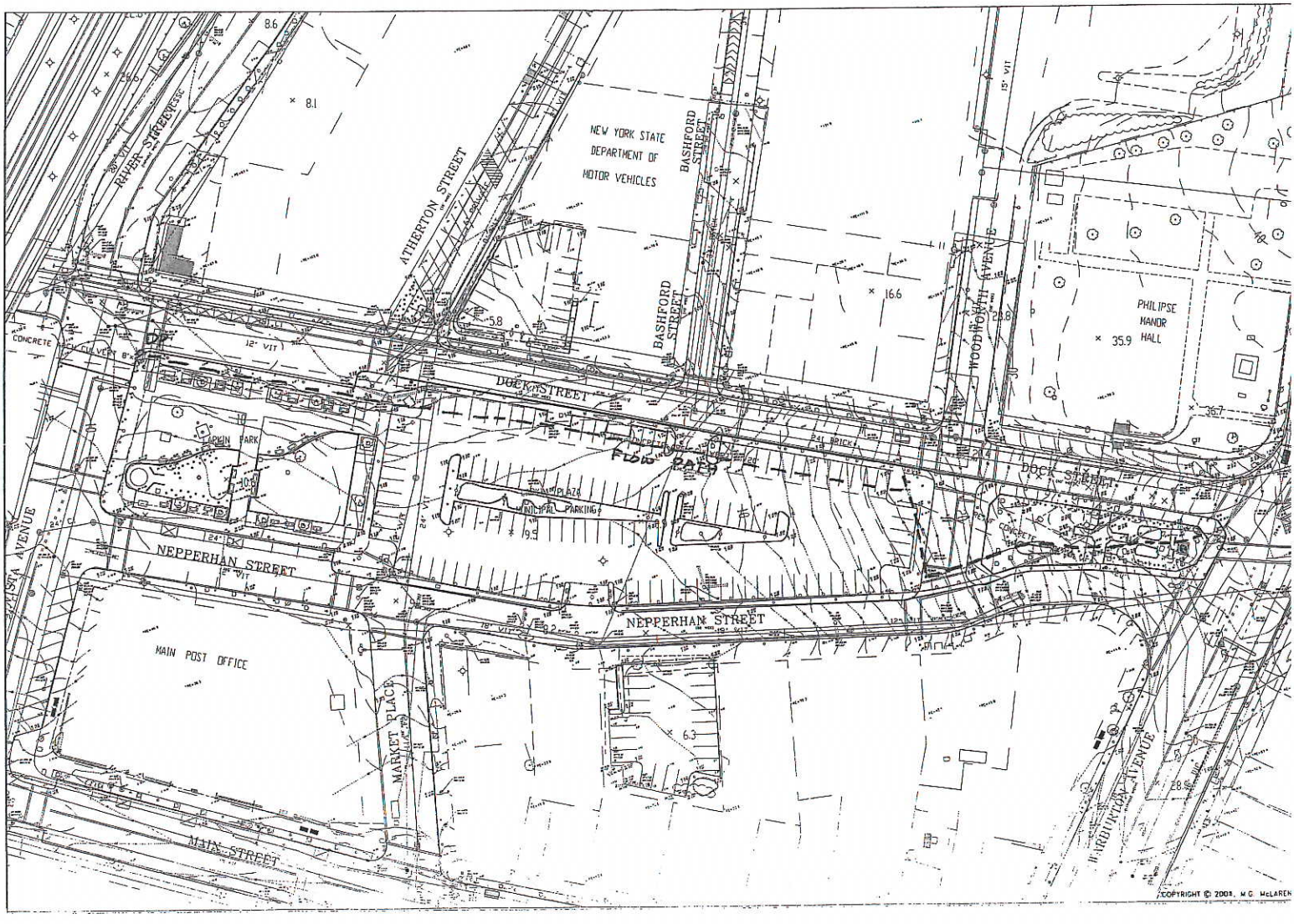
Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
PLaza							
SHEET	99	0.0200	0.240				0.226
SHALLOW	30	0.0200	0.025				0.003
CHANNEL	88					2.000	0.012
CHANNEL	603					1.500	0.112
					Time of Concentration		0.353

B. SANTOS

MEG 106100.03
EXIST COND - Larkin Plaza
Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
PLaza	Open space; grass cover 50% to 75% (fair)	C	.372	79
	Paved parking lots, roofs, driveways	C	1.522	98
	Total Area / Weighted Curve Number		1.89	94


NEW YORK STATE
DEPARTMENT OF
MOTOR VEHICLES
ATHERTON STREET
BASHFORD STREET
BASHFORD STREET
WOODWORTH AVENUE
PHILIPSE
MANOR
HALL
35.9
DOCK STREET
DOCK STREET
FLOOD
WALL
PARK
NEPPERHAN STREET
NEPPERHAN STREET
MAIN POST OFFICE
MARKET PLACE
MAIN STREET
RIVER STREET
CONCRETE
CULVERT
8.6
8.1
16.6
19.5
6.3
28.6
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APPENDIX B
PROPOSED CONDITIONS

WinTR-55 Current Data Description

--- Identification Data ---

User: B. SANTOS
Project: MEG 106100
SubTitle: PROP COND RUN-1 : RIVER PARK CENTER PROJECT
State: New York
County: Westchester
Filename: P:\Proj106\106100\8. Technical (Rpts, Calcs, Specs)\Calculations\Computer Analysis\Storm

Date: 2/23/2007
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A-1A	R-PARK TO C-SEWER	Outlet	0.3	98	0.100
A-1C	R-PARK TO C-SEWER	Outlet	0.41	98	0.100
A-2A	R-PARK TO STORM	Outlet	13.29	94	0.100
B-1	G=CENTER TO STORM D	Outlet	2.82	96	0.100
C-1	CACASE CENTER TO STORM	Outlet	3.09	98	0.100
C-2	CACASE CENTER TO C-SEWER	Outlet	1.84	87	0.100

Total area: 21.75 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.5	4.5	5.0	6.0	7.0	7.5	2.8

Storm Data Source: Westchester County, NY (NRCS)
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

B. SANTOS

MEG 106100

PROP COND RUN-1 : RIVER PARK CENTER PROJECT

Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A-1A	.30	0.100	98	Outlet	R-PARK TO C-SEWER
A-1C	.41	0.100	98	Outlet	R-PARK TO C-SEWER
A-2A	13.29	0.100	94	Outlet	R-PARK TO STORM
B-1	2.82	0.100	96	Outlet	G=CENTER TO STORM D
C-1	3.09	0.100	98	Outlet	CACASE CENTER TO STORM
C-2	1.84	0.100	87	Outlet	CACASE CENTER TO C-SEWER

Total Area: 21.75 (ac)

PROP COND RUN-1 : RIVER PARK CENTER PROJECT
Westchester County, New York

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A-1A							
User-provided							0.100
					Time of Concentration		0.100
A-1C							
User-provided							0.100
					Time of Concentration		0.100
A-2A							
User-provided							0.100
					Time of Concentration		0.100
B-1							
User-provided							0.100
					Time of Concentration		0.100
C-1							
User-provided							0.100
					Time of Concentration		0.100
C-2							
User-provided							0.100
					Time of Concentration		0.100

MEG 106100
PROP COND RUN-1 : RIVER PARK CENTER PROJECT
Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A-1A	Paved parking lots, roofs, driveways	D	.3	98
	Total Area / Weighted Curve Number		.3	98
A-1C	Paved parking lots, roofs, driveways	D	.41	98
	Total Area / Weighted Curve Number		.41	98
A-2A	Open space; grass cover > 75% (good)	D	2.96	80
	Paved parking lots, roofs, driveways	D	10.33	98
	Total Area / Weighted Curve Number		13.29	94
B-1	Open space; grass cover > 75% (good)	D	.31	80
	Paved parking lots, roofs, driveways	D	2.51	98
	Total Area / Weighted Curve Number		2.82	96
C-1	Paved parking lots, roofs, driveways	D	.8	98
	Paved; curbs and storm sewers	D	2.29	98
	Total Area / Weighted Curve Number		3.09	98
C-2	Open space; grass cover > 75% (good)	D	1.1	80
	Paved parking lots, roofs, driveways	D	.74	98
	Total Area / Weighted Curve Number		1.84	87

B. SANTOS

MEG 106100
PROPOSED CONDITION RUN-2 : PALISADE AVE SITE
Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
D-2	.87	0.100	96	Outlet	R-PRK GAR TO RIVER

Total Area: .87 (ac)

B. SANTOS

MEG 106100
PROPOSED CONDITION RUN-2 : PALISADE AVE SITE
Westchester County, New York

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
D-2							
SHEET	50	0.0100	0.011				0.015
SHALLOW	100	0.0400	0.025				0.007
SHALLOW	30	0.0900	0.050				0.002
CHANNEL	120					2.000	0.017
					Time of Concentration		0.100

B. SANTOS

MEG 106100
PROPOSED CONDITION RUN-2 : PALISADE AVE SITE
Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
D-2	Open space; grass cover > 75% (good)	D	.09	80
	Paved parking lots, roofs, driveways	D	.78	98
	Total Area / Weighted Curve Number		.87	96

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	0.884	-------	-------	1.270	1.527	-------	1.912	Area A-1A
2	SCS Runoff	-------	-------	1.209	-------	-------	1.736	2.087	-------	2.613	Area A-1C
3	SCS Runoff	-------	-------	36.50	-------	-------	54.09	65.71	-------	83.03	Area A-2A
4	SCS Runoff	-------	-------	8.075	-------	-------	11.75	14.19	-------	17.83	Area B-1
5	SCS Runoff	-------	-------	9.110	-------	-------	13.09	15.73	-------	19.69	Area C-1
6	SCS Runoff	-------	-------	4.088	-------	-------	6.569	8.224	-------	10.69	Area C-2
7	SCS Runoff	-------	-------	2.443	-------	-------	3.587	4.343	-------	5.471	Area D-1
8	Combine	1, 2, 3,	-------	38.59	-------	-------	57.10	69.32	-------	87.55	Total river Park Center Prop.
9	Combine	5, 6,	-------	13.20	-------	-------	19.65	23.95	-------	30.38	total Cacace Center Prop
10	Combine	1, 2,	-------	2.093	-------	-------	3.007	3.614	-------	4.524	River Park Combined to Combined
11	Combine	3, 4, 5, 7,	-------	56.13	-------	-------	82.52	99.97	-------	126.02	Prop Combined to SMR
12	Combine	1, 2, 6,	-------	6.181	-------	-------	9.575	11.84	-------	15.22	Total Prop to Combined Sewer
13	SCS Runoff	-------	-------	513.89	-------	-------	789.40	971.62	-------	1242.88	Yonkers Area to Saw Mill river
14	Combine	11, 13	-------	549.95	-------	-------	842.15	1035.41	-------	1323.16	Total Prop to SMR minus Upstrea

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	0.884	3	726	0.077	----	------	------	Area A-1A
2	SCS Runoff	1.209	3	726	0.105	----	------	------	Area A-1C
3	SCS Runoff	36.50	3	726	2.944	----	------	------	Area A-2A
4	SCS Runoff	8.075	3	726	0.671	----	------	------	Area B-1
5	SCS Runoff	9.110	3	726	0.789	----	------	------	Area C-1
6	SCS Runoff	4.088	3	726	0.314	----	------	------	Area C-2
7	SCS Runoff	2.443	3	726	0.200	----	------	------	Area D-1
8	Combine	38.59	3	726	3.125	1, 2, 3,	------	------	Total river Park Center Prop.
9	Combine	13.20	3	726	1.102	5, 6,	------	------	total Cacace Center Prop
10	Combine	2.093	3	726	0.181	1, 2,	------	------	River Park Combined to Combined
11	Combine	56.13	3	726	4.603	3, 4, 5, 7,	------	------	Prop Combined to SMR
12	Combine	6.181	3	726	0.495	1, 2, 6,	------	------	Total Prop to Combined Sewer
13	SCS Runoff	513.89	3	732	53.524	----	------	------	Yonkers Area to Saw Mill river
14	Combine	549.95	3	732	58.128	11, 13	------	------	Total Prop to SMR minus Upstrea

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	1.270	3	726	0.112	----	------	------	Area A-1A
2	SCS Runoff	1.736	3	726	0.153	----	------	------	Area A-1C
3	SCS Runoff	54.09	3	726	4.473	----	------	------	Area A-2A
4	SCS Runoff	11.75	3	726	0.999	----	------	------	Area B-1
5	SCS Runoff	13.09	3	726	1.150	----	------	------	Area C-1
6	SCS Runoff	6.569	3	726	0.513	----	------	------	Area C-2
7	SCS Runoff	3.587	3	726	0.300	----	------	------	Area D-1
8	Combine	57.10	3	726	4.737	1, 2, 3,	------	------	Total river Park Center Prop.
9	Combine	19.65	3	726	1.663	5, 6,	------	------	total Cacace Center Prop
10	Combine	3.007	3	726	0.264	1, 2,	------	------	River Park Combined to Combined
11	Combine	82.52	3	726	6.922	3, 4, 5, 7,	------	------	Prop Combined to SMR
12	Combine	9.575	3	726	0.777	1, 2, 6,	------	------	Total Prop to Combined Sewer
13	SCS Runoff	789.40	3	732	83.876	----	------	------	Yonkers Area to Saw Mill river
14	Combine	842.15	3	732	90.798	11, 13	------	------	Total Prop to SMR minus Upstrea

