APPENDIX C

Stormwater Management Report

ATZL, SCATASSA & ZIGLER P.C. • ENGINEERS-SURVEYORS-PLANNERS

STORMWATER MANAGEMENT REPORT
AND
WATER QUALITY & QUANTITY SYSTEM DESIGN

Prepared For:

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

Source: www.googleearth.com

Revision 2: November 16, 2011
Revision 1: October 07, 2011
Date: November 19, 2008
Job No. 3300

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TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

HYDRAULIC AND HYDROLOGICAL STUDY

BY

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Revision 1: November 16, 2011

November 19, 2008

Town of Clarkstown
10 Maple Avenue
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Att.: Dennis Letson, P.E.
Deputy Director

Re: Orchard Ridge (Project # 3300)
Town of Clarkstown
Rockland County, New York

Sub: Preliminary Hydraulic and Hydrological Study

1.0 INTRODUCTION:

The following hydraulic/hydrological study (drainage report) has been prepared for the above mentioned project. The drainage report satisfies the requirements set by the New York State DEC Storm Water Management Design Manual dated August 2003, last revision April 2008. It also provides the zero net increases of peak flow due to the site development and as well as water quality measures (Clean Water Act).

The site is predominantly wooded area. It is proposed to build eight buildings (40 units per building) with a total of 320 units, a commercial building, and a recreation center. Upon the implementation of the proposed developments, the runoff from the site will increase due to the proposed impervious areas. Therefore, mitigation is required in order to attenuate the post development runoff to the pre-developed condition as well as water quality measures. There is a wetland located on the north-west corner of the property. The wetland is delineated by Robert Torgersen, Landscape Architect on August 8, 2007.

2.0 SITE LOCATION:

The project is located west of Route 303, east of Consolidated Rail Corporation and 700 ft. ± north of Brenner Drive.

2.0 HYDROLOGICAL SOIL GROUP:

The soils at the watersheds consist of two different types of soils, which are listed as follows:

Soil Symbol	Soil Name	Hydraulic Soil Group
WeB & WeC	Wethersfield	"C"
Wc	Watchaug	"B"

The detail of soils characteristics are listed on pages 43-45 and 175 of Soil Survey of Rockland County, New York, United States Department of Agriculture, Soil Conservation Service in cooperation with Cornell University Agricultural Experiment Station dated October 1981.

3.1 EXISTING WATERSHED:

Four (4) watersheds cover the on-site and off-site drainage area. The watersheds (WS #1, WS #2, WS #3, & WS#4) are delineated and shown on the existing drainage map. The total drainage area of the site is approximately 110 acres, which includes onsite and offsite drainage areas.

The runoffs from these watersheds generally flow from east (N.Y.S. Route 303) to west (Consolidated Rail Road) toward the existing wetland, and then crossing the rail road through existing culverts. This existing 30" cast iron culvert is considered as the point of interest (P.O.I).

The 100-year storm event, the total flow generated from the above mentioned watersheds just before entering the existing wetland is 435.15 CFS, and the combined outlet flow at the P.O.I. is 265.13. The peak flow is reduce due to the existing swales/reached and the existing wetland's storage capacity.

The watersheds are delineated and flow paths are shown on the attached existing condition map (E-1).

3.2 DEVELOPED WATERSHED:

The proposed improvements consist of the eight building with 40 units, or 320-units adult residence, a commercial building, a recreation center, roads and parking lots. Upon implementation of the proposed development, the total drainage (on-site and off-site drainage) area and delineation remain the same as existing condition. The total drainage area will be subdivided into nine watersheds called WS#1, WS#1A, WS#1B, WS#2A, WS#2B, WS#2C, WS#2D, WS#3 and WS#4. The runoffs from these

watersheds generally flow from east to west and the into the existing wetland before crossing the rail road through an existing 30" cast iron culvert (P.O.I.).

The runoff from WS#1 flows from east to west and continues to flow northerly over a proposed water quality grass swale toward the existing wetland. The drainage area of the WS#1 is calculated 4.18 acres. The 100-year storm peak runoff from the WS#1 is about 17.16 cfs at a proposed check dam (berm) outlet.

The runoff from WS#1A, WS#1B, WS#2A, WS#2B flow from south to north toward a proposed Pond#1A (WS#1A & WS#1B), Pond#1B, Pond#2A and Pond#2B respectively and then discharged to the existing wetland. The drainage area of the WS#1A, WS#1B, WS#2A and WS#2B are calculated 2.07 acres, 1.58 acres, 3.88 acres and 4.04 acres respectively. The 100-year storm peak runoff from those drainage areas are about 10.23 cfs, 7.54 cfs, 19.21 cfs and 21.44 cfs respectively at the Ponds.

The runoff from WS#2C flows from east to west and continues to flow northerly thru a proposed drainage pipes toward a proposed Pond#1 and then discharged to the existing wetland. The drainage area of the WS#2C is calculated about 8.46 acres. Only 4.58 acres of WS#2C will be developed as part of this project, the balance will be developed in future. The 100-year storm peak runoff from the WS#1 is about 28.43 cfs at the Pond#1. However, the system is designed for ultimate build-up assuming that the existing strip shop and the vacant will be developed with 90% impervious coverage. Therefore, upon the development of these two parcels, the proposed drainage system could be connected to the Pond#1without additional drainage system.

The WS#2D is offsite drainage area and will remain undisturbed. The runoff from the watershed area flows from east to west and then bypassed thru a proposed drainage pipe toward the existing wetland. The drainage area of the WS#2D is calculated 2.68 acres and its 100-year storm peak runoff is about 12.66 cfs.

The WS#3 and WS#4 remain undisturbed. The runoff from WS#3 and WS#4 flow from east to west and then discharged to the existing wetland. The drainage area of the WS#3 and WS#4 are calculated 12.79 acres and 70.33 acres respectively. The 100-year storm peak runoff from combined drainage areas is about 293.96 cfs at the existing wetland.

The watersheds are delineated and flow paths are shown on the attached developed condition map (D-1 & D-2).

4.0 DRAINAGE STUDY:

We have prepared the attached hydrological and hydraulics analysis for the existing and developed conditions.

Due to the proposed developments, the impervious area such as roof tops, driveways, and paved road will be increased. Therefore, the peak runoff of all storm frequencies will be increased relatively. The 100-year storm peak runoff at the P.O.I. will be increased from 265.13 cfs to 284.09 cfs without routing the flow through the proposed stormwater retention ponds.

5.0 MITIGATION:

To comply with the NYSDEC stormwater management design manual, dated August 2003, last revision April 2008 and to mitigate the impact of the proposed development, the following structures are proposed:

- A grass swale system combined with check dams (berm) outlet structures to provide water quality and channel protection mitigation. The system is designed to treat and control of upstream runoff from the drainage area of WS#1.

- Three (3) pocket ponds (P-5) with required components such as forebays, permanent pools, aquatic benches, control structures etc. are designed to treat and control the upstream drainage area of WS#1A, WS#1B, WS#2A and WS#2B, which will function as water quality and channel protection. The depth of these ponds varies from 5 to 7 feet including 1 ft. of free board. Runoff from WS#1A and WS#1B drains into the Pond#1A. The runoff from WS#2A flows into the Pond#2A. The runoff from WS#2B flows into the Pond#2B.

- One (1) micro pool extended detention pond (P-1) system with required components including a pilot channel, a forebay, a permanent pool, an aquatic benches, a control structures etc. is designed to treat and control the upstream drainage area of WS#2C, which will function as a water quality as well as a water quantity basin. The total depth of the pond is six (6) including the required 1 ft. of free board.

6.0 CALCULATION PROCEDURES:

The calculation procedures are as follows:

- Compile the Hydrological / Hydraulics parameters form watershed maps and Soil Map.

- Calculate the drainage area of each watershed, flow path's length and slopes.

- TR-55 is used to calculate CN values and time of concentration of each sub-drainage area for Existing Condition and Developed Condition without mitigation.

- Use TR-20 program to calculate peak flow of different storm frequencies (1, 2, 5, 10, 25, 50 & 100 year storms) at the point of interests for existing and developed condition with and without proposed storages.

- Calculate water quality and quantity storage volumes for each watershed.

- Design storage pond and control structures.

TR-20 is mainly used to calculate peak flows for routing the flow through the proposed storage system (Retention pond) and at existing wetland.

The summary tables for the, the required storage calculations and the water quality design calculation are attached for your reference.

Very truly yours,

Ray Ahmadi, PhD, PE F-ASCE

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P: Primary share\Hydrology TR-55\3105\New\3300 Drainage Study\Ray.doc

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SUMMARY FLOW TABLE

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SUMMARY PEAK FLOW AT P.O.I.

PRE AND POST DEVELOPED CONDITIONS

1, 2, 5, 10, 25, 50 & 100 YEAR STORMS PEAK RUNOFF

STORM FREQUENCY (YEAR)	EXISTING PEAK FLOW, Q_{EXT} (CFS) (Per TR-20)	DEVELOPED PEAK FLOW NO STORAGE, $Q_{W/O\ STO.}$ (CFS) (Per TR-20)	DEVELOPED PEAK FLOW WITH STORAGE, $Q_{W.\ STO.}$ (CFS) (Per TR-20)	FLOW REDUCTION AFTER ROUTING	REMARK
1	44.55	53.21	41.43	- 7.0%	*
2	70.03	77.19	64.07	- 8.5%	*
5	103.74	117.84	95.55	- 7.9%	*
10	127.65	144.29	118.18	- 7.4%	*
25	180.30	197.92	172.18	- 4.5%	*
50	235.51	254.83	229.60	- 2.5%	*
100	265.13	284.24	260.71	- 1.7%	*

* Zero net increase of peak runoff and water quality treatment will be achieved by the combination of the proposed Micropool Extended Detention Pond (Pond#1), Pond#1A, Pond#2A, Pond#2B and the Existing Wetland at Outlet (P.O.I.). The location of the stormwater facilities are shown on the site plan.

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LOCATION MAPS

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NORTH

STREET MAP
Source: www.maps.google.com

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WATERSHED SOIL MAP

NORTH

Source: http://websoilsurvey.nrcs.usda.gov

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

DRAINAGE CALCULATION

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EXISTING CONDITION:

The drainage area of the site is located on four watersheds (WS#1, WS#2, WS#3, & WS#4). The watershed area is delineated on the Existing Drainage Map (E-1). Total watershed area is about 110.01 acres.

WS#1:

The area of the WS#1 — Hydrological Soil Group

$A = 7.94$ Acres { $A_{Woods} = 7.94$ Acres — "C"

$L_1 = 100$ LF (Sheet Flow)

$$S_1 = \frac{206 - 198}{100} = 0.08$$

$L_2 = 630$ LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{198 - 170.5}{630} = 0.044$$

WS#1 → WETLAND → OUTLET

WS#2:

The area of the WS#2

		Hydrological Soil Group
A = 6.70 Acres	A_{Woods} = 1.3 Acres	"B"
	A_{Woods} = 5.4 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{216.0 - 211.5}{100} = 0.045$$

L_2 = 835 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{211.5 - 165.5}{835} = 0.055$$

WS#2 → WETLAND → OUTLET

WS#3:

The area of the WS#3:

		Hydrological Soil Group
A = 25.04 Acres	A_{Grass} = 0.2 Acres	"B"
	A_{Grass} = 0.31 Acres	"C"
	$A_{impervious}$ = 3.43 Acres	"B"
	A_{woods} = 5.0 Acres	"B"
	A_{woods} = 16.1 Acres	"C"

L_1 = 100 LF (Sheet Flow)

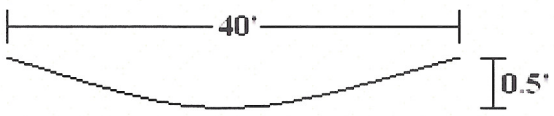
$$S_1 = \frac{234.5 - 230.5}{100} = 0.040$$

L_2 = 1000 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{230.5 - 170.0}{1000} = 0.061$$

L_3 = 840 LF (Channel)

$$S_3 = \frac{170.0 - 161.7}{840} = 0.010$$



Crossection of the Existing Wetland

- $A = \frac{2}{3} \times 40 \times 0.5 = 13.33$ Sq.ft.
- W.P. = 40 LF
- n = 0.035

WS#3 → WETLAND → OUTLET

WS#4:

The area of the WS#4:

		Hydrological Soil Group
A = 70.33 Acres	A_{Grass} = 1.58 Acres	"C"
	$A_{impervious}$ = 10.72 Acres	"C"
	A_{woods} = 58.03 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{550.5 - 533.5}{100} = 0.170$$

L_2 = 510 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{533.5 - 328.0}{510} = 0.403$$

L_3 = 510 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_3 = \frac{328.0 - 250.0}{510} = 0.153$$

L_4 = 1085 LF (Pipe Flow)

$S_4 \approx 0.050$

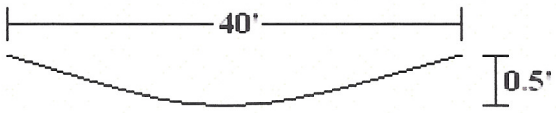
30" RCP (Average):

- $A = \frac{\pi}{4} \times \left(\frac{30}{12}\right)^2 = 4.91$ Sq.ft.
- W.P. $= \pi \times \frac{30}{12} = 7.85$ LF

- n = 0.015

L_5 = 500 LF (Channel Flow)

$S_3 \approx 0.020$



Crossection of the Existing Wetland

- $A = \frac{2}{3} \times 40 \times 0.5 = 13.33$ Sq.ft.
- W.P. = 40 LF
- n = 0.035

WS#4 → WETLAND → OUTLET

DEVELOPED CONDITION:

Upon development, the total drainage area the existing condition will be subdivided into nine watersheds (WS#1, WS#1A, WS#1B, WS#2A, WS#2B, WS#2C, WS#2D, WS#3 & WS#4). The watershed area is delineated on the Existing Drainage Map (E-1). Total watershed area will remain the same as 110.01 acres.

WS#1:

The area of the WS#1:

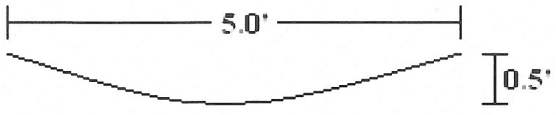
		Hydrological Soil Group
A = 4.18 Acres	$A_{Impervious}$ = 1.37 Acres	"C"
	A_{Grass} = 2.17 Acres	"C"
	A_{Woods} = 0.64 Acres	"C"

L_1 = 95 LF (Sheet Flow)

$$S_1 = \frac{216.5 - 215.5}{95} = 0.0105$$

L_2 = 990 LF (Channel Flow)

$$S_2 = \frac{215.5 - 182.0}{990} = 0.0338$$



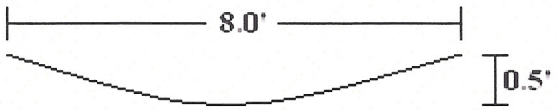
Crossection of the proposed grass swale

- $A = \frac{2}{3} \times 5 \times 0.5 = 1.67$ Sq.ft.
- W.P. = 5.0 LF

- n = 0.035

L_3 = 980 LF (Channel Flow)

$$S_2 = \frac{182.0 - 168.1}{980} = 0.0142$$



Crossection of the proposed grass swale

- $A = \frac{2}{3} \times 8.0 \times 0.5 = 2.67$ Sq.ft.
- W.P. = 8.0 LF
- n = 0.035

WS#1 → GRASS SWALE → WETLAND → OUTLET

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CALCULATED BY: RA DATE: 10/14/11
CHECKED BY: RA DATE: 10/14/11
SCALE
REVISED DATE: 10/04/2011

WS#1A:

The area of the WS#1A:

		Hydrological Soil Group
A = 2.07 Acres	$A_{Impervious}$ = 1.59 Acres	"C"
	A_{Gravel} = 0.04 Acres	"C"
	A_{Lawn} = 0.44 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{188.2 - 186.0}{100} = 0.022$$

L_2 = 645 LF (Pipe Flow)

$S_2 \approx 0.01$

15" ADS (Average):

- $A = \frac{\pi}{4} \times \left(\frac{15}{12}\right)^2 = 1.23$ Sq.ft.
- W.P. $= \pi \times \frac{15}{12} = 3.93$ LF
- n = 0.012

WS#1A → POND#1A → WETLAND → OUTLET

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CHECKED BY: RA DATE: 10/14/11
SCALE
REVISED DATE: 10/04/2011

WS#1B:

The area of the WS#1B:

		Hydrological Soil Group
A = 1.58 Acres	$A_{Impervious}$ = 1.10 Acres	"C"
	A_{Gravel} = 0.07 Acres	"C"
	A_{Lawn} = 0.41 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{188.5 - 187.0}{100} = 0.015$$

L_2 = 335 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{187. - 185.12}{335} = 0.006$$

L_3 = 100 LF (Pipe Flow)

$S_3 \approx 0.01$

15" ADS (Average):

- $A = \frac{\pi}{4} \times \left(\frac{15}{12}\right)^2 = 1.23$ Sq.ft.
- W.P. = $\pi \times \frac{15}{12} = 3.93$ LF
- n = 0.012

WS#1B → POND#1B → WETLAND → OUTLET

WS#2A:

The area of the WS#2A:

		Hydrological Soil Group
A = 3.88 Acres	$A_{Impervious}$ = 3.01 Acres	"C"
	A_{Gravel} = 0.05 Acres	"C"
	A_{Lawn} = 0.82 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{196.2 - 194.6}{100} = 0.016$$

L_2 = 340 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{194.6 - 192.0}{340} = 0.008$$

L_3 = 75 LF (Pipe Flow)

$S_3 \approx 0.01$

18" ADS (Average):

- $A = \frac{\pi}{4} \times \left(\frac{18}{12}\right)^2 = 1.77$ Sq.ft.
- W.P. = $\pi \times \frac{18}{12} = 4.71$ LF
- n = 0.012

WS#2A → POND#2A → WETLAND → OUTLET

WS#2B:

The area of the WS#2B:

			Hydrological Soil Group
A = 4.04 Acres	$A_{Impervious}$ = 3.09 Acres	2.98 Acres	"C"
		0.11 Acres	"B"
	A_{Lawn} = 0.95 Acres	0.91 Acres	"C"
		0.04 Acres	"B"

L_1 = 90 LF (Sheet Flow)

$$S_1 = \frac{206.0 - 204.6}{90} = 0.016$$

L_2 = 125 LF (Shallow Concentrated Flow) ..... (Paved)

$$S_2 = \frac{204.6 - 201.07}{125} = 0.028$$

L_3 = 120 LF (Pipe Flow)

$S_3 \approx 0.01$

18" ADS (Average):

- $A = \frac{\pi}{4} \times \left(\frac{18}{12}\right)^2 = 1.77$ Sq.ft.
- W.P. $= \pi \times \frac{18}{12} = 4.71$ LF
- n = 0.012

WS#2B → POND#2B → WETLAND → OUTLET

WS#2C:

The area of the WS#2C:

			Hydrological Soil Group
A = 8.46 Acres	$A_{Impervious}$ =4.95 Acres	0.25 Acres	"C"
		4.70Acres	"B"
	A_{Lawn} = 2.45 Acres	0.25 Acres	"C"
		2.20 Acres	"B"
	A_{Wood} = 1.06 Acres		"B"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{232.0 - 226.0}{100} = 0.06$$

L_2 = 310 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{226.0 - 215.8}{310} = 0.0329$$

L_3 = 75 LF (Shallow Concentrated Flow) ..... (Paved)

$$S_2 = \frac{215.3 - 213.5}{75} = 0.024$$

L_4 = 90 LF (Pipe Flow)

$S_4 \approx 0.02$

18" ADS (Average):

- $A = \frac{\pi}{4} \times \left(\frac{18}{12}\right)^2 = 1.77$ Sq.ft.
- W.P. $= \pi \times \frac{18}{12} = 4.71$ LF
- $n = 0.012$

WS#2C → POND#1 → WETLAND → OUTLET

WS#2D:

The area of the WS#2D:

			Hydrological Soil Group
A = 2.68Acres	$A_{Impervious}$ = 0.82 Acres	0.01 Acres	"C"
		0.81Acres	"B"
	A_{Lawn} = 1.86 Acres	0.91 Acres	"C"
		0.95 Acres	"B"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{219.0 - 211.5}{100} = 0.075$$

L_2 = 410 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{211.5 - 179.0}{410} = 0.079$$

WS#2D → WETLAND → OUTLET

WS#3:

The area of the WS#3:

		Hydrological Soil Group
A = 12.79 Acres	A_{Wood} = 12.57 Acres	"C"
	A_{Wood} = 0.22 Acres	"B"

L_1 = 100 LF (Sheet Flow)

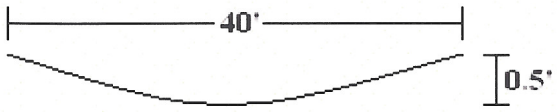
$$S_1 = \frac{204.3 - 197.5}{100} = 0.068$$

L_2 = 385 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{197.5 - 170.0}{385} = 0.071$$

L_3 = 565 LF (Channel Flow)

$$S_3 = \frac{170.0 - 161.7}{565} = 0.015$$



Crossection of the Existing Wetland

- $A = \frac{2}{3} \times 40 \times 0.5 = 13.33$ Sq.ft.
- W.P. = 40 LF
- n = 0.035

WS#3 → WETLAND → OUTLET

WS#4:

The area of the WS#4:

		Hydrological Soil Group
A = 70.33 Acres	A_{Grass} = 1.58 Acres	"C"
	$A_{impervious}$ = 10.72 Acres	"C"
	A_{woods} = 58.03 Acres	"C"

L_1 = 100 LF (Sheet Flow)

$$S_1 = \frac{550.5 - 533.5}{100} = 0.170$$

L_2 = 510 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_2 = \frac{533.5 - 328.0}{510} = 0.403$$

L_3 = 510 LF (Shallow Concentrated Flow) ..... (Unpaved)

$$S_3 = \frac{328.0 - 250.0}{510} = 0.153$$

L_4 = 1085 LF (Pipe Flow)

$S_4 \approx 0.050$

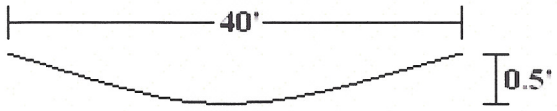
30" RCP (Average):

- $A = \frac{\pi}{4} \times \left(\frac{30}{12}\right)^2 = 4.91$ Sq.ft.
- W.P. $= \pi \times \frac{30}{12} = 7.85$ LF

- n = 0.015

L_5 = 500 LF (Channel Flow)

$S_3 \approx 0.020$



Crossection of the Existing Wetland

- $A = \frac{2}{3} \times 40 \times 0.5 = 13.33$ Sq.ft.
- W.P. = 40 LF
- n = 0.035

WS#4 → WETLAND → OUTLET

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

EXISTING CONDITION
Tc & CN CALCULATION
PER TR-55

BY

ATZL, SCATASSA & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
234 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543

WinTR-55 Current Data Description

--- Identification Data ---

User: ASZ P.C.
Project: ORCHARD RIDGE (3300)
SubTitle: Existing Condition: 1,2,5,10,25,50,100 Yr. Storm Peak Runoff
State: New York
County: Rockland
Filename: \\Server\primary share\hydrology TR-55\3300\Ray Oct 14-2011\Ray\WINTR-55\Existing Conditio

Date: 2011-11-17
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
WS#1	Existing Condition	Outlet	7.94	73	.249
WS#2	Existing Condition	Outlet	6.7	70	0.308
WS#3	Existing Condition	Outlet	25.04	74	.302
WS#4	Existing Condition	Outlet	70.33	77	.248

Total area: 110.01 (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	2.7

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

ASZ P.C. ORCHARD RIDGE (3300)
Existing Condition: 1,2,5,10,25,50,100 Yr. Storm Peak Runoff
Rockland 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)
WS#1							
SHEET	100	0.0800	0.400				0.197
SHALLOW	630	0.0440	0.050				0.052
					Time of Concentration		.249
WS#2							
SHEET	100	0.0450	0.400				0.247
SHALLOW	835	0.0550	0.050				0.061
					Time of Concentration		0.308
WS#3							
SHEET	100	0.0400	0.150				0.118
SHALLOW	1000	0.0610	0.050				0.070
CHANNEL	840	0.0100	0.035	13.33	40.00	2.047	0.114
					Time of Concentration		.302
WS#4							
SHEET	100	0.1700	0.400				0.145
SHALLOW	510	0.4030	0.050				0.014
SHALLOW	510	0.1530	0.050				0.022
CHANNEL	1085	0.0500	0.015	4.91	7.85	15.863	0.019
CHANNEL	500	0.0200	0.035	13.33	40.00	2.894	0.048
					Time of Concentration		.248

ASZ P.C. ORCHARD RIDGE (3300)
Existing Condition: 1,2,5,10,25,50,100 Yr. Storm Peak Runoff
Rockland County, New York

Sub-Area Land Use and Curve Number Details

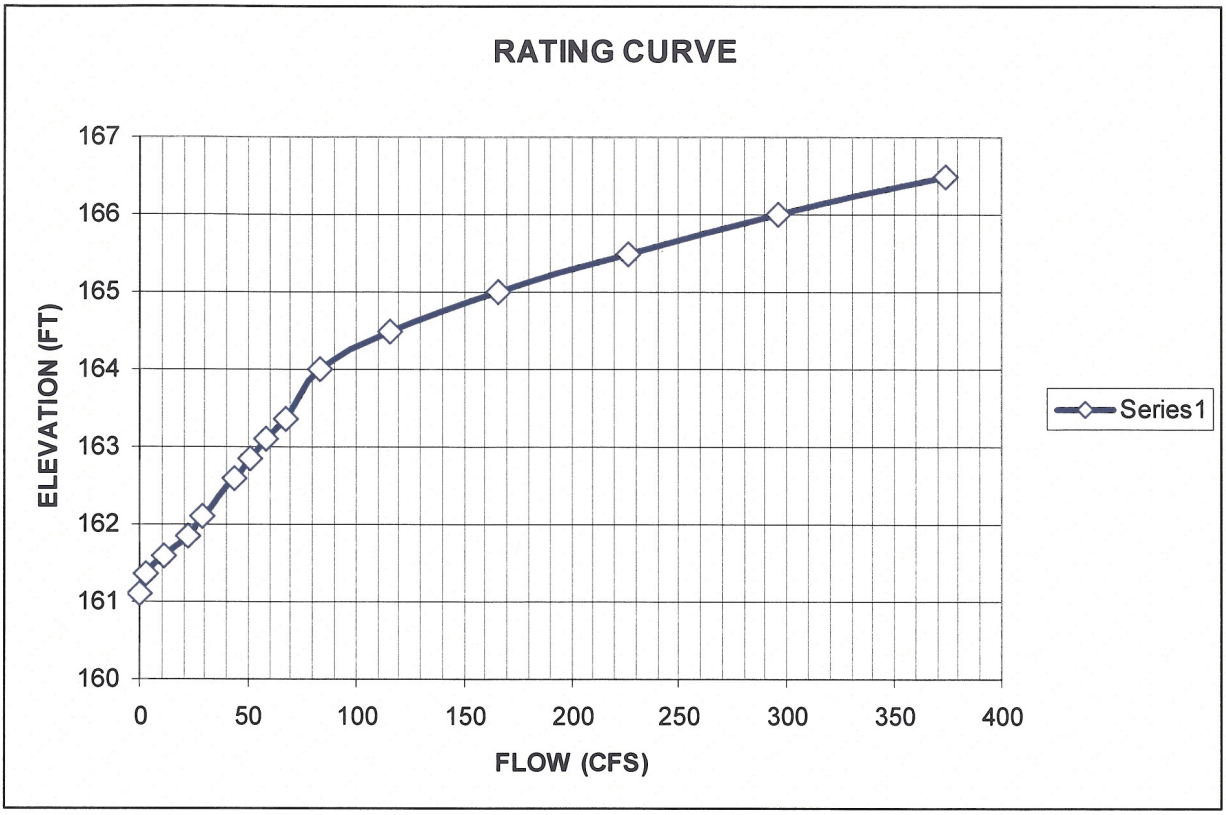
Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
WS#1	Woods	(fair)	C	7.94	73
	Total Area / Weighted Curve Number			7.94	73
WS#2	Woods	(fair)	B	1.3	60
	Woods	(fair)	C	5.4	73
	Total Area / Weighted Curve Number			6.7	70
WS#3	Open space; grass cover 50% to 75%	(fair)	B	.2	69
	Open space; grass cover 50% to 75%	(fair)	C	.31	79
	Paved parking lots, roofs, driveways		B	3.43	98
	Woods	(fair)	B	5	60
	Woods	(fair)	C	16.1	73
	Total Area / Weighted Curve Number			25.04	74
WS#4	Open space; grass cover > 75%	(good)	C	1.58	74
	Paved parking lots, roofs, driveways		C	10.72	98
	Woods	(fair)	C	58.03	73
	Total Area / Weighted Curve Number			70.33	77

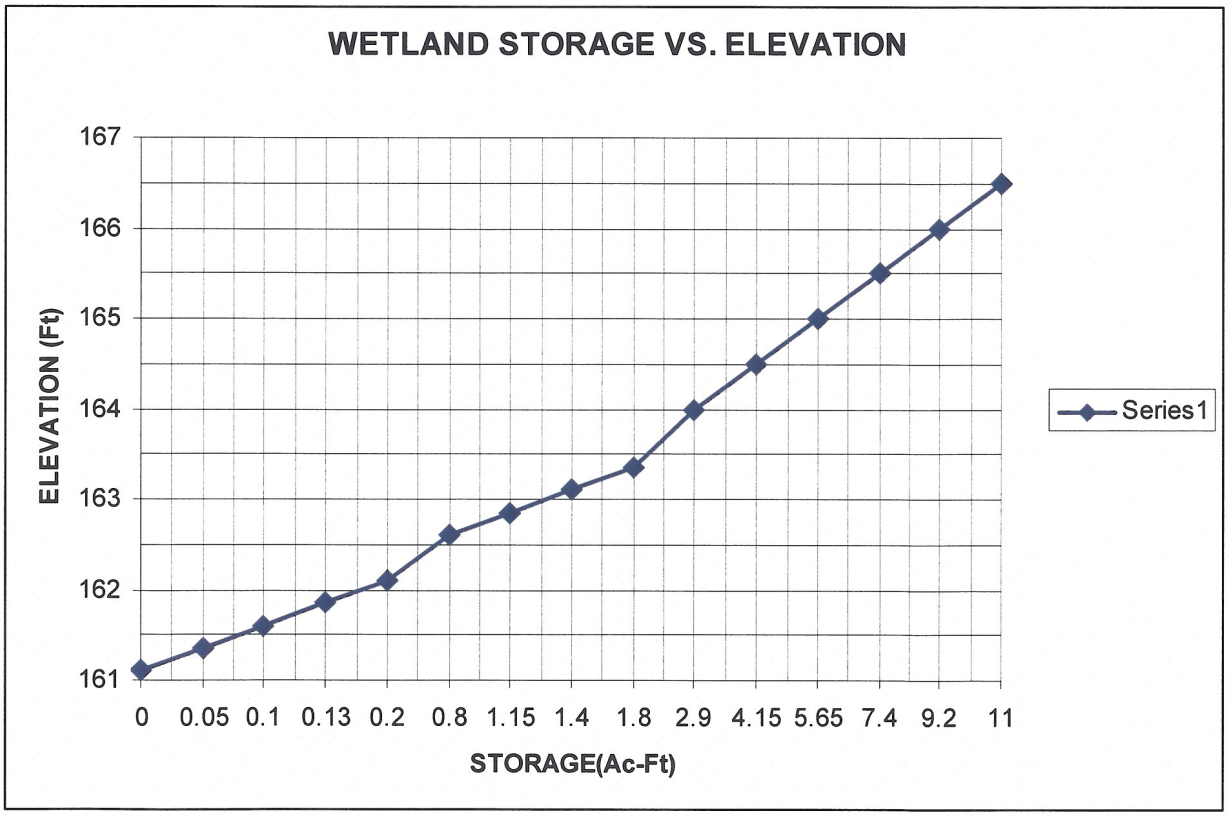
NYSDEC FRESHWATER WETLANDS HS-8 (EXISTING WETLANDS) HAVE BEEN DELINEATED BY ROBERT TORGERSEN LANDSCAP ARCHITECT ON AUGUST 8, 2007, AND VALIDATED BY NYSDEC ON APRIL 23, 2008.

AREAS = 5.6 ACRES

RATING CURVE & STORAGE

EL	30" CIP (Flow)	(2'X4') Culvert (Flow)	Overflow (RR)	Total Flow
161.1	0	0		0
161.35	1.57	1.55		3.12
161.6	6.59	4.38		10.97
161.85	14.17	8.05		22.22
162.1	16.7	12.4		29.1
162.6	20.46	22.78		43.24
162.85	22.1	28.71		50.81
163.1	23.62	35.07		58.69
163.35	25.05	43.04		68.09
164	30.34	53.06	0	83.4
164.5	34.63	59.64	21.92	116.19
165	38.45	65.56	62	166.01
165.5	41.92	70.98	113.9	226.8
166	45.13	76.02	175.36	296.51
166.5	48.12	80.75	245.08	373.95


RATING CURVE
ELEVATION (FT)
167
166
165
164
163
162
161
160
0
50
100
150
200
250
300
350
400
FLOW (CFS)
Series1


WETLAND STORAGE VS. ELEVATION
ELEVATION (Ft)
167
166
165
164
163
162
161
0
0.05
0.1
0.13
0.2
0.8
1.15
1.4
1.8
2.9
4.15
5.65
7.4
9.2
11
STORAGE(Ac-Ft)
Series1

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

TR-20 OUTPUT DATA FOR EXISTING CONDITION (1, 2, 5, 10, 25, 50 & 100-YEAR STORMS)

BY

ATZL, SCATASSA & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
234 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543

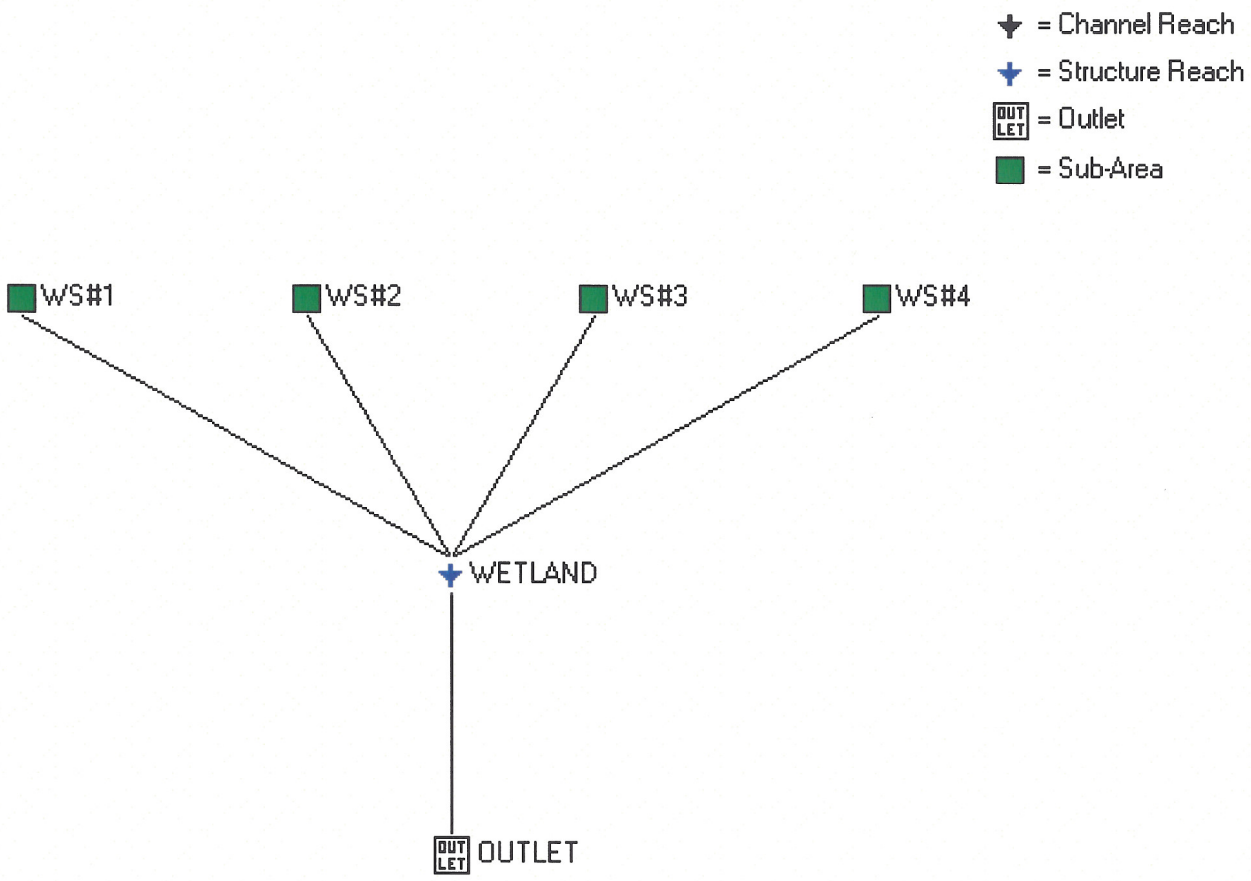


Figure 1: Drainage system schematic for existing condition with the existing wetland.