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	1.527	3	726	0.135	----	-------	------	Area A-1A
2	SCS Runoff	2.087	3	726	0.185	----	-------	------	Area A-1C
3	SCS Runoff	65.71	3	726	5.499	----	-------	------	Area A-2A
4	SCS Runoff	14.19	3	726	1.218	----	-------	------	Area B-1
5	SCS Runoff	15.73	3	726	1.391	----	-------	------	Area C-1
6	SCS Runoff	8.224	3	726	0.649	----	-------	------	Area C-2
7	SCS Runoff	4.343	3	726	0.368	----	-------	------	Area D-1
8	Combine	69.32	3	726	5.819	1, 2, 3,	-------	------	Total river Park Center Prop.
9	Combine	23.95	3	726	2.040	5, 6,	-------	------	total Cacace Center Prop
10	Combine	3.614	3	726	0.320	1, 2,	-------	------	River Park Combined to Combined
11	Combine	99.97	3	726	8.476	3, 4, 5, 7,	-------	------	Prop Combined to SMR
12	Combine	11.84	3	726	0.969	1, 2, 6,	-------	------	Total Prop to Combined Sewer
13	SCS Runoff	971.62	3	732	104.415	----	-------	------	Yonkers Area to Saw Mill river
14	Combine	1035.41	3	732	112.891	11, 13	-------	------	Total Prop to SMR minus Upstrea

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.01

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	1.912	3	726	0.170	----	------	------	Area A-1A
2	SCS Runoff	2.613	3	726	0.233	----	------	------	Area A-1C
3	SCS Runoff	83.03	3	726	7.045	----	------	------	Area A-2A
4	SCS Runoff	17.83	3	726	1.547	----	------	------	Area B-1
5	SCS Runoff	19.69	3	726	1.753	----	------	------	Area C-1
6	SCS Runoff	10.69	3	726	0.857	----	------	------	Area C-2
7	SCS Runoff	5.471	3	726	0.469	----	------	------	Area D-1
8	Combine	87.55	3	726	7.447	1, 2, 3,	------	------	Total river Park Center Prop.
9	Combine	30.38	3	726	2.610	5, 6,	------	------	total Cacace Center Prop
10	Combine	4.524	3	726	0.403	1, 2,	------	------	River Park Combined to Combined
11	Combine	126.02	3	726	10.814	3, 4, 5, 7,	------	------	Prop Combined to SMR
12	Combine	15.22	3	726	1.260	1, 2, 6,	------	------	Total Prop to Combined Sewer
13	SCS Runoff	1242.88	3	732	135.461	----	------	------	Yonkers Area to Saw Mill river
14	Combine	1323.16	3	732	146.275	11, 13	------	------	Total Prop to SMR minus Upstrea

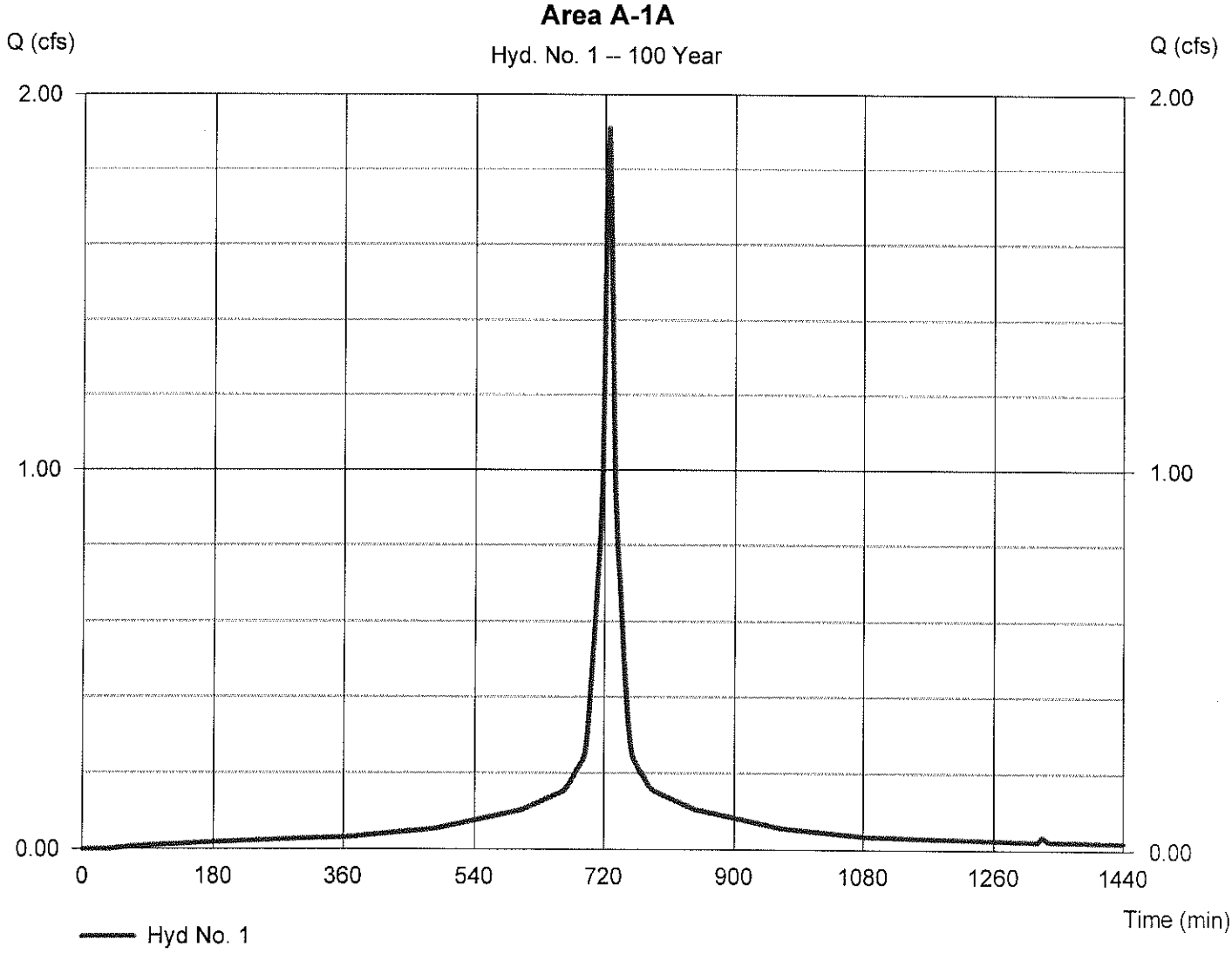
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 1

Area A-1A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.912 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 0.170 acft
Drainage area	= 0.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



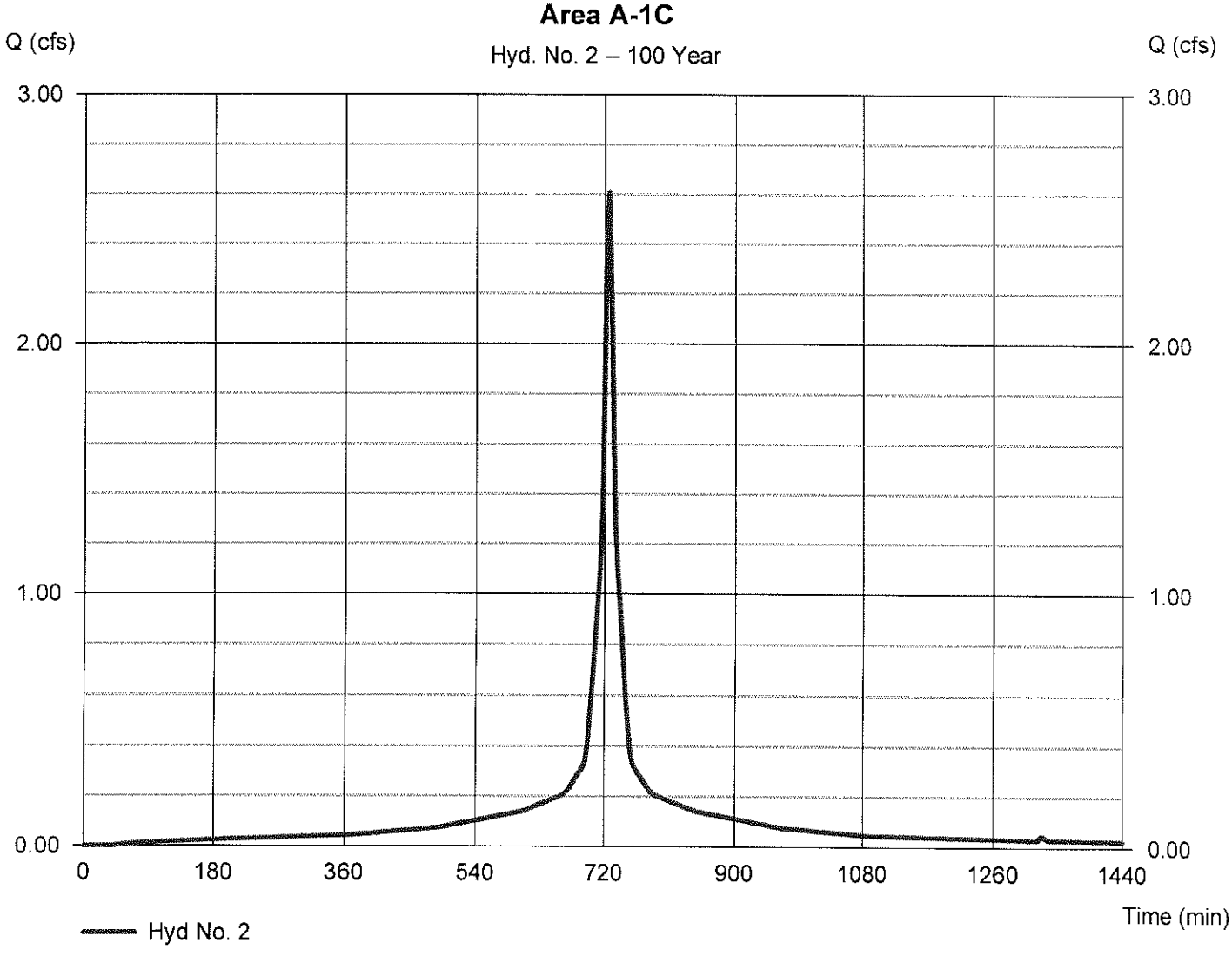
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 2

Area A-1C

Hydrograph type	= SCS Runoff	Peak discharge	= 2.613 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 0.233 acft
Drainage area	= 0.410 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



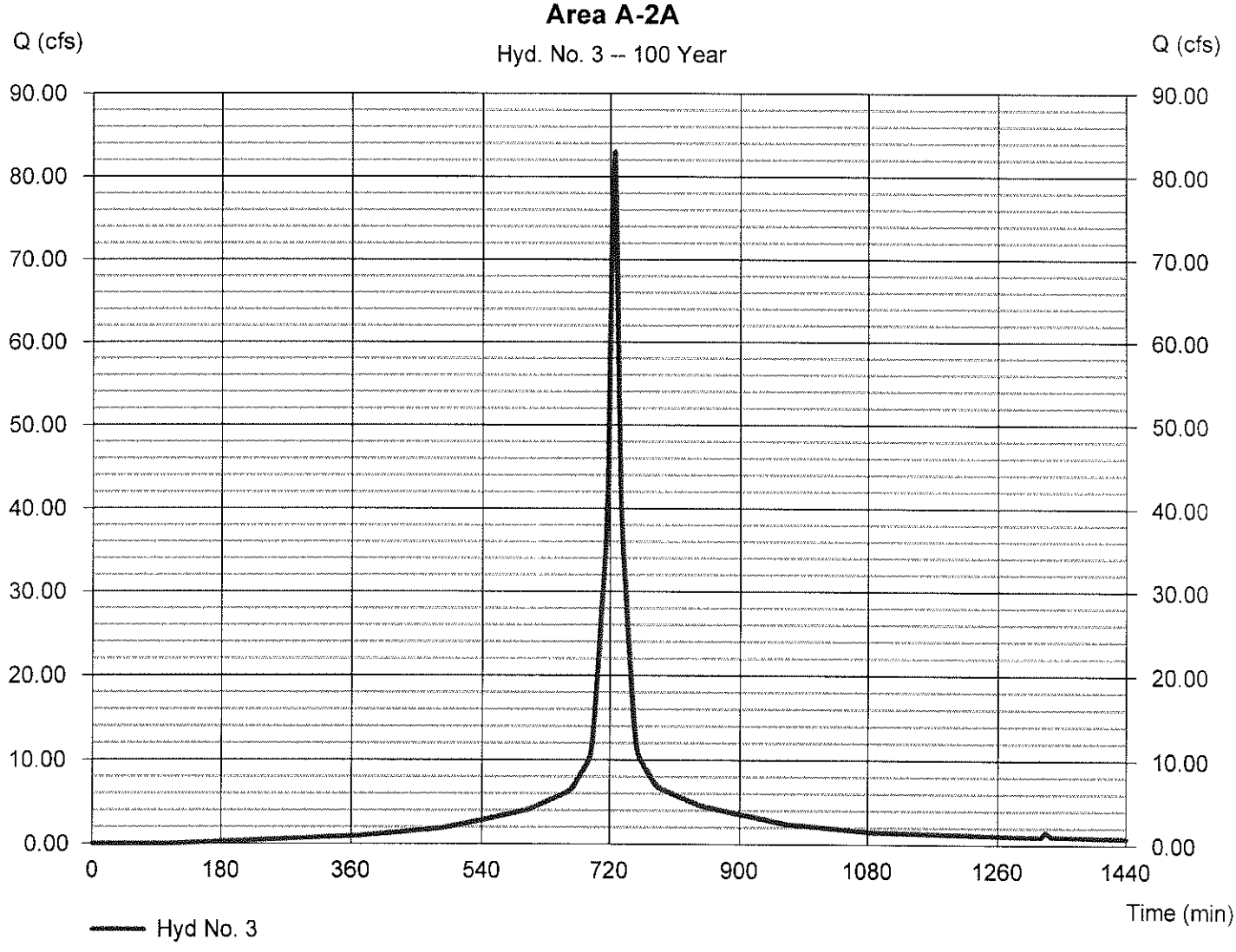
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 3

Area A-2A

Hydrograph type	= SCS Runoff	Peak discharge	= 83.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 7.045 acft
Drainage area	= 13.290 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



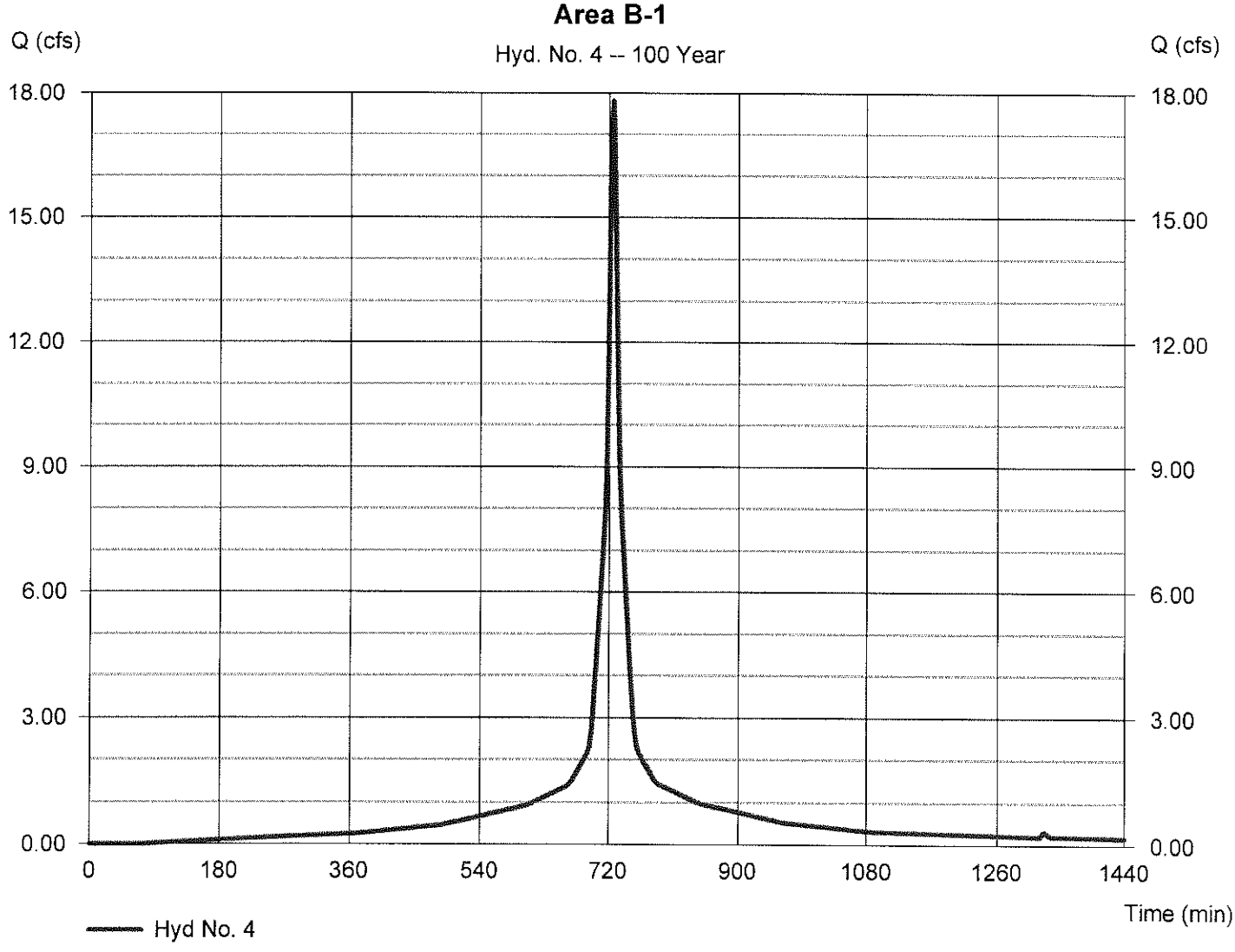
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 4

Area B-1

Hydrograph type	= SCS Runoff	Peak discharge	= 17.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 1.547 acft
Drainage area	= 2.820 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



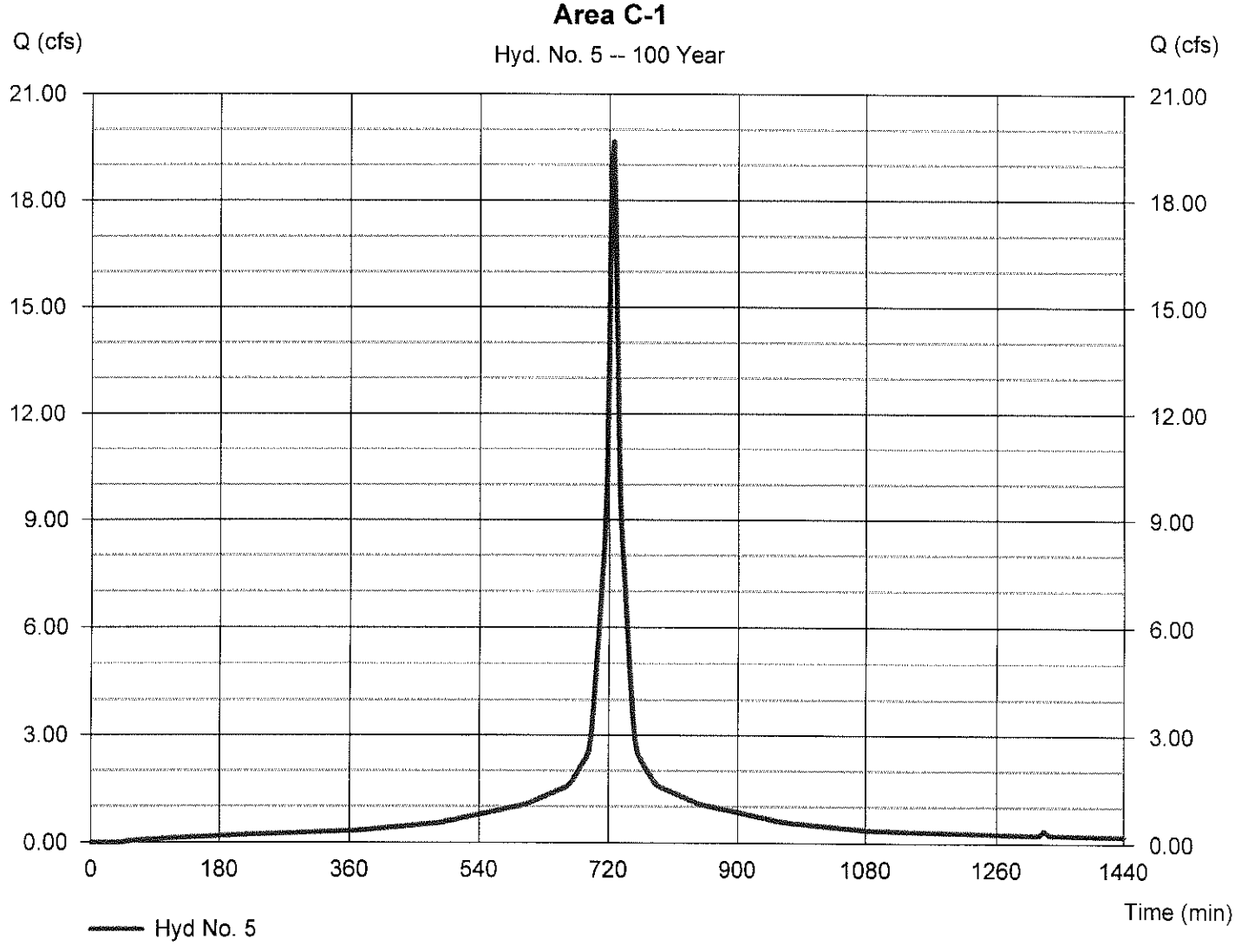
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 5

Area C-1

Hydrograph type	= SCS Runoff	Peak discharge	= 19.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 1.753 acft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



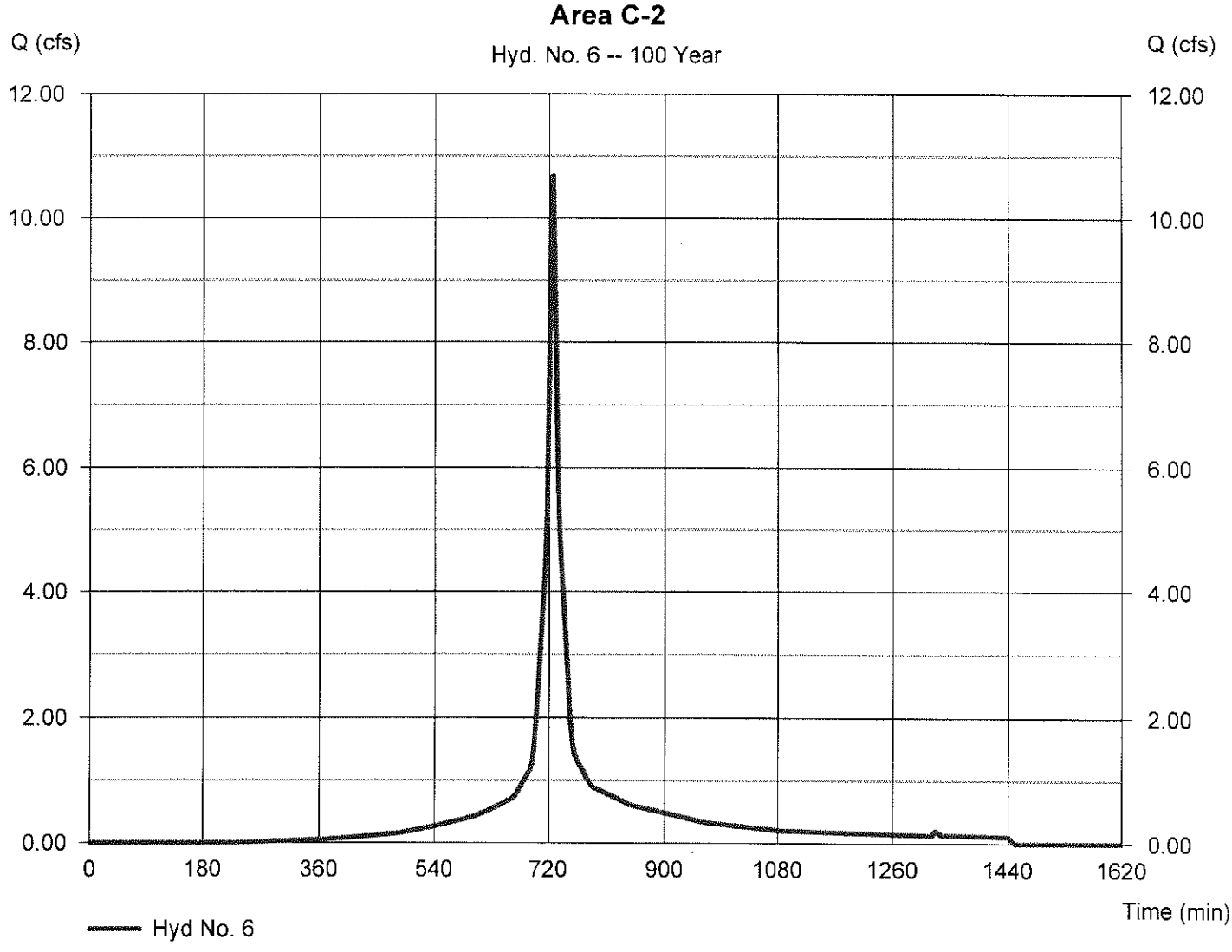
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 6

Area C-2

Hydrograph type	= SCS Runoff	Peak discharge	= 10.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 0.857 acft
Drainage area	= 1.840 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