WinTR-20 Printed Page File Beginning of Input Data List
P:\hydrology TR-55\3300\DRAINAGE REPORT\WINTR-20\Exting Routing.inp

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WinTR-20: Version 1.11                    0         0         0.1       0
ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

SUB-AREA:
          WS#1      WETLAND              0.0124062573.       0.249     YY YY
          WS#2      WETLAND              0.0104687570.       0.308     YY YY
          WS#3      WETLAND              0.039125  74.       0.302     YY YY
          WS#4      WETLAND              0.1098906277.       0.248     YY YY

STREAM REACH:
          WETLAND   OUTLET               WETLAND                       YY YYY


STORM ANALYSIS:
          1-YR                 0.0       2.7       Type III  2         3.5
          2-YR                 0.0       3.5       Type III  2         3.5
          5-YR                 0.0       4.5       Type III  2         3.5
          10-YR                0.0       5.0       Type III  2         3.5
          25-YR                0.0       6.0       Type III  2         3.5
          50-YR                0.0       7.0       Type III  2         3.5
          100-YR               0.0       7.5       Type III  2         3.5


STRUCTURE RATING:
          WETLAND   161.1
                    161.1     0.        0.
                    161.35    3.12      0.05
                    161.60    10.97     0.10
                    161.85    22.22     0.13
                    162.1     29.10     0.20
                    162.6     43.24     0.80
                    162.85    50.81     1.15
                    163.10    58.69     1.40
                    163.35    68.09     1.80
                    164.0     83.40     2.90
                    164.50    116.19    4.15
                    165.0     166.01    5.65
                    165.5     226.80    7.40
                    166.0     296.51    9.20
                    166.5     373.95    11.0



GLOBAL OUTPUT:
          2         1.        0.1       YYNYY     YYNYYY


VERIFICATION:
          DATA PREP              Y   Y Y Y Y                 Y Y Y       Y Y
          PROCESSING  Y       Y Y Y Y Y Y


WinTR-20 Printed Page File  End of Input Data List
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ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Name of printed page file:
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STORM 1-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		0.676		12.21	4.18	337.31

Line
Start Time ---------- Flow Values @ time increment of 0.100 hr ----------

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.000	1.47	3.07	4.17	3.75	3.08	2.45	1.82
12.700	1.35	1.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		0.525		12.27	2.49	237.72

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.100	1.38	2.29	2.47	2.19	1.84	1.45	1.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.039		0.723		12.25	13.41	342.81

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.800	1.14	2.19	4.33	8.79	12.95	12.97	11.01
12.500	9.00	6.91	5.17	4.09	3.48	3.07	2.76
13.200	2.53	2.38	2.28	2.20	2.13	2.07	2.00
13.900	1.93	1.86	1.79	1.73	1.68	1.64	1.61
14.600	1.57	1.54	1.51	1.47	1.44	1.40	1.36
15.300	1.33	1.29	1.25	1.21	1.18	1.14	1.10
16.000	1.06	1.02					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		0.868		12.21	50.43	458.91

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.300	1.05	1.41	1.84	2.52	4.04	7.03	11.70
12.000	21.28	39.72	50.42	43.61	34.88	27.21	19.96
12.700	14.68	11.91	10.43	9.36	8.48	7.85	7.46
13.400	7.20	6.97	6.75	6.53	6.31	6.08	5.85
14.100	5.62	5.44	5.30	5.18	5.07	4.96	4.85
14.800	4.73	4.62	4.50	4.39	4.27	4.15	4.03
15.500	3.91	3.78	3.66	3.54	3.41	3.28	3.16
16.200	3.07	2.99	2.93	2.87	2.82	2.76	2.71
16.900	2.66	2.60	2.54	2.49	2.43	2.38	2.32
17.600	2.27	2.21	2.15	2.09	2.04	1.98	1.94
18.300	1.91	1.89	1.87	1.86	1.84	1.82	1.81
19.000	1.79	1.78	1.76	1.74	1.73	1.71	1.69
19.700	1.68	1.66	1.64	1.62	1.61	1.59	1.58
20.400	1.57	1.55	1.54	1.53	1.51	1.50	1.49
21.100	1.48	1.46	1.45	1.44	1.43	1.41	1.40
21.800	1.39	1.38	1.36	1.35	1.33	1.32	1.31
22.500	1.29	1.28	1.27	1.26	1.24	1.23	1.21
23.200	1.20	1.19	1.17	1.16	1.15	1.13	1.12
23.900	1.11	1.09					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	0.801		12.21	69.98	407.12

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.300	1.05	1.41	1.99	2.80	4.75	8.51	14.75
12.000	27.62	52.96	69.79	62.79	51.17	40.51	30.15
12.700	22.30	17.98	15.63	13.97	12.63	11.66	11.06
13.400	10.65	10.31	9.99	9.67	9.34	9.01	8.68
14.100	8.35	8.07	7.86	7.68	7.52	7.35	7.19
14.800	7.03	6.86	6.69	6.52	6.35	6.17	6.00
15.500	5.82	5.64	5.45	5.27	5.09	4.90	4.72
16.200	4.57	4.46	4.37	4.28	4.20	4.12	4.04
16.900	3.96	3.88	3.80	3.71	3.63	3.55	3.46
17.600	3.38	3.30	3.21	3.13	3.04	2.96	2.89
18.300	2.85	2.82	2.80	2.77	2.75	2.72	2.70
19.000	2.67	2.65	2.62	2.60	2.58	2.55	2.53
19.700	2.50	2.48	2.45	2.43	2.40	2.38	2.36
20.400	2.34	2.32	2.30	2.28	2.26	2.24	2.22
21.100	2.21	2.19	2.17	2.15	2.13	2.11	2.09
21.800	2.07	2.06	2.03	1.93	1.90	1.88	1.86
22.500	1.84	1.82	1.81	1.78	1.76	1.75	1.73
23.200	1.71	1.69	1.67	1.65	1.63	1.61	1.59
23.900	1.57	1.55	1.24				

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	0.800	162.64	12.46	44.55	259.20

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	1.20	1.68	2.50	5.31	10.23	22.13	30.11
12.200	36.05	41.60	44.17	44.42	42.86	39.83	36.29
12.900	32.82	29.62	19.15	12.22	11.25	10.86	10.56
13.600	10.24	9.91	9.59	9.27	8.93	8.60	8.29
14.300	8.03	7.83	7.65	7.48	7.32	7.15	6.99
15.000	6.82	6.65	6.48	6.31	6.13	5.95	5.77
15.700	5.59	5.41	5.23	5.04	4.86	4.69	4.55
16.400	4.44	4.35	4.27	4.18	4.10	4.02	3.94
17.100	3.86	3.78	3.69	3.61	3.53	3.45	3.36
17.800	3.28	3.19	3.11	3.07	3.01	2.95	2.90
18.500	2.87	2.83	2.80	2.77	2.75	2.72	2.70
19.200	2.67	2.65	2.62	2.60	2.57	2.55	2.52
19.900	2.50	2.47	2.45	2.42	2.40	2.38	2.36
20.600	2.34	2.32	2.30	2.28	2.26	2.24	2.23
21.300	2.21	2.19	2.17	2.15	2.13	2.11	2.09
22.000	2.07	2.05	1.99	1.95	1.91	1.89	1.86
22.700	1.84	1.82	1.80	1.78	1.76	1.74	1.73
23.400	1.71	1.69	1.67	1.65	1.63	1.61	1.59
24.100	1.54	1.28					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		0.800		12.46	44.55	259.20

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	1.20	1.68	2.50	5.31	10.23	22.13	30.11
12.200	36.05	41.60	44.17	44.42	42.86	39.83	36.29
12.900	32.82	29.62	19.15	12.22	11.25	10.86	10.56
13.600	10.24	9.91	9.59	9.27	8.93	8.60	8.29
14.300	8.03	7.83	7.65	7.48	7.32	7.15	6.99
15.000	6.82	6.65	6.48	6.31	6.13	5.95	5.77
15.700	5.59	5.41	5.23	5.04	4.86	4.69	4.55
16.400	4.44	4.35	4.27	4.18	4.10	4.02	3.94
17.100	3.86	3.78	3.69	3.61	3.53	3.45	3.36
17.800	3.28	3.19	3.11	3.07	3.01	2.95	2.90
18.500	2.87	2.83	2.80	2.77	2.75	2.72	2.70
19.200	2.67	2.65	2.62	2.60	2.57	2.55	2.52
19.900	2.50	2.47	2.45	2.42	2.40	2.38	2.36
20.600	2.34	2.32	2.30	2.28	2.26	2.24	2.23
21.300	2.21	2.19	2.17	2.15	2.13	2.11	2.09

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
22.000	2.07	2.05	1.99	1.95	1.91	1.89	1.86
22.700	1.84	1.82	1.80	1.78	1.76	1.74	1.73
23.400	1.71	1.69	1.67	1.65	1.63	1.61	1.59
24.100	1.54	1.28					

STORM 2-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		1.176		12.19	7.79	627.92

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.800	1.15	1.88	3.36	6.18	7.79	6.71	5.35
12.500	4.16	3.05	2.24	1.81	1.58	1.42	1.29
13.200	1.19	1.13	1.09	1.06	1.02		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		1.004		12.25	5.06	483.28

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
12.000	1.71	3.35	4.88	4.89	4.15	3.38	2.60
12.700	1.94	1.53	1.29	1.14	1.02		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.039		1.239		12.23	24.44	624.68

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.500	1.14	1.45	2.13	3.49	5.65	9.62	17.47
12.200	23.98	23.05	19.02	15.22	11.52	8.52	6.68
12.900	5.64	4.95	4.43	4.04	3.79	3.63	3.50
13.600	3.39	3.27	3.16	3.05	2.93	2.82	2.72
14.300	2.64	2.58	2.52	2.46	2.41	2.35	2.29
15.000	2.24	2.18	2.12	2.06	2.00	1.94	1.88
15.700	1.82	1.76	1.70	1.63	1.57	1.52	1.48

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
16.400	1.45	1.42	1.39	1.36	1.34	1.31	1.28
17.100	1.26	1.23	1.20	1.17	1.15	1.12	1.09
17.800	1.06	1.03	1.01				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		1.430		12.19	86.24	784.76

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
10.500	1.07	1.29	1.53	1.78	2.05	2.34	2.68
11.200	3.12	3.72	4.45	5.30	6.63	9.79	15.67
11.900	24.15	40.66	70.88	85.97	72.22	56.57	43.50
12.600	31.59	23.06	18.61	16.22	14.52	13.12	12.11
13.300	11.49	11.07	10.69	10.34	9.99	9.63	9.28
14.000	8.91	8.56	8.26	8.04	7.85	7.68	7.50
14.700	7.33	7.15	6.97	6.79	6.61	6.43	6.24
15.400	6.06	5.87	5.68	5.49	5.30	5.11	4.92
16.100	4.74	4.59	4.47	4.38	4.29	4.21	4.13
16.800	4.05	3.96	3.88	3.79	3.71	3.62	3.54
17.500	3.45	3.37	3.28	3.20	3.11	3.03	2.94
18.200	2.88	2.84	2.81	2.78	2.76	2.73	2.71
18.900	2.68	2.66	2.63	2.61	2.58	2.56	2.53
19.600	2.50	2.48	2.45	2.43	2.40	2.38	2.35
20.300	2.34	2.31	2.29	2.28	2.26	2.23	2.22
21.000	2.20	2.18	2.16	2.14	2.12	2.10	2.08
21.700	2.06	2.04	2.03	2.01	1.98	1.97	1.94
22.400	1.92	1.91	1.89	1.87	1.85	1.83	1.81
23.100	1.79	1.76	1.75	1.73	1.71	1.69	1.67
23.800	1.65	1.63	1.60	1.34			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	1.342		12.19	122.61	713.29

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
10.500	1.07	1.29	1.68	2.00	2.35	2.72	3.26
11.200	3.85	4.65	5.63	6.86	8.68	12.88	20.83
11.900	32.60	55.39	97.88	122.59	106.87	85.10	66.26
12.600	48.74	35.76	28.63	24.74	22.03	19.85	18.27
13.300	17.29	16.62	16.06	15.53	15.01	14.48	13.95
14.000	13.41	12.88	12.44	12.10	11.81	11.55	11.28

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.700	11.02	10.76	10.50	10.23	9.96	9.69	9.41
15.400	9.13	8.86	8.58	8.29	8.01	7.72	7.43
16.100	7.16	6.93	6.75	6.61	6.48	6.36	6.23
16.800	6.11	5.98	5.86	5.73	5.60	5.48	5.35
17.500	5.22	5.09	4.96	4.84	4.70	4.58	4.45
18.200	4.35	4.29	4.24	4.20	4.16	4.12	4.09
18.900	4.05	4.01	3.97	3.94	3.90	3.86	3.82
19.600	3.78	3.75	3.71	3.67	3.63	3.59	3.56
20.300	3.53	3.50	3.47	3.44	3.41	3.38	3.35
21.000	3.32	3.30	3.27	3.24	3.21	3.18	3.14
21.700	3.12	3.09	3.07	3.03	3.00	2.97	2.94
22.400	2.91	2.88	2.85	2.83	2.80	2.76	2.74
23.100	2.70	2.67	2.64	2.61	2.59	2.56	2.52
23.800	2.49	2.46	2.43	2.08			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	1.342	163.43	12.47	70.03	407.40

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.700	1.16	1.44	1.74	2.06	2.44	2.89	3.80
11.400	4.84	5.92	7.32	9.96	17.89	24.79	30.79
12.100	38.92	51.93	64.75	69.32	69.98	68.59	64.09
12.800	58.23	51.00	46.39	42.12	38.03	34.44	31.34
13.500	27.46	18.57	15.30	14.66	14.12	13.58	13.05
14.200	12.57	12.20	11.90	11.63	11.37	11.11	10.90
14.900	10.68	10.43	10.17	9.90	9.62	9.35	9.07
15.600	8.79	8.51	8.23	7.94	7.66	7.37	7.11
16.300	6.90	6.73	6.59	6.45	6.33	6.20	6.08
17.000	5.95	5.83	5.70	5.57	5.45	5.32	5.19
17.700	5.06	4.93	4.80	4.68	4.55	4.43	4.34
18.400	4.28	4.23	4.19	4.15	4.12	4.08	4.04
19.100	4.00	3.96	3.93	3.89	3.85	3.81	3.78
19.800	3.74	3.70	3.66	3.62	3.58	3.55	3.52
20.500	3.49	3.46	3.43	3.40	3.37	3.34	3.32
21.200	3.29	3.26	3.23	3.20	3.17	3.14	3.12
21.900	3.10	3.08	3.05	3.03	3.00	2.97	2.94
22.600	2.91	2.88	2.85	2.82	2.79	2.76	2.73
23.300	2.70	2.67	2.64	2.61	2.58	2.55	2.52
24.000	2.49	2.41	2.03	1.44			

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		1.342		12.47	70.03	407.40

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.700	1.16	1.44	1.74	2.06	2.44	2.89	3.80
11.400	4.84	5.92	7.32	9.96	17.89	24.79	30.79
12.100	38.92	51.93	64.75	69.32	69.98	68.59	64.09
12.800	58.23	51.00	46.39	42.12	38.03	34.44	31.34
13.500	27.46	18.57	15.30	14.66	14.12	13.58	13.05
14.200	12.57	12.20	11.90	11.63	11.37	11.11	10.90
14.900	10.68	10.43	10.17	9.90	9.62	9.35	9.07
15.600	8.79	8.51	8.23	7.94	7.66	7.37	7.11
16.300	6.90	6.73	6.59	6.45	6.33	6.20	6.08
17.000	5.95	5.83	5.70	5.57	5.45	5.32	5.19
17.700	5.06	4.93	4.80	4.68	4.55	4.43	4.34
18.400	4.28	4.23	4.19	4.15	4.12	4.08	4.04
19.100	4.00	3.96	3.93	3.89	3.85	3.81	3.78
19.800	3.74	3.70	3.66	3.62	3.58	3.55	3.52
20.500	3.49	3.46	3.43	3.40	3.37	3.34	3.32
21.200	3.29	3.26	3.23	3.20	3.17	3.14	3.12
21.900	3.10	3.08	3.05	3.03	3.00	2.97	2.94
22.600	2.91	2.88	2.85	2.82	2.79	2.76	2.73
23.300	2.70	2.67	2.64	2.61	2.58	2.55	2.52
24.000	2.49	2.41	2.03	1.44			

STORM 5-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		1.891		12.18	12.91	1040.63

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.600	1.03	1.51	2.41	3.68	6.15	10.65	12.90
12.300	10.82	8.45	6.49	4.71	3.44	2.77	2.41
13.000	2.16	1.95	1.80	1.70	1.64	1.59	1.53
13.700	1.48	1.43	1.37	1.32	1.27	1.22	1.19
14.400	1.16	1.14	1.11	1.08	1.06	1.03	1.00

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		1.669		12.23	8.83	843.31

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.800	1.32	2.11	3.53	6.31	8.65	8.37	6.92
12.500	5.53	4.19	3.10	2.42	2.04	1.78	1.59
13.200	1.45	1.36	1.30	1.25	1.21	1.17	1.13
13.900	1.09	1.04	1.00				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.039		1.971		12.22	39.96	1021.37

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.800	1.05	1.18	1.32	1.48	1.69	1.97	2.32
11.500	2.72	3.30	4.59	7.09	10.83	17.43	29.92
12.200	39.54	37.07	30.02	23.65	17.72	13.01	10.14
12.900	8.52	7.45	6.65	6.06	5.67	5.42	5.22
13.600	5.04	4.86	4.69	4.52	4.34	4.17	4.02
14.300	3.90	3.80	3.71	3.62	3.54	3.45	3.37
15.000	3.28	3.19	3.10	3.02	2.93	2.84	2.75
15.700	2.66	2.57	2.48	2.38	2.29	2.22	2.16
16.400	2.11	2.06	2.02	1.98	1.94	1.90	1.86
17.100	1.82	1.78	1.74	1.70	1.66	1.62	1.58
17.800	1.54	1.50	1.46	1.42	1.38	1.36	1.34
18.500	1.33	1.32	1.30	1.29	1.28	1.27	1.26
19.200	1.24	1.23	1.22	1.21	1.19	1.18	1.17
19.900	1.16	1.15	1.13	1.12	1.11	1.10	1.09
20.600	1.08	1.07	1.06	1.06	1.05	1.04	1.03
21.300	1.02	1.01	1.00				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		2.210		12.19	135.11	1229.52

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.600	1.11	1.30	1.49	1.70	1.91	2.14	2.40
10.300	2.69	3.02	3.37	3.75	4.15	4.58	5.03
11.000	5.50	6.04	6.81	7.86	9.13	10.55	12.84
11.700	18.35	28.37	42.20	68.04	114.04	134.39	110.84
12.400	85.54	65.08	46.94	34.06	27.37	23.78	21.24
13.100	19.16	17.65	16.73	16.09	15.53	15.00	14.47
13.800	13.94	13.41	12.87	12.35	11.92	11.59	11.31
14.500	11.04	10.78	10.52	10.26	10.00	9.74	9.47
15.200	9.20	8.94	8.66	8.39	8.12	7.85	7.57

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.900	7.30	7.02	6.76	6.54	6.37	6.24	6.12
16.600	6.00	5.87	5.76	5.63	5.52	5.39	5.27
17.300	5.15	5.03	4.90	4.78	4.66	4.54	4.41
18.000	4.29	4.17	4.08	4.02	3.98	3.94	3.90
18.700	3.87	3.83	3.80	3.76	3.72	3.69	3.65
19.400	3.61	3.58	3.54	3.51	3.47	3.43	3.39
20.100	3.36	3.32	3.30	3.27	3.24	3.21	3.18
20.800	3.15	3.13	3.10	3.08	3.05	3.02	2.99
21.500	2.96	2.93	2.91	2.88	2.86	2.82	2.80
22.200	2.77	2.74	2.71	2.68	2.65	2.63	2.60
22.900	2.57	2.54	2.51	2.48	2.46	2.43	2.41
23.600	2.37	2.34	2.32	2.29	2.25	1.89	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	2.100		12.19	195.51	1137.41

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.600	1.11	1.31	1.65	1.92	2.19	2.49	2.92
10.300	3.33	3.77	4.26	4.78	5.33	6.04	6.69
11.000	7.38	8.16	9.24	10.73	12.52	14.56	17.76
11.700	25.28	39.19	58.84	95.15	160.90	195.36	167.06
12.400	130.94	100.76	73.57	53.62	42.71	36.75	32.63
13.100	29.34	26.96	25.47	24.44	23.58	22.77	21.98
13.800	21.19	20.39	19.58	18.79	18.12	17.62	17.18
14.500	16.78	16.39	16.00	15.61	15.21	14.81	14.42
15.200	14.01	13.61	13.20	12.79	12.38	11.96	11.55
15.900	11.13	10.71	10.31	9.98	9.72	9.51	9.32
16.600	9.14	8.95	8.77	8.59	8.41	8.22	8.04
17.300	7.85	7.67	7.48	7.30	7.11	6.93	6.73
18.000	6.55	6.36	6.22	6.13	6.06	6.01	5.95
18.700	5.89	5.84	5.78	5.73	5.68	5.62	5.57
19.400	5.51	5.45	5.40	5.34	5.29	5.23	5.18
20.100	5.12	5.07	5.03	4.98	4.94	4.90	4.86
20.800	4.81	4.77	4.73	4.70	4.65	4.60	4.56
21.500	4.52	4.47	4.43	4.39	4.36	4.31	4.27
22.200	4.22	4.18	4.13	4.09	4.05	4.02	3.97
22.900	3.92	3.88	3.84	3.79	3.75	3.71	3.67
23.600	3.62	3.58	3.54	3.49	3.44	2.94	1.47

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	2.100	164.31	12.49	103.74	603.51

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	1.20	1.44	1.69	1.96	2.25	2.61	2.99
10.500	3.71	4.33	4.90	5.53	6.18	6.85	7.57
11.200	8.45	9.66	11.47	13.87	16.56	22.21	28.06
11.900	32.42	39.90	56.35	74.96	89.67	100.94	103.71
12.600	100.29	92.91	84.06	78.92	74.10	69.41	62.87
13.300	55.63	49.27	45.13	41.39	38.02	35.11	32.57
14.000	30.34	26.36	21.32	17.90	17.33	16.91	16.52
14.700	16.13	15.73	15.34	14.94	14.54	14.14	13.74
15.400	13.33	12.92	12.51	12.10	11.68	11.26	10.90
16.100	10.58	10.23	9.93	9.68	9.47	9.28	9.09
16.800	8.91	8.73	8.55	8.36	8.18	7.99	7.81
17.500	7.62	7.44	7.25	7.07	6.88	6.69	6.51
18.200	6.34	6.21	6.12	6.05	5.99	5.94	5.88
18.900	5.83	5.77	5.72	5.66	5.61	5.55	5.50
19.600	5.44	5.39	5.33	5.28	5.22	5.16	5.11
20.300	5.06	5.02	4.97	4.93	4.89	4.84	4.80
21.000	4.76	4.72	4.68	4.64	4.60	4.55	4.51
21.700	4.46	4.42	4.39	4.35	4.30	4.26	4.21
22.400	4.17	4.12	4.08	4.04	4.00	3.96	3.91
23.100	3.87	3.82	3.78	3.74	3.70	3.66	3.61
23.800	3.57	3.53	3.48	3.30	2.77	1.98	1.29

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		2.100		12.49	103.74	603.51

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	1.20	1.44	1.69	1.96	2.25	2.61	2.99
10.500	3.71	4.33	4.90	5.53	6.18	6.85	7.57
11.200	8.45	9.66	11.47	13.87	16.56	22.21	28.06
11.900	32.42	39.90	56.35	74.96	89.67	100.94	103.71
12.600	100.29	92.91	84.06	78.92	74.10	69.41	62.87
13.300	55.63	49.27	45.13	41.39	38.02	35.11	32.57
14.000	30.34	26.36	21.32	17.90	17.33	16.91	16.52
14.700	16.13	15.73	15.34	14.94	14.54	14.14	13.74
15.400	13.33	12.92	12.51	12.10	11.68	11.26	10.90
16.100	10.58	10.23	9.93	9.68	9.47	9.28	9.09
16.800	8.91	8.73	8.55	8.36	8.18	7.99	7.81
17.500	7.62	7.44	7.25	7.07	6.88	6.69	6.51
18.200	6.34	6.21	6.12	6.05	5.99	5.94	5.88
18.900	5.83	5.77	5.72	5.66	5.61	5.55	5.50
19.600	5.44	5.39	5.33	5.28	5.22	5.16	5.11
20.300	5.06	5.02	4.97	4.93	4.89	4.84	4.80
21.000	4.76	4.72	4.68	4.64	4.60	4.55	4.51
21.700	4.46	4.42	4.39	4.35	4.30	4.26	4.21
22.400	4.17	4.12	4.08	4.04	4.00	3.96	3.91

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.100	3.87	3.82	3.78	3.74	3.70	3.66	3.61
23.800	3.57	3.53	3.48	3.30	2.77	1.98	1.29

STORM 10-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.012		2.276		12.19	15.65	1261.33

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	1.12	1.38	1.98	3.11	4.68	7.67	13.05
12.200	15.59	12.98	10.08	7.71	5.58	4.06	3.26
12.900	2.84	2.53	2.29	2.11	2.00	1.92	1.86
13.600	1.79	1.73	1.67	1.61	1.54	1.48	1.43
14.300	1.39	1.36	1.33	1.29	1.26	1.23	1.20
15.000	1.17	1.14	1.11	1.07	1.04	1.01	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2	0.010		2.031		12.23	10.88	1039.29

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.700	1.14	1.79	2.78	4.54	7.93	10.70	10.23
12.400	8.39	6.67	5.03	3.71	2.89	2.43	2.12
13.100	1.89	1.72	1.61	1.54	1.48	1.43	1.38
13.800	1.33	1.28	1.23	1.18	1.14	1.11	1.08
14.500	1.05	1.03	1.01				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.039		2.363		12.21	48.20	1232.05

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	1.10	1.23	1.38	1.54	1.70	1.88	2.07
11.200	2.33	2.68	3.12	3.62	4.35	5.96	9.08
11.900	13.71	21.71	36.62	47.81	44.39	35.71	28.03

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.600	20.94	15.34	11.93	10.00	8.73	7.79	7.09
13.300	6.63	6.33	6.10	5.88	5.68	5.47	5.27
14.000	5.06	4.86	4.68	4.54	4.42	4.32	4.21
14.700	4.11	4.01	3.91	3.81	3.71	3.61	3.50
15.400	3.40	3.29	3.19	3.08	2.98	2.87	2.76
16.100	2.66	2.57	2.50	2.44	2.39	2.34	2.30
16.800	2.25	2.20	2.16	2.11	2.06	2.02	1.97
17.500	1.92	1.88	1.83	1.78	1.73	1.68	1.64
18.200	1.60	1.57	1.55	1.54	1.52	1.51	1.49
18.900	1.48	1.46	1.45	1.44	1.42	1.41	1.39
19.600	1.38	1.37	1.35	1.34	1.32	1.31	1.30
20.300	1.29	1.27	1.26	1.25	1.24	1.23	1.22
21.000	1.21	1.20	1.19	1.18	1.17	1.16	1.14
21.700	1.13	1.12	1.11	1.10	1.09	1.08	1.07
22.400	1.06	1.05	1.04	1.03	1.02	1.00	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		2.623		12.18	160.77	1463.00

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.200	1.11	1.30	1.50	1.70	1.92	2.15	2.39
9.900	2.64	2.90	3.18	3.50	3.87	4.27	4.71
10.600	5.17	5.66	6.18	6.72	7.29	7.95	8.88
11.300	10.18	11.73	13.47	16.26	23.03	35.30	51.90
12.000	82.71	136.86	159.72	130.76	100.41	76.17	54.75
12.700	39.67	31.84	27.63	24.66	22.22	20.47	19.39
13.400	18.63	17.98	17.36	16.74	16.13	15.50	14.88
14.100	14.27	13.76	13.38	13.05	12.74	12.44	12.14
14.800	11.83	11.53	11.22	10.92	10.60	10.29	9.98
15.500	9.67	9.35	9.03	8.71	8.40	8.08	7.77
16.200	7.52	7.33	7.18	7.03	6.90	6.75	6.62
16.900	6.48	6.34	6.20	6.06	5.92	5.78	5.63
17.600	5.50	5.35	5.21	5.07	4.93	4.79	4.68
18.300	4.62	4.57	4.52	4.48	4.44	4.40	4.36
19.000	4.31	4.27	4.23	4.19	4.15	4.11	4.06
19.700	4.02	3.98	3.94	3.89	3.85	3.81	3.78
20.400	3.75	3.71	3.68	3.65	3.61	3.59	3.55
21.100	3.53	3.49	3.46	3.43	3.40	3.36	3.33
21.800	3.30	3.27	3.24	3.20	3.17	3.14	3.10
22.500	3.07	3.04	3.01	2.98	2.94	2.91	2.88
23.200	2.84	2.81	2.78	2.75	2.72	2.68	2.65
23.900	2.62	2.58	2.16	1.01			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	2.503		12.20	234.08	1361.81

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.200	1.11	1.34	1.66	1.93	2.21	2.50	2.92
9.900	3.27	3.63	4.02	4.45	4.96	5.62	6.25
10.600	6.92	7.64	8.39	9.18	10.02	10.97	12.30
11.300	14.15	16.37	18.88	22.81	32.13	49.28	73.09
12.000	116.72	194.43	233.65	198.33	154.59	118.57	86.31
12.700	62.79	49.93	42.90	38.05	34.19	31.38	29.64
13.400	28.43	27.41	26.46	25.53	24.60	23.66	22.71
14.100	21.79	21.01	20.42	19.91	19.44	18.98	18.52
14.800	18.06	17.60	17.14	16.67	16.20	15.73	15.26
15.500	14.78	14.30	13.82	13.34	12.85	12.36	11.90
16.200	11.52	11.21	10.98	10.75	10.54	10.32	10.12
16.900	9.90	9.69	9.48	9.27	9.05	8.84	8.62
17.600	8.41	8.19	7.98	7.76	7.55	7.33	7.17
18.300	7.06	6.98	6.92	6.85	6.79	6.72	6.66
19.000	6.59	6.53	6.47	6.41	6.34	6.28	6.21
19.700	6.15	6.08	6.02	5.95	5.89	5.83	5.79
20.400	5.73	5.68	5.63	5.58	5.53	5.49	5.44
21.100	5.40	5.34	5.29	5.25	5.20	5.14	5.10
21.800	5.05	5.01	4.95	4.90	4.86	4.80	4.75
22.500	4.70	4.65	4.61	4.56	4.51	4.46	4.41
23.200	4.35	4.31	4.26	4.22	4.16	4.11	4.06
23.900	4.01	3.95	3.38	1.72			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	2.502	164.62	12.48	127.65	742.65

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.400	1.20	1.44	1.70	1.97	2.27	2.60	2.95
10.100	3.51	4.07	4.57	5.12	5.76	6.41	7.09
10.800	7.82	8.58	9.38	10.25	11.65	13.52	15.64
11.500	18.05	21.33	25.08	30.46	35.88	45.65	66.61
12.200	84.55	110.59	124.78	127.32	121.05	110.85	100.05
12.900	89.51	81.52	76.57	71.80	66.77	60.10	53.10
13.600	48.19	44.56	41.21	38.18	35.52	33.17	31.08
14.300	29.21	24.39	20.81	19.18	18.67	18.21	17.75
15.000	17.29	16.82	16.35	15.88	15.41	14.93	14.45
15.700	13.98	13.49	13.01	12.52	12.05	11.64	11.31
16.400	11.05	10.88	10.69	10.49	10.28	10.07	9.86
17.100	9.64	9.43	9.22	9.00	8.79	8.58	8.36

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.800	8.14	7.93	7.71	7.50	7.30	7.16	7.05
18.500	6.97	6.90	6.84	6.77	6.71	6.64	6.58
19.200	6.52	6.45	6.39	6.33	6.26	6.20	6.13
19.900	6.07	6.00	5.94	5.88	5.82	5.77	5.72
20.600	5.67	5.62	5.57	5.52	5.47	5.43	5.38
21.300	5.33	5.28	5.24	5.18	5.13	5.08	5.04
22.000	4.99	4.94	4.89	4.84	4.79	4.74	4.69
22.700	4.65	4.60	4.55	4.50	4.45	4.39	4.34
23.400	4.30	4.25	4.20	4.15	4.10	4.05	3.99
24.100	3.79	2.97	2.16	1.43			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		2.502		12.48	127.65	742.65

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.400	1.20	1.44	1.70	1.97	2.27	2.60	2.95
10.100	3.51	4.07	4.57	5.12	5.76	6.41	7.09
10.800	7.82	8.58	9.38	10.25	11.65	13.52	15.64
11.500	18.05	21.33	25.08	30.46	35.88	45.65	66.61
12.200	84.55	110.59	124.78	127.32	121.05	110.85	100.05
12.900	89.51	81.52	76.57	71.80	66.77	60.10	53.10
13.600	48.19	44.56	41.21	38.18	35.52	33.17	31.08
14.300	29.21	24.39	20.81	19.18	18.67	18.21	17.75
15.000	17.29	16.82	16.35	15.88	15.41	14.93	14.45
15.700	13.98	13.49	13.01	12.52	12.05	11.64	11.31
16.400	11.05	10.88	10.69	10.49	10.28	10.07	9.86
17.100	9.64	9.43	9.22	9.00	8.79	8.58	8.36
17.800	8.14	7.93	7.71	7.50	7.30	7.16	7.05
18.500	6.97	6.90	6.84	6.77	6.71	6.64	6.58
19.200	6.52	6.45	6.39	6.33	6.26	6.20	6.13
19.900	6.07	6.00	5.94	5.88	5.82	5.77	5.72
20.600	5.67	5.62	5.57	5.52	5.47	5.43	5.38
21.300	5.33	5.28	5.24	5.18	5.13	5.08	5.04
22.000	4.99	4.94	4.89	4.84	4.79	4.74	4.69
22.700	4.65	4.60	4.55	4.50	4.45	4.39	4.34
23.400	4.30	4.25	4.20	4.15	4.10	4.05	3.99
24.100	3.79	2.97	2.16	1.43			

STORM 25-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		3.084		12.19	21.33	1719.26

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.100	1.03	1.15	1.32	1.52	1.75	2.12	3.01
11.800	4.62	6.81	10.88	18.08	21.22	17.45	13.42
12.500	10.19	7.34	5.32	4.27	3.70	3.30	2.98
13.200	2.74	2.60	2.50	2.41	2.33	2.24	2.16
13.900	2.08	1.99	1.91	1.84	1.79	1.75	1.71
14.600	1.67	1.63	1.59	1.55	1.50	1.46	1.42
15.300	1.38	1.34	1.30	1.25	1.21	1.17	1.13
16.000	1.08	1.04	1.01				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		2.800		12.23	15.18	1450.02

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	1.13	1.35	1.85	2.81	4.25	6.73	11.38
12.200	14.99	14.13	11.45	9.02	6.77	4.96	3.85
12.900	3.22	2.81	2.50	2.27	2.12	2.02	1.95
13.600	1.88	1.81	1.75	1.68	1.62	1.55	1.49
14.300	1.45	1.41	1.38	1.35	1.31	1.28	1.25
15.000	1.22	1.18	1.15	1.12	1.09	1.05	1.02

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.039		3.184		12.22	65.29	1668.84

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	1.04	1.15	1.26	1.37	1.51	1.66	1.83
10.500	2.01	2.21	2.42	2.64	2.87	3.11	3.38
11.200	3.74	4.25	4.87	5.59	6.63	8.94	13.37
11.900	19.82	30.71	50.59	64.93	59.58	47.49	37.00
12.600	27.50	20.07	15.56	13.01	11.34	10.10	9.18
13.300	8.58	8.19	7.87	7.59	7.32	7.05	6.78
14.000	6.51	6.25	6.01	5.83	5.68	5.54	5.41
14.700	5.28	5.14	5.01	4.88	4.75	4.62	4.48
15.400	4.35	4.21	4.08	3.94	3.80	3.67	3.53

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.100	3.40	3.28	3.19	3.12	3.05	2.99	2.93
16.800	2.87	2.81	2.75	2.69	2.63	2.57	2.51
17.500	2.45	2.39	2.33	2.27	2.20	2.14	2.08
18.200	2.03	2.00	1.97	1.95	1.93	1.92	1.90
18.900	1.88	1.86	1.84	1.83	1.81	1.79	1.77
19.600	1.75	1.73	1.72	1.70	1.68	1.66	1.64
20.300	1.63	1.62	1.60	1.59	1.57	1.56	1.55
21.000	1.53	1.52	1.51	1.49	1.48	1.46	1.45
21.700	1.44	1.42	1.41	1.40	1.38	1.37	1.35
22.400	1.34	1.33	1.31	1.30	1.29	1.27	1.26
23.100	1.24	1.23	1.21	1.20	1.19	1.17	1.16
23.800	1.14	1.13	1.11	1.00			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		3.479		12.19	212.89	1937.33

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	1.09	1.27	1.46	1.66	1.88	2.11	2.36
9.200	2.62	2.89	3.17	3.47	3.78	4.10	4.44
9.900	4.78	5.14	5.52	5.97	6.49	7.06	7.67
10.600	8.31	8.99	9.70	10.43	11.19	12.08	13.38
11.300	15.19	17.34	19.72	23.59	33.03	49.88	72.34
12.000	113.13	183.66	211.28	171.47	130.71	98.53	70.61
12.700	51.01	40.83	35.39	31.54	28.40	26.13	24.74
13.400	23.76	22.91	22.10	21.30	20.51	19.71	18.90
14.100	18.12	17.47	16.98	16.55	16.16	15.76	15.38
14.800	14.99	14.60	14.20	13.81	13.41	13.02	12.61
15.500	12.22	11.81	11.41	11.01	10.60	10.19	9.81
16.200	9.49	9.25	9.05	8.87	8.69	8.51	8.34
16.900	8.16	7.99	7.81	7.63	7.45	7.28	7.09
17.600	6.92	6.74	6.56	6.38	6.20	6.02	5.89
18.300	5.81	5.74	5.69	5.63	5.58	5.53	5.48
19.000	5.42	5.37	5.32	5.26	5.21	5.16	5.10
19.700	5.05	5.00	4.94	4.89	4.84	4.79	4.75
20.400	4.71	4.66	4.62	4.58	4.54	4.50	4.46
21.100	4.43	4.38	4.34	4.30	4.26	4.21	4.18
21.800	4.14	4.10	4.06	4.02	3.98	3.93	3.89
22.500	3.85	3.81	3.78	3.73	3.69	3.65	3.61
23.200	3.56	3.53	3.48	3.45	3.40	3.36	3.32
23.900	3.28	3.23	2.71	1.27			

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	3.342		12.19	313.18	1821.99

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	1.09	1.38	1.62	1.89	2.16	2.46	2.88
9.200	3.24	3.61	4.00	4.42	4.85	5.31	5.89
9.900	6.40	6.93	7.49	8.14	8.89	9.72	10.62
10.600	11.56	12.56	13.60	14.69	15.82	17.13	18.99
11.300	21.59	24.71	28.19	33.70	46.84	70.71	103.26
12.000	161.49	263.66	312.23	262.62	203.08	154.75	112.24
12.700	81.38	64.51	55.32	48.98	43.97	40.32	38.04
13.400	36.46	35.13	33.89	32.68	31.46	30.25	29.02
14.100	27.83	26.82	26.05	25.39	24.78	24.19	23.60
14.800	23.00	22.41	21.81	21.21	20.60	20.00	19.39
15.500	18.78	18.16	17.55	16.93	16.31	15.69	15.10
16.200	14.60	14.22	13.92	13.63	13.36	13.08	12.82
16.900	12.54	12.28	12.00	11.73	11.46	11.19	10.91
17.600	10.64	10.36	10.09	9.81	9.54	9.27	9.06
18.300	8.93	8.83	8.74	8.66	8.58	8.49	8.41
19.000	8.33	8.25	8.17	8.09	8.01	7.93	7.84
19.700	7.76	7.68	7.60	7.51	7.43	7.36	7.30
20.400	7.23	7.17	7.11	7.04	6.97	6.92	6.86
21.100	6.81	6.74	6.67	6.61	6.55	6.48	6.42
21.800	6.36	6.31	6.24	6.18	6.12	6.05	5.98
22.500	5.92	5.86	5.81	5.74	5.68	5.62	5.55
23.200	5.48	5.42	5.36	5.31	5.24	5.17	5.11
23.900	5.05	4.97	4.25	2.17			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	3.342	165.12	12.44	180.30	1048.93

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.700	1.19	1.42	1.67	1.93	2.22	2.57	2.92
9.400	3.47	4.04	4.50	4.95	5.49	6.00	6.52
10.100	7.06	7.65	8.33	9.10	9.94	10.85	12.20
10.800	13.26	14.33	15.45	16.68	18.34	20.71	22.79
11.500	24.94	28.27	30.81	35.69	44.64	60.92	80.14
12.200	121.35	161.93	178.75	178.40	166.76	149.46	130.78
12.900	114.16	102.02	91.16	82.42	77.71	73.31	69.23
13.600	63.76	58.26	52.25	48.36	45.29	42.46	39.78
14.300	37.41	35.34	33.52	31.92	30.50	29.22	25.76
15.000	23.70	22.46	20.89	20.20	19.58	18.98	18.36
15.700	17.75	17.13	16.51	15.89	15.29	14.76	14.34

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.400	14.01	13.72	13.44	13.17	12.90	12.63	12.36
17.100	12.09	11.82	11.55	11.28	11.00	10.81	10.57
17.800	10.30	10.03	9.75	9.48	9.23	9.05	8.92
18.500	8.81	8.72	8.64	8.56	8.48	8.39	8.31
19.200	8.23	8.15	8.07	7.99	7.91	7.82	7.74
19.900	7.66	7.58	7.50	7.42	7.35	7.28	7.22
20.600	7.15	7.09	7.02	6.96	6.90	6.85	6.79
21.300	6.72	6.66	6.60	6.53	6.47	6.41	6.35
22.000	6.29	6.23	6.16	6.10	6.03	5.97	5.91
22.700	5.85	5.79	5.73	5.66	5.60	5.53	5.47
23.400	5.41	5.35	5.29	5.22	5.16	5.10	5.03
24.100	4.77	3.49	2.45	1.64	1.01		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		3.342		12.44	180.30	1048.93

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.700	1.19	1.42	1.67	1.93	2.22	2.57	2.92
9.400	3.47	4.04	4.50	4.95	5.49	6.00	6.52
10.100	7.06	7.65	8.33	9.10	9.94	10.85	12.20
10.800	13.26	14.33	15.45	16.68	18.34	20.71	22.79
11.500	24.94	28.27	30.81	35.69	44.64	60.92	80.14
12.200	121.35	161.93	178.75	178.40	166.76	149.46	130.78
12.900	114.16	102.02	91.16	82.42	77.71	73.31	69.23
13.600	63.76	58.26	52.25	48.36	45.29	42.46	39.78
14.300	37.41	35.34	33.52	31.92	30.50	29.22	25.76
15.000	23.70	22.46	20.89	20.20	19.58	18.98	18.36
15.700	17.75	17.13	16.51	15.89	15.29	14.76	14.34
16.400	14.01	13.72	13.44	13.17	12.90	12.63	12.36
17.100	12.09	11.82	11.55	11.28	11.00	10.81	10.57
17.800	10.30	10.03	9.75	9.48	9.23	9.05	8.92
18.500	8.81	8.72	8.64	8.56	8.48	8.39	8.31
19.200	8.23	8.15	8.07	7.99	7.91	7.82	7.74
19.900	7.66	7.58	7.50	7.42	7.35	7.28	7.22
20.600	7.15	7.09	7.02	6.96	6.90	6.85	6.79
21.300	6.72	6.66	6.60	6.53	6.47	6.41	6.35
22.000	6.29	6.23	6.16	6.10	6.03	5.97	5.91
22.700	5.85	5.79	5.73	5.66	5.60	5.53	5.47
23.400	5.41	5.35	5.29	5.22	5.16	5.10	5.03
24.100	4.77	3.49	2.45	1.64	1.01		

STORM 50-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		3.931		12.18	27.21	2193.58

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.600	1.00	1.09	1.18	1.27	1.37	1.48	1.64
11.300	1.87	2.14	2.44	2.93	4.11	6.24	9.08
12.000	14.27	23.32	27.02	22.02	16.83	12.72	9.13
12.700	6.60	5.28	4.58	4.08	3.67	3.38	3.20
13.400	3.07	2.96	2.86	2.76	2.65	2.55	2.45
14.100	2.35	2.26	2.20	2.14	2.09	2.04	1.99
14.800	1.94	1.89	1.84	1.79	1.74	1.69	1.64
15.500	1.58	1.53	1.48	1.43	1.38	1.32	1.27
16.200	1.23	1.20	1.18	1.15	1.13	1.11	1.08
16.900	1.06	1.04	1.01				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		3.613		12.21	19.69	1880.68

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.200	1.09	1.24	1.43	1.64	1.95	2.63	3.93
11.900	5.85	9.06	15.03	19.52	18.18	14.61	11.44
12.600	8.54	6.25	4.84	4.04	3.51	3.12	2.83
13.300	2.64	2.52	2.42	2.34	2.25	2.17	2.09
14.000	2.01	1.92	1.85	1.80	1.75	1.71	1.66
14.700	1.62	1.58	1.54	1.50	1.46	1.42	1.38
15.400	1.34	1.30	1.26	1.22	1.17	1.13	1.09
16.100	1.05	1.01					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.039		4.041		12.22	82.94	2119.89

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.200	1.02	1.13	1.24	1.36	1.49	1.62	1.76
9.900	1.90	2.04	2.20	2.37	2.57	2.80	3.04
10.600	3.30	3.58	3.86	4.16	4.47	4.82	5.29
11.300	5.96	6.79	7.73	9.08	12.13	17.96	26.31
12.000	40.15	65.14	82.56	75.11	59.48	46.13	34.16

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.700	24.85	19.22	16.04	13.96	12.42	11.29	10.54
13.400	10.05	9.66	9.31	8.97	8.64	8.31	7.97
14.100	7.65	7.36	7.13	6.94	6.77	6.60	6.44
14.800	6.28	6.12	5.96	5.79	5.63	5.46	5.30
15.500	5.13	4.97	4.80	4.63	4.47	4.30	4.13
16.200	3.99	3.88	3.79	3.71	3.64	3.56	3.49
16.900	3.41	3.34	3.27	3.19	3.12	3.05	2.97
17.600	2.90	2.82	2.75	2.68	2.60	2.53	2.47
18.300	2.43	2.39	2.37	2.35	2.32	2.30	2.28
19.000	2.26	2.24	2.21	2.19	2.17	2.15	2.13
19.700	2.10	2.08	2.06	2.04	2.01	1.99	1.98
20.400	1.96	1.94	1.92	1.91	1.89	1.87	1.86
21.100	1.84	1.83	1.81	1.79	1.77	1.75	1.74
21.800	1.72	1.71	1.69	1.67	1.66	1.64	1.62
22.500	1.60	1.59	1.57	1.56	1.54	1.52	1.50
23.200	1.48	1.47	1.45	1.44	1.42	1.40	1.38
23.900	1.37	1.35	1.21				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		4.366		12.18	266.83	2428.12

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.900	1.13	1.28	1.43	1.61	1.80	2.02	2.26
8.600	2.51	2.78	3.07	3.37	3.68	4.01	4.36
9.300	4.72	5.10	5.49	5.89	6.31	6.75	7.19
10.000	7.65	8.14	8.72	9.40	10.14	10.94	11.77
10.700	12.63	13.53	14.46	15.43	16.55	18.22	20.57
11.400	23.34	26.39	31.36	43.55	65.26	93.59	144.59
12.100	231.87	264.12	212.71	161.21	121.15	86.52	62.38
12.800	49.88	43.16	38.44	34.58	31.80	30.10	28.88
13.500	27.84	26.85	25.87	24.89	23.91	22.92	21.97
14.200	21.17	20.57	20.05	19.57	19.09	18.61	18.14
14.900	17.66	17.18	16.70	16.22	15.73	15.25	14.76
15.600	14.27	13.78	13.29	12.80	12.31	11.84	11.46
16.300	11.16	10.93	10.70	10.49	10.27	10.06	9.84
17.000	9.63	9.41	9.20	8.98	8.77	8.55	8.34
17.700	8.12	7.90	7.68	7.47	7.26	7.10	7.00
18.400	6.92	6.85	6.79	6.72	6.66	6.59	6.53
19.100	6.47	6.40	6.34	6.27	6.21	6.14	6.08
19.800	6.01	5.95	5.88	5.82	5.76	5.72	5.66
20.500	5.61	5.56	5.51	5.45	5.41	5.36	5.32
21.200	5.27	5.22	5.17	5.12	5.06	5.02	4.97
21.900	4.93	4.88	4.83	4.78	4.73	4.67	4.63
22.600	4.58	4.54	4.48	4.43	4.39	4.33	4.28
23.300	4.23	4.18	4.15	4.09	4.04	3.99	3.94

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
24.000	3.88	3.25	1.52				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	4.214		12.18	394.25	2293.60

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.900	1.13	1.41	1.61	1.83	2.08	2.37	2.75
8.600	3.11	3.48	3.87	4.29	4.73	5.20	5.79
9.300	6.31	6.86	7.44	8.04	8.66	9.30	9.96
10.000	10.65	11.38	12.22	13.21	14.31	15.48	16.71
10.700	17.99	19.33	20.73	22.17	23.83	26.25	29.64
11.400	33.70	38.20	45.33	62.44	93.41	134.83	208.16
12.100	335.32	393.15	328.01	252.13	191.44	138.37	100.09
12.800	79.24	67.82	59.99	53.80	49.30	46.49	44.53
13.500	42.88	41.35	39.85	38.35	36.85	35.35	33.89
14.200	32.65	31.70	30.89	30.14	29.40	28.67	27.94
14.900	27.22	26.48	25.75	25.01	24.27	23.52	22.78
15.600	22.03	21.28	20.52	19.77	19.01	18.30	17.69
16.300	17.23	16.85	16.50	16.17	15.84	15.52	15.18
17.000	14.86	14.52	14.20	13.86	13.54	13.20	12.87
17.700	12.53	12.21	11.87	11.54	11.21	10.95	10.79
18.400	10.67	10.56	10.46	10.36	10.26	10.17	10.06
19.100	9.97	9.87	9.77	9.67	9.57	9.47	9.37
19.800	9.27	9.17	9.07	8.97	8.88	8.81	8.73
20.500	8.65	8.58	8.50	8.41	8.35	8.27	8.21
21.200	8.13	8.05	7.98	7.90	7.81	7.75	7.67
21.900	7.61	7.53	7.45	7.37	7.30	7.21	7.14
22.600	7.07	7.01	6.92	6.84	6.77	6.69	6.60
23.300	6.54	6.46	6.40	6.31	6.23	6.16	6.08
24.000	5.99	5.12	2.62				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	4.214	165.56	12.43	235.51	1370.10

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	1.04	1.23	1.43	1.65	1.88	2.15	2.47
8.700	2.81	3.23	3.88	4.37	4.83	5.37	5.90
9.400	6.44	7.00	7.58	8.18	8.81	9.45	10.12
10.100	10.82	11.91	12.88	13.95	15.09	16.31	17.57

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.800	18.90	20.27	21.70	22.66	24.03	26.30	29.18
11.500	30.39	32.33	36.00	43.30	56.68	73.23	104.55
12.200	167.64	216.61	234.83	230.60	213.35	189.25	164.07
12.900	142.16	123.29	109.05	97.79	88.04	81.41	77.31
13.600	73.48	69.91	65.55	60.61	55.52	50.78	47.88
14.300	45.30	42.98	40.77	38.82	37.09	35.53	34.12
15.000	32.83	31.64	30.53	29.49	26.99	24.82	23.45
15.700	22.42	20.84	20.02	19.26	18.52	17.88	17.37
16.400	16.97	16.61	16.28	15.95	15.62	15.29	14.96
17.100	14.63	14.30	13.97	13.64	13.31	12.98	12.64
17.800	12.31	11.98	11.65	11.31	11.03	10.89	10.76
18.500	10.65	10.54	10.44	10.34	10.24	10.14	10.04
19.200	9.94	9.85	9.75	9.65	9.55	9.45	9.35
19.900	9.25	9.15	9.05	8.95	8.87	8.79	8.71
20.600	8.63	8.56	8.48	8.40	8.33	8.26	8.19
21.300	8.11	8.03	7.96	7.88	7.80	7.73	7.66
22.000	7.59	7.51	7.43	7.36	7.27	7.20	7.12
22.700	7.06	6.98	6.90	6.83	6.75	6.67	6.59
23.400	6.52	6.45	6.38	6.29	6.22	6.14	6.06
24.100	5.75	4.20	2.70	1.82	1.14		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		4.214		12.43	235.51	1370.10

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	1.04	1.23	1.43	1.65	1.88	2.15	2.47
8.700	2.81	3.23	3.88	4.37	4.83	5.37	5.90
9.400	6.44	7.00	7.58	8.18	8.81	9.45	10.12
10.100	10.82	11.91	12.88	13.95	15.09	16.31	17.57
10.800	18.90	20.27	21.70	22.66	24.03	26.30	29.18
11.500	30.39	32.33	36.00	43.30	56.68	73.23	104.55
12.200	167.64	216.61	234.83	230.60	213.35	189.25	164.07
12.900	142.16	123.29	109.05	97.79	88.04	81.41	77.31
13.600	73.48	69.91	65.55	60.61	55.52	50.78	47.88
14.300	45.30	42.98	40.77	38.82	37.09	35.53	34.12
15.000	32.83	31.64	30.53	29.49	26.99	24.82	23.45
15.700	22.42	20.84	20.02	19.26	18.52	17.88	17.37
16.400	16.97	16.61	16.28	15.95	15.62	15.29	14.96
17.100	14.63	14.30	13.97	13.64	13.31	12.98	12.64
17.800	12.31	11.98	11.65	11.31	11.03	10.89	10.76
18.500	10.65	10.54	10.44	10.34	10.24	10.14	10.04
19.200	9.94	9.85	9.75	9.65	9.55	9.45	9.35
19.900	9.25	9.15	9.05	8.95	8.87	8.79	8.71
20.600	8.63	8.56	8.48	8.40	8.33	8.26	8.19
21.300	8.11	8.03	7.96	7.88	7.80	7.73	7.66

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
22.000	7.59	7.51	7.43	7.36	7.27	7.20	7.12
22.700	7.06	6.98	6.90	6.83	6.75	6.67	6.59
23.400	6.52	6.45	6.38	6.29	6.22	6.14	6.06
24.100	5.75	4.20	2.70	1.82	1.14		

STORM 100-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.012		4.365		12.18	30.20	2434.21

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
10.400	1.01	1.10	1.19	1.28	1.38	1.49	1.60
11.100	1.72	1.91	2.16	2.47	2.81	3.35	4.69
11.800	7.08	10.25	16.01	25.99	29.96	24.34	18.55
12.500	13.99	10.03	7.24	5.79	5.02	4.47	4.02
13.200	3.70	3.50	3.36	3.24	3.13	3.02	2.90
13.900	2.79	2.67	2.56	2.47	2.40	2.34	2.29
14.600	2.23	2.18	2.12	2.07	2.01	1.95	1.90
15.300	1.84	1.78	1.73	1.67	1.61	1.56	1.50
16.000	1.44	1.39	1.34	1.31	1.28	1.25	1.23
16.700	1.20	1.18	1.15	1.13	1.10	1.08	1.05
17.400	1.03	1.00					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2	0.010		4.032		12.21	21.99	2100.56

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.000	1.07	1.17	1.29	1.46	1.67	1.91	2.26
11.700	3.04	4.52	6.67	10.27	16.91	21.82	20.25
12.400	16.23	12.67	9.44	6.90	5.33	4.44	3.86
13.100	3.43	3.11	2.91	2.77	2.66	2.57	2.47
13.800	2.38	2.29	2.20	2.11	2.03	1.97	1.92
14.500	1.87	1.82	1.78	1.74	1.69	1.65	1.60
15.200	1.56	1.51	1.47	1.42	1.38	1.33	1.28
15.900	1.24	1.19	1.15	1.11	1.08	1.05	1.03
16.600	1.01						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.039		4.480		12.20	91.70	2343.73

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	1.08	1.19	1.31	1.43	1.56	1.70	1.84
9.700	1.99	2.14	2.30	2.47	2.64	2.84	3.06
10.400	3.32	3.60	3.89	4.20	4.52	4.85	5.19
11.100	5.58	6.11	6.86	7.80	8.85	10.36	13.81
11.800	20.36	29.62	44.93	72.52	91.46	83.04	65.61
12.500	50.73	37.49	27.24	21.07	17.57	15.28	13.59
13.200	12.34	11.53	10.98	10.55	10.17	9.80	9.43
13.900	9.07	8.70	8.34	8.03	7.78	7.57	7.38
14.600	7.20	7.03	6.85	6.67	6.49	6.31	6.13
15.300	5.96	5.77	5.59	5.41	5.23	5.05	4.86
16.000	4.68	4.50	4.35	4.23	4.13	4.04	3.96
16.700	3.88	3.80	3.72	3.64	3.56	3.48	3.40
17.400	3.32	3.24	3.16	3.07	2.99	2.91	2.83
18.100	2.75	2.68	2.64	2.61	2.58	2.55	2.53
18.800	2.50	2.48	2.46	2.43	2.41	2.38	2.36
19.500	2.34	2.31	2.29	2.26	2.24	2.21	2.19
20.200	2.17	2.15	2.13	2.11	2.09	2.07	2.05
20.900	2.04	2.02	2.00	1.98	1.96	1.95	1.93
21.600	1.91	1.89	1.87	1.86	1.84	1.82	1.80
22.300	1.78	1.76	1.74	1.73	1.71	1.69	1.67
23.000	1.65	1.63	1.61	1.60	1.58	1.56	1.54
23.700	1.52	1.50	1.49	1.46	1.31		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		4.818		12.18	293.96	2675.00

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	1.14	1.28	1.44	1.60	1.77	1.95	2.15
8.300	2.38	2.64	2.91	3.20	3.51	3.84	4.18
9.000	4.54	4.91	5.31	5.71	6.14	6.57	7.03
9.700	7.50	7.98	8.48	8.99	9.54	10.18	10.94
10.400	11.77	12.66	13.58	14.55	15.54	16.57	17.64
11.100	18.88	20.74	23.36	26.45	29.83	35.35	48.97
11.800	73.14	104.50	160.71	256.24	290.61	233.35	176.52
12.500	132.43	94.49	68.09	54.39	47.05	41.89	37.67
13.200	34.64	32.77	31.45	30.30	29.22	28.15	27.08
13.900	26.01	24.93	23.89	23.02	22.37	21.80	21.27
14.600	20.75	20.23	19.71	19.19	18.66	18.14	17.61
15.300	17.09	16.56	16.03	15.50	14.97	14.43	13.90

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.000	13.36	12.86	12.44	12.12	11.86	11.61	11.38
16.700	11.15	10.92	10.68	10.45	10.21	9.98	9.75
17.400	9.52	9.28	9.05	8.81	8.58	8.33	8.10
18.100	7.87	7.70	7.59	7.50	7.43	7.36	7.29
18.800	7.22	7.15	7.08	7.01	6.94	6.87	6.80
19.500	6.73	6.66	6.59	6.52	6.45	6.38	6.31
20.200	6.24	6.20	6.14	6.08	6.03	5.97	5.91
20.900	5.87	5.81	5.77	5.71	5.66	5.61	5.55
21.600	5.49	5.44	5.39	5.35	5.29	5.23	5.18
22.300	5.12	5.06	5.02	4.96	4.92	4.86	4.80
23.000	4.75	4.70	4.63	4.59	4.53	4.49	4.43
23.700	4.37	4.32	4.27	4.20	3.53	1.65	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	4.660		12.18	435.15	2531.54

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	1.14	1.42	1.62	1.83	2.05	2.28	2.53
8.300	2.95	3.29	3.67	4.07	4.50	4.95	5.53
9.000	6.06	6.60	7.18	7.77	8.40	9.05	9.72
9.700	10.41	11.13	11.88	12.64	13.45	14.40	15.51
10.400	16.74	18.05	19.43	20.87	22.36	23.90	25.51
11.100	27.35	30.04	33.84	38.39	43.40	51.34	70.52
11.800	105.10	151.07	232.01	371.65	433.58	360.90	276.93
12.500	209.84	151.47	109.51	86.60	74.08	65.50	58.72
13.200	53.80	50.71	48.56	46.76	45.08	43.43	41.80
13.900	40.16	38.51	36.91	35.56	34.52	33.63	32.81
14.600	32.00	31.21	30.41	29.62	28.81	28.01	27.20
15.300	26.40	25.58	24.77	23.96	23.14	22.32	21.50
16.000	20.67	19.89	19.24	18.73	18.32	17.94	17.58
16.700	17.21	16.86	16.50	16.15	15.78	15.43	15.06
17.400	14.71	14.34	13.98	13.62	13.26	12.89	12.53
18.100	12.17	11.90	11.72	11.59	11.47	11.36	11.25
18.800	11.14	11.04	10.93	10.82	10.71	10.61	10.50
19.500	10.39	10.28	10.18	10.06	9.96	9.85	9.74
20.200	9.64	9.57	9.48	9.39	9.31	9.22	9.13
20.900	9.06	8.98	8.91	8.82	8.74	8.66	8.57
21.600	8.48	8.41	8.33	8.26	8.17	8.08	8.00
22.300	7.92	7.82	7.75	7.67	7.60	7.51	7.42
23.000	7.34	7.26	7.16	7.09	7.01	6.94	6.85
23.700	6.76	6.68	6.60	6.50	5.56	2.84	

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	4.660	165.77	12.41	265.13	1542.44

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
7.700	1.05	1.24	1.44	1.64	1.85	2.08	2.36
8.400	2.67	3.00	3.60	4.13	4.59	5.10	5.64
9.100	6.18	6.74	7.32	7.92	8.55	9.21	9.88
9.800	10.58	11.56	12.39	13.19	14.08	15.14	16.34
10.500	17.63	18.98	20.40	21.87	22.75	23.90	25.35
11.200	27.26	29.33	30.53	32.38	34.95	39.39	47.50
11.900	63.31	78.45	119.50	191.90	245.94	264.80	258.20
12.600	236.26	208.42	180.43	155.68	134.98	117.41	105.23
13.300	94.87	86.04	80.74	76.95	73.40	70.05	66.09
14.000	61.37	56.69	51.99	48.89	46.46	44.29	42.27
14.700	40.38	38.68	37.15	35.74	34.44	33.23	32.09
15.400	31.01	29.97	28.62	25.77	24.05	22.83	21.21
16.100	20.15	19.44	18.88	18.45	18.06	17.70	17.33
16.800	16.98	16.61	16.26	15.90	15.54	15.18	14.82
17.500	14.46	14.10	13.73	13.38	13.01	12.65	12.29
18.200	11.98	11.78	11.63	11.51	11.40	11.29	11.18
18.900	11.07	10.97	10.89	10.79	10.69	10.58	10.47
19.600	10.37	10.26	10.15	10.04	9.93	9.83	9.72
20.300	9.63	9.54	9.45	9.37	9.29	9.20	9.12
21.000	9.04	8.97	8.89	8.80	8.72	8.64	8.55
21.700	8.47	8.39	8.31	8.23	8.15	8.06	7.98
22.400	7.89	7.81	7.73	7.66	7.58	7.49	7.41
23.100	7.32	7.23	7.15	7.07	7.00	6.92	6.83
23.800	6.74	6.66	6.57	6.23	4.56	2.80	1.90
24.500	1.19						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		4.660		12.41	265.13	1542.44

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
7.700	1.05	1.24	1.44	1.64	1.85	2.08	2.36
8.400	2.67	3.00	3.60	4.13	4.59	5.10	5.64
9.100	6.18	6.74	7.32	7.92	8.55	9.21	9.88
9.800	10.58	11.56	12.39	13.19	14.08	15.14	16.34
10.500	17.63	18.98	20.40	21.87	22.75	23.90	25.35
11.200	27.26	29.33	30.53	32.38	34.95	39.39	47.50
11.900	63.31	78.45	119.50	191.90	245.94	264.80	258.20
12.600	236.26	208.42	180.43	155.68	134.98	117.41	105.23
13.300	94.87	86.04	80.74	76.95	73.40	70.05	66.09

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.000	61.37	56.69	51.99	48.89	46.46	44.29	42.27
14.700	40.38	38.68	37.15	35.74	34.44	33.23	32.09
15.400	31.01	29.97	28.62	25.77	24.05	22.83	21.21
16.100	20.15	19.44	18.88	18.45	18.06	17.70	17.33
16.800	16.98	16.61	16.26	15.90	15.54	15.18	14.82
17.500	14.46	14.10	13.73	13.38	13.01	12.65	12.29
18.200	11.98	11.78	11.63	11.51	11.40	11.29	11.18
18.900	11.07	10.97	10.89	10.79	10.69	10.58	10.47
19.600	10.37	10.26	10.15	10.04	9.93	9.83	9.72
20.300	9.63	9.54	9.45	9.37	9.29	9.20	9.12
21.000	9.04	8.97	8.89	8.80	8.72	8.64	8.55
21.700	8.47	8.39	8.31	8.23	8.15	8.06	7.98
22.400	7.89	7.81	7.73	7.66	7.58	7.49	7.41
23.100	7.32	7.23	7.15	7.07	7.00	6.92	6.83
23.800	6.74	6.66	6.57	6.23	4.56	2.80	1.90
24.500	1.19						

ORCHARD RIDGE (3300): EXISTING CONDITION
FOUR (4) WATERSHEDS ROUTING THRU EXISTING WETLAND

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 1-YR (cfs)	2-YR (cfs)	5-YR (cfs)	10-YR (cfs)	25-YR (cfs)
WS#1	0.012		4.18	7.79	12.91	15.65	21.33
WS#2	0.010		2.49	5.06	8.83	10.88	15.18
WS#3	0.039		13.41	24.44	39.96	48.20	65.29
WS#4	0.110		50.43	86.24	135.11	160.77	212.89
WETLAND	0.172		69.98	122.61	195.51	234.08	313.18
DOWNSTREAM			44.55	70.03	103.74	127.65	180.30
OUTLET	0.172		44.55	70.03	103.74	127.65	180.30

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 50-YR (cfs)	100-YR (cfs)	(cfs)	(cfs)	(cfs)
WS#1	0.012		27.21	30.20			
WS#2	0.010		19.69	21.99			
WS#3	0.039		82.94	91.70			
WS#4	0.110		266.83	293.96			
WETLAND	0.172		394.25	435.15			
DOWNSTREAM			235.51	265.13			
OUTLET	0.172		235.51	265.13			

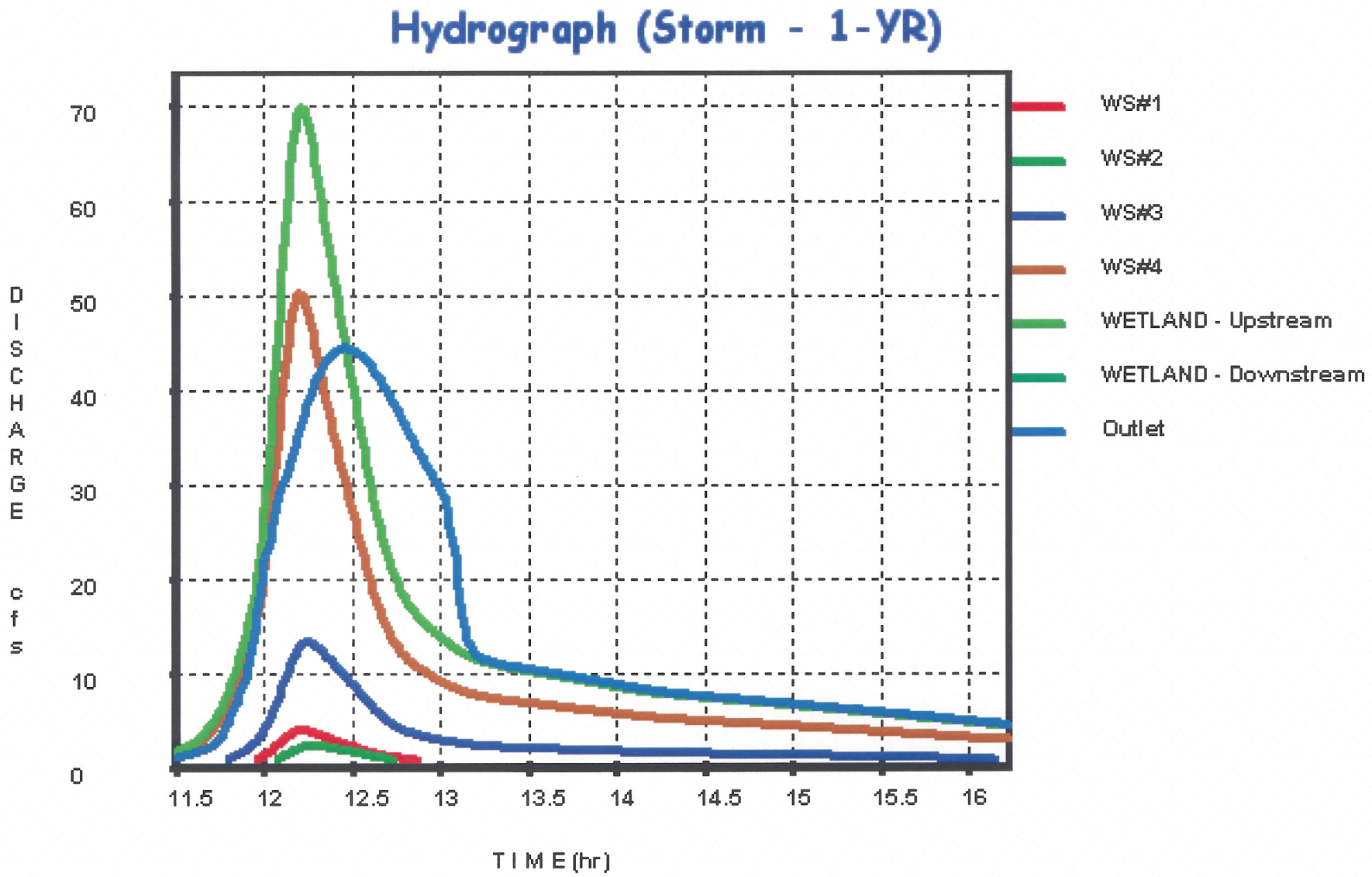

Figure E-1: Routing hydrograph of the existing drainage system for **1 year** storm peak runoff for at upstream, downstream and outlet.