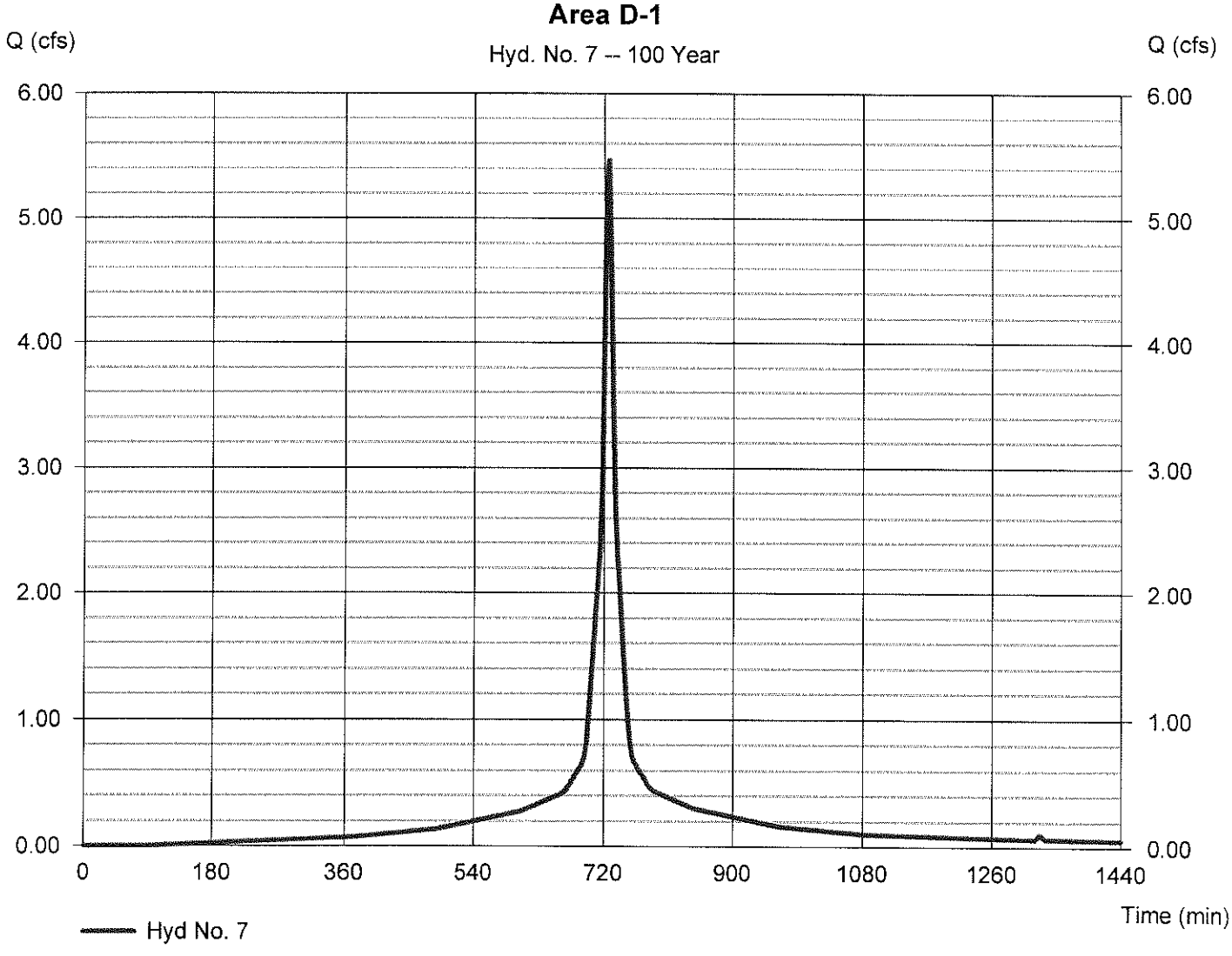
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 7

Area D-1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.471 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 0.469 acft
Drainage area	= 0.870 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



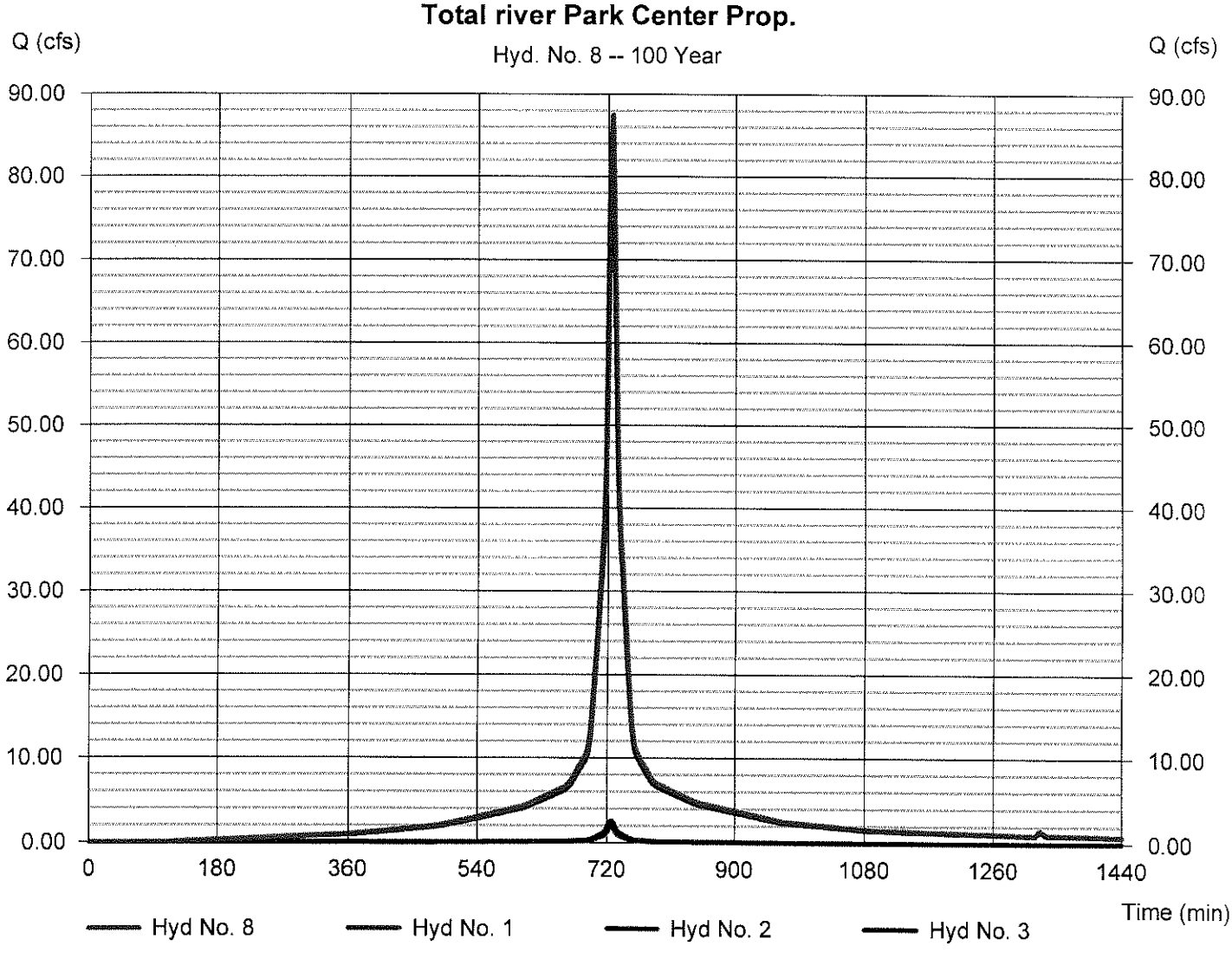
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 Tuesday, Dec 4, 2007

Hyd. No. 8

Total river Park Center Prop.

Hydrograph type	= Combine	Peak discharge	= 87.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 7.447 acft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 14.000 ac



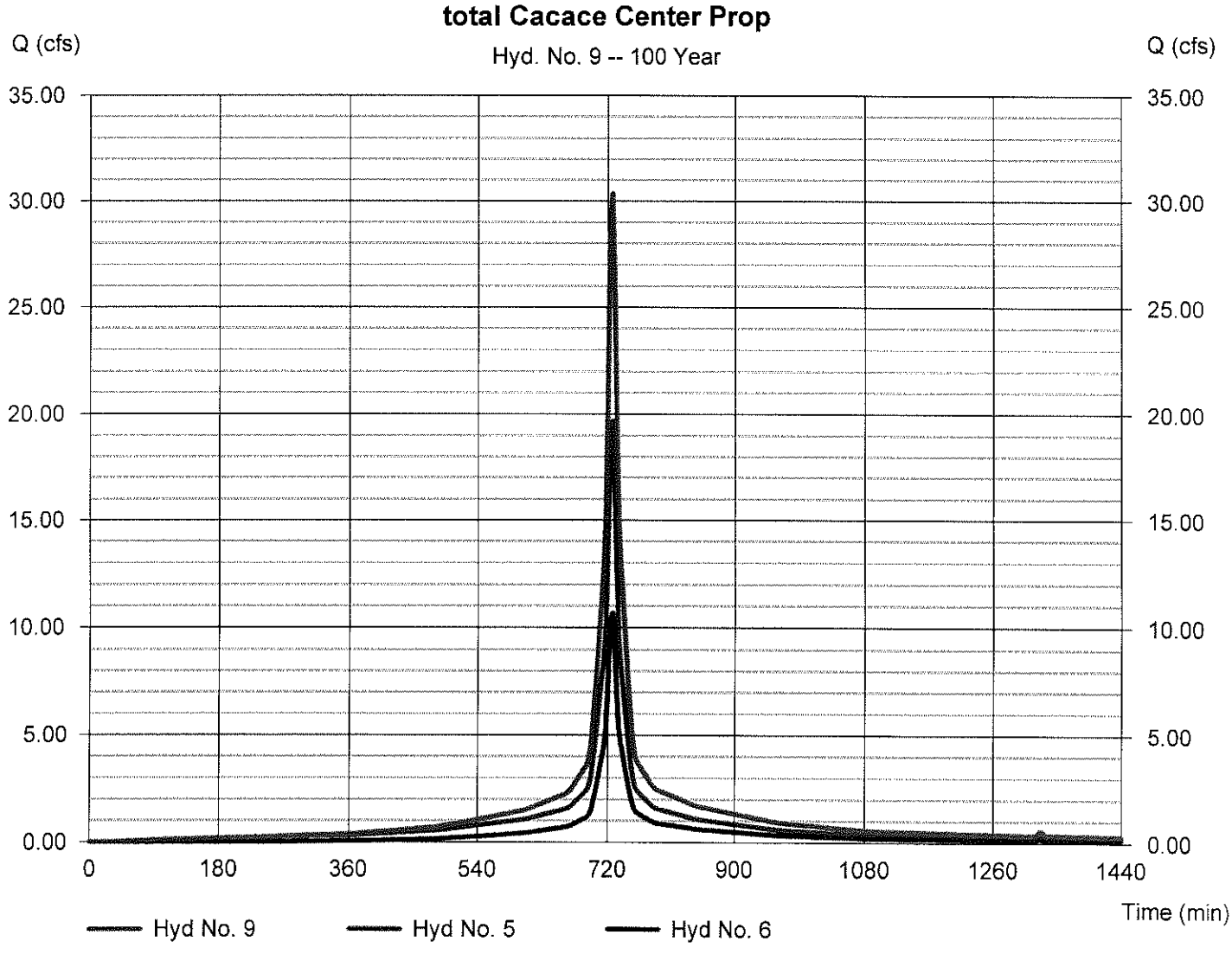
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 Tuesday, Dec 4, 2007

Hyd. No. 9

total Cacace Center Prop

Hydrograph type	= Combine	Peak discharge	= 30.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 2.610 acft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 4.930 ac



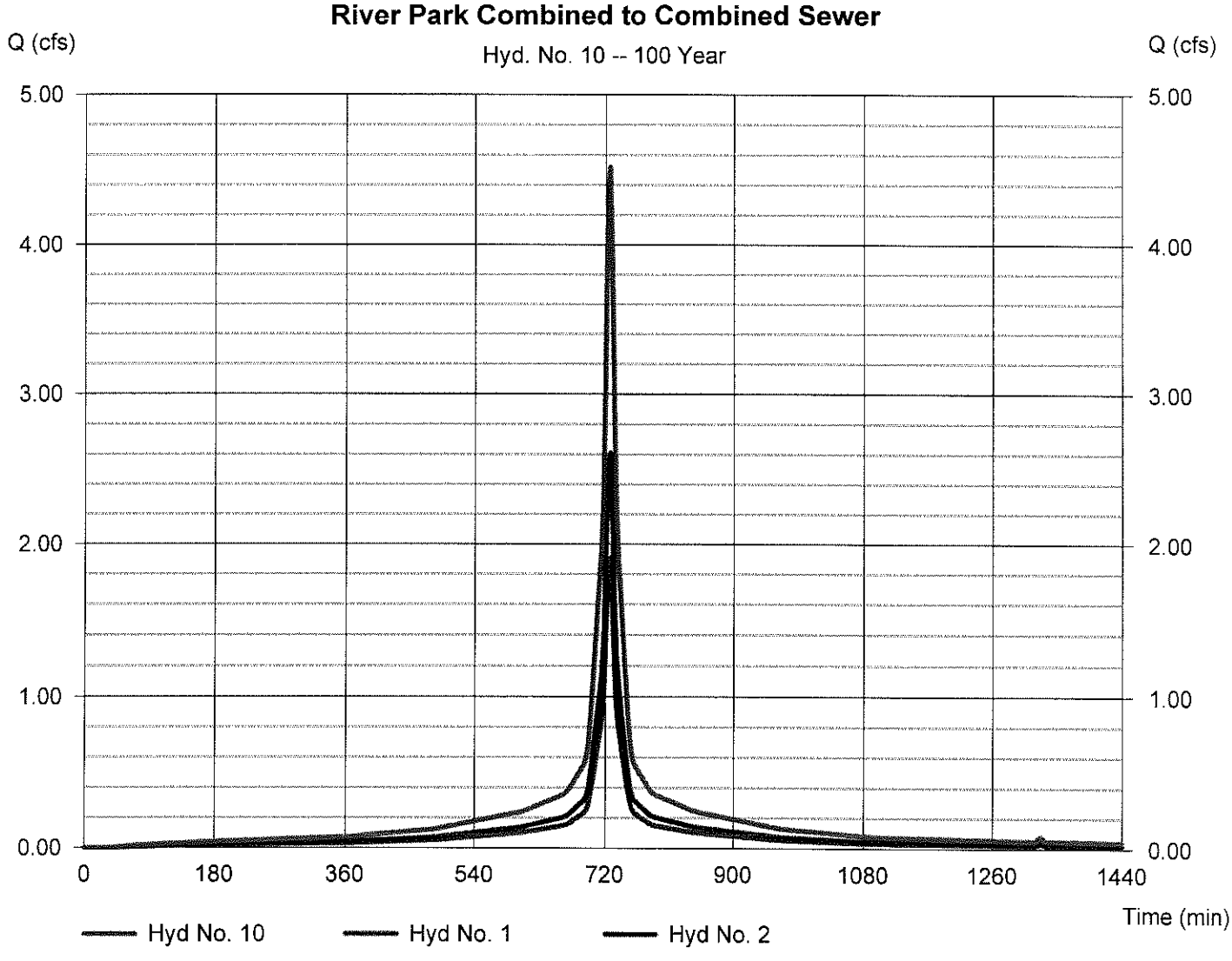
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 Tuesday, Dec 4, 2007