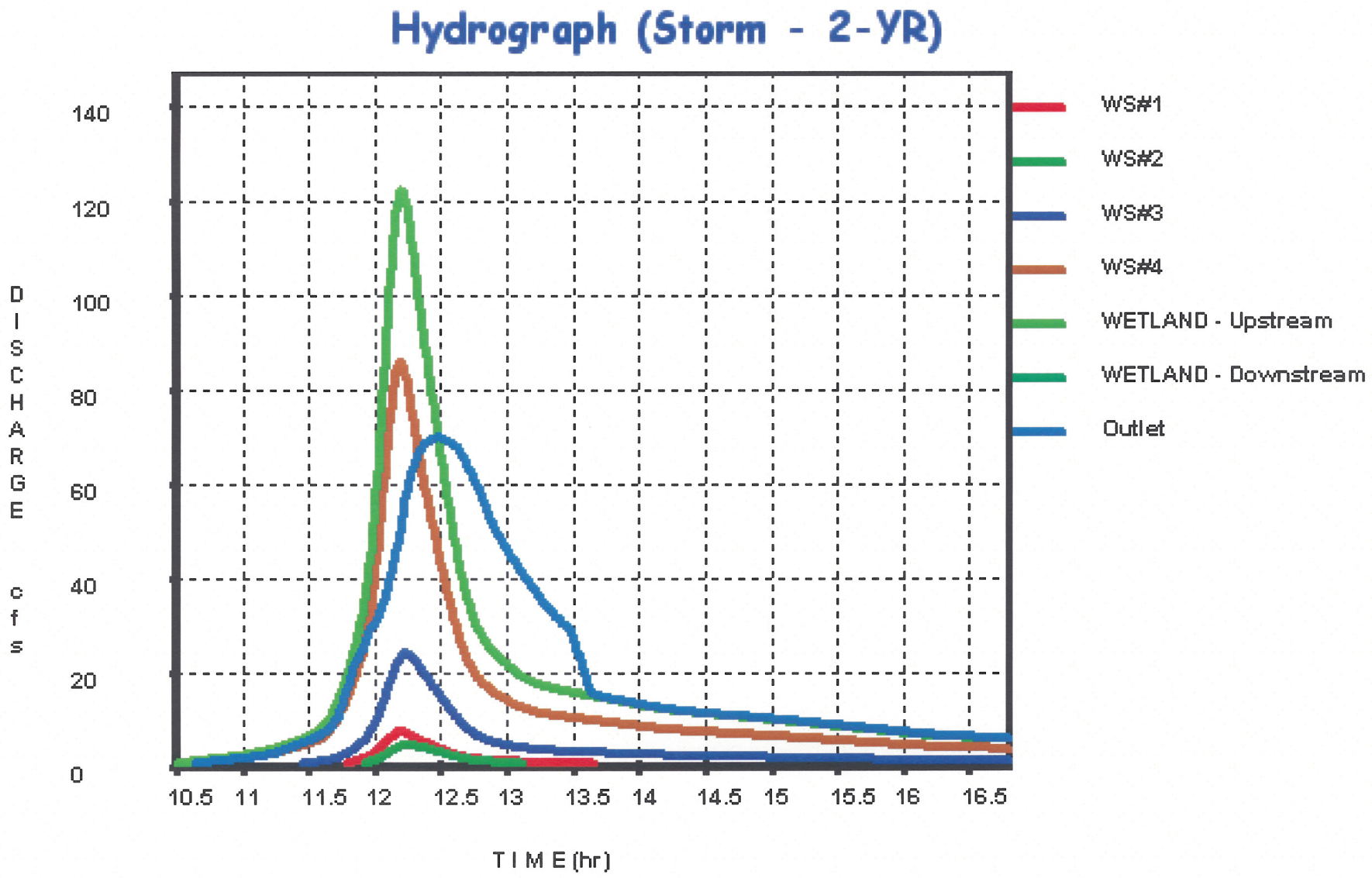

Figure E-2: Routing hydrograph of the existing drainage system for **2 year** storm peak runoff for at upstream, downstream and outlet.

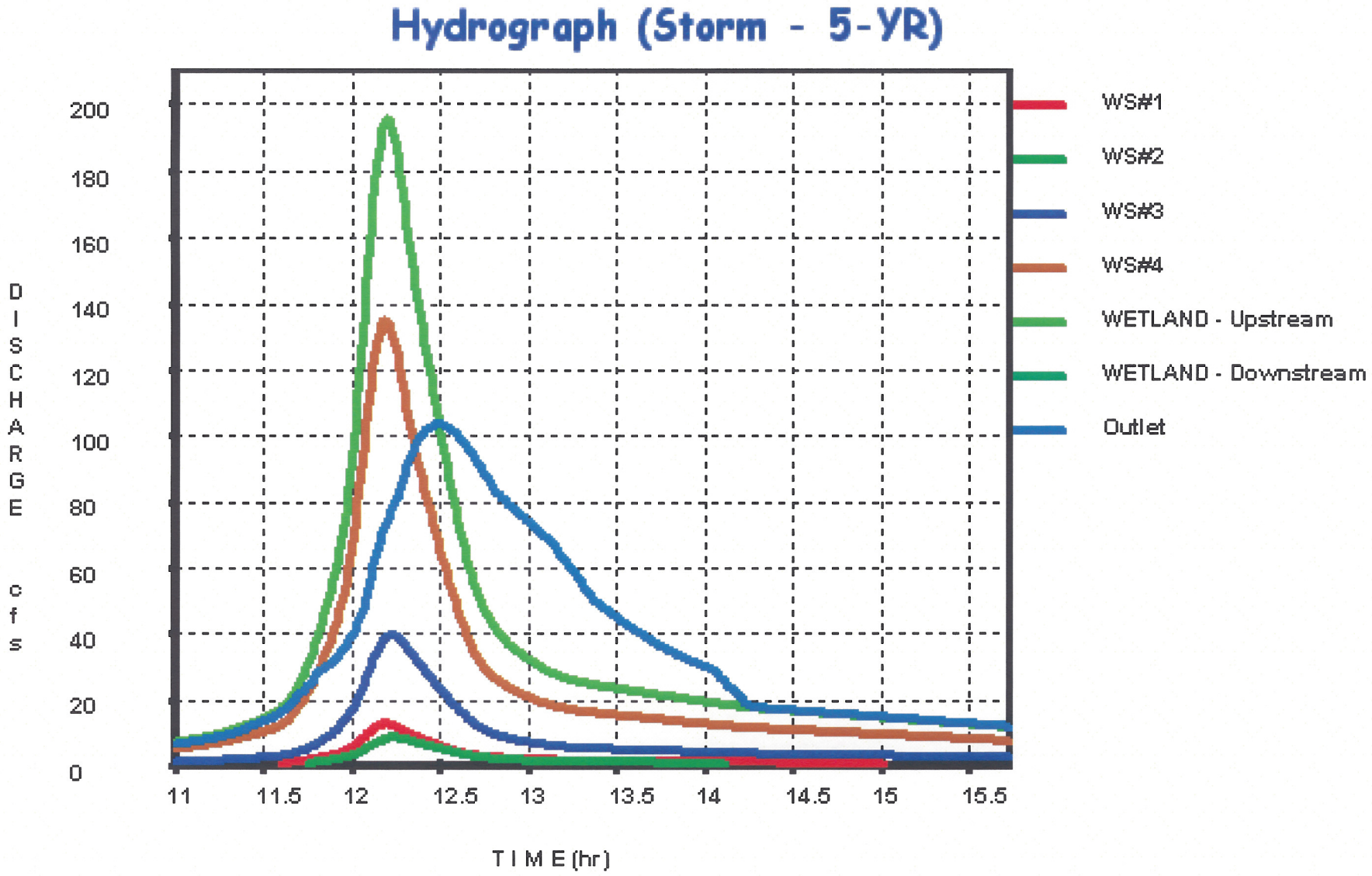

Figure E-3: Routing hydrograph of the existing drainage system for **5 year** storm peak runoff for at upstream, downstream and outlet.

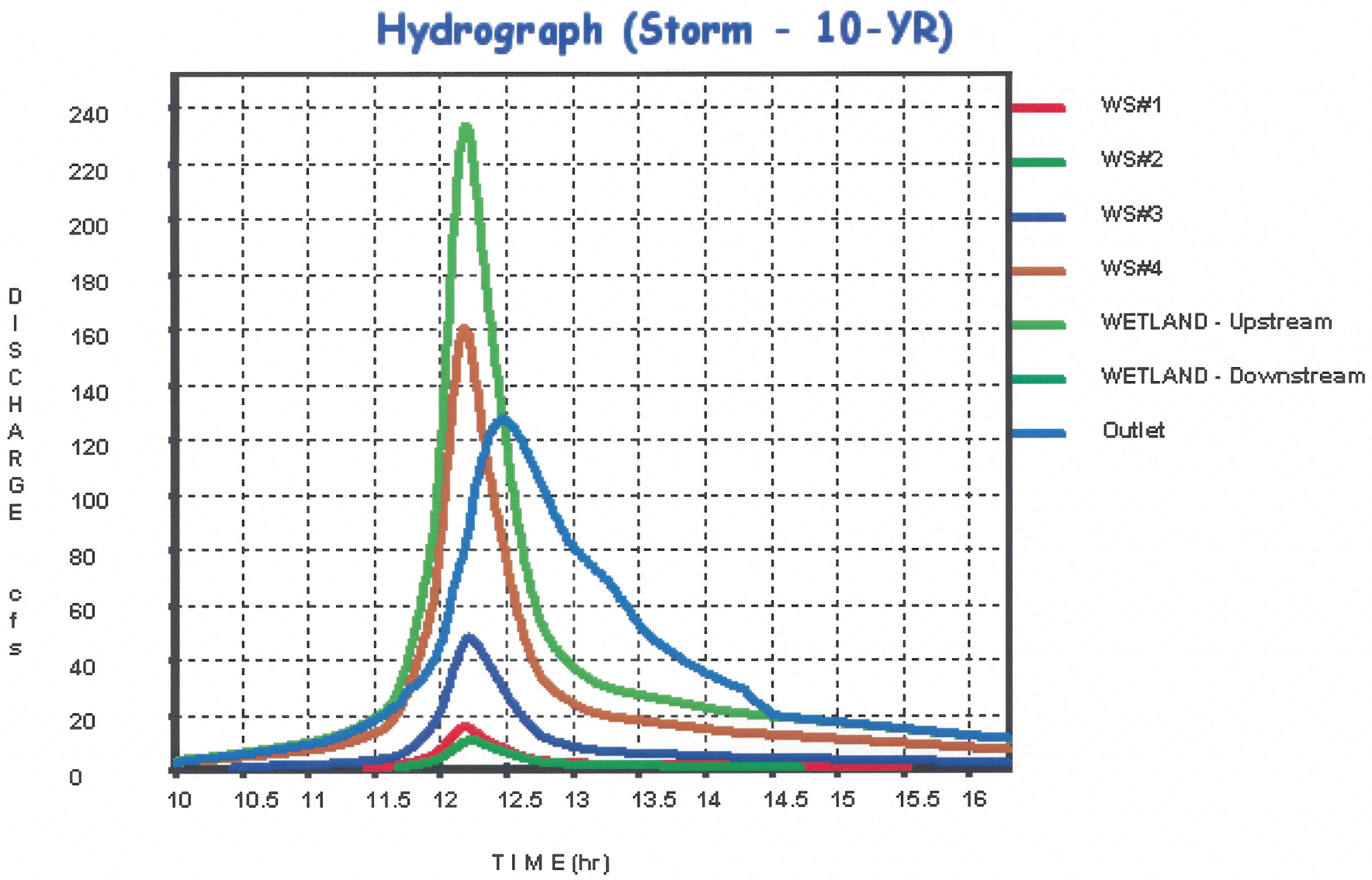

Figure E-4: Routing hydrograph of the existing drainage system for **10 year** storm peak runoff for at upstream, downstream and outlet.

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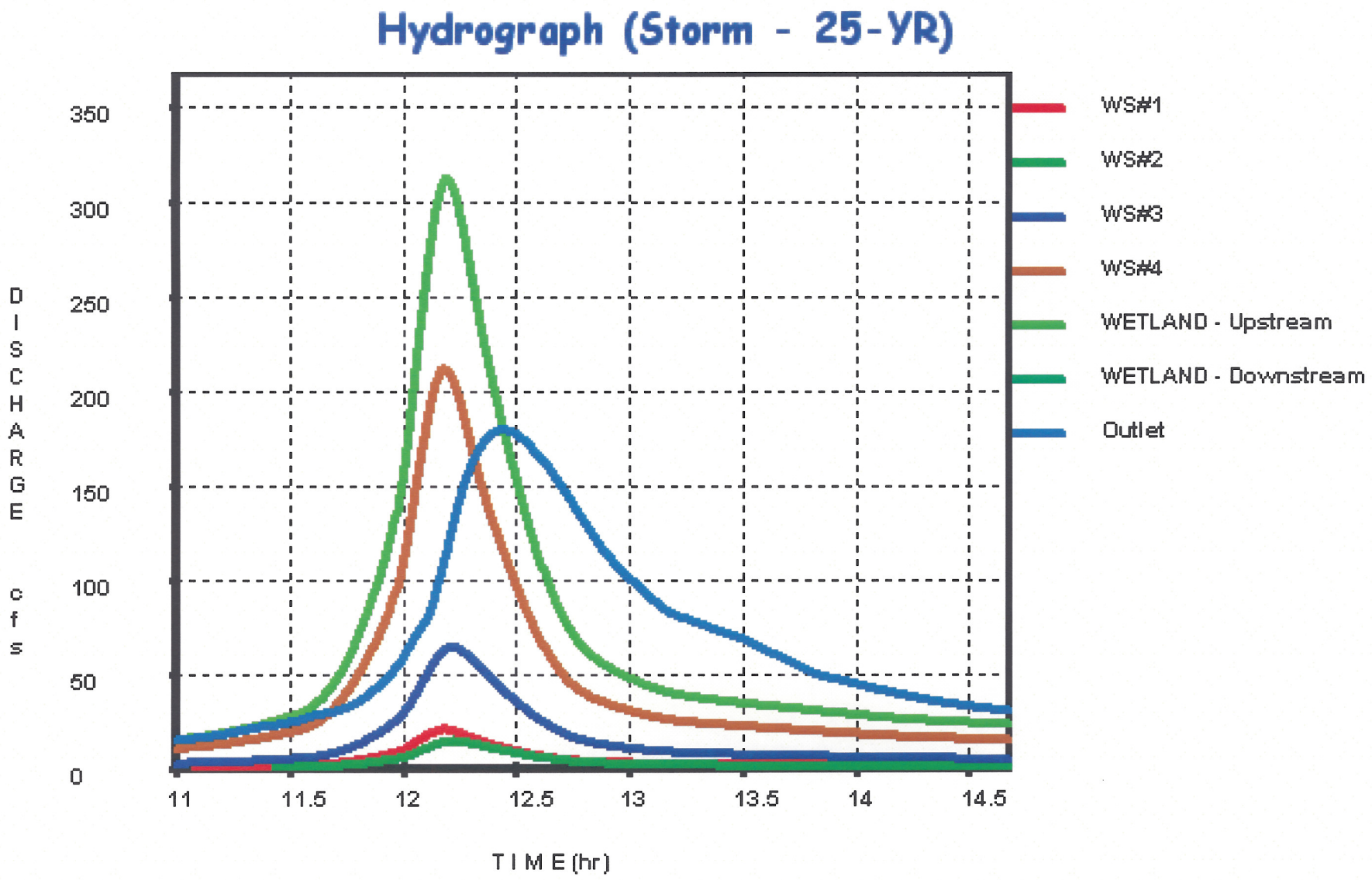

Figure E-5: Routing hydrograph of the existing drainage system for **25 year** storm peak runoff for at upstream, downstream and outlet.

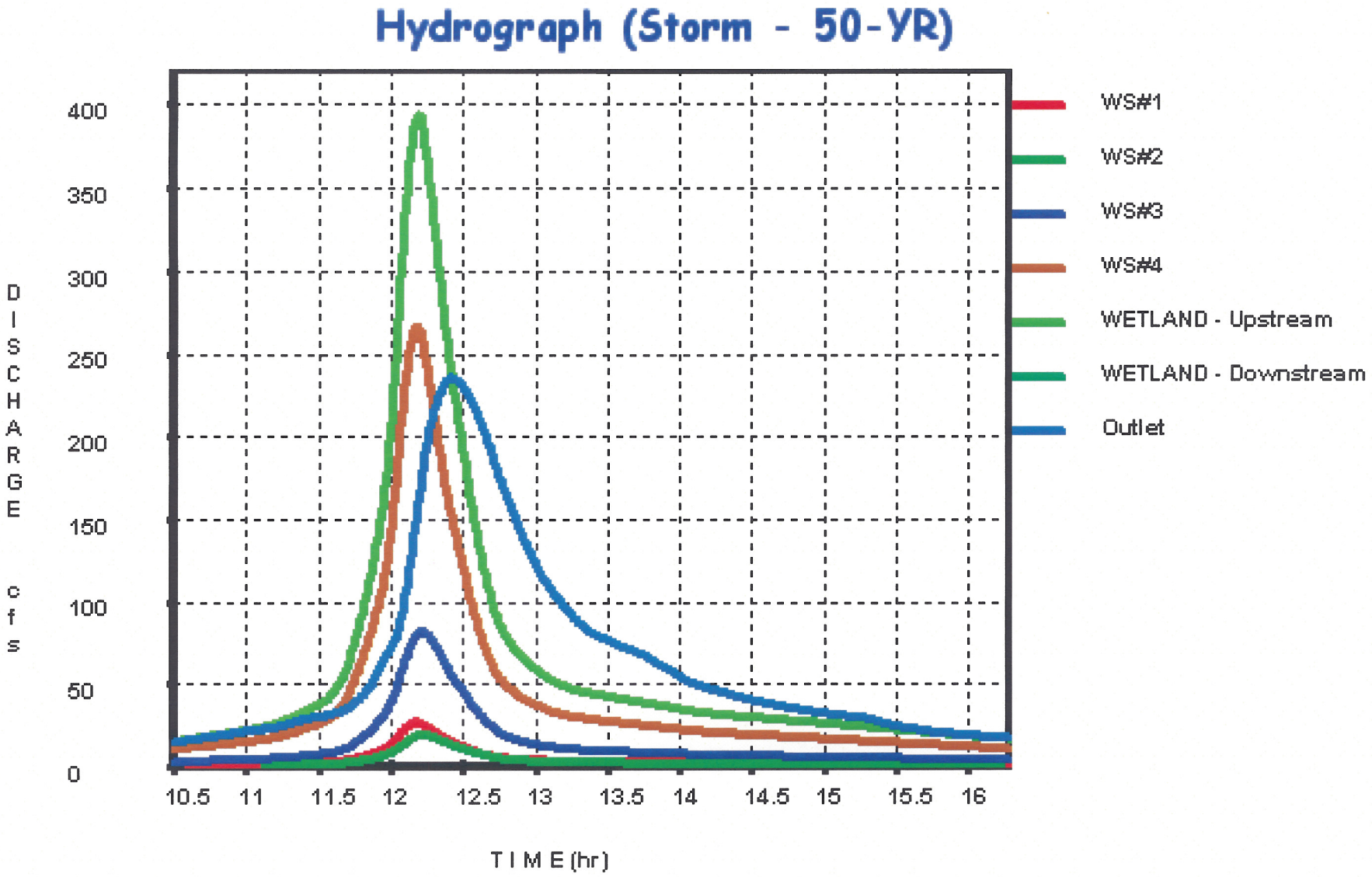

Figure E-6: Routing hydrograph of the existing drainage system for **50 year** storm peak runoff for at upstream, downstream and outlet.

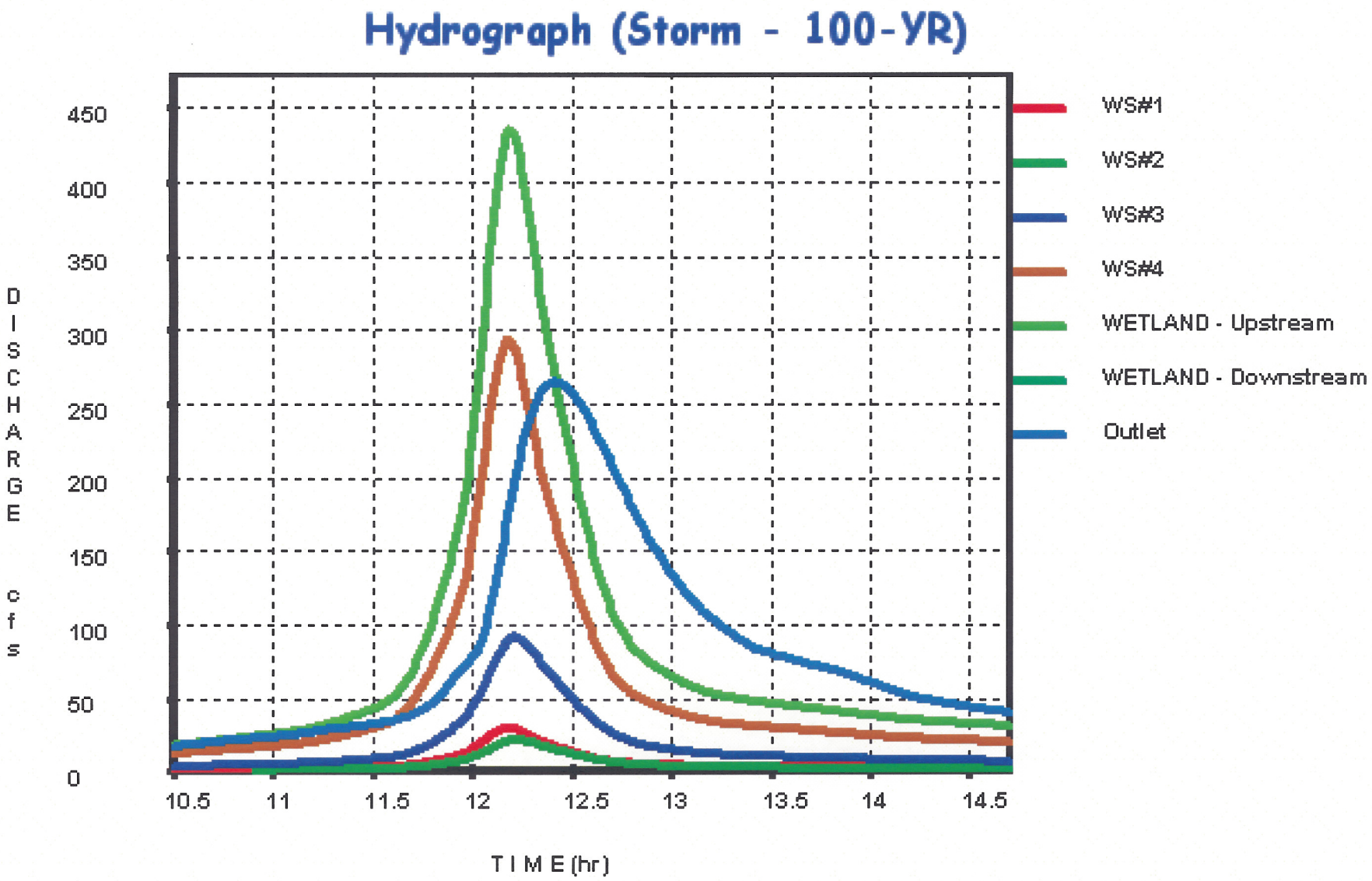

Figure E-7: Routing hydrograph of the existing drainage system for **100 year** storm peak runoff for at upstream, downstream and outlet.

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

DEVELOPED CONDITION
Tc & CN CALCULATION
PER TR-55

BY

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ASZ P.C. ORCHARD RIDGE (3300)
Developed Condition: 1,2,5,10,25,50,100 Yr Storm Peak Runoff
Rockland County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
WS#1	4.18	0.467	82	Outlet	Developed Disturbed
WS#1A	2.07	0.100	93	Outlet	Developed Disturbed
WS#1B	1.58	0.334	91	Outlet	Developed Disturbed
WS#2A	3.88	0.317	93	Outlet	Developed Disturbed
WS#2B	4.04	0.244	92	Outlet	Developed Disturbed
WS#2C	8.46	0.260	83	Outlet	Developed Disturbed
WS#2D	2.68	0.117	76	Outlet	Undisturbed
WS#3	12.79	0.298	73	Outlet	Undisturbed
WS#4	70.33	0.248	77	Outlet	Undisturbed

Total Area: 110.01 (ac)

ASZ P.C. ORCHARD RIDGE (3300)
Developed Condition: 1,2,5,10,25,50,100 Yr Storm Peak Runoff
Rockland 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	2.7

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

ASZ P.C. ORCHARD RIDGE (3300)
Developed Condition: 1,2,5,10,25,50,100 Yr Storm Peak Runoff
Rockland County, New York

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
WS#1	4.18	0.467	82	Outlet	Developed Disturbed
WS#1A	2.07	0.100	93	Outlet	Developed Disturbed
WS#1B	1.58	0.334	91	Outlet	Developed Disturbed
WS#2A	3.88	0.317	93	Outlet	Developed Disturbed
WS#2B	4.04	0.244	92	Outlet	Developed Disturbed
WS#2C	8.46	0.260	83	Outlet	Developed Disturbed
WS#2D	2.68	0.117	76	Outlet	Undisturbed
WS#3	12.79	0.298	73	Outlet	Undisturbed
WS#4	70.33	0.248	77	Outlet	Undisturbed

Total Area: 110.01 (ac)

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)
WS#1							
SHEET	95	0.0105	0.240				0.282
CHANNEL	990	0.0338	0.035	1.67	5.00	3.767	0.073
CHANNEL	980	0.0142	0.035	2.67	8.00	2.431	0.112
					Time of Concentration		.467
WS#1A							
SHEET	100	0.0220	0.011				0.019
CHANNEL	645	0.0100	0.012	1.23	3.93	5.780	0.031
					Time of Concentration		0.1
WS#1B							
SHEET	100	0.0150	0.240				0.255
SHALLOW	335	0.0060	0.050				0.074
CHANNEL	100	0.0100	0.012	1.23	3.93	5.556	0.005
					Time of Concentration		.334
WS#2A							
SHEET	100	0.0160	0.240				0.249
SHALLOW	340	0.0080	0.050				0.065
CHANNEL	75	0.0100	0.012	1.77	4.71	6.944	0.003
					Time of Concentration		.317
WS#2B							
SHEET	90	0.0160	0.240				0.229
SHALLOW	125	0.0280	0.025				0.010
CHANNEL	120	0.0100	0.012	1.76	4.71	6.667	0.005
					Time of Concentration		.244
WS#2C							
SHEET	100	0.0600	0.400				0.221
SHALLOW	310	0.0329	0.050				0.029
SHALLOW	75	0.0240	0.025				0.007
CHANNEL	90	0.0200	0.012	1.76	4.71	8.333	0.003
					Time of Concentration		.26
WS#2D							
SHEET	100	0.0750	0.150				0.092
SHALLOW	410	0.0790	0.050				0.025

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		.117
WS#3							
SHEET	100	0.0680	0.400				0.210
SHALLOW	385	0.0710	0.050				0.025
CHANNEL	565	0.0150	0.035	13.33	40.00	2.491	0.063
					Time of Concentration		.298
WS#4							
SHEET	100	0.1700	0.400				0.145
SHALLOW	510	0.4030	0.050				0.014
SHALLOW	510	0.1530	0.050				0.022
CHANNEL	1085	0.0500	0.015	4.91	7.85	15.863	0.019
CHANNEL	500	0.0200	0.035	13.33	40.00	2.894	0.048
					Time of Concentration		.248

ASZ P.C.

ORCHARD RIDGE (3300)
Developed Condition: 1,2,5,10,25,50,100 Yr Storm Peak Runoff
Rockland 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
WS#1	Open space; grass cover > 75%	(good)	C	2.17	74
	Paved parking lots, roofs, driveways		C	1.37	98
	Woods	(fair)	C	.64	73
	Total Area / Weighted Curve Number			4.18	82
WS#1A	Open space; grass cover > 75%	(good)	C	.44	74
	Paved parking lots, roofs, driveways		C	1.59	98
	Gravel (w/ right-of-way)		C	.04	89
	Total Area / Weighted Curve Number			2.07	93
WS#1B	Open space; grass cover > 75%	(good)	C	.41	74
	Paved parking lots, roofs, driveways		C	1.1	98
	Gravel (w/ right-of-way)		C	.07	89
	Total Area / Weighted Curve Number			1.58	91
WS#2A	Open space; grass cover > 75%	(good)	C	.82	74
	Paved parking lots, roofs, driveways		C	3.01	98
	Gravel (w/ right-of-way)		C	.05	89
	Total Area / Weighted Curve Number			3.88	93
WS#2B	Open space; grass cover > 75%	(good)	B	.04	61
	Open space; grass cover > 75%	(good)	C	.91	74
	Paved parking lots, roofs, driveways		B	.11	98
	Paved parking lots, roofs, driveways		C	2.98	98
	Total Area / Weighted Curve Number			4.04	92
WS#2C	Open space; grass cover > 75%	(good)	B	2.2	61
	Open space; grass cover > 75%	(good)	C	.25	74
	Paved parking lots, roofs, driveways		B	4.7	98
	Paved parking lots, roofs, driveways		C	.25	98
	Woods	(fair)	B	1.06	60
	Total Area / Weighted Curve Number			8.46	83
WS#2D	Paved parking lots, roofs, driveways		B	.01	98
	Paved parking lots, roofs, driveways		C	.81	98
	Woods	(fair)	B	.95	60
	Woods	(fair)	C	.91	73
	Total Area / Weighted Curve Number			2.68	76

Sub-Area Land Use and Curve Number Details (continued)

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
WS#3	Woods	(fair)	B	.22	60
	Woods	(fair)	C	12.57	73
	Total Area / Weighted Curve Number			12.79	73
WS#4	Open space; grass cover > 75%	(good)	C	1.58	74
	Paved parking lots, roofs, driveways		C	10.72	98
	Woods	(fair)	C	58.03	73
	Total Area / Weighted Curve Number			70.33	77

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

TR-20 OUTPUT DATA FOR DEVELOPED CONDITION WITHOUT STORAGE (1, 2, 5, 10, 25, 50 & 100-YEAR STORMS)

BY

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NEW CITY, NY 10956
TEL: (845) 634-4694
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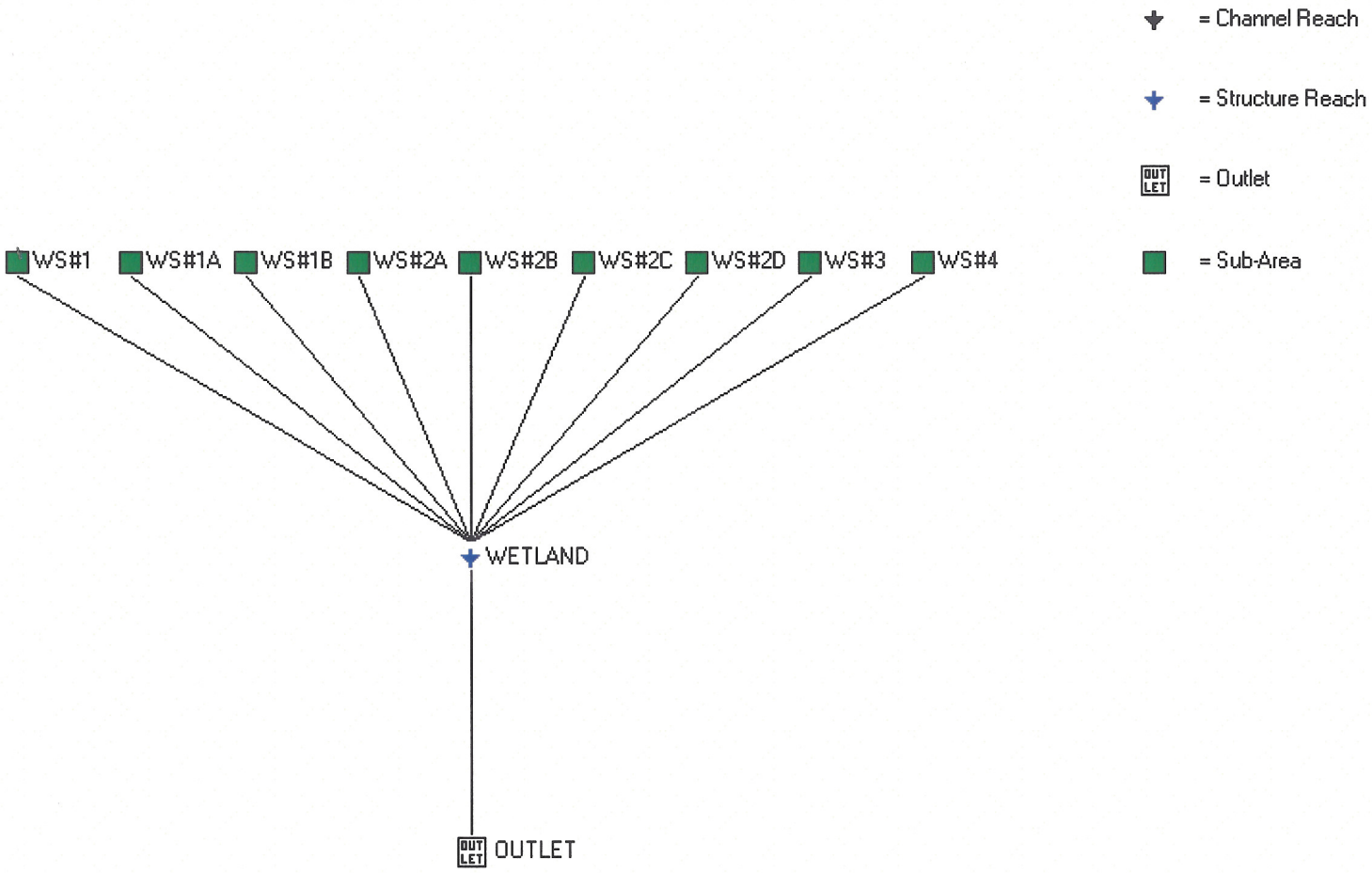

Figure 2: Drainage system schematic for developed condition with existing wetland and without proposed storage system.