Hyd. No. 10

River Park Combined to Combined Sewer

Hydrograph type	= Combine	Peak discharge	= 4.524 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 0.403 acft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.710 ac



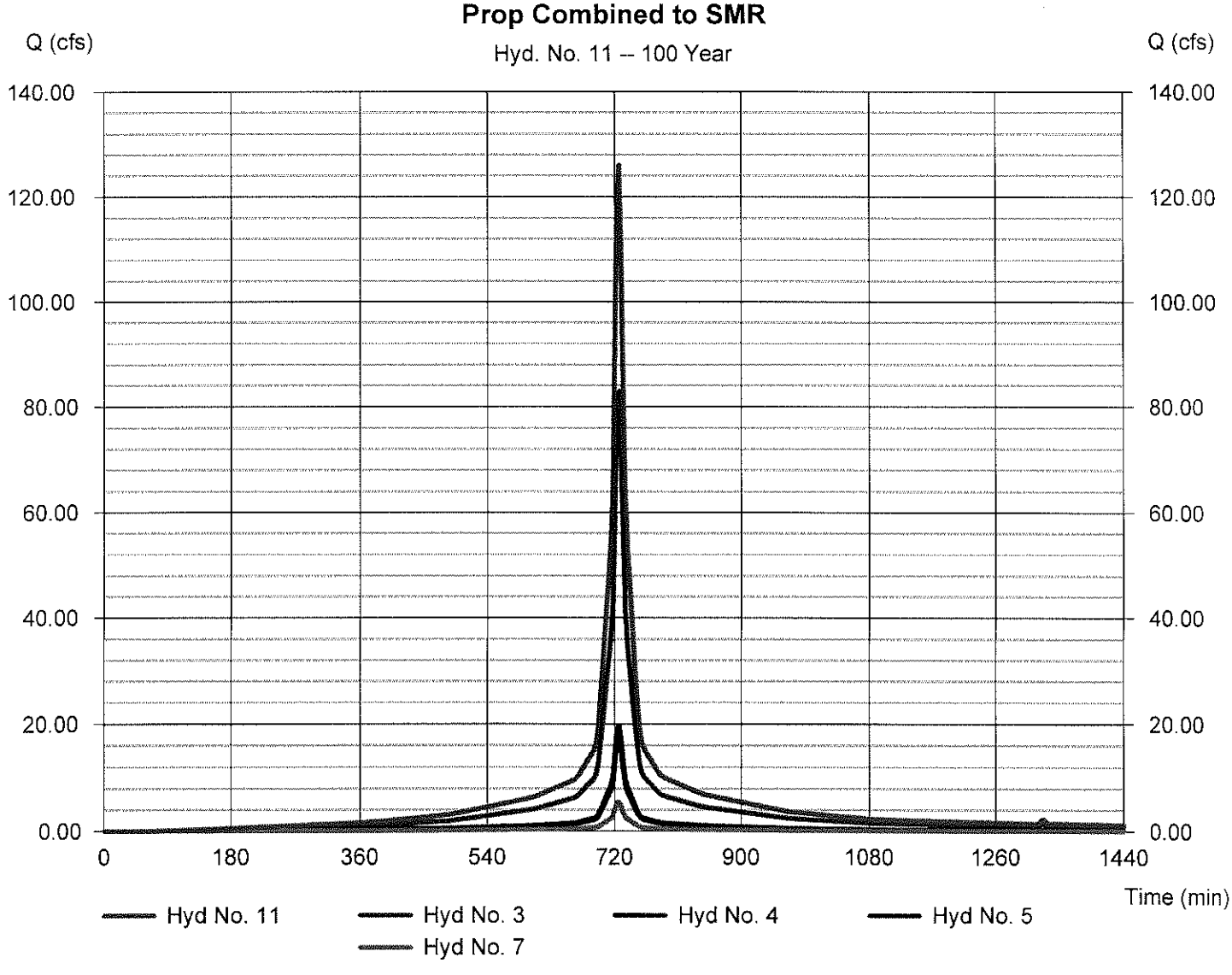
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 Tuesday, Dec 4, 2007

Hyd. No. 11

Prop Combined to SMR

Hydrograph type	= Combine	Peak discharge	= 126.02 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 10.814 acft
Inflow hyds.	= 3, 4, 5, 7	Contrib. drain. area	= 20.070 ac



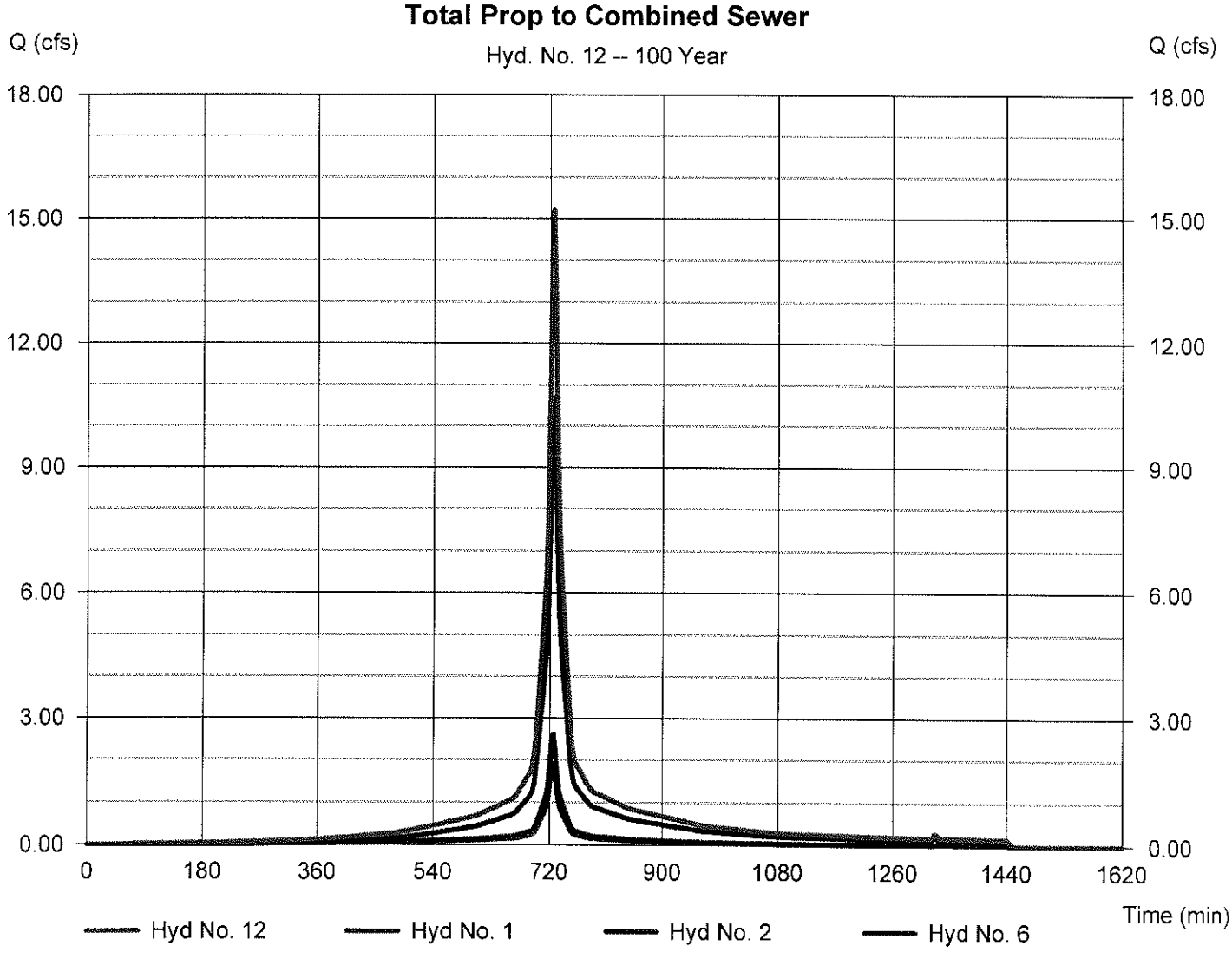
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 12

Total Prop to Combined Sewer

Hydrograph type	= Combine	Peak discharge	= 15.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 1.260 acft
Inflow hyds.	= 1, 2, 6	Contrib. drain. area	= 2.550 ac



WinTR-55 Current Data Description

--- Identification Data ---

User: B. SANTOS
Project: MEG 106100.03
SubTitle: PROP. COND - Larkin Plaza
State: New York
County: Westchester
Filename: P:\Proj106\106100.03\8. Technical (Rpts, Calcs, Specs)\Calculations\Computer Analysis\Wi

Date: 11/28/2007
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Plaza	Park Area and River	Outlet	1.89	84	0.352

Total area: 1.89 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.5	4.5	5.0	6.0	7.0	7.5	2.8

Storm Data Source: Westchester County, NY (NRCS)
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.5	4.5	5.0	6.0	7.0	7.5	2.8

Storm Data Source: Westchester County, NY (NRCS)
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
Plaza	2.83	4.76	6.08	8.02
REACHES				
OUTLET	2.83	4.76	6.08	8.02

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period			
	2-Yr (cfs) (hr)	10-Yr (cfs) (hr)	25-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS				
Plaza	2.83 12.24	4.76 12.23	6.08 12.23	8.02 12.23
REACHES				
OUTLET	2.83	4.76	6.08	8.02

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Plaza	1.89	0.352	84	Outlet	Park Area and River

Total Area: 1.89 (ac)

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Plaza							
SHEET	99	0.0200	0.240				0.226
CHANNEL	680					1.500	0.126
					Time of Concentration		0.352

B. SANTOS

MEG 106100.03
PROP. COND - Larkin Plaza
Westchester County, New York

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Plaza	Open space; grass cover > 75% (good)	C	1.07	74
	Paved parking lots, roofs, driveways	C	.824	98
	Total Area / Weighted Curve Number		1.89	84

TABLE OF FLOWS

MEG 106100.03 - LARKIN PLAZA

Project: LARKIN PLAZA
No: 106100

Date 11.26.07
By BERT
Chk SLG

Description	Areas			CN	Tc	Storm Flow			
	Pervious	Impervious	Total			2 Year	10 Year	25 Year	100 Year
	(AC)	(AC)	(AC)		(Hr)	(CFS)	(CFS)	(CFS)	(CFS)
A) Existing Conditions	0.37	1.52	1.89	94	0.353	3.97	5.90	7.17	9.07
B) Proposed Condition	1.07	0.82	1.89	84	0.352	2.83	4.76	6.08	8.02
Difference	0.70	-0.70	0.00			-1.14	-1.14	-1.09	-1.05

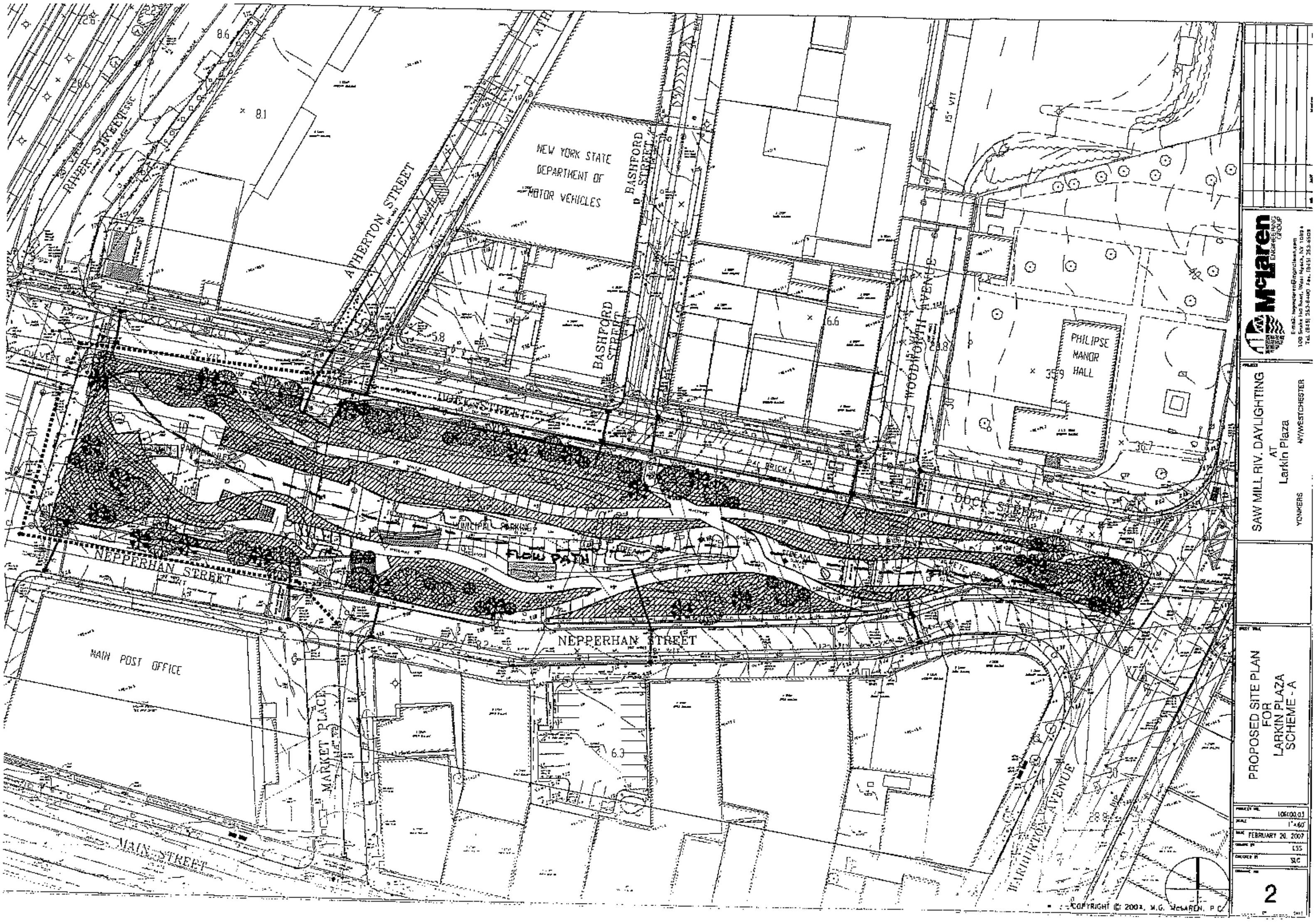

RIVER STREET
ATHERTON STREET
NEW YORK STATE
DEPARTMENT OF
MOTOR VEHICLES
BASHFORD STREET
DOCK STREET
WOODWORTH AVENUE
PHILIPSE
MANOR
HALL
FLOW PATH
NEPPERHAN STREET
MAIN POST OFFICE
MARKET PLACE
MAIN STREET
WARBURTON AVENUE
McLaren
SAW MILL RIV. DAYLIGHTING
AT
Larkin Plaza
YONKERS
NY/WESTCHESTER
PROPOSED SITE PLAN
FOR
LARKIN PLAZA
SCHEME - A
L06100.03
1"=60'
FEBRUARY 26, 2007
CSS
SLC
2
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TABLE OF CURVE NUMBER OF DRAINAGE AREAS

MEG 106100.03 - LARKIN PLAZA

Project: LARKIN PLAZA
No: 106100

Date 11.26.07
By BERT
Chk SLG

Area	No	Descriptions	Areas Pervious (SFT)	Areas Impervious (SFT)	Total (SFT)	Total Area (Ac)	RECOMMENDED CURVE NUMBER * AREAS (CN*A) Pavement and Roads Impervious 98	IMPERVIOUS AREA (GRASS COVER) Poor 86	Fair 79	Good 74	Total CN*A (C*A)	CN
A) Existing Conditions												
		Planters	2284									
		Planters	3533									
		Planters	2415									
		Planters	1077									
		Planters	1190									
		Planters	152									
		Planters	3428									
		Planters	2147									
		Road and Parking		82524								
		Sub Total	16225	66299	82524	1.89	149.16		29.43		178.58	94
B) Proposed Condition												
		Planters	6621									
		Planters	6976									
		Planters	8896									
		Planters	3939									
		Planters	4173									
		Planters	651									
		Planters	3985									
		Planters	3581									
		Planters	1191									
		Planters	6621									
		Water		3348								
		Water		2360								
		Water		11652								
		Road and Walkway		18529								
		Sub Total	46635	35889	82524	1.89	80.74			79.22	159.97	84

McLaren ENGINEERING GROUP

PROJECT RIVER PARK CENTER
SHEET NO. 1 OF
CALCULATED BY SRG DATE
CHECKED BY DATE
REVISIONS
SCALE

AREA WITIN YONKERS TO SMR - 274.0 AC. (SEE DAYLIGHTING REPORT)
RIVER PARK STUDY AREA 28.9 AC

AREA IN YONKERS TO SMR 245.1 AC.
CN = 91
TC = 17.20 MINUTES

SAW MILL RIVER Q PER ACOE REPORT @ HOUR 12 ≈ 200CFS

Q TOTAL TO SMR @ RIVER PARK CENTER = 200CFS + Q_{245AC} + $Q_{RIVER\ PARK}$

$Q_{RIVER\ PARK}$ = Q TO SMR ; NOT TO COMBINED SEWER

EXIST. CONDITION

$Q_{245AC} + Q_{RIVER\ PARK}$ = 1323 CFS (SEE Hyd. #14)
Q SMR = 200 CFS
1523 CFS

PROP. CONDITION

$Q_{245} + Q_{RIVER\ PARK}$ = 1304 CFS (SEE Hydro #20)
Q SMR = 200 CFS
1504 CFS

$Q_{INCREASE}$ = 1523 - 1504 = 19 CFS (1.2% OF EXIST. PEAK)

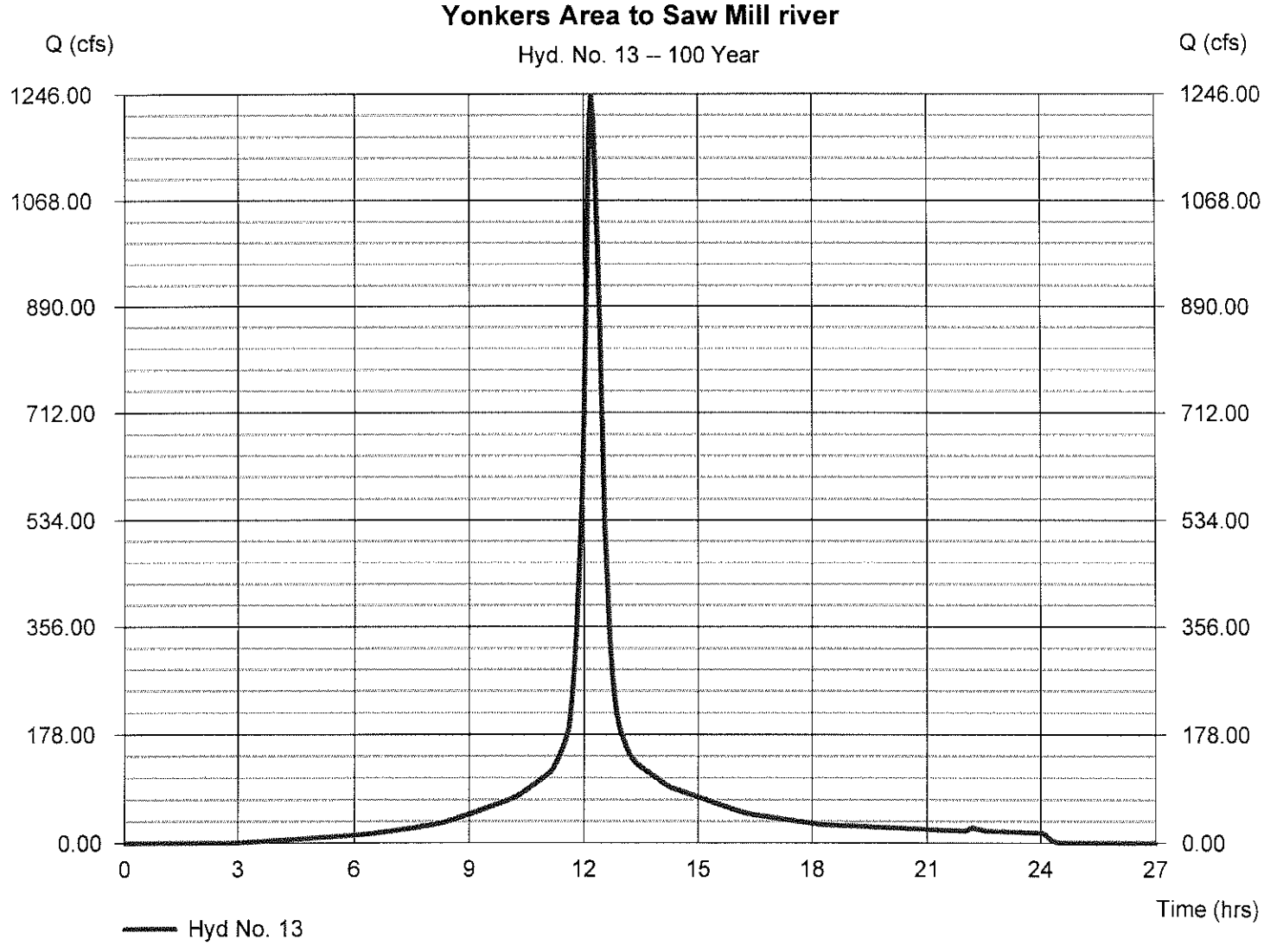
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 13

Yonkers Area to Saw Mill river

Hydrograph type	= SCS Runoff	Peak discharge	= 1242.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 3 min	Hyd. volume	= 135.461 acft
Drainage area	= 245.100 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 17.20 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



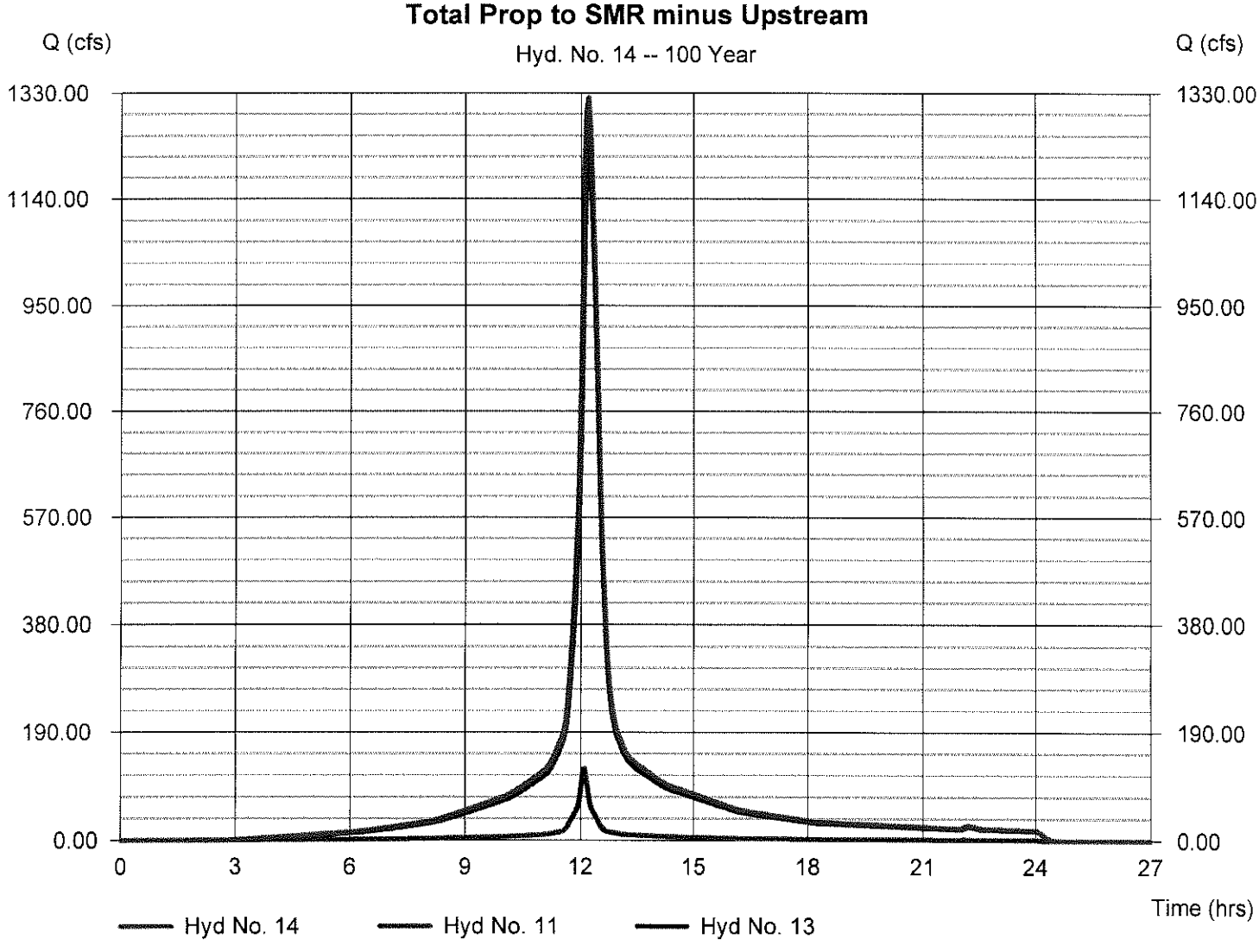
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 14