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WinTR-20: Version 1.11                  0         0         0.1       0
ORCHARD RIDGE (3300)
DEVELOPED CONDITION NO PROPOSED STORAGE (EXISTING WETLAND ONLY)

SUB-AREA:
          WS#1      WETLAND              0.0071562583.       0.467     YY YY
          WS#1A     WETLAND              0.0026093793.       0.10      YY YY
          WS#1B     WETLAND              0.0024687591.       0.334     YY YY
          WS#2A     WETLAND              0.0060625 93.       0.317     YY YY
          WS#2B     WETLAND              0.0063125 92.       0.244     YY YY
          WS#2C     WETLAND              0.0132187583.       0.260     YY YY
          WS#2D     WETLAND              0.0041875 76.       0.117     YY YY
          WS#3      WETLAND              0.0199843773.       0.298     YY YY
          WS#4      WETLAND              0.1098906277.       0.248     YY YY

STREAM REACH:
          WETLAND   OUTLET               WETLAND                       YY YYY


STORM ANALYSIS:
          1-YR                 0.0       2.7       Type III  2         3.5
          2-YR                 0.0       3.5       Type III  2         3.5
          5-YR                 0.0       4.5       Type III  2         3.5
          10-YR                0.0       5.0       Type III  2         3.5
          25-YR                0.0       6.0       Type III  2         3.5
          50-YR                0.0       7.0       Type III  2         3.5
          100-YR               0.0       7.5       Type III  2         3.5


STRUCTURE RATING:
          WETLAND   161.1
                    161.1     0.        0.
                    161.35    3.12      0.05
                    161.60    10.97     0.10
                    161.85    22.22     0.13
                    162.1     29.10     0.20
                    162.6     43.24     0.80
                    162.85    50.81     1.15
                    163.10    58.69     1.40
                    163.35    68.09     1.80
                    164.0     83.40     2.90
                    164.50    116.19    4.15
                    165.0     166.01    5.65
                    165.50    226.80    7.40
                    166.0     296.51    9.20
                    166.50    373.95    11.0




GLOBAL OUTPUT:
          2         0.1       0.5       YYNYY     YYNYYY


VERIFICATION:
          DATA PREP   Y         Y     Y Y Y Y                 Y Y           Y
          PROCESSING  Y       Y Y Y Y Y Y
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WinTR-20 Printed Page File End of Input Data List

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DEVELOPED CONDITION NO PROPOSED STORAGE (EXISTING WETLAND ONLY)

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STORM 1-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

WS#1	0.007	1.166	12.34	3.80	531.35	

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.14	0.26	1.30	3.24	1.10	0.63	0.51
14.500	0.43	0.38	0.33	0.28	0.24	0.21	0.19
18.000	0.17	0.15	0.14	0.14	0.13	0.12	0.12
21.500	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		1.621		12.11	3.26	1248.27

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.16	0.21	0.36	2.78	0.76	0.33
13.500	0.26	0.21	0.19	0.16	0.14	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		1.436		12.24	2.22	901.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.11	0.15	0.24	1.08	1.33	0.39	0.26
14.000	0.21	0.18	0.16	0.13	0.11		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		1.906		12.22	6.04	996.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.20	0.25	0.33	0.44	0.70
12.000	3.08	3.35	0.97	0.66	0.54	0.45	0.40
15.500	0.34	0.29	0.25	0.22	0.20	0.17	0.16
19.000	0.15	0.14	0.13	0.13	0.12	0.12	0.11
22.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		1.828		12.17	6.55	1038.21

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.13	0.18	0.24	0.32	0.43	0.71	3.69
12.500	2.85	0.90	0.65	0.53	0.46	0.40	0.34
16.000	0.29	0.25	0.22	0.20	0.17	0.16	0.15
19.500	0.14	0.14	0.13	0.12	0.12	0.11	0.11
23.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		1.204		12.19	8.71	658.97

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.16	0.30	0.61	4.15	4.48	1.46	1.06
14.000	0.88	0.76	0.67	0.58	0.48	0.42	0.38
17.500	0.34	0.30	0.27	0.26	0.25	0.23	0.22
21.000	0.21	0.20	0.20	0.19	0.18	0.17	0.16

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		0.645		12.13	2.15	514.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.000	1.38	0.69	0.30	0.25	0.20	0.18	0.16
15.500	0.14	0.12	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.020		0.678		12.24	6.34	317.06

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.000	1.93	4.29	1.48	1.07	0.91	0.79	0.70
15.500	0.61	0.52	0.45	0.41	0.37	0.32	0.30
19.000	0.28	0.27	0.26	0.25	0.24	0.23	0.22
22.500	0.21	0.20	0.19	0.17			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		0.868		12.21	50.43	458.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.36	1.84	21.28	27.21	9.36	6.97	5.85
14.500	5.07	4.50	3.91	3.28	2.87	2.60	2.32
18.000	2.04	1.87	1.79	1.71	1.62	1.55	1.49
21.500	1.43	1.36	1.29	1.23	1.16	1.09	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	0.970		12.20	86.75	504.70

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.28	0.38	0.60	1.08	2.03	4.72
12.000	40.68	48.21	16.31	11.80	9.85	8.49	7.53
15.500	6.52	5.48	4.68	4.05	3.61	3.17	2.91
19.000	2.77	2.65	2.51	2.40	2.30	2.20	2.10
22.500	2.00	1.70	1.51	1.42			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	0.970	162.93	12.47	53.21	309.57

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.23	0.34	0.53	0.87	1.59	3.92	27.36
12.500	52.98	35.30	11.95	10.15	8.65	7.68	6.68
16.000	5.64	4.78	4.11	3.68	3.23	2.97	2.83
19.500	2.70	2.56	2.44	2.34	2.24	2.14	2.04
23.000	1.83	1.57	1.46	0.30			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		0.970		12.47	53.21	309.57

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.23	0.34	0.53	0.87	1.59	3.92	27.36
12.500	52.98	35.30	11.95	10.15	8.65	7.68	6.68
16.000	5.64	4.78	4.11	3.68	3.23	2.97	2.83
19.500	2.70	2.56	2.44	2.34	2.24	2.14	2.04
23.000	1.83	1.57	1.46	0.30			

STORM 2-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		1.842		12.33	5.90	824.41

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.19	0.30	0.51	2.20	4.93	1.63
13.500	0.92	0.73	0.61	0.54	0.47	0.40	0.34
17.000	0.30	0.27	0.24	0.21	0.20	0.19	0.18
20.500	0.17	0.17	0.16	0.15	0.14	0.14	0.13
24.000	0.12						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		2.380		12.10	4.44	1700.17

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.000	0.12	0.15	0.18	0.24	0.31	0.52	3.83
12.500	1.02	0.45	0.35	0.28	0.25	0.22	0.18
16.000	0.15	0.14	0.12	0.11			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		2.181		12.22	3.12	1262.22

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.500	0.10	0.13	0.17	0.23	0.36	1.56	1.83
13.000	0.53	0.35	0.28	0.24	0.21	0.18	0.15
16.500	0.13	0.12	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		2.698		12.21	8.26	1362.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.500	0.11	0.14	0.18	0.24	0.32	0.39	0.51
11.000	0.66	1.01	4.32	4.53	1.30	0.87	0.72
14.500	0.60	0.53	0.45	0.38	0.33	0.29	0.26
18.000	0.23	0.21	0.20	0.19	0.18	0.17	0.16
21.500	0.15	0.15	0.14	0.13	0.12	0.12	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		2.605		12.17	9.07	1437.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.12	0.17	0.23	0.30	0.38	0.50	0.66
11.500	1.05	5.22	3.88	1.21	0.87	0.72	0.61
15.000	0.53	0.46	0.38	0.33	0.30	0.26	0.23
18.500	0.21	0.20	0.19	0.18	0.17	0.16	0.16
22.000	0.15	0.14	0.13	0.13	0.12		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		1.853		12.19	13.50	1021.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.500	0.15	0.26	0.41	0.63	1.15	6.83	6.66
13.000	2.12	1.53	1.27	1.08	0.95	0.82	0.69
16.500	0.60	0.54	0.48	0.42	0.38	0.37	0.35
20.000	0.33	0.31	0.30	0.29	0.27	0.26	0.25
23.500	0.23	0.22					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		1.193		12.13	3.70	882.42

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
11.500	0.21	2.57	1.10	0.48	0.38	0.32	0.28
15.000	0.24	0.21	0.17	0.16	0.14	0.13	0.11
18.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.020		1.178		12.24	11.82	591.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
11.000	0.13	0.48	4.56	7.37	2.42	1.72	1.45
14.500	1.24	1.10	0.96	0.81	0.70	0.64	0.57
18.000	0.50	0.46	0.44	0.42	0.39	0.38	0.36
21.500	0.35	0.33	0.31	0.30	0.28	0.27	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		1.430		12.19	86.24	784.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.25	1.07	2.34	5.30	40.66	43.50	14.52
13.500	10.69	8.91	7.68	6.79	5.87	4.92	4.29
17.000	3.88	3.45	3.03	2.78	2.66	2.53	2.40
20.500	2.29	2.20	2.10	2.01	1.91	1.81	1.71
24.000	1.60						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	1.558		12.19	142.14	826.90

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.11	0.26	0.35	0.59	1.01	1.71	3.09
11.000	5.26	10.60	71.74	74.81	24.65	17.69	14.67
14.500	12.60	11.12	9.61	8.05	7.01	6.32	5.63
18.000	4.75	4.35	4.05	3.86	3.67	3.50	3.35
21.500	3.20	3.06	2.90	2.75	2.60	2.44	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	1.557	163.74	12.49	77.19	449.08

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.23	0.31	0.51	0.81	1.36	2.52	4.85
11.500	9.49	34.16	77.18	54.86	32.89	14.87	12.69
15.000	11.22	9.84	8.29	7.12	6.43	5.74	4.86
18.500	4.39	4.09	3.89	3.70	3.52	3.37	3.23
22.000	3.10	2.96	2.81	2.66	2.51	0.51	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		1.557		12.49	77.19	449.08

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.23	0.31	0.51	0.81	1.36	2.52	4.85
11.500	9.49	34.16	77.18	54.86	32.89	14.87	12.69
15.000	11.22	9.84	8.29	7.12	6.43	5.74	4.86

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
18.500	4.39	4.09	3.89	3.70	3.52	3.37	3.23
22.000	3.10	2.96	2.81	2.66	2.51	0.51	

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		2.708		12.33	8.65	1208.25

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.000	0.11	0.18	0.26	0.37	0.54	0.87	3.42
12.500	7.11	2.29	1.27	1.02	0.85	0.74	0.64
16.000	0.54	0.46	0.41	0.37	0.32	0.29	0.27
19.500	0.26	0.25	0.24	0.23	0.22	0.21	0.19
23.000	0.18	0.17	0.16				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		3.392		12.11	5.90	2261.61

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.10	0.14	0.18	0.22	0.26	0.34	0.43
11.500	0.72	5.14	1.35	0.58	0.46	0.37	0.32
15.000	0.28	0.24	0.20	0.18	0.16	0.14	0.12
18.500	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		3.156		12.22	4.23	1712.86

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.000	0.12	0.16	0.20	0.26	0.34	0.52	2.16
12.500	2.45	0.70	0.46	0.38	0.32	0.28	0.24
16.000	0.20	0.17	0.15	0.14	0.12	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		3.671		12.22	11.03	1819.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
6.500	0.11	0.15	0.18	0.23	0.29	0.38	0.47
10.000	0.58	0.73	0.93	1.41	5.85	5.98	1.71
13.500	1.15	0.94	0.79	0.69	0.59	0.49	0.42
17.000	0.38	0.34	0.30	0.27	0.26	0.24	0.23
20.500	0.22	0.21	0.20	0.19	0.18	0.17	0.16
24.000	0.15						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		3.570		12.16	12.19	1930.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.000	0.13	0.17	0.21	0.28	0.37	0.46	0.57
10.500	0.74	0.95	1.49	7.13	5.14	1.60	1.15
14.000	0.94	0.80	0.70	0.60	0.50	0.43	0.39
17.500	0.34	0.30	0.28	0.26	0.25	0.24	0.22
21.000	0.22	0.21	0.20	0.19	0.18	0.17	0.15

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		2.719		12.18	19.79	1496.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.500	0.14	0.24	0.37	0.54	0.78	1.11	1.91
12.000	10.40	9.45	2.96	2.13	1.75	1.49	1.31
15.500	1.13	0.94	0.82	0.74	0.65	0.57	0.52
19.000	0.50	0.47	0.45	0.43	0.41	0.39	0.37
22.500	0.35	0.34	0.32	0.30			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		2.053		12.12	5.81	1386.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.13	0.21	0.43	4.25	1.64	0.70	0.56
14.000	0.46	0.40	0.35	0.30	0.25	0.22	0.20
17.500	0.18	0.16	0.15	0.14	0.13	0.13	0.12
21.000	0.12	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		1.893		12.23	19.61	981.32

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.28	0.59	1.26	8.49	11.59	3.68	2.59
14.000	2.16	1.85	1.63	1.41	1.19	1.03	0.93
17.500	0.83	0.73	0.66	0.63	0.60	0.57	0.55
21.000	0.52	0.50	0.48	0.45	0.43	0.41	0.38

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		2.210		12.19	135.11	1229.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.21	0.94	1.91	3.37	5.50	10.55	68.04
12.500	65.08	21.24	15.53	12.87	11.04	9.74	8.39
16.000	7.02	6.12	5.52	4.90	4.29	3.94	3.76
19.500	3.58	3.39	3.24	3.10	2.96	2.82	2.68
23.000	2.54	2.41	2.25				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	2.362		12.19	216.95	1262.14

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.11	0.28	0.35	0.54	0.85	1.61	2.81
10.000	4.32	7.00	10.60	19.16	114.95	109.78	35.46
13.500	25.29	20.88	17.86	15.73	13.56	11.33	9.85
17.000	8.88	7.90	6.91	6.33	6.03	5.64	5.26
20.500	5.01	4.80	4.58	4.37	4.05	3.84	3.63

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
24.000	3.40						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	2.362	164.52	12.48	117.84	685.55

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.000	0.24	0.32	0.45	0.72	1.25	2.33	4.05
10.500	6.53	10.00	18.37	45.30	117.57	78.70	49.23
14.000	32.97	18.02	15.87	13.70	11.48	10.02	9.03
17.500	8.05	7.06	6.38	6.08	5.69	5.30	5.05
21.000	4.83	4.62	4.41	4.14	3.87	3.66	3.44
24.500	0.74						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		2.362		12.48	117.84	685.55

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.000	0.24	0.32	0.45	0.72	1.25	2.33	4.05
10.500	6.53	10.00	18.37	45.30	117.57	78.70	49.23
14.000	32.97	18.02	15.87	13.70	11.48	10.02	9.03
17.500	8.05	7.06	6.38	6.08	5.69	5.30	5.05
21.000	4.83	4.62	4.41	4.14	3.87	3.66	3.44
24.500	0.74						

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.007		3.156		12.32	10.05	1404.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.000	0.16	0.24	0.34	0.47	0.67	1.05	4.06
12.500	8.22	2.62	1.45	1.16	0.96	0.84	0.73
16.000	0.62	0.52	0.47	0.42	0.37	0.33	0.31

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.500	0.30	0.28	0.27	0.26	0.24	0.23	0.22
23.000	0.21	0.20	0.19				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		3.930		12.11	6.63	2539.84

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.10	0.13	0.16	0.21	0.26	0.31	0.40
11.000	0.50	0.82	5.79	1.51	0.65	0.51	0.42
14.500	0.36	0.32	0.27	0.22	0.20	0.18	0.16
18.000	0.13	0.13	0.12	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		3.676		12.23	4.78	1937.80

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.19	0.24	0.30	0.39	0.60
12.000	2.46	2.75	0.79	0.52	0.42	0.35	0.31
15.500	0.27	0.22	0.19	0.17	0.15	0.13	0.12
19.000	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		4.163		12.21	12.40	2046.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.14	0.18	0.22	0.27	0.35	0.45
9.500	0.56	0.67	0.84	1.07	1.61	6.63	6.70
13.000	1.91	1.28	1.05	0.88	0.77	0.66	0.55
16.500	0.47	0.43	0.38	0.33	0.30	0.29	0.27
20.000	0.26	0.24	0.23	0.22	0.21	0.20	0.19
23.500	0.18	0.17					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		4.057		12.17	13.75	2178.20

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.13	0.17	0.21	0.26	0.34	0.44	0.55
10.000	0.67	0.86	1.09	1.71	8.09	5.77	1.79
13.500	1.29	1.05	0.90	0.78	0.67	0.56	0.48
17.000	0.43	0.39	0.34	0.31	0.29	0.28	0.26
20.500	0.25	0.24	0.23	0.22	0.21	0.20	0.18
24.000	0.17						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		3.167		12.19	22.98	1738.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.13	0.22	0.34	0.50	0.69	0.98	1.37
11.500	2.32	12.27	10.86	3.38	2.42	2.00	1.70
15.000	1.49	1.28	1.07	0.93	0.84	0.74	0.65
18.500	0.59	0.57	0.54	0.51	0.49	0.46	0.44
22.000	0.42	0.40	0.38	0.36	0.34		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		2.497		12.12	6.91	1651.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.10	0.18	0.28	0.55	5.14	1.91	0.82
13.500	0.65	0.53	0.46	0.41	0.35	0.29	0.26
17.000	0.23	0.21	0.18	0.17	0.16	0.15	0.14
20.500	0.14	0.13	0.13	0.12	0.11	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.020		2.278		12.22	23.79	1190.66

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.23	0.48	0.86	1.71	10.62	13.78	4.33
13.500	3.04	2.52	2.16	1.90	1.65	1.38	1.20
17.000	1.08	0.96	0.84	0.77	0.73	0.70	0.66
20.500	0.63	0.61	0.58	0.55	0.52	0.50	0.47
24.000	0.44						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		2.623		12.18	160.77	1463.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.12	0.77	1.70	2.90	4.71	7.29	13.47
12.000	82.71	76.17	24.66	17.98	14.88	12.74	11.22
15.500	9.67	8.08	7.03	6.34	5.63	4.93	4.52
19.000	4.31	4.11	3.89	3.71	3.55	3.40	3.24
22.500	3.07	2.91	2.75	2.58			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	2.786		12.18	255.84	1488.37

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.27	0.35	0.54	0.79	1.34	2.52
9.500	4.00	6.16	9.22	13.53	23.83	137.77	127.68
13.000	40.95	29.14	24.02	20.52	18.05	15.54	12.99
16.500	11.29	10.16	9.03	7.90	7.24	6.90	6.56
20.000	6.22	5.84	5.49	5.24	4.99	4.74	4.49
23.500	4.25	3.88					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	2.785	164.78	12.46	144.29	839.45

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.23	0.31	0.44	0.68	1.03	2.06	3.66
10.000	5.77	8.66	13.22	22.44	51.92	143.34	86.71

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.500	58.77	38.03	25.10	18.21	15.71	13.15	11.36
17.000	10.33	9.21	8.08	7.30	6.95	6.61	6.28
20.500	5.89	5.54	5.28	5.03	4.78	4.53	4.28
24.000	3.93	0.82					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		2.785		12.46	144.29	839.45

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.23	0.31	0.44	0.68	1.03	2.06	3.66
10.000	5.77	8.66	13.22	22.44	51.92	143.34	86.71
13.500	58.77	38.03	25.10	18.21	15.71	13.15	11.36
17.000	10.33	9.21	8.08	7.30	6.95	6.61	6.28
20.500	5.89	5.54	5.28	5.03	4.78	4.53	4.28
24.000	3.93	0.82					

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		4.073		12.31	12.89	1800.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.12	0.18	0.27	0.38	0.51	0.69	0.95
11.500	1.45	5.36	10.44	3.29	1.81	1.44	1.20
15.000	1.05	0.91	0.76	0.65	0.58	0.52	0.45
18.500	0.41	0.38	0.37	0.35	0.33	0.31	0.30
22.000	0.29	0.27	0.26	0.24	0.23		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		5.002		12.10	8.07	3093.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.14	0.17	0.22	0.27	0.33	0.39
10.500	0.50	0.62	1.02	7.08	1.82	0.79	0.62
14.000	0.50	0.44	0.38	0.32	0.27	0.24	0.21
17.500	0.19	0.16	0.15	0.15	0.14	0.13	0.12
21.000	0.12	0.11	0.11	0.10			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		4.746		12.22	5.89	2387.11

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.10	0.12	0.16	0.21	0.26	0.31	0.40
11.000	0.51	0.76	3.07	3.37	0.96	0.63	0.51
14.500	0.43	0.38	0.32	0.27	0.23	0.21	0.18
18.000	0.16	0.15	0.14	0.13	0.13	0.12	0.11
21.500	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		5.154		12.22	15.14	2496.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.000	0.11	0.14	0.16	0.20	0.25	0.31	0.37
8.500	0.46	0.59	0.72	0.86	1.07	1.35	2.01
12.000	8.13	8.14	2.32	1.55	1.27	1.06	0.93
15.500	0.80	0.67	0.57	0.51	0.46	0.40	0.36
19.000	0.34	0.33	0.31	0.29	0.28	0.27	0.26
22.500	0.24	0.23	0.22	0.20			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		5.043		12.17	16.84	2667.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.500	0.12	0.15	0.19	0.24	0.30	0.36	0.46
9.000	0.58	0.72	0.87	1.10	1.39	2.15	9.98

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.500	7.02	2.17	1.56	1.28	1.09	0.95	0.81
16.000	0.67	0.59	0.53	0.47	0.41	0.37	0.35
19.500	0.34	0.32	0.30	0.29	0.28	0.26	0.25
23.000	0.24	0.22	0.21				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		4.085		12.18	29.43	2226.40

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.10	0.17	0.26	0.38	0.56	0.78	1.03
10.500	1.41	1.92	3.16	16.04	13.67	4.22	3.02
14.000	2.48	2.11	1.85	1.59	1.32	1.15	1.03
17.500	0.92	0.80	0.73	0.70	0.66	0.63	0.60
21.000	0.57	0.55	0.52	0.49	0.47	0.44	0.41

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		3.355		12.12	9.18	2192.59

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.13	0.19	0.29	0.43	0.81	6.98	2.47
13.000	1.05	0.83	0.68	0.59	0.52	0.44	0.37
16.500	0.33	0.29	0.26	0.23	0.21	0.20	0.19
20.000	0.18	0.17	0.17	0.16	0.15	0.14	0.14
23.500	0.13	0.12					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		3.086		12.21	32.44	1623.04

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.12	0.31	0.56	0.93	1.47	2.69	15.18
12.500	18.30	5.64	3.94	3.26	2.78	2.45	2.11
16.000	1.77	1.53	1.38	1.23	1.08	0.98	0.94
19.500	0.89	0.85	0.81	0.77	0.74	0.70	0.67

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.000	0.63	0.60	0.56				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		3.479		12.19	212.89	1937.33

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.40	1.09	2.11	3.47	5.14	7.67	11.19
11.500	19.72	113.13	98.53	31.54	22.91	18.90	16.16
15.000	14.20	12.22	10.19	8.87	7.99	7.09	6.20
18.500	5.69	5.42	5.16	4.89	4.66	4.46	4.26
22.000	4.06	3.85	3.65	3.45	3.23		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	3.659		12.19	335.18	1949.96

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.000	0.11	0.26	0.31	0.39	0.71	1.02	1.80
8.500	2.95	4.71	7.10	9.87	14.06	19.83	33.75
12.000	185.03	163.76	51.97	36.86	30.31	25.85	22.70
15.500	19.53	16.30	14.15	12.73	11.31	9.89	9.06
19.000	8.63	8.20	7.77	7.41	7.09	6.77	6.45
22.500	6.02	5.61	5.30	4.97			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	3.659	165.26	12.43	197.92	1151.41

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.500	0.22	0.29	0.36	0.55	0.84	1.48	2.47
9.000	4.36	6.71	9.42	13.73	19.42	29.20	68.50
12.500	194.78	108.08	71.60	47.47	35.15	26.19	19.73
16.000	16.51	14.25	12.83	11.40	10.11	9.13	8.69
19.500	8.27	7.84	7.46	7.14	6.82	6.50	6.08
23.000	5.66	5.35	5.02	0.96			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		3.659		12.43	197.92	1151.41

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
5.500	0.22	0.29	0.36	0.55	0.84	1.48	2.47
9.000	4.36	6.71	9.42	13.73	19.42	29.20	68.50
12.500	194.78	108.08	71.60	47.47	35.15	26.19	19.73
16.000	16.51	14.25	12.83	11.40	10.11	9.13	8.69
19.500	8.27	7.84	7.46	7.14	6.82	6.50	6.08
23.000	5.66	5.35	5.02	0.96			

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.007		5.009		12.32	15.73	2198.37

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.500	0.14	0.20	0.28	0.39	0.53	0.70	0.92
11.000	1.24	1.86	6.69	12.67	3.95	2.17	1.72
14.500	1.43	1.25	1.08	0.91	0.77	0.69	0.61
18.000	0.54	0.48	0.46	0.43	0.41	0.39	0.37
21.500	0.36	0.34	0.32	0.31	0.29	0.27	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1A	0.003		6.057		12.10	9.51	3644.45

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
6.500	0.12	0.15	0.18	0.21	0.27	0.34	0.41
10.000	0.48	0.61	0.75	1.21	8.37	2.14	0.93
13.500	0.73	0.59	0.51	0.45	0.38	0.31	0.28
17.000	0.25	0.22	0.19	0.18	0.17	0.16	0.15
20.500	0.15	0.14	0.13	0.13	0.12	0.11	0.11
24.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1B	0.002		5.803		12.23	6.99	2829.60

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.11	0.13	0.16	0.20	0.26	0.32	0.39
10.500	0.49	0.62	0.92	3.67	3.98	1.13	0.74
14.000	0.60	0.51	0.44	0.38	0.32	0.27	0.24
17.500	0.22	0.19	0.17	0.16	0.15	0.15	0.14
21.000	0.13	0.13	0.12	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		6.147		12.22	17.86	2945.46

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.12	0.16	0.19	0.22	0.27	0.33	0.40
8.000	0.47	0.58	0.73	0.89	1.05	1.30	1.63
11.500	2.41	9.64	9.57	2.72	1.82	1.48	1.25
15.000	1.09	0.94	0.78	0.67	0.60	0.53	0.47
18.500	0.42	0.40	0.38	0.36	0.34	0.33	0.31
22.000	0.30	0.28	0.27	0.25	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		6.032		12.18	19.91	3154.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.11	0.14	0.17	0.20	0.25	0.32	0.39
8.000	0.46	0.58	0.73	0.90	1.07	1.34	1.68
11.500	2.58	11.86	8.26	2.55	1.83	1.50	1.27
15.000	1.11	0.95	0.79	0.69	0.62	0.55	0.48
18.500	0.44	0.42	0.39	0.37	0.36	0.34	0.32
22.000	0.31	0.29	0.28	0.26	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		5.021		12.18	35.93	2717.96

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.12	0.20	0.29	0.41	0.57	0.80	1.08
10.000	1.39	1.86	2.49	4.03	19.84	16.47	5.06
13.500	3.61	2.96	2.52	2.20	1.89	1.58	1.37
17.000	1.23	1.09	0.95	0.87	0.83	0.79	0.75
20.500	0.71	0.68	0.65	0.62	0.59	0.55	0.52
24.000	0.49						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		4.231		12.12	11.50	2746.19

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.14	0.20	0.29	0.42	0.59	1.08	8.89
12.500	3.03	1.28	1.01	0.82	0.72	0.63	0.54
16.000	0.44	0.39	0.35	0.31	0.27	0.26	0.24
19.500	0.23	0.22	0.21	0.20	0.19	0.18	0.17
23.000	0.16	0.15	0.14				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.020		3.933		12.20	41.37	2070.08

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.15	0.35	0.61	0.95	1.44	2.15	3.76
12.000	19.97	22.89	6.97	4.85	4.01	3.41	3.00
15.500	2.58	2.16	1.87	1.68	1.50	1.31	1.20
19.000	1.14	1.08	1.03	0.98	0.94	0.90	0.85
22.500	0.81	0.77	0.73	0.68			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		4.366		12.18	266.83	2428.12

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.60	1.28	2.26	3.68	5.49	7.65	10.94
11.000	15.43	26.39	144.59	121.15	38.44	27.84	22.92
14.500	19.57	17.18	14.76	12.31	10.70	9.63	8.55
18.000	7.47	6.85	6.53	6.21	5.88	5.61	5.36
21.500	5.12	4.88	4.63	4.39	4.15	3.88	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	4.559		12.18	416.28	2421.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.23	0.30	0.36	0.42	0.76	1.10	2.13
8.000	3.19	4.90	7.42	10.43	13.97	19.31	26.57
11.500	44.24	233.54	200.16	63.02	44.59	36.60	31.17
15.000	27.35	23.50	19.60	17.01	15.30	13.58	11.87
18.500	10.87	10.35	9.84	9.32	8.88	8.50	8.11
22.000	7.73	7.33	6.95	6.56	6.05		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	4.559	165.70	12.41	254.83	1482.49

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.15	0.27	0.33	0.40	0.64	0.96	1.78
8.000	2.77	4.57	7.01	9.94	13.73	18.89	24.87
11.500	32.89	78.89	247.82	130.20	79.20	58.71	42.36
15.000	34.02	26.94	19.85	17.12	15.41	13.70	11.98
18.500	10.93	10.43	9.92	9.40	8.95	8.55	8.17
22.000	7.79	7.39	7.00	6.62	6.12	1.09	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		4.559		12.41	254.83	1482.49

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.15	0.27	0.33	0.40	0.64	0.96	1.78
8.000	2.77	4.57	7.01	9.94	13.73	18.89	24.87
11.500	32.89	78.89	247.82	130.20	79.20	58.71	42.36
15.000	34.02	26.94	19.85	17.12	15.41	13.70	11.98
18.500	10.93	10.43	9.92	9.40	8.95	8.55	8.17
22.000	7.79	7.39	7.00	6.62	6.12	1.09	

STORM 100-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		5.482		12.31	17.16	2397.99

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.18	0.24	0.33	0.46	0.61	0.79
10.500	1.03	1.38	2.06	7.36	13.78	4.28	2.34
14.000	1.86	1.54	1.35	1.17	0.98	0.83	0.74
17.500	0.66	0.58	0.52	0.49	0.47	0.44	0.42
21.000	0.40	0.38	0.37	0.35	0.33	0.31	0.29

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		6.562		12.11	10.23	3920.59

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.14	0.17	0.20	0.24	0.30	0.37
9.500	0.44	0.52	0.66	0.81	1.31	9.01	2.30
13.000	0.99	0.78	0.63	0.55	0.48	0.41	0.34
16.500	0.30	0.27	0.24	0.20	0.19	0.18	0.17
20.000	0.16	0.16	0.15	0.14	0.14	0.13	0.12
23.500	0.11	0.11					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		6.314		12.23	7.54	3052.60

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.15	0.18	0.23	0.29	0.36	0.43
10.500	0.53	0.68	1.00	3.97	4.28	1.21	0.79
14.000	0.65	0.54	0.47	0.41	0.34	0.29	0.26
17.500	0.23	0.20	0.18	0.18	0.17	0.16	0.15
21.000	0.14	0.14	0.13	0.12	0.12	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		6.645		12.22	19.21	3168.65

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.000	0.11	0.15	0.18	0.21	0.25	0.30	0.37
7.500	0.44	0.52	0.64	0.80	0.97	1.15	1.41
11.000	1.77	2.60	10.40	10.28	2.92	1.95	1.59
14.500	1.34	1.17	1.00	0.84	0.72	0.65	0.57
18.000	0.50	0.45	0.43	0.41	0.39	0.37	0.35
21.500	0.34	0.32	0.30	0.29	0.27	0.25	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		6.528		12.17	21.44	3396.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.13	0.16	0.20	0.23	0.29	0.36	0.43
8.000	0.51	0.64	0.81	0.99	1.17	1.46	1.83
11.500	2.80	12.80	8.88	2.74	1.97	1.61	1.37
15.000	1.19	1.02	0.85	0.74	0.66	0.59	0.51
18.500	0.47	0.45	0.42	0.40	0.38	0.36	0.35
22.000	0.33	0.31	0.30	0.28	0.26		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		5.495		12.18	39.09	2957.13

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.16	0.25	0.36	0.49	0.67	0.93	1.24
10.000	1.58	2.10	2.78	4.47	21.78	17.87	5.47
13.500	3.90	3.20	2.72	2.38	2.04	1.70	1.47
17.000	1.33	1.18	1.03	0.94	0.89	0.85	0.81
20.500	0.77	0.73	0.70	0.67	0.63	0.60	0.57
24.000	0.53						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		4.678		12.12	12.66	3023.42

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.17	0.25	0.34	0.49	0.68	1.23
12.000	9.86	3.32	1.39	1.10	0.90	0.78	0.68
15.500	0.58	0.48	0.43	0.38	0.34	0.30	0.28
19.000	0.26	0.25	0.24	0.23	0.22	0.21	0.20
22.500	0.19	0.18	0.17	0.16			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		4.367		12.21	45.96	2299.66

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.24	0.47	0.78	1.16	1.71	2.51	4.32
12.000	22.44	25.22	7.64	5.31	4.38	3.72	3.27
15.500	2.82	2.36	2.04	1.84	1.63	1.43	1.30
19.000	1.24	1.18	1.12	1.07	1.02	0.97	0.93
22.500	0.88	0.84	0.79	0.74			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		4.818		12.18	293.96	2675.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.36	0.99	1.77	2.91	4.54	6.57	8.99
10.500	12.66	17.64	29.83	160.71	132.43	41.89	30.30

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.000	24.93	21.27	18.66	16.03	13.36	11.61	10.45
17.500	9.28	8.10	7.43	7.08	6.73	6.38	6.08
21.000	5.81	5.55	5.29	5.02	4.75	4.49	4.20

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	5.017		12.18	457.10	2659.28

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.000	0.11	0.27	0.34	0.41	0.59	0.89	1.75
7.500	2.75	3.95	6.07	8.84	12.21	16.13	22.06
11.000	30.08	49.63	258.33	218.36	68.55	48.45	39.75
14.500	33.83	29.67	25.48	21.25	18.43	16.58	14.72
18.000	12.86	11.77	11.21	10.65	10.09	9.62	9.20
21.500	8.78	8.36	7.93	7.52	7.10	6.65	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	5.016	165.91	12.40	284.24	1653.62

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.24	0.32	0.39	0.55	0.80	1.41	2.35
8.000	3.71	5.66	8.38	11.96	15.86	21.59	28.06
11.500	35.59	85.59	275.07	141.65	82.43	63.80	45.71
15.000	36.91	30.89	22.58	18.56	16.70	14.84	12.98
18.500	11.81	11.24	10.74	10.18	9.69	9.26	8.85
22.000	8.43	8.00	7.58	7.16	6.72	1.15	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		5.016		12.40	284.24	1653.62

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.24	0.32	0.39	0.55	0.80	1.41	2.35
8.000	3.71	5.66	8.38	11.96	15.86	21.59	28.06
11.500	35.59	85.59	275.07	141.65	82.43	63.80	45.71

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.000	36.91	30.89	22.58	18.56	16.70	14.84	12.98
18.500	11.81	11.24	10.74	10.18	9.69	9.26	8.85
22.000	8.43	8.00	7.58	7.16	6.72	1.15	

ORCHARD RIDGE (3300)
DEVELOPED CONDITION NO PROPOSED STORAGE (EXISTING WETLAND ONLY)

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 1-YR (cfs)	2-YR (cfs)	5-YR (cfs)	10-YR (cfs)	25-YR (cfs)
WS#1	0.007		3.80	5.90	8.65	10.05	12.89
WS#1A	0.003		3.26	4.44	5.90	6.63	8.07
WS#1B	0.002		2.22	3.12	4.23	4.78	5.89
WS#2A	0.006		6.04	8.26	11.03	12.40	15.14
WS#2B	0.006		6.55	9.07	12.19	13.75	16.84
WS#2C	0.013		8.71	13.50	19.79	22.98	29.43
WS#2D	0.004		2.15	3.70	5.81	6.91	9.18
WS#3	0.020		6.34	11.82	19.61	23.79	32.44
WS#4	0.110		50.43	86.24	135.11	160.77	212.89
WETLAND	0.172		86.75	142.14	216.95	255.84	335.18
DOWNSTREAM			53.21	77.19	117.84	144.29	197.92
OUTLET	0.172		53.21	77.19	117.84	144.29	197.92

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 50-YR (cfs)	100-YR (cfs)	(cfs)	(cfs)	(cfs)
WS#1	0.007		15.73	17.16			
WS#1A	0.003		9.51	10.23			
WS#1B	0.002		6.99	7.54			
WS#2A	0.006		17.86	19.21			
WS#2B	0.006		19.91	21.44			
WS#2C	0.013		35.93	39.09			
WS#2D	0.004		11.50	12.66			
WS#3	0.020		41.37	45.96			
WS#4	0.110		266.83	293.96			
WETLAND	0.172		416.28	457.10			
DOWNSTREAM			254.83	284.24			
OUTLET	0.172		254.83	284.24			

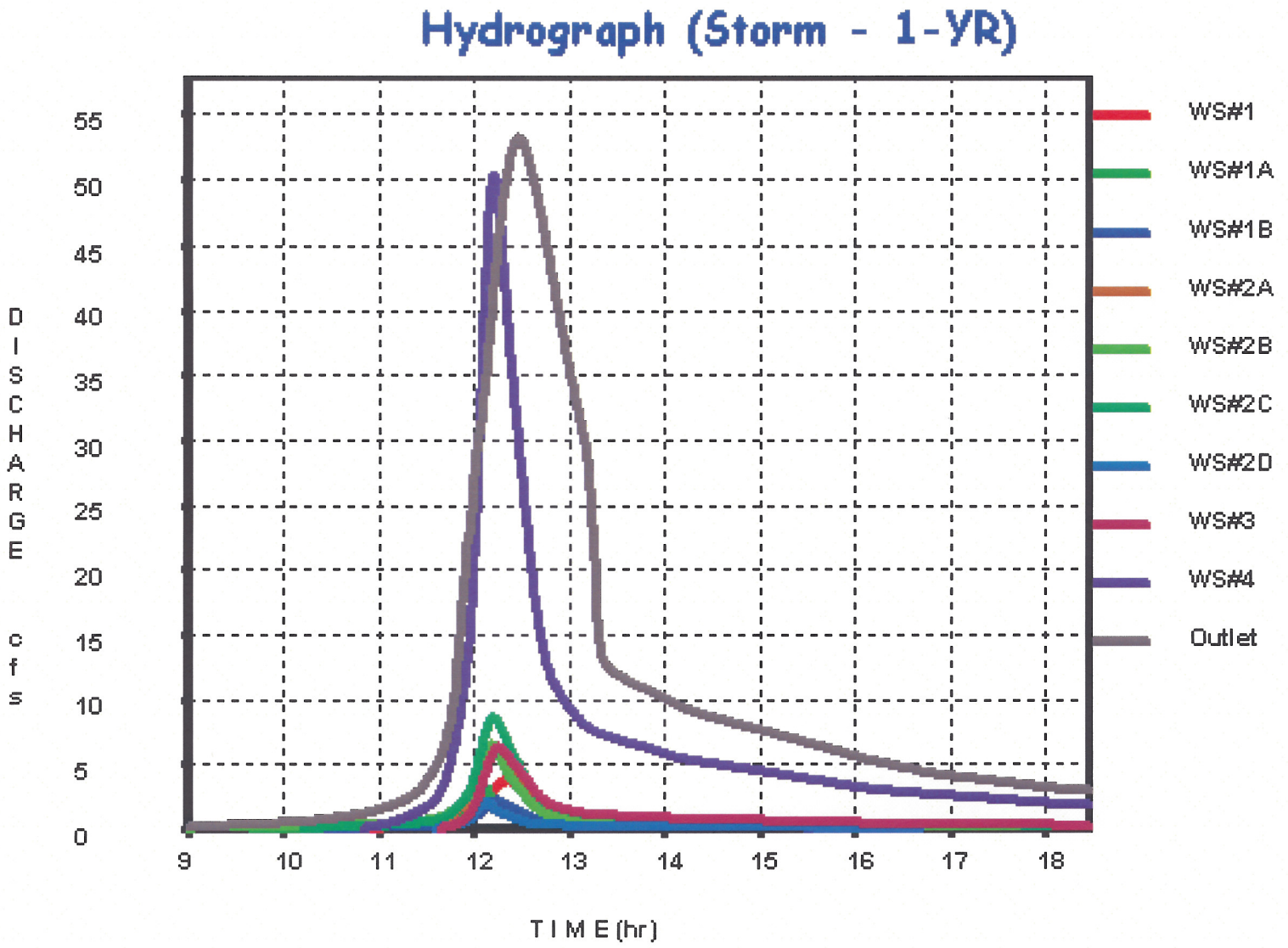

Figure D-1: Routing hydrograph of developed without storage for **1 year** storm peak runoff for at upstream, downstream and outlet.

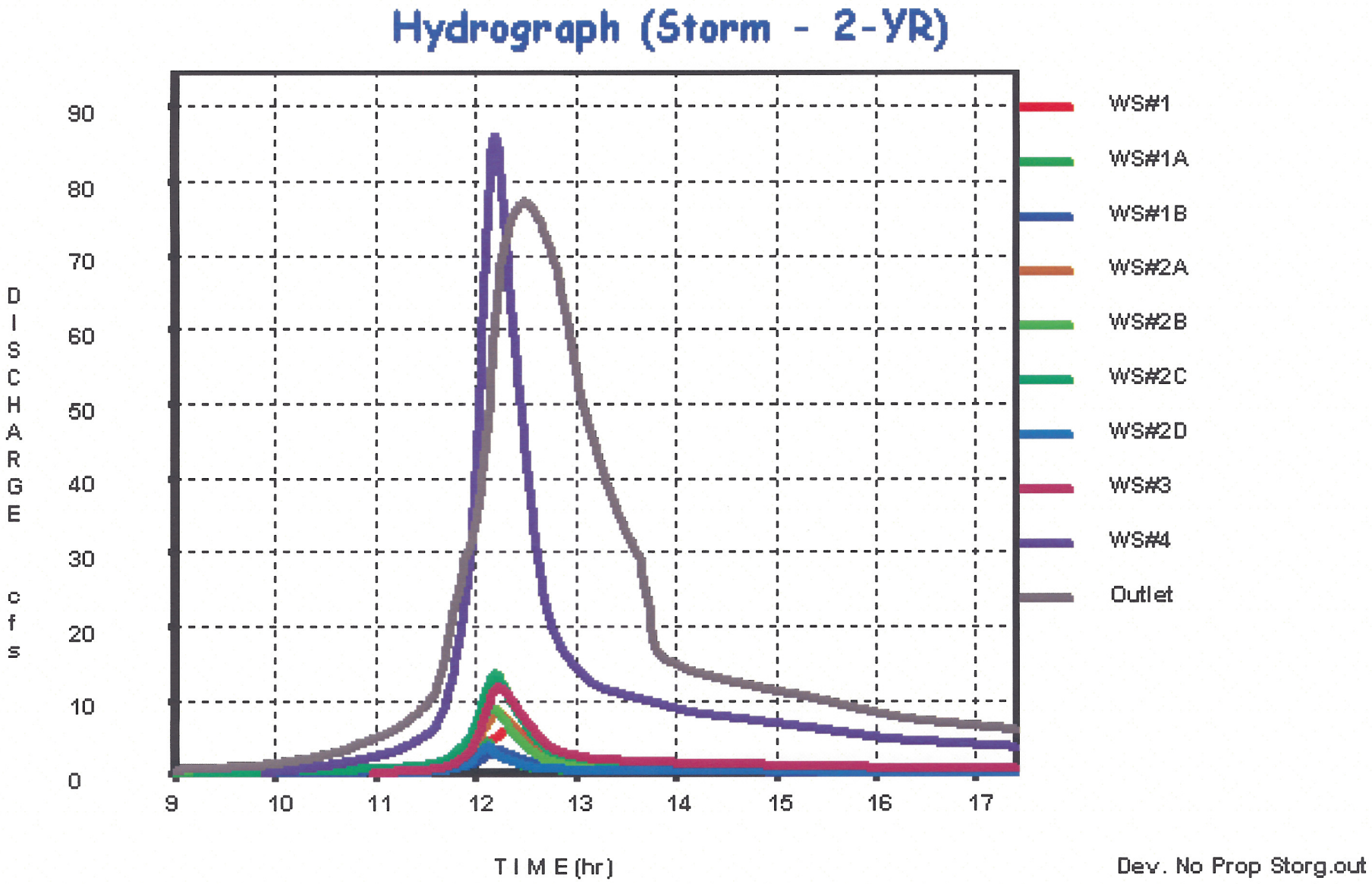

Figure D-2: Routing hydrograph of developed without storage for **2 year** storm peak runoff for at upstream, downstream and outlet.

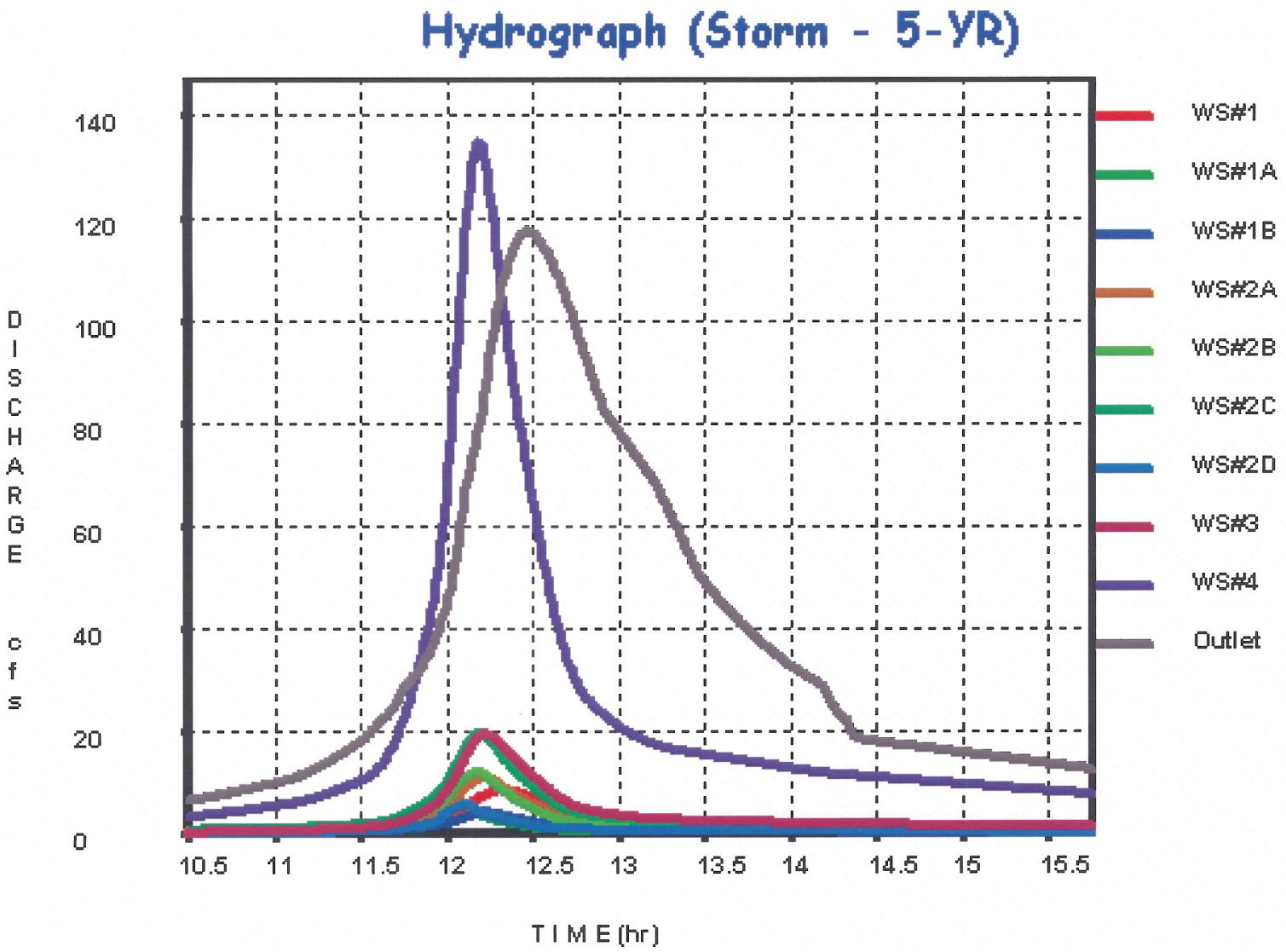

Figure D-3: Routing hydrograph of developed without storage for **5 year** storm peak runoff for at upstream, downstream and outlet.

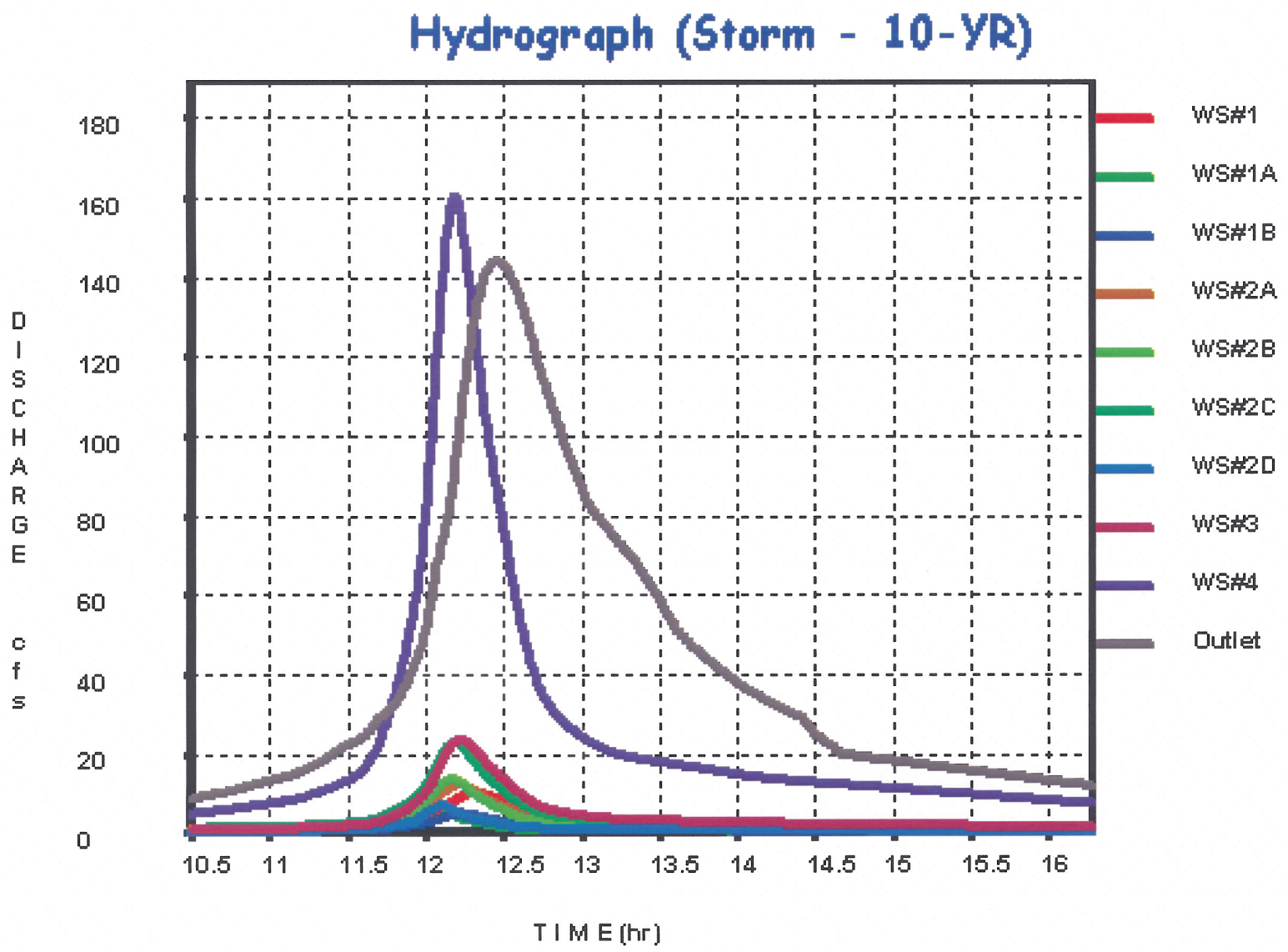

Figure D-4: Routing hydrograph of developed without storage for **10 year** storm peak runoff for at upstream, downstream and outlet.

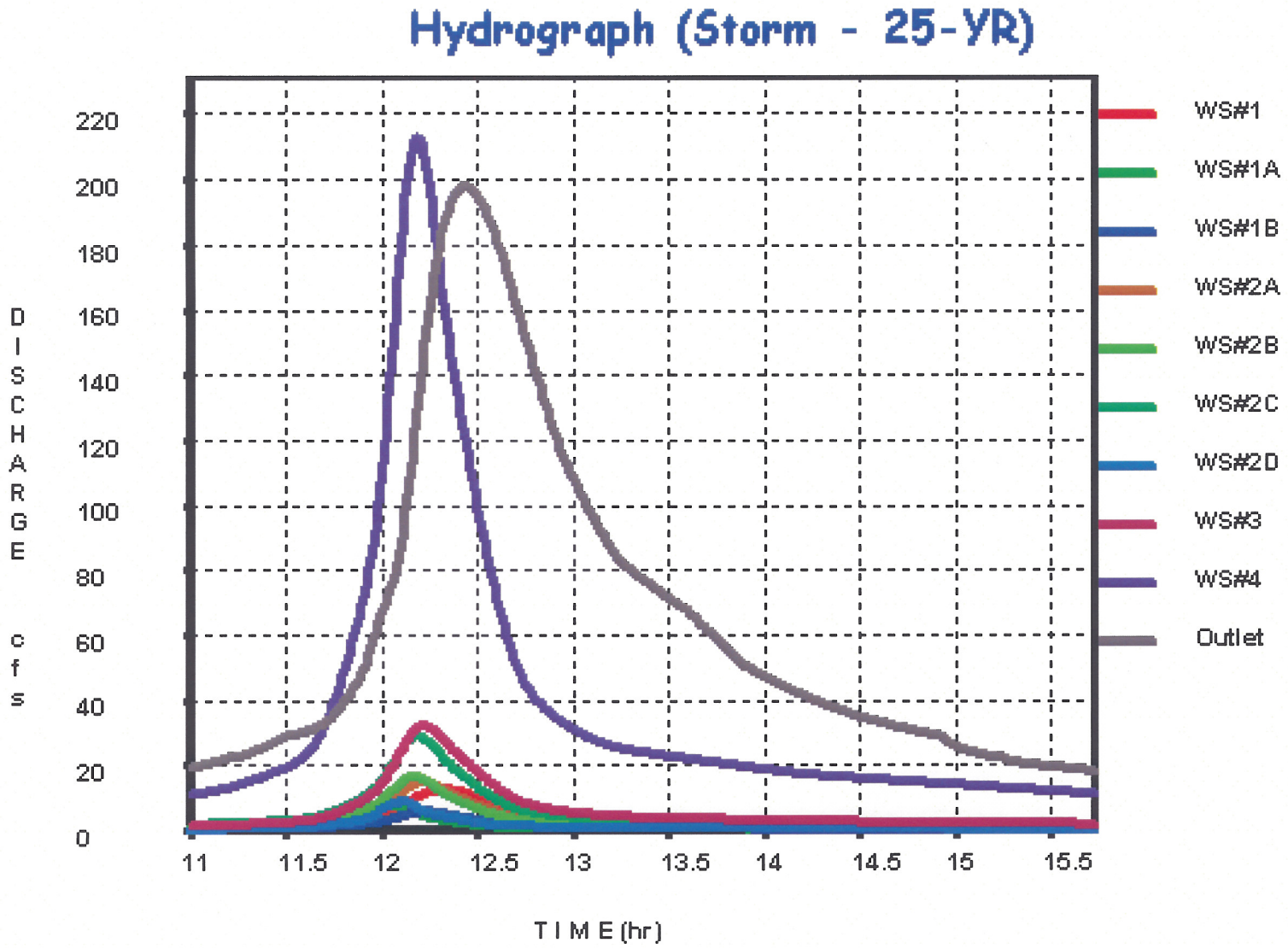

Figure D-5: Routing hydrograph of developed without storage for **25 year** storm peak runoff for at upstream, downstream and outlet.

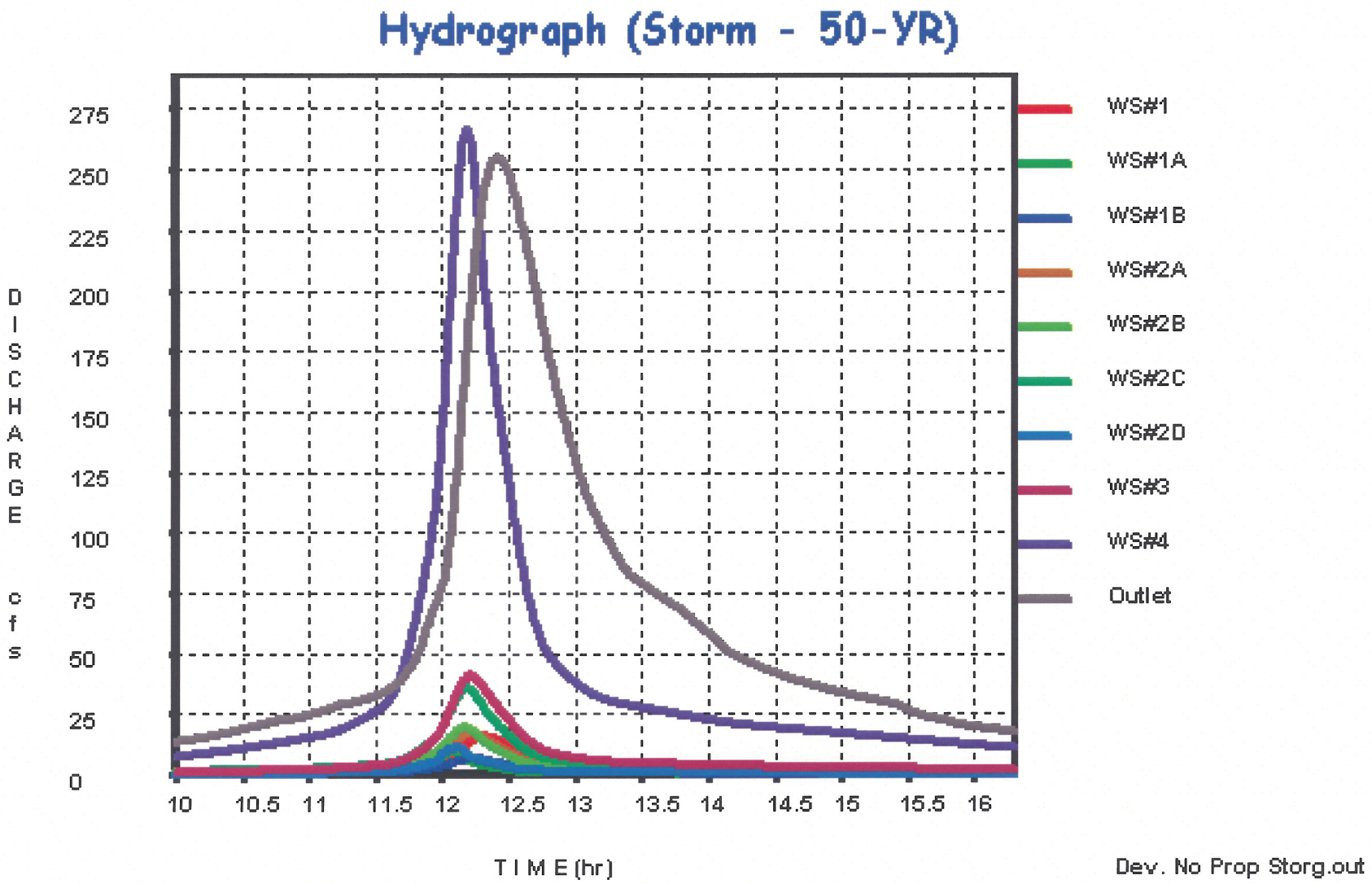

Figure D-6: Routing hydrograph of developed without storage for **50 year** storm peak runoff for at upstream, downstream and outlet.

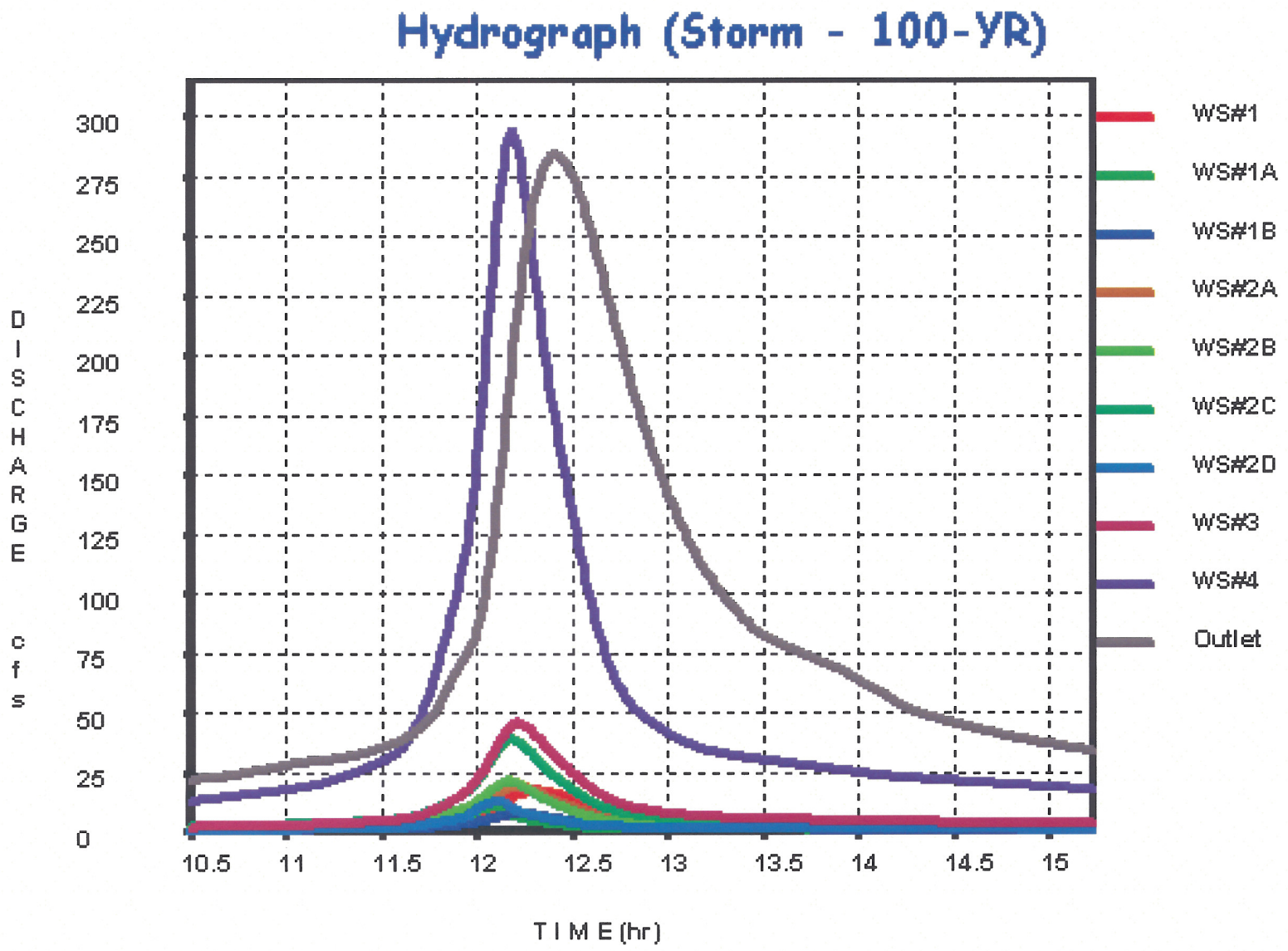

Figure D-7: Routing hydrograph of developed without storage for **100 year** storm peak runoff for at upstream, downstream and outlet.

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

STEP BY STEP
WATER QUALITY & QUANTITY PONDS
DESIGN CALCULATION
PER
NYSDEC DESIGN MANUAL

BY

ATZL, SCATASSA & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
234 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

WATER QUALITY & QUANTITY DESIGN
(POND #1)
(1, 2, 5, 10, 25, 50 & 100-YEAR STORMS)

BY

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New City, NY 10956
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Fax: (845) 634-5543

JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RN DATE: 10/04/11
CHECKED BY: RA DATE: 10/11/11
SHEET NO:
SCALE:

WATER QUALITY & QUANTITY MICROPOOL E.D. POND DESIGN CALCULATION

The proposed Retention Pond#1 (**Micropool Extended Detention Pond**) will be installed on the proposed WS#2C, which is on northwest side of the proposed Road "H". The pond will function as a water quality as well as water quantity (volumetric control) basin. The storm frequency up to 100 year storm peak runoff that is produced from post developed site will be treated and reduced to pre developed site through the proposed stormwater facility.

Following are the step by step calculation to design the stormwater facility, which complies with the NYSDEC stormwater design guidelines. The calculation also includes the required water quality volume (WQv) and stream channel protection (Cp_v) volume calculations.

WATER QUALITY VOLUME CALCULATION OF WS#2C:

- Base Data:
  - Drainage Area in WS#2C = 8.46acres
  - Total impervious area in the ultimate buildout condition = 4.95acres

- Water Quality Volume, WQv:

The impervious cover,

$$I = \frac{4.95}{8.46} \times 100\% = 58.51\%$$

The runoff coefficient,

$$R_V = 0.05 + 0.009 \times I$$
$$\Rightarrow R_V = 0.05 + 0.009 \times 58.51$$
$$\Rightarrow R_V = 0.58$$

Use the 90% rule 1.3" of rainfall in Rockland County,

$$WQ_V = 1.3'' \times R_V \times A_{Drainage}$$
$$\Rightarrow WQ_V = \left(\frac{1.3}{12}\right)' \times 0.58 \times 8.46 acs.$$
$$\Rightarrow WQ_V = 0.53 acs.ft$$

The required standard water quality volume, $(WQv)_{WS\#2C}$ = 23,155 C.F. or 0.53 ACS.FT.

ATZL, SCATASSA & ZIGLER P.C.
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JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RN DATE: 10/04/11
CHECKED BY: RA DATE: 10/11/11
SHEET NO:
SCALE:

CHANNEL PROTECTION VOLUME CALCULATION OF WS#2C:

- The Curve Number, CN = 83 (Per TR-55)
- The Initial Abstraction, $I_a = \left(\frac{200}{CN} - 2\right) = \left(\frac{200}{83} - 2\right) = 0.41$
- $\frac{I_a}{P} = \frac{0.41}{2.7} = 0.152$
- Time of concentration, T_c = 0.260 hours (Per TR-55)
- The unit peak discharge, q_u = 490 csm/in (Per TR-55, Exhibit 4-III)
- $\frac{q_0}{q_i} = 0.037$ (Per NYSSMDM Figure 8.5)
- $\frac{V_s}{V_r} = 0.683 - 1.43 \times \left(\frac{q_o}{q_i}\right) + 1.64 \times \left(\frac{q_o}{q_i}\right)^2 - 0.804 \times \left(\frac{q_o}{q_i}\right)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.683 - 1.43 \times 0.037 + 1.64 \times (0.037)^2 - 0.804 \times (0.037)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.632$
- $V_r = A_{Drainage} \times Q_{inch.} = (8.46acs) \times \left(\frac{1.207}{12}\right) ft. = 0.851 acs.ft.$

  [Here, $Q_{1\text{-}yr}$ = 1.207 inch.]
- $V_s = \frac{V_s}{V_r} \times V_r = 0.632 \times 0.851 acs.ft. = 0.54 acs.ft.$

So, the 1-year storm, stream channel protection volume of WS#2C, $(Cp_v)_{WS\#2C}$= 0.54 acs.ft.