Total Prop to SMR minus Upstream

Hydrograph type	= Combine	Peak discharge	= 1323.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 3 min	Hyd. volume	= 146.275 acft
Inflow hyds.	= 11, 13	Contrib. drain. area	= 245.100 ac



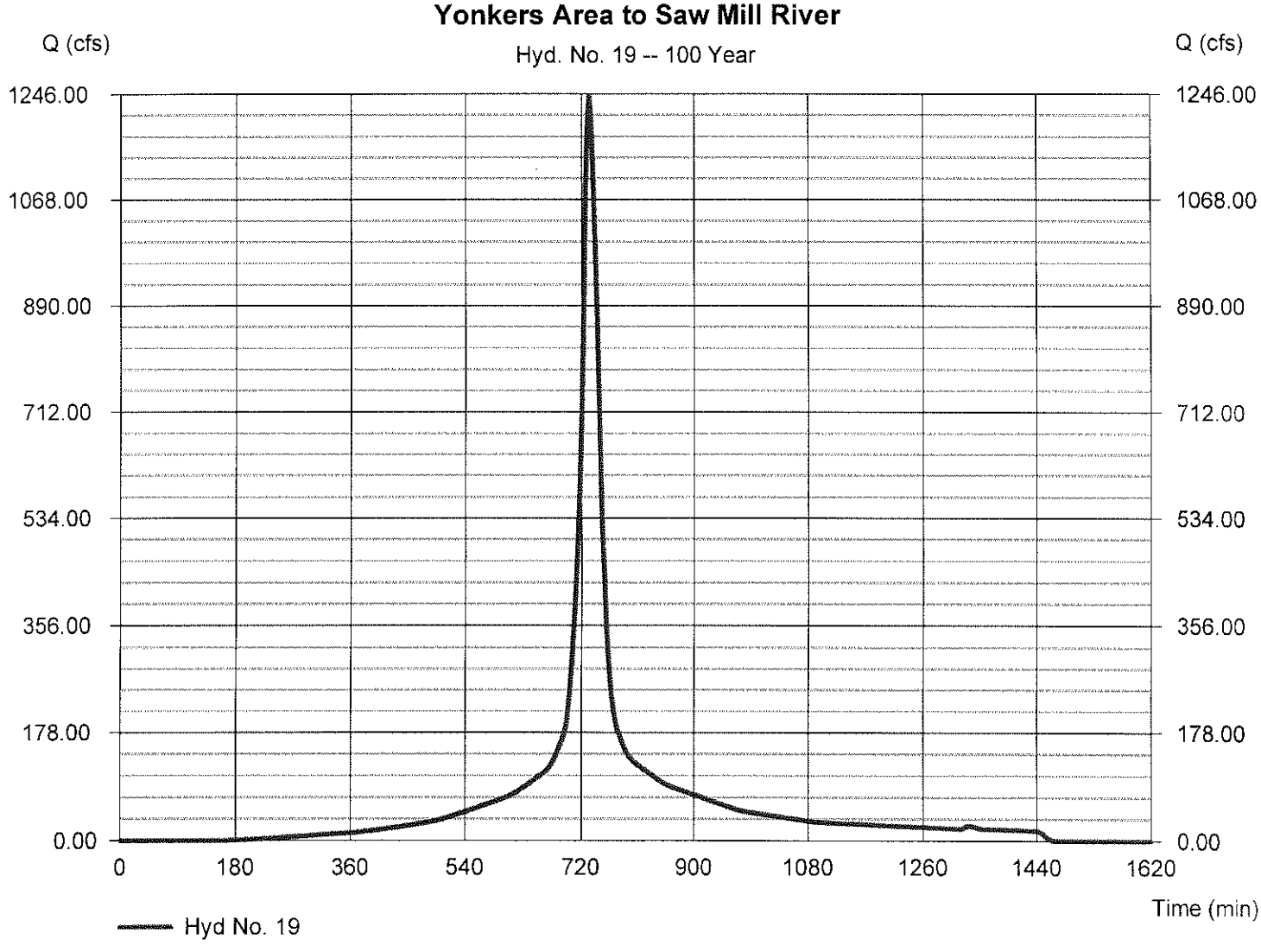
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 19

Yonkers Area to Saw Mill River

Hydrograph type	= SCS Runoff	Peak discharge	= 1242.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 3 min	Hyd. volume	= 135.461 acft
Drainage area	= 245.100 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 17.20 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



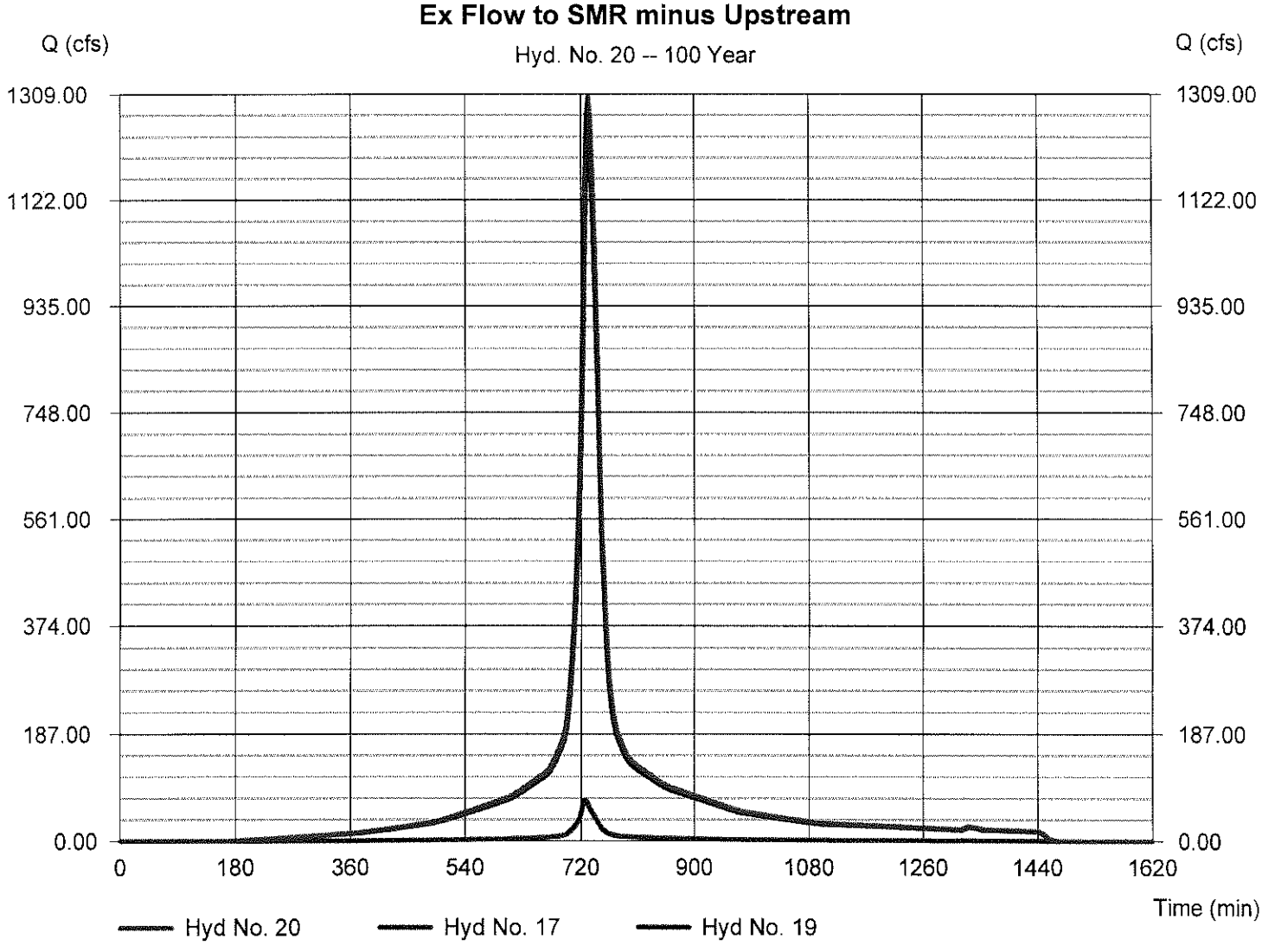
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.01 — Tuesday, Dec 4, 2007

Hyd. No. 20

Ex Flow to SMR minus Upstream

Hydrograph type	= Combine	Peak discharge	= 1304.42 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 3 min	Hyd. volume	= 142.631 acft
Inflow hyds.	= 17, 19	Contrib. drain. area	= 245.100 ac



McLaren ENGINEERING GROUP

JOB:	River Park Center		
JOB #:	106100		
CLIENT:	SFC		
CALC BY:	SLG	DATE:	12/5/2007
CHK BY:		DATE:	

Comparison of River Elevations with Increased flow from Project

Comparison of 100-year Flows vs. 100-year+19 cfs Flows
Date: 4-Dec-07

	100-yr Flow (1540 cfs)		100 yr + 49 cfs (1589)		Delta		
River Sta.	W.S. Elev.	Chan. Vel.	W.S. Elev.	Chan. Vel.	W.S. Elev.	Chan. Ve	Comment/Notes
10	48.23	13.53	48.26	13.62	0.03	0.09	At Palisades Bridge
100	55.13	6.54	55.22	6.57	0.09	0.03	
217.75	52.78	9.29	52.85	9.33	0.07	0.04	At Mouth of Culvert
238.44	52.68	10	52.75	10.03	0.07	0.03	
278.57	54.97	3.84	55.05	3.84	0.08	0	At Pond Spillway
288	55.11	3.82	55.2	3.82	0.09	0	
374.7	55.13	4.07	55.22	4.08	0.09	0.01	
416.46	55.21	3.68	55.29	3.68	0.08	0	
458.2	55.25	3.46	55.33	3.46	0.08	0	
499.95	55.27	3.49	55.35	3.49	0.08	0	Downstream of Bridge

HEC-RAS Plan: prpcongatewa River: SAWMILL RIVER Reach: RIVER PARK Profile: 100 Yr

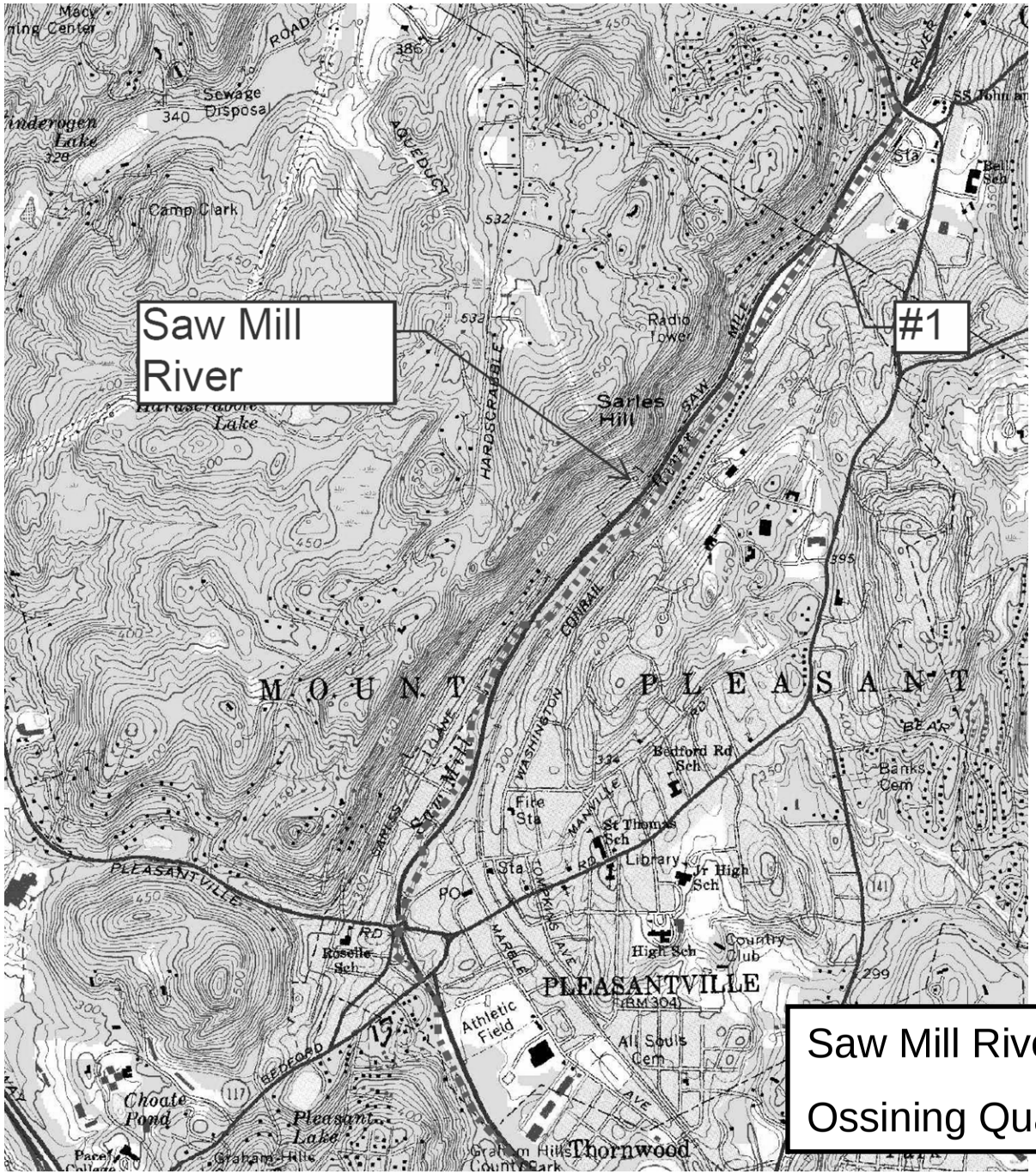
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
RIVER PARK	10	100 Yr	1540.00	42.55	48.23	48.23	51.07	0.179820	13.53	113.83	20.07	1.00
RIVER PARK	100	100 Yr	1540.00	43.40	55.13		55.79	0.024608	6.54	235.54	20.16	0.34
RIVER PARK	190		Culvert									
RIVER PARK	217.75	100 Yr	1540.00	44.52	52.78	50.20	54.12	0.004685	9.29	165.72	20.12	0.57
RIVER PARK	238		Culvert									
RIVER PARK	238.44	100 Yr	1540.00	45.00	52.68	50.69	54.23	0.005726	10.00	154.04	20.12	0.64
RIVER PARK	278		Bridge									
RIVER PARK	278.57	100 Yr	1540.00	45.40	54.97	49.47	55.20	0.000486	3.84	401.34	53.79	0.25
RIVER PARK	285		Inl Struct									
RIVER PARK	288	100 Yr	1540.00	45.50	55.11	49.57	55.34	0.000490	3.82	403.18	52.30	0.24
RIVER PARK	374.7	100 Yr	1540.00	46.10	55.13		55.39	0.000595	4.07	378.02	52.05	0.27
RIVER PARK	416.45*	100 Yr	1540.00	46.40	55.21		55.42	0.000486	3.68	418.40	58.87	0.24
RIVER PARK	458.2*	100 Yr	1540.00	46.70	55.25		55.44	0.000403	3.46	445.36	58.83	0.22
RIVER PARK	499.95	100 Yr	1540.00	47.00	55.27		55.45	0.000410	3.49	441.78	56.26	0.22
RIVER PARK	500		Bridge									

WITH DESIGN FLOW

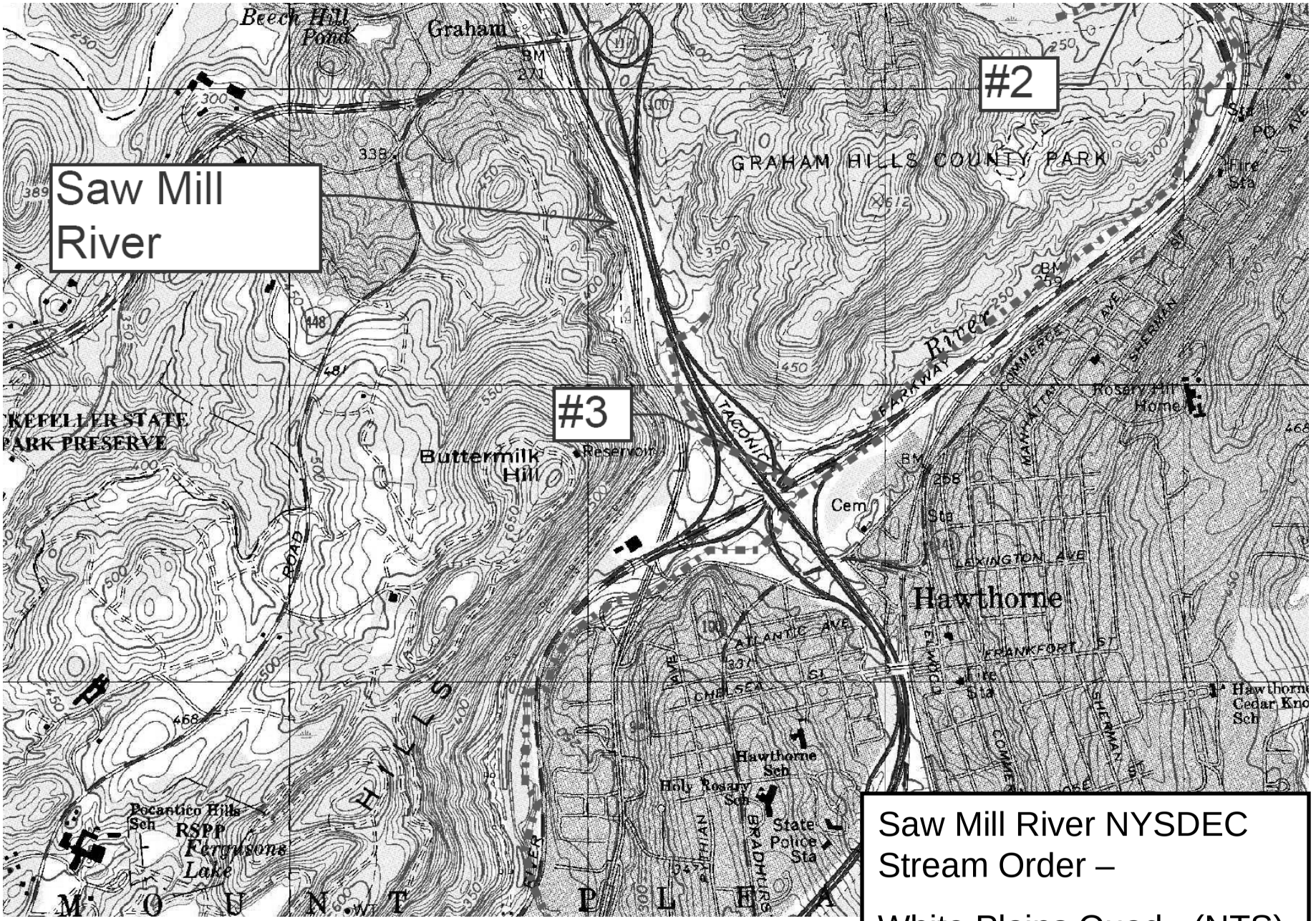
HEC-RAS Plan: prpcongatewa River: SAWMILL RIVER Reach: RIVER PARK Profile: 100 Yr

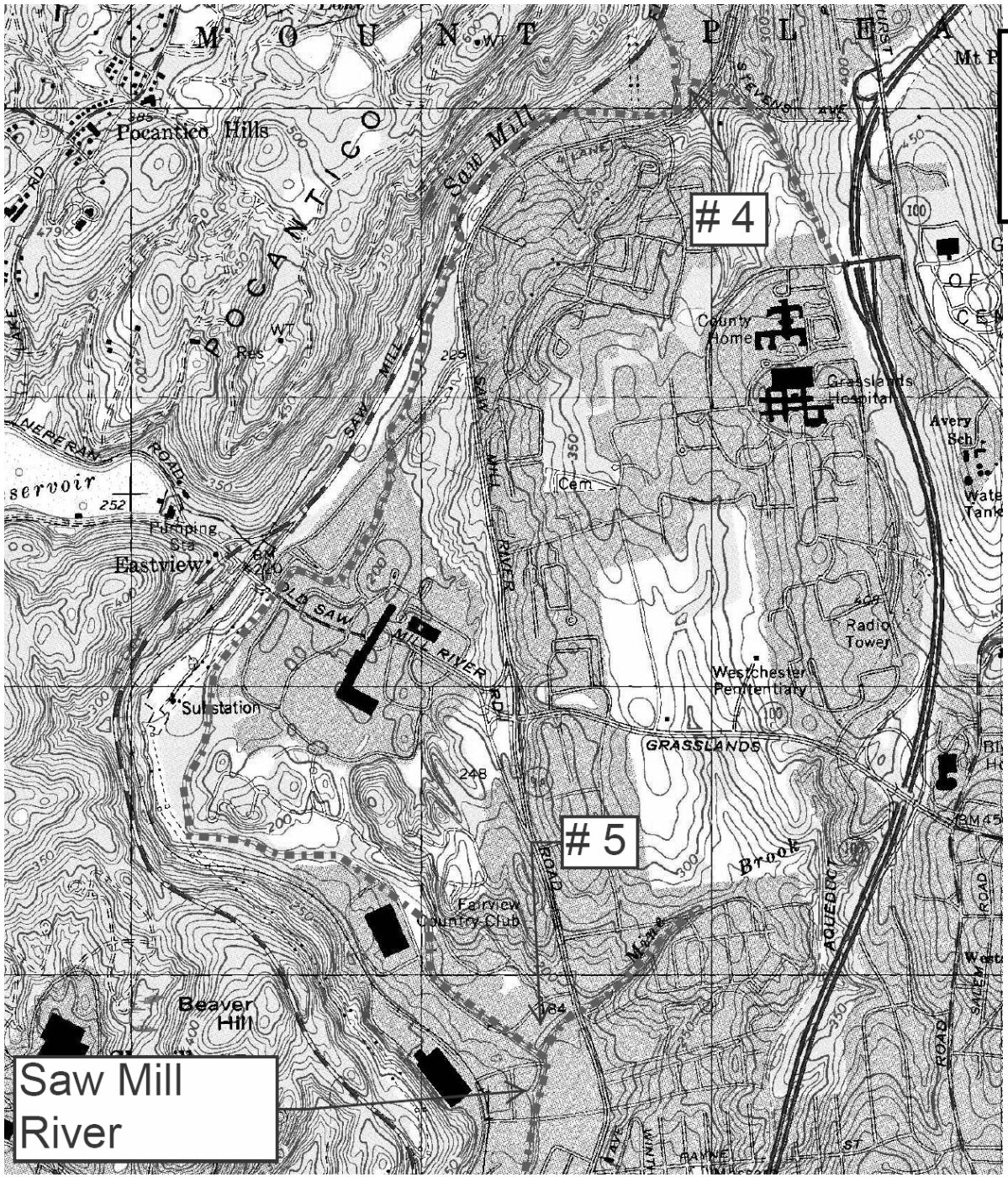
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
RIVER PARK	10	100 Yr	1559.00	42.55	48.26	48.26	51.14	0.181368	13.62	114.47	20.07	1.01
RIVER PARK	100	100 Yr	1559.00	43.40	55.22		55.89	0.024718	6.57	237.36	20.16	0.34
RIVER PARK	190		Culvert									
RIVER PARK	217.75	100 Yr	1559.00	44.52	52.85	50.23	54.20	0.004690	9.33	167.16	20.12	0.57
RIVER PARK	238		Culvert									
RIVER PARK	238.44	100 Yr	1559.00	45.00	52.75	50.71	54.31	0.005719	10.03	155.49	20.12	0.64
RIVER PARK	278		Bridge									
RIVER PARK	278.57	100 Yr	1559.00	45.40	55.05	49.50	55.28	0.000482	3.84	405.96	54.00	0.25
RIVER PARK	285		Inl Struct									
RIVER PARK	288	100 Yr	1559.00	45.50	55.20	49.61	55.43	0.000487	3.82	407.60	52.47	0.24
RIVER PARK	374.7	100 Yr	1559.00	46.10	55.22		55.47	0.000590	4.08	382.42	52.22	0.27
RIVER PARK	416.45*	100 Yr	1559.00	46.40	55.29		55.50	0.000483	3.68	423.38	59.16	0.24
RIVER PARK	458.2*	100 Yr	1559.00	46.70	55.33		55.52	0.000400	3.46	450.30	58.95	0.22
RIVER PARK	499.95	100 Yr	1559.00	47.00	55.35		55.54	0.000407	3.49	446.49	56.31	0.22
RIVER PARK	500		Bridge									

WITH 19 CFS INCREASE



Saw Mill River NYSDEC Stream Order – Ossining Quad - (NTS)


Saw Mill River
#2
#3
Beech Hill Pond
Graham
GRAHAM HILLS COUNTY PARK
Buttermilk Hill
Reservoir
Hawthorne
Saw Mill River NYSDEC Stream Order –
White Plains Quad - (NTS)


Saw Mill River NYSDEC Stream Order –
White Plains Quad - (NTS)
4
5
Saw Mill River
Pocantico Hills
Eastview
Fairview Country Club
Beaver Hill
Grasslands Hospital
County Home
Westchester Penitentiary
Radio Tower
Substation
Pumping Sta
Avery Sch
GRASSLANDS
OLD SAW MILL RIVER RD
SAW MILL RIVER
ROAD
AQUEDUCT
Brook
Cem
Res