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Following are the calculation of overbank flood protection (Qp_{10}) and extreme flood protection (Qf_{100}) for entire developed drainage area (WS#2C) in order to provide the zero net increase of peak runoff.

Computation of required Overbank Flood Protection Volume, $(Qp_{10})_{Total}$:

- Existing $(Q_{10})_{Outlet}$ = 127.65 cfs ..... (Per TR-55)
- Developed $(Q_{10})_{Outlet}$ = 144.29 cfs ..... (Per TR-55)
- ΔQ_{10} = 144.29 – 127.65 = 16.64 cfs

The 10 year peak flow of developed condition at outlet:

- $(Q_{WS\#2C})_{in}$ = 22.98 cfs developed condition .....(Per TR-55)

$Q_{WS\#2Cout}$ = 22.98 – 16.64 = 6.34 CFS to achieve the zero net increase of peak runoff.

- $\frac{q_{out}}{q_{in}} = \frac{6.34}{22.98} = 0.276$
- $\frac{V_s}{V_r} = 0.683 - 1.43 \times \left(\frac{q_o}{q_i}\right) + 1.64 \times \left(\frac{q_o}{q_i}\right)^2 - 0.804 \times \left(\frac{q_o}{q_i}\right)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.683 - 1.43 \times 0.276 + 1.64 \times (0.276)^2 - 0.804 \times (0.276)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.396$
- $V_r = A_{Drainage} \times Q_{inch.} = (8.46acs) \times \left(\frac{3.172}{12}\right) ft. = 2.24 acs.ft.$

  Here, $(Q)_{10}$ = 3.172 inch
- $V_s = \frac{V_s}{V_r} \times V_r = 0.396 \times 2.24 acs.ft. = 0.89 acs.ft.$

So, the required 10-year storm, overbank flood protection volume, ($Q_{p\text{-}10}$) = 0.89 acs.ft.

Computation of required extreme flood protection Volume, $(Q_{f\text{-}100})_{Total}$:

The 100 year peak flow of developed condition at outlet:

- Existing $(Q_{100})_{Outlet} = 265.13$ cfs ..... (Per TR-55)
- Developed $(Q_{100})_{Outlet} = 284.24$ cfs ..... (Per TR-55)
- $\Delta Q_{100} = 284.24 - 265.13 = 19.11$cfs

The 100 year peak flow of developed condition at outlet:

- $(Q_{WS\#2C})_{in} = 39.09$cfs developed condition ..... (Per TR-55)
- $(Q_{WS\#2C})_{out} = (39.09 - \Delta Q_{100}) = 19.98$ cfs

Provide required $(Q_{WS\#2C})_{out}$ = **19.98 cfs or less** to achieve the zero net increase of peak runoff.

- $\frac{q_{out}}{q_{in}} = \frac{19.98}{39.09} = 0.51$
- $\frac{V_s}{V_r} = 0.683 - 1.43 \times \left(\frac{q_o}{q_i}\right) + 1.64 \times \left(\frac{q_o}{q_i}\right)^2 - 0.804 \times \left(\frac{q_o}{q_i}\right)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.683 - 1.43 \times 0.51 + 1.64 \times (0.51)^2 - 0.804 \times (0.51)^3$

  $\Rightarrow \frac{V_s}{V_r} = 0.274$
- $V_r = A_{Drainage} \times Q_{inch.} = (8.46acs) \times \left(\frac{5.499}{12}\right) ft. = 3.87 acs.ft.$

  Here, $(Q)_{100} = 5.499$ inch
- $V_s = \frac{V_s}{V_r} \times V_r = 0.274 \times 3.87 acs.ft. = 1.06 acs.ft.$

So, the required 100-year storm, extreme flood protection volume, $(Q_{p\text{-}100})$ = 1.06 acs.ft.

Table 1: Below is the summary table of general stage requirement for **the drainage area of WS#2C**:

SYMBOL	CATEGORY	VOLUME (ACS.FT)	DRAINAGE INFLOW (CFS)	MAXIMUM ALLOWABLE OUTFLOW (CFS)	NOTES
WQ_v	Water Quality Volume	0.53	N/A	N/A	20% remains at Permanent Pool.
C_{Pv}	Stream Protection	0.54	8.71	0.27	Average ED. Flow releases over 24 hours.
Q_p	Overbank Control	0.89	22.98	6.34	10 year Storm, in this case
Q_f	Flood Control	1.06	39.09	19.98	100 Year Storm, in this case.

- **STEP 2: DETERMINE IF THE DEVELOPMENT SITE AND CONDITIONS ARE APPROPRIATE FOR THE USE OF A STORMWATER POND:**

The site is appropriate for stormwater quality and quantity control practice.

- **STEP 3: CONFIRM LOCAL DESIGN CRITERIA AND APPLICABILITY:**

There are no additional requirements for this site.

- **STEP 4: DETERMINE PRETREATMENT VOLUME:**

Size wet forebay to treat 10% water quality volume (WQv)

$$V_{Forebay} = (0.53 acs.ft.) \times \frac{10}{100}$$

$$V_{Forebay} = 0.053 acs.ft.$$

- **STEP 5: PERMANENT POOL AND EXTENTED DETENTION VOLUME:**

- Size permanent pool volume to contain 20% of WQv

$$V_{Permanent\ Pool} = 0.53 \times 0.20 = 0.106 \text{ acs.ft.}$$

- Size extended detention volume to contain 80% of WQv

$$V_{ED} = 0.53 \times 0.80 = 0.424 \text{acs.ft.}$$

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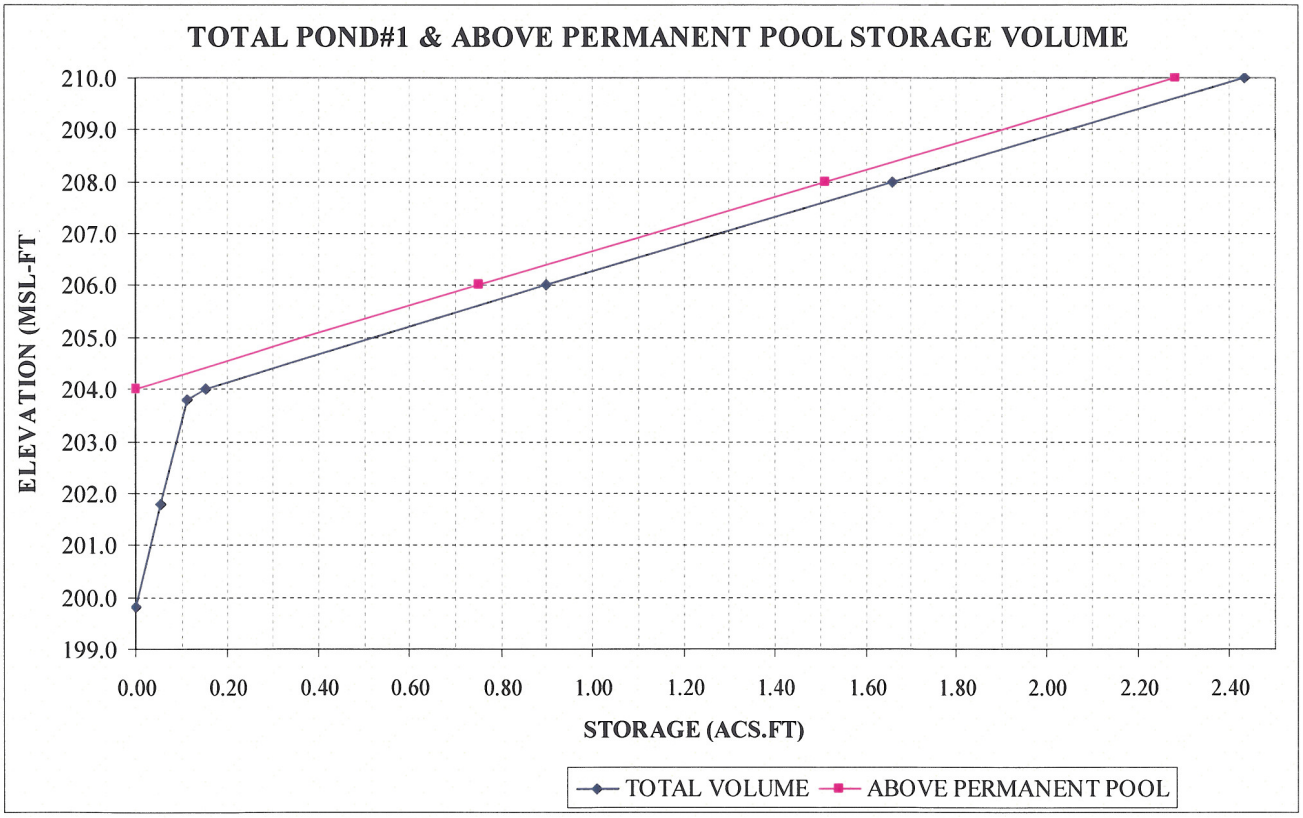
❑ **STEP 6: <u>DETERMINE STORAGE AVAILABLE FOR WQv PERMAMENT POOL AND WQv-ED:</u>**

Elevation (MSL)	Area (sq.ft)	Average Area (sq.ft.)	Depth (ft.)	Volume (c.f.)	Cumulative Volume (c.f.)	Cumulative Volume (acs.ft.)	Volume Above Permanent Pool (acs.ft.)	Permanent Pool Elevation (MSL)
199.8	1,200		0.0	0	0	0.000		
201.8	1,200	1,200	2.0	2,400	2,400	0.055		
203.8	1,200	1,200	2.0	2,400	4,800	0.110		
204.0	16,170	8,685	0.2	1,737	6,537	0.150	0.00	204.0
206.0	16,460	16,315	2.0	32,630	39,167	0.899	0.75	206.0
208.0	16,690	16,575	2.0	33,150	72,317	1.660	1.51	208.0
210.0	16,950	16,820	2.0	33,640	105,957	2.432	2.28	210.0



SET WATER SURFACE AND OTHER ELEVATION:

The permanent pool volume = 0.106 ac-.ft (Step-5). Therefore, from the elevation-storage table, read elevation 204.0 ft. (0.15 acs.ft provided). Please note that the permanent pool will surrounded by a gravity retaining wall (Boulders).

- **Set permanent pool WS.EL = 204.0**

Required extended detention volume ($W_{ED.}$ = 0.424 acs.ft). From the elevation-storage table (volume above the permanent pool), read elevation 205.13 ft.

- **Set extended detention WS.EL = 205.13**

Compute the required WQ_V-ED orifice diameter to release 0.424 acs.ft over 24 hours:

- Average ED. Release rate =

$$\left(0.424 acs.ft. \times 43{,}560 \frac{ft.^2}{acs.}\right) \div \left(24 hour \times 3{,}600 \frac{\text{sec.}}{hour}\right) = 0.21 cfs$$

- Invert of orifice at WS.EL = 204.0 ft. elevation

- Average Head $= \left(\frac{205.13 - 204.0}{2}\right) = 0.57 FT.$

- Use orifice equation to compute cross sectional area and diameter.

$$Q = C \cdot A \cdot \sqrt{2gh}$$
$$\Rightarrow 0.21 = 0.6 \times A \times \sqrt{2 \times 32.2 \times 0.57}$$
$$\Rightarrow A = 0.058 sq.ft.$$
$$\Rightarrow Diameter, D = 0.27 ft.$$
$$\Rightarrow D = 3.26 Inch.$$

Use one 4 inch. diameter pipe, gate down to 3.26 inch.

Compute the stage discharge equation for the **3.26"** WQv –ED orifice

- $Q_{WQv\text{-}ED} = C \times A \times \sqrt{2gh} = 0.6 \times \left(\frac{\pi}{4} \times \left(\frac{3.26}{12}\right)^2\right) \times \sqrt{2 \times 32.2 \times h}$

$$\Rightarrow Q_{WQv\text{-}ED} = 0.279 \times h^{0.5} \quad \text{---------- (i)}$$

(Where, h = WS.EL – 204.14)

- **STEP 7: <u>COMPUTE ED ORIFICE SIZE, AND COMPUTE RELEASE RATE FOR CPv-ED CONTROL AND ESTABLISH CPv ELEVATION</u>**

The Average Cpv Release Rate =

$$\left(0.54 acs.ft. \times 43{,}560 \frac{ft.^2}{acs.}\right) \div \left(24 hour \times 3{,}600 \frac{\text{sec.}}{hour}\right) = 0.27 cfs$$

- The Cp_v, 1 year storm design average out discharge = 0.27 cfs.
- The 1 year storm peak runoff required storage = 0.54 acs.ft.
- From the elevation storage table, read elevation = 205.44 ft.

<u>At elevation 205.44, the flow through 3.26" WQv-ED orifice [Use Equation (i)]:</u>

$$Q_{WQv-ED} = 0.279 \times h^{0.5}$$

$$\Rightarrow Q_{WQv-ED} = 0.279 \times \left(\frac{205.44 - 204.14}{2}\right)^{0.5}$$

$$\Rightarrow Q_{WQv-ED} \approx 0.20 cfs$$

Q_{WQv-ED} = Cpv = 0.22 cfs.

<u>Cpv Orifice:</u>

Cpv = 0.27 – 0.22 = 0.05 cfs.

Use 3.0" orifice, (minimum orifice size) at elevation 205.0

- $Q_{Cpv} = C \times A \times \sqrt{2gh} = 0.6 \times \left(\frac{\pi}{4} \times \left(\frac{3.0}{12}\right)^2\right) \times \sqrt{2 \times 32.2 \times h}$

$Q = 0.236 \times h^{0.5}$

(Where, h = WS.EL – 205.13)

h = – 205.44 – 205.13 = 0.31 ft h/2 =0.16 ft

$Q = 0.236 \times 0.16^{0.5} = 0.09 cfs$

Q = 0.22 + 0.09 = 0.31 CFS

- **STEP 8: <u>CALCULATE Qp_{10} (10 YEAR STORM) RELEASE RATE AND WATER SURFACE ELEVATION.</u>**

The 10 year storm required storage, $Q_{p\text{-}10}$ = 0.89 acs.ft. In order to achieve the zero net increase of peak runoff, the total available storage is accounted more than or equal to the required storage per SCS requirements. Therefore, the designed routed $Q_{p\text{-}10}$ storage is used 1.34 acs.ft. (0.54 + 0.89 = 1.34), above the permanent pool.

- The Qp_{10}, 10 year storm allowable out peak discharge = 6.34 cfs
- The 10 year storm peak runoff design storage = 1.34 acs.ft.
- From the elevation storage table, read elevation = 207.55 ft.

<u>At elevation 207.55, the flow through 3.26" WQv-ED orifice [Use Equation (i)]:</u>

$$Q_{WQv-ED} = 0.279 \times h^{0.5}$$
$$\Rightarrow Q_{WQv-ED} = 0.279 \times (207.55 - 204.14)^{0.5}$$
$$\Rightarrow Q_{WQv-ED} \approx 0.52 cfs$$

<u>At elevation 207.55, the flow through 3.0" Wpv orifice</u>

$$Q = 0.236 \times h^{0.5} = 0.236 \times (207.55 - 205.13)^{0.5} = 0.37 cfs$$

Q = 6.34 –(0.52 + 0.37) = 5.45 CFS

Flow from 5 ft. weir at elevation 207.00:

$$Q = CxL \times h^{1..5}$$

$$Q = 3.1x4.3 \times (207.55 - 207.00)^{1.5} = 5.44 cfs$$

<u>(o.k.)</u> √

- **STEP 9: <u>CALCULATE Q_f(100 YEAR STORM) RELEASE RATE AND WATER SURFACE ELEVATION.</u>**

The 100 year storm required storage, $Q_{p\text{-}100}$ = 1.06 acs.ft. In order to achieve the zero net increase of peak runoff, the total available storage is accounted more than the required storage per SCS requirements.

- The $Q_{f\text{-}100}$, 100 year storm allowable out peak discharge = 19.98 cfs.
- The 100 year storm peak runoff design storage = 1.60 acs.ft. (1.06 + 0.54)
- From the elevation storage table, read elevation = 207.55 ft.
- From the elevation storage table, read elevation = 208.23 ft.

At elevation 208.23, the flow through 3.26" WQv-ED orifice [Use Equation (i)]:

$$Q_{WQv-ED} = 0.279 \times h^{0.5}$$
$$\Rightarrow Q_{WQv-ED} = 0.279 \times (208.23 - 204.14)^{0.5}$$
$$\Rightarrow Q_{WQv-ED} \approx 0.56 cfs$$

At elevation 208.23, the flow through 3.0" Wpv orifice

$$Q = 0.236 \times h^{0.5} = 0.236 \times (208.23 - 205.13)^{0.5} = 0.42 cfs$$

Q = 19.98 –(0.56 + 0.42) = 19.00 CFS

Flow from 4.3 ft. weir:

$$Q = CxL \times h^{1..5}$$

$Q = 3.1x4.3 \times (208.23 - 207.00)^{1.5} = 18.18 cfs$ < 19.0 CFS, Therefore, water surface must rise to elevation of 208.27:

$$Q = 3.1x4.3 \times (208.27 - 207.00)^{1.5} = 19.07 cfs$$

(o.k.) √

The details break down of the stage and discharge is summarized on **Table 1**. Those numerical numbers is used for the pond rating curve for final routing structural through the Pond.

Table 1: Stage-Discharge-Storage summary rating curve table of **Pond#1.**

Elevation (MSL)	Low Flow WQv-ED 3.3" Eq. Dia. (cfs)	QCpv Flow 3.0" Orifice Flow (cfs)	4.3' Weir (cfs)	Overflow Riser (5' X 4') Opening (cfs)	QTotal (cfs)	Storage, V (acs.ft.)
204.00	0.00				0.00	0.000
204.20	0.07				0.07	0.068
204.60	0.19				0.19	0.221
204.70	0.21				0.21	0.259
204.80	0.23				0.23	0.297
205.00	0.26	0.00			0.26	0.373
205.30	0.30	0.10			0.40	0.487
205.50	0.33	0.14			0.47	0.563

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205.70	0.35	0.18			0.53	0.639
206.00	0.38	0.22			0.60	0.753
206.20	0.40	0.24			0.64	0.829
206.50	0.43	0.28			0.70	0.943
206.70	0.45	0.30			0.74	1.020
207.00	0.47	0.32	0.00		0.79	1.134
207.20	0.49	0.34	1.19		2.02	1.210
207.30	0.50	0.35	2.19		3.03	1.248
207.50	0.51	0.36	4.71		5.59	1.324
207.70	0.53	0.38	7.81		8.71	1.400
208.00	0.55	0.40	13.33		14.28	1.514
208.20	0.56	0.41	17.52		18.50	1.590
208.50	0.58	0.43	24.49		25.50	1.704
208.70	0.60	0.45	29.55		30.59	1.780
208.80	0.60	0.45	32.19		33.25	1.818
208.90	0.61	0.46	34.91		35.98	1.857
209.00	0.62	0.46	37.70	0.00	38.78	1.895
209.10	0.62	0.47	40.57	1.47	43.13	1.933
209.20	0.63	0.48	43.50	4.16	48.76	1.971
209.30	0.63	0.48	46.50	7.64	55.25	2.009
209.40	0.64	0.49	49.56	11.76	62.45	2.047
209.50	0.65	0.49	52.69	16.44	70.27	2.085
209.60	0.65	0.50	55.88	21.61	78.65	2.123
209.70	0.66	0.50	59.14	27.23	87.53	2.161
209.80	0.66	0.51	62.45	33.27	96.90	2.199
209.90	0.67	0.52	65.83	39.70	106.72	2.237
210.00	0.68	0.52	69.26	46.50	116.96	2.275

WQ-ED & Cpv Orifice, $Q_{p\text{-}10}$ Orifice, $Q_{f\text{-}100}$ Weir and Control Structure Top elevations respectively.

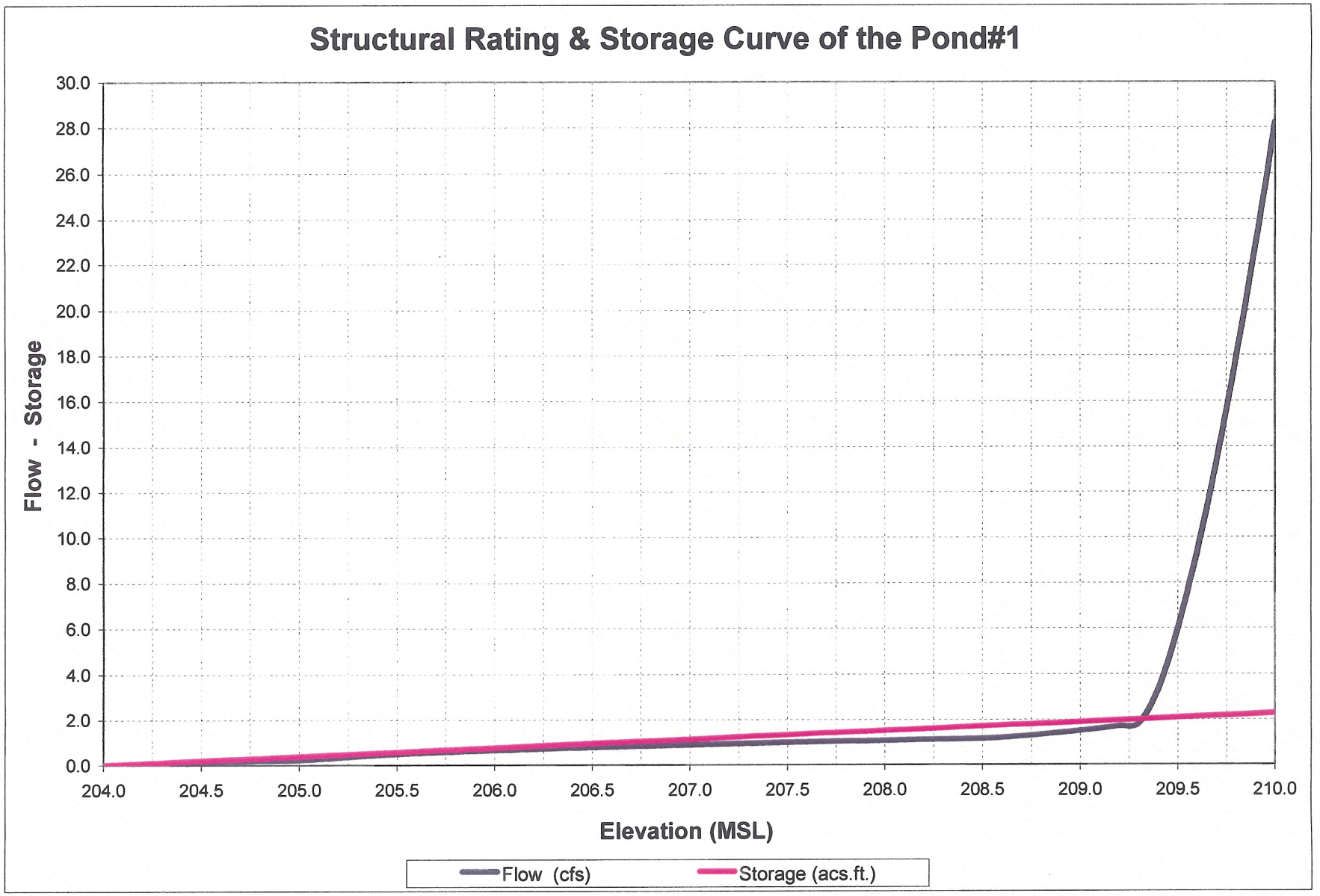
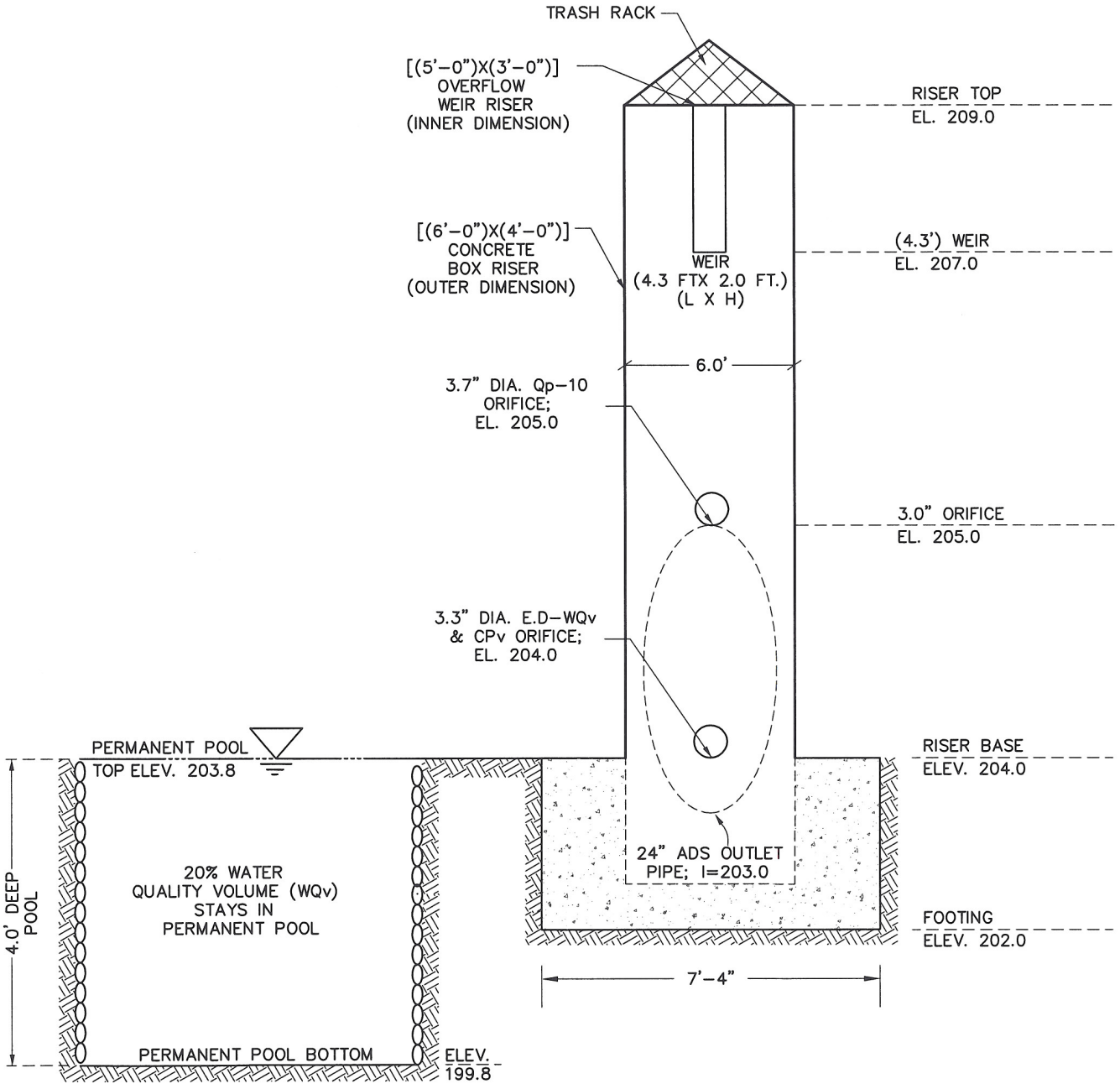


Figure P-1: Rating and Storage Curve of the proposed Quality and Quantity Retention Pond System (Pond#1)

NOTE: 100 YEAR WATER SURFACE
SEE RESULT OF TR-20



HYDRAULIC CONTROL STRUCTURE SCHEMATIC
MICROPOOL E.D. POND#2

N.T.S.

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SCALE:
REVISION DATE: Date: mm/dd/yy

WS#2C

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	8.460	Acres
Total Impervious Area, $A_{Impervious}$ =	4.950	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 58.5 %
The Runoff Coefficient, Rv = 0.58

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.528 Acs.ft.

So, The Required Water Quality Volume,

WQv = 23,019 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

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SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#2C

Input Data ID	Value	Unit
The Curve Number, CN =	83	N/A
Disturbed Drainage Area, A =	8.46	Acres
Time of Concentration, t_c =	0.260	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$=	1.207	Inch

Input Data

Output Data (Item#1 to #8):

1. The Initital Abstraction, I_a = 0.410
2. Ratio Int. Abs. to Rainfall I_a/P = 0.152
3. The Valid Ratio of I_a/P = 0.15
4. The Unit Peak Discharge, q_u = 503 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0353
6. Storage to Runoff Ratio (Vs/Vr) = 0.635 Acs.ft.
7. Total Runoff Volume, V_r = 0.851 Acs.ft.
8. The Required Storage Volume, V_s = 0.540 Acs.ft.

So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.540** Acs.ft. or **23,521** C.F.

Calculated Result

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

POND#1A, POND#2A & POND#2B
SUMMARY DESIGN CALCULATION
PER
NYSDEC DESIGN MANUAL

BY

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CHECKED BY: RA Date: 10/14/11
SCALE:
REVISION DATE: Date: mm/dd/yy

WS#1

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	4.180	Acres
Total Impervious Area, $A_{Impervious}$ =	1.370	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 32.8 %
The Runoff Coefficient, Rv = 0.34

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.156 Acs.ft.

So, The Required Water Quality Volume,

WQv = 6,805 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

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CHECKED BY: RA DATE: mm/dd/yy
SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#1

Input Data ID	Value	Unit
The Curve Number, CN =	82	N/A
Disturbed Drainage Area, A =	4.18	Acres
Time of Concentration, t_c =	0.467	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$ =	1.141	Inch

Input Data

Output Data (Item#1 to #8):

1. The Initital Abstraction, I_a = 0.439
2. Ratio Int. Abs. to Rainfall I_a/P = 0.163
3. The Valid Ratio of I_a/P = 0.16
4. The Unit Peak Discharge, q_u = 401 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0442
6. Storage to Runoff Ratio (Vs/Vr) = 0.623 Acs.ft.
7. Total Runoff Volume, V_r = 0.397 Acs.ft.
8. The Required Storage Volume, V_s = 0.248 Acs.ft.

So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.248** Acs.ft. or **10,784** C.F.

Calculated Result

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Fax: (845) 634-5543

JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RA Date: 10/14/11
CHECKED BY: RA Date: 10/14/11
SCALE:
REVISION DATE: Date: mm/dd/yy

WS#1A

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	2.070	Acres
Total Impervious Area, $A_{Impervious}$ =	1.590	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 76.8 %
The Runoff Coefficient, Rv = 0.74

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.166 Acs.ft.

So, The Required Water Quality Volume,

WQv = 7,241 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

ATZL, SCATASSA & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNER
234 North Main Steet
New City, NY 10956
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Fax: (845) 634-5543

JOB: Orchard ridge (3300)
CALCULATED BY: RA DATE: 10/14/11
CHECKED BY: RA DATE: mm/dd/yy
SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#1A

Input Data ID	Value	Unit
The Curve Number, CN =	93	N/A
Disturbed Drainage Area, A =	2.07	Acres
Time of Concentration, t_c =	0.100	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$ =	1.921	Inch

Input Data

Output Data (Item#1 to #8):

1. The Initital Abstraction, I_a = 0.151
2. Ratio Int. Abs. to Rainfall I_a/P = 0.056
3. The Valid Ratio of I_a/P = 0.10
4. The Unit Peak Discharge, q_u = 662 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0272
6. Storage to Runoff Ratio (Vs/Vr) = 0.645 Acs.ft.
7. Total Runoff Volume, V_r = 0.331 Acs.ft.
8. The Required Storage Volume, V_s = 0.214 Acs.ft.

So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.214** Acs.ft. or **9,314** C.F.

Calculated Result

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New City, NY 10956
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Fax: (845) 634-5543

JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RA Date: 10/14/11
CHECKED BY: RA Date: 10/14/11
SCALE:
REVISION DATE: Date: mm/dd/yy

WS#1B

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	1.580	Acres
Total Impervious Area, $A_{Impervious}$ =	1.100	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 69.6 %
The Runoff Coefficient, Rv = 0.68

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.116 Acs.ft.

So, The Required Water Quality Volume,

WQv = 5,045 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

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New City, NY 10956
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Fax: (845) 634-5543

JOB: Orchard ridge (3300)
CALCULATED BY: RA DATE: 10/14/11
CHECKED BY: RA DATE: mm/dd/yy
SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#1B

Input Data ID	Value	Unit
The Curve Number, CN =	91	N/A
Disturbed Drainage Area, A =	1.58	Acres
Time of Concentration, t_c =	0.334	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$=	1.663	Inch

Input Data

Output Data (Item#1 to #8):

1. The Initital Abstraction, I_a = 0.198
2. Ratio Int. Abs. to Rainfall I_a/P = 0.073
3. The Valid Ratio of I_a/P = 0.10
4. The Unit Peak Discharge, q_u = 480 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0368
6. Storage to Runoff Ratio (Vs/Vr) = 0.633 Acs.ft.
7. Total Runoff Volume, V_r = 0.219 Acs.ft.
8. The Required Storage Volume, V_s = 0.139 Acs.ft.

So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.139** Acs.ft. or **6,034** C.F.

Calculated Result

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New City, NY 10956
Tel: (845) 634-4694
Fax: (845) 634-5543

JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RA Date: 10/14/11
CHECKED BY: RA Date: 10/14/11
SCALE:
REVISION DATE: Date: mm/dd/yy

WS#2A

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	3.880	Acres
Total Impervious Area, $A_{Impervious}$ =	3.010	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 77.6 %
The Runoff Coefficient, Rv = 0.75

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.314 Acs.ft.

So, The Required Water Quality Volume,

WQv = 13,699 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

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Tel: (845) 634-4694
Fax: (845) 634-5543

JOB: Orchard ridge (3300)
CALCULATED BY: RA DATE: 10/14/11
CHECKED BY: RA DATE: mm/dd/yy
SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#2A

Input Data ID	Value	Unit
The Curve Number, CN =	93	N/A
Disturbed Drainage Area, A =	3.88	Acres
Time of Concentration, t_c =	0.317	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$ =	1.955	Inch

Input Data

Output Data (Item#1 to #8):

1. The Initital Abstraction, I_a = 0.151
2. Ratio Int. Abs. to Rainfall I_a/P = 0.056
3. The Valid Ratio of I_a/P = 0.10
4. The Unit Peak Discharge, q_u = 489 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0362
6. Storage to Runoff Ratio (Vs/Vr) = 0.633 Acs.ft.
7. Total Runoff Volume, V_r = 0.632 Acs.ft.
8. The Required Storage Volume, V_s = 0.400 Acs.ft.

So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.400** Acs.ft. or **17,440** C.F.

Calculated Result

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234 North Main Street
New City, NY 10956
Tel: (845) 634-4694
Fax: (845) 634-5543

JOB: ORCHARD RIDGE (3300)
CALCULATED BY: RA Date: 10/14/11
CHECKED BY: RA Date: 10/14/11
SCALE:
REVISION DATE: Date: mm/dd/yy

WS#2B

Input Base Data ID	Value	Unit
Disturbed Drainage Area, $A_{Drainage}$ =	4.040	Acres
Total Impervious Area, $A_{Impervious}$ =	3.090	Acres
90% Rainfall Event Number =	1.30	Inch

Output Data:

The Impervious Cover, I = 76.5 %
The Runoff Coefficient, Rv = 0.74

Use 90% Capture Rule with 1.30 Inch of Rainfall In Rockland County:

Water Quality Volume, WQv = 0.323 Acs.ft.

So, The Required Water Quality Volume,

WQv = 14,077 C.F.

Calculated Result

Note: This Program is only valid for Rockland, Orange and Sullivan County.

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234 North Main Steet
New City, NY 10956
Tel: (845) 634-4694
Fax: (845) 634-5543

JOB: Orchard ridge (3300)
CALCULATED BY: RA DATE: 10/14/11
CHECKED BY: RA DATE: mm/dd/yy
SCALE:
REVISION DATE: mm/dd/yy

Computation of required stream channel protection volume, Cpv:

WS#2B

Input Data ID	Value	Unit
The Curve Number, CN =	92	N/A
Disturbed Drainage Area, A =	4.04	Acres
Time of Concentration, t_c =	0.244	Hour
1 Year Rainfall Amount, P =	2.7	Inch
1 Yr Storm Runoff Depth, $Q_{in.}$ =	1.868	Inch

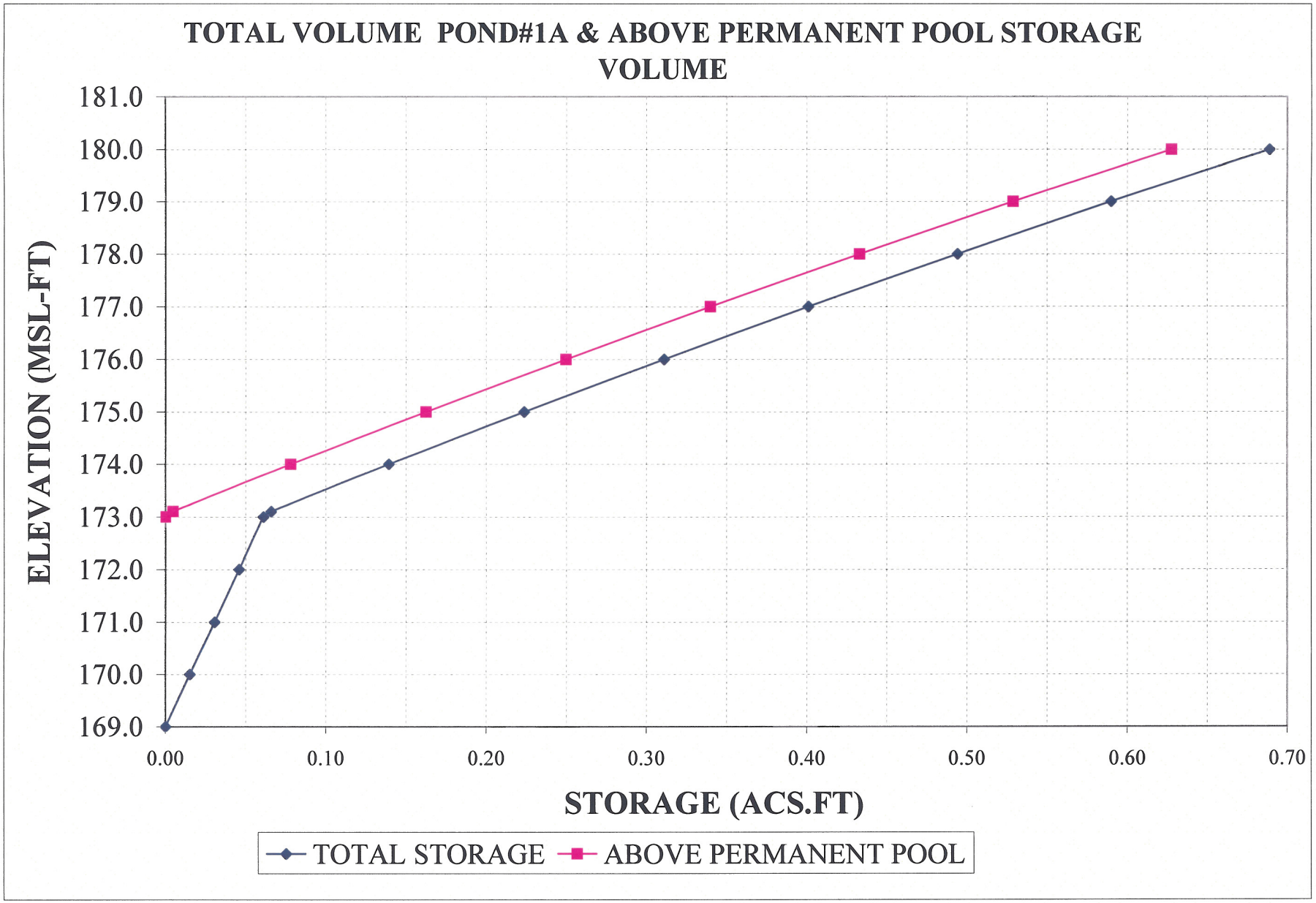
Input Data

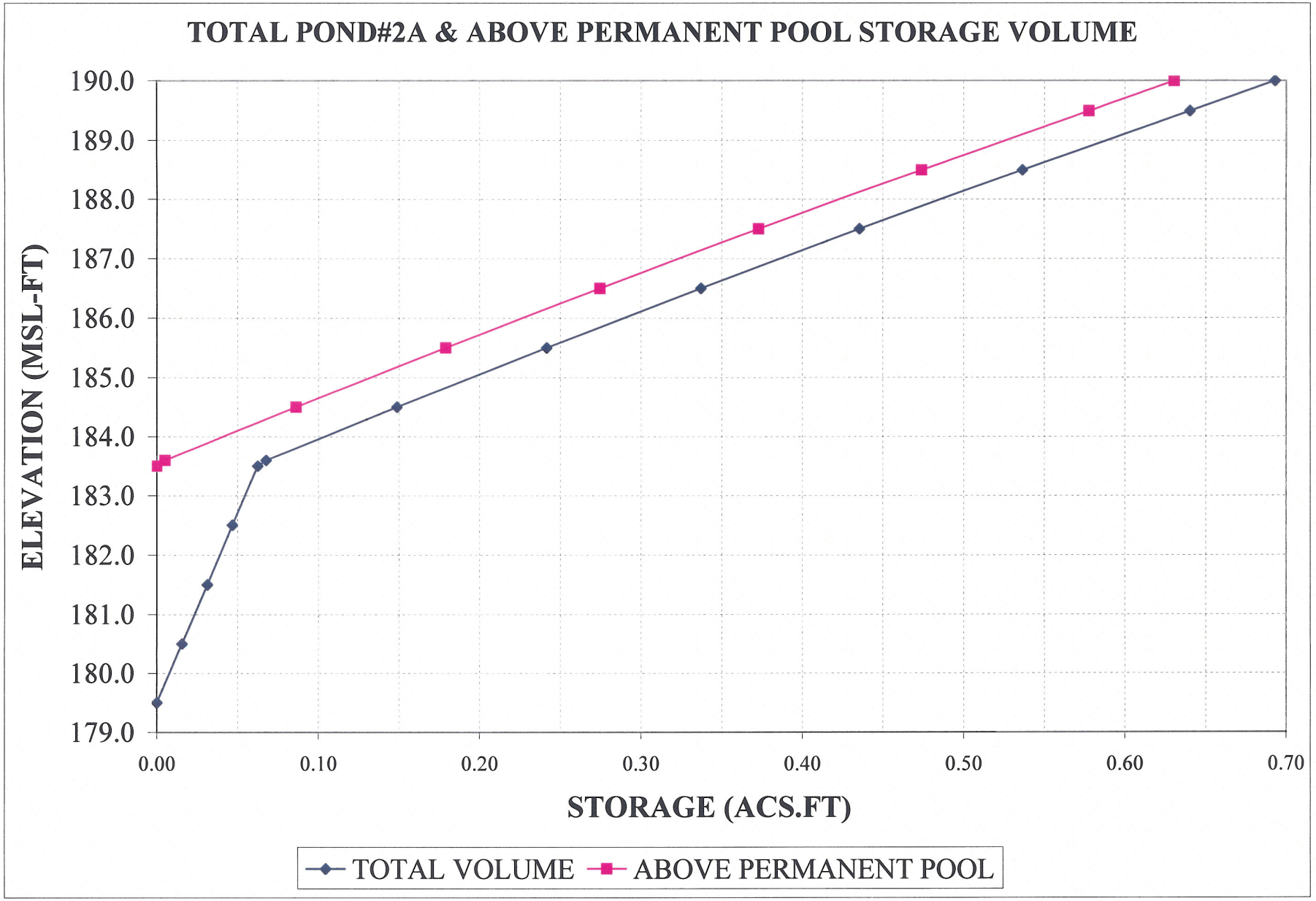
Output Data (Item#1 to #8):

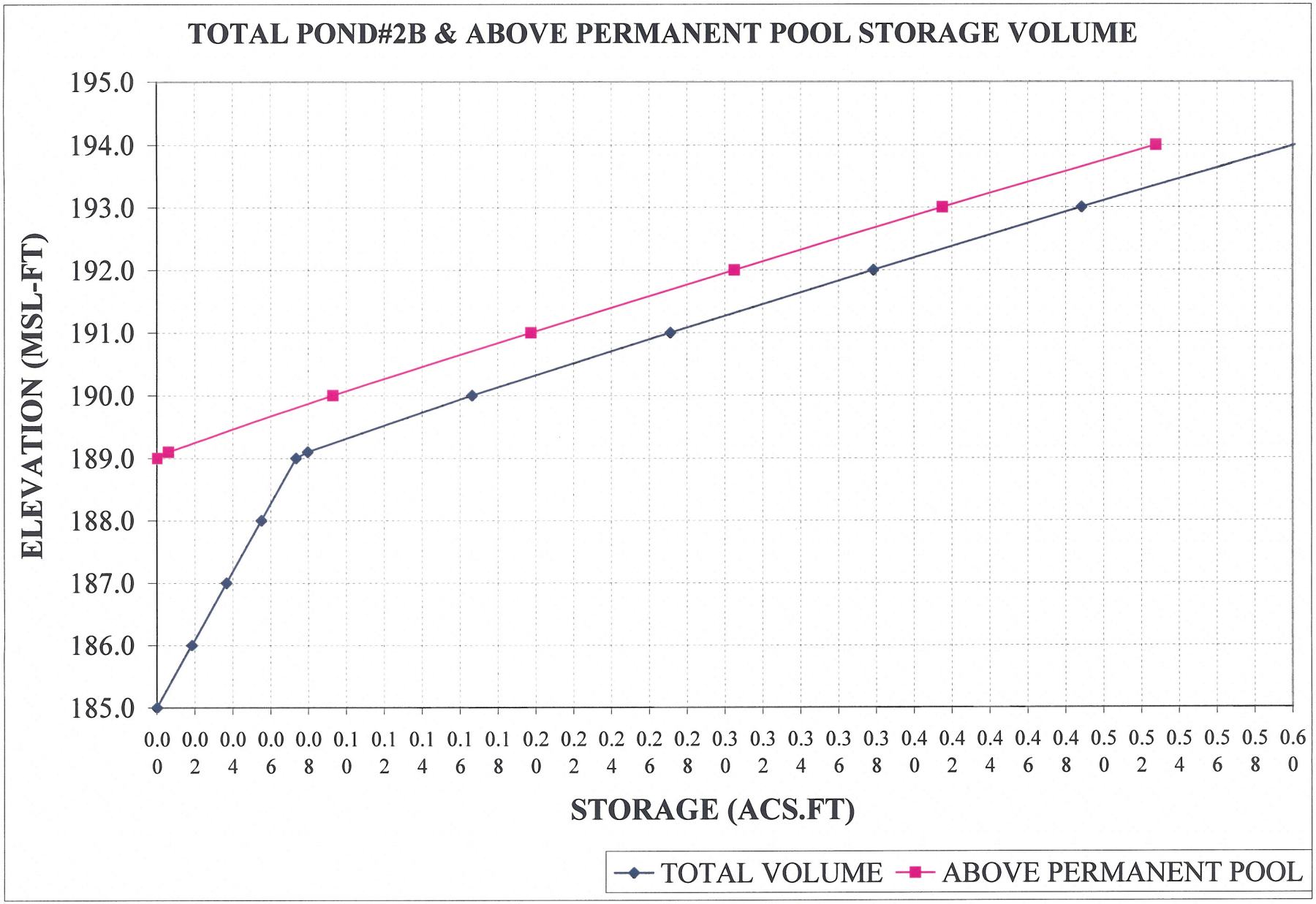
1. The Initital Abstraction, I_a = 0.174
2. Ratio Int. Abs. to Rainfall I_a/P = 0.064
3. The Valid Ratio of I_a/P = 0.10
4. The Unit Peak Discharge, q_u = 533 csm/in
5. Ratio of Out to inflow (q_0/q_i) = 0.0333
6. Storage to Runoff Ratio (Vs/Vr) = 0.637 Acs.ft.
7. Total Runoff Volume, V_r = 0.629 Acs.ft.
8. The Required Storage Volume, V_s = 0.401 Acs.ft.

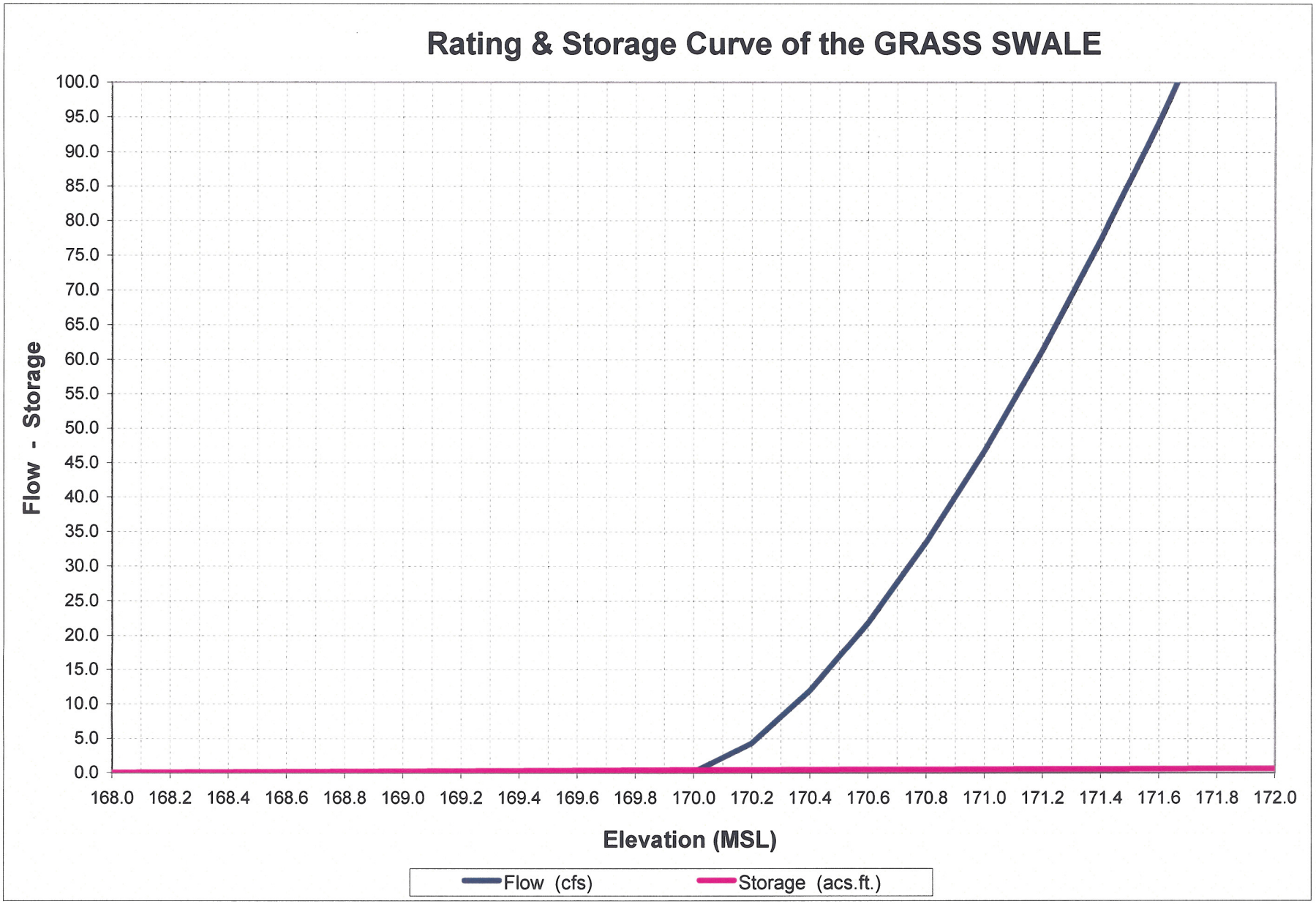
So, the 1-Year Storm, Stream Channel Protection Volume, Cpv = **0.401** Acs.ft. or **17,454** C.F.

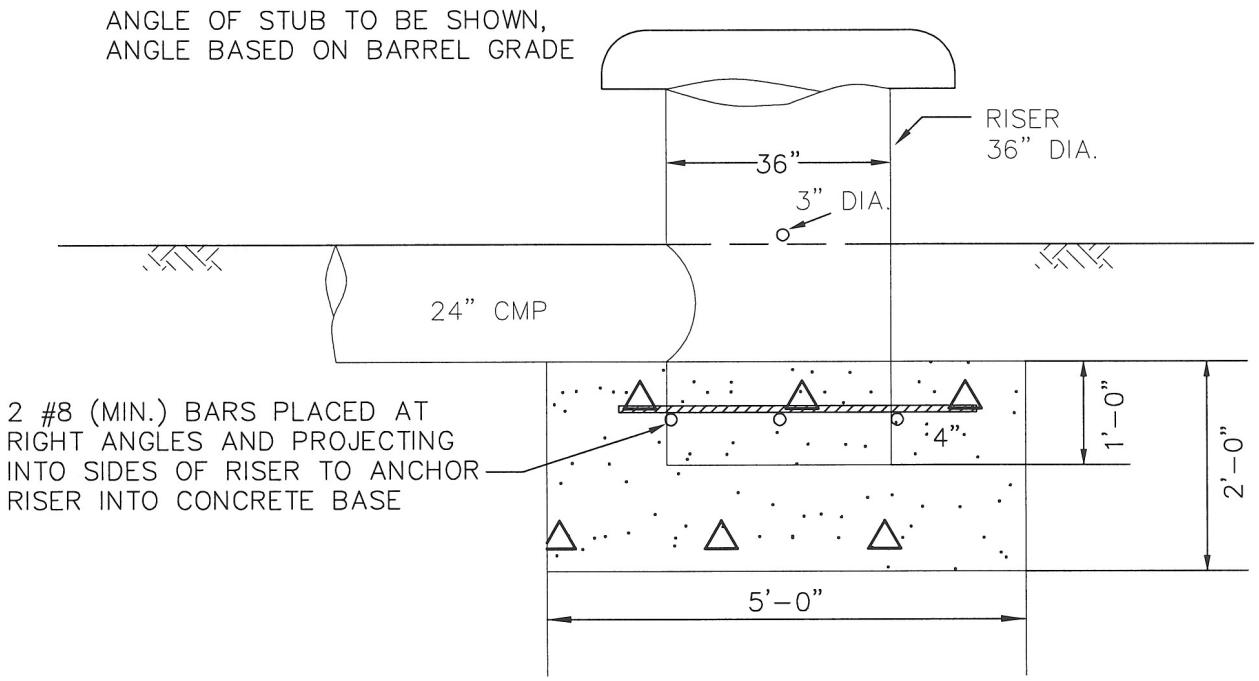
Calculated Result


TOTAL VOLUME POND#1A & ABOVE PERMANENT POOL STORAGE VOLUME
ELEVATION (MSL-FT)
181.0
180.0
179.0
178.0
177.0
176.0
175.0
174.0
173.0
172.0
171.0
170.0
169.0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
STORAGE (ACS.FT)
TOTAL STORAGE
ABOVE PERMANENT POOL


TOTAL POND#2A & ABOVE PERMANENT POOL STORAGE VOLUME
ELEVATION (MSL-FT)
190.0
189.0
188.0
187.0
186.0
185.0
184.0
183.0
182.0
181.0
180.0
179.0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
STORAGE (ACS.FT)
TOTAL VOLUME
ABOVE PERMANENT POOL


TOTAL POND#2B & ABOVE PERMANENT POOL STORAGE VOLUME
ELEVATION (MSL-FT)
195.0
194.0
193.0
192.0
191.0
190.0
189.0
188.0
187.0
186.0
185.0
0.00 0.02 0.04 0.06 0.08 0.10 0.12 0.14 0.16 0.18 0.20 0.22 0.24 0.26 0.28 0.30 0.32 0.34 0.36 0.38 0.40 0.42 0.44 0.46 0.48 0.50 0.52 0.54 0.56 0.58 0.60
STORAGE (ACS.FT)
TOTAL VOLUME
ABOVE PERMANENT POOL


Rating & Storage Curve of the GRASS SWALE
Flow - Storage
100.0
95.0
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
168.0 168.2 168.4 168.6 168.8 169.0 169.2 169.4 169.6 169.8 170.0 170.2 170.4 170.6 170.8 171.0 171.2 171.4 171.6 171.8 172.0
Elevation (MSL)
Flow (cfs)
Storage (acs.ft.)



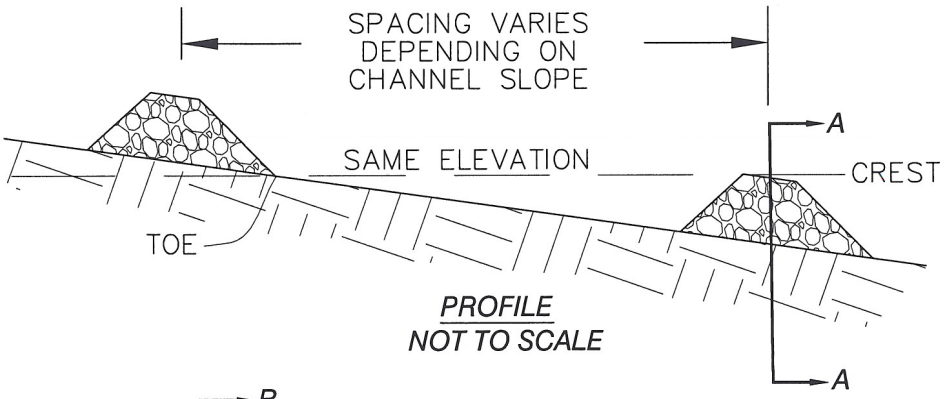
CONSTRUCTION SPECIFICATIONS

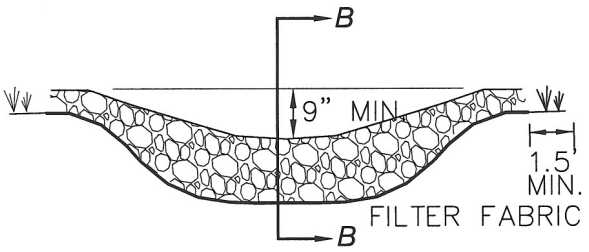
NOTES:

1. THE CONCRETE BASE SHALL BE POURED IN SUCH A MANNER TO INSURE THAT THE CONCRETE FILLS THE BOTTOM OF THE RISER TO THE INVERT OF THE OUTLET PIPE TO PREVENT THE RISER FROM BREAKING AWAY FROM THE BASE.
2. WITH ALUMINUM OR ALUMINIZED PIPE, THE EMBEDDED SECTION MUST BE PAINTED WITH CHROMATE OR EQUIVALENT.
3. RISER BASE MAY BE SIZED AS COMPUTED USING FLOATATION WITH A FACTOR OF SAFETY OF 1.2.

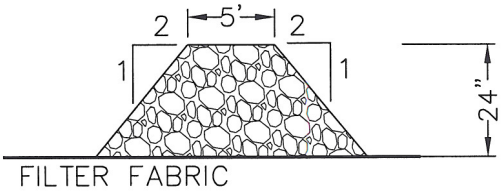
RISER BASE DETAIL

N.T.S.





SECTION A-A



SECTION B-B

SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES, AND LOCATIONS SHOWN ON THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

CHECK DAM DETAIL

N.T.S.

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

TR-20 DATA
FOR
DEVELOPED CONDITION
(WITH STORAGE)
(1, 2, 5, 10, 25, 50 & 100-YEAR STORMS)

BY

ATZL, SCATASSA & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
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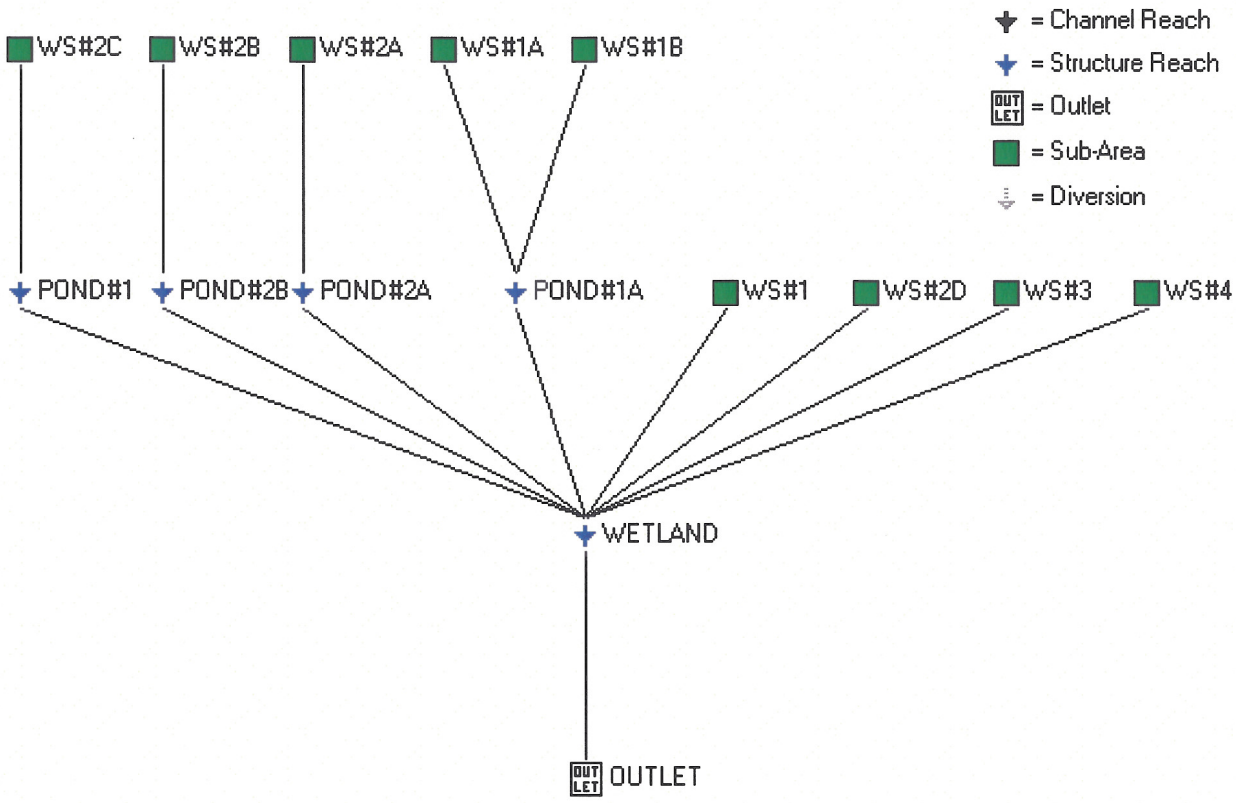

Figure 3: Drainage system schematic for developed condition with proposed storage systems (Pond#1, Pond#1A, Pond#2A, Pond#2B) and Existing Wetland.

```
WinTR-20: Version 1.11                  0         0         0.1       0
ORCHARD RIDGE (3300)
DEVELOPED CONDITION WITH PONDS ROUTING

SUB-AREA:
          WS#1      WETLAND              0.0071562583.       0.467     YY YY
          WS#1A     POND#1A              0.0026093793.       0.10      YY YY
          WS#1B     POND#1A              0.0024687591.       0.334     YY YY
          WS#2A     POND#2A              0.0060625 93.       0.317     YY YY
          WS#2B     POND#2B              0.0063125 92.       0.244     YY YY
          WS#2C     POND#1               0.0132187583.       0.260     YY YY
          WS#2D     WETLAND              0.0041875 76.       0.117     YY YY
          WS#3      WETLAND              0.0199843773.       0.298     YY YY
          WS#4      WETLAND              0.1098906277.       0.248     YY YY

STREAM REACH:
          WETLAND   OUTLET               WETLAND                       YY YYY
          POND#1    WETLAND              POND#1                        YY YYY
          POND#2B   WETLAND              POND#2B                       YY YYY
          POND#2A   WETLAND              POND#2A                       YY YYY
          POND#1A   WETLAND              POND#1A                       YY YYY


STORM ANALYSIS:
          1-YR                 0.0       2.7       Type III  2         3.5
          2-YR                 0.0       3.5       Type III  2         3.5
          5-YR                 0.0       4.5       Type III  2         3.5
          10-YR                0.0       5.0       Type III  2         3.5
          25-YR                0.0       6.0       Type III  2         3.5
          50-YR                0.0       7.0       Type III  2         3.5
          100-YR               0.0       7.5       Type III  2         3.5


STRUCTURE RATING:
          WETLAND   161.1
                    161.1     0.        0.
                    161.35    3.12      0.05
                    161.60    10.97     0.10
                    161.85    22.22     0.13
                    162.1     29.10     0.20
                    162.6     43.24     0.80
                    162.85    50.81     1.15
                    163.10    58.69     1.40
                    163.35    68.09     1.80
                    164.0     83.40     2.90
                    164.50    116.19    4.15
                    165.0     166.01    5.65
                    165.50    226.80    7.40
                    166.0     296.51    9.20
                    166.50    373.95    11.0
          POND#1    204.0
                    204.0     0.00      0.000
                    204.2     0.07      0.068
                    204.6     0.19      0.221
                    204.7     0.21      0.259
                    204.8     0.23      0.297
                    205.0     0.26      0.373
                    205.3     0.40      0.487
                    205.5     0.47      0.563
                    205.7     0.53      0.639
                    206.0     0.60      0.753
                    206.2     0.64      0.829
                    206.5     0.70      0.943
                    206.7     0.74      1.020
                    207.0     0.79      1.134
                    207.2     2.02      1.210
                    207.3     3.03      1.248
                    207.5     5.59      1.324
                    207.7     8.71      1.400
                    208.0     14.28     1.514
                    208.2     18.50     1.590
                    208.5     25.50     1.704
                    208.7     30.59     1.780
                    208.8     33.25     1.818
```

	208.9	35.98	1.857
	209.0	38.78	1.895
	209.1	43.13	1.933
	209.2	48.76	1.971
	209.3	55.25	2.009
	209.4	62.45	2.047
	209.5	70.27	2.085
	209.6	78.65	2.123
	209.7	87.53	2.161
	209.8	96.90	2.199
	209.9	106.72	2.237
	210.0	116.96	2.275
POND#2B	188.0		
	188.0	0.00	0.000
	188.5	0.14	0.077
	189.0	0.22	0.154
	189.5	0.28	0.231
	190.0	0.32	0.308
	190.3	0.35	0.354
	190.6	0.37	0.400
	190.8	0.39	0.431
	191.0	4.28	0.461
	191.1	7.54	0.477
	191.2	11.39	0.492
	191.3	15.76	0.508
	191.4	20.60	0.523
	191.5	25.85	0.538
	192.	57.52	0.615
POND#1A	173.		
	173.	0.	0.
	173.5	0.14	0.035
	174.0	0.22	0.076
	174.5	0.28	0.117
	175.0	0.32	0.158
	175.5	0.36	0.199
	176.0	0.4	0.24
	176.5	0.43	0.281
	177.0	0.46	0.322
	177.5	0.49	0.363
	178.0	1.57	0.404
	178.5	3.52	0.445
	179.0	6.04	0.486
	179.5	9.01	0.527
	180.	12.38	0.568
	180.5	13.10	0.609
	181.0	31.11	0.65
	181.5	55.49	0.691
	182.	86.06	0.732
POND#2A	185.0		
	185.0	0.	0.
	185.5	0.14	0.045
	186.	0.22	0.094
	186.5	0.28	0.143
	187.	0.32	0.192
	187.5	0.36	0.241
	188.	0.4	0.29
	188.5	0.43	0.34
	189.	0.46	0.389
	189.5	0.49	0.438
	190.	9.12	0.487
	190.5	24.88	0.536
	191.	45.28	0.585
	191.5	69.43	0.634
	192.	96.81	0.683

GLOBAL OUTPUT:

2	0.1	0.5	YYNYY	YYNYYY

VERIFICATION:

| | | | |

ORCHARD RIDGE (3300)
DEVELOPED CONDITION WITH PONDS ROUTING

Name of printed page file:
P:\hydrology TR-55\3300\Ray Oct 14-2011\Ray\WINTR-20\Ponds Routing.out

STORM 1-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1A	0.003		1.621		12.11	3.26	1248.27

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.16	0.21	0.36	2.78	0.76	0.33
13.500	0.26	0.21	0.19	0.16	0.14	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1B	0.002		1.436		12.24	2.22	901.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.11	0.15	0.24	1.08	1.33	0.39	0.26
14.000	0.21	0.18	0.16	0.13	0.11		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Upstream	1.530		12.12	5.07	998.73

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.27	0.36	0.60	3.85	2.09	0.72
13.500	0.52	0.43	0.36	0.32	0.27	0.23	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Downstream	1.420	176.40	14.01	0.42	83.53

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	0.13	0.24	0.39	0.42	0.42	0.42	0.42
15.000	0.42	0.42	0.41	0.41	0.39	0.38	0.36
18.500	0.35	0.33	0.32	0.31	0.30	0.28	0.27
22.000	0.25	0.24	0.22	0.21	0.19	0.18	0.16
25.500	0.15	0.14	0.12				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		1.166		12.34	3.80	531.35

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.14	0.26	1.30	3.24	1.10	0.63	0.51
14.500	0.43	0.38	0.33	0.28	0.24	0.21	0.19
18.000	0.17	0.15	0.14	0.14	0.13	0.12	0.12
21.500	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		0.645		12.13	2.15	514.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.000	1.38	0.69	0.30	0.25	0.20	0.18	0.16
15.500	0.14	0.12	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		0.678		12.24	6.34	317.06

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.000	1.93	4.29	1.48	1.07	0.91	0.79	0.70
15.500	0.61	0.52	0.45	0.41	0.37	0.32	0.30
19.000	0.28	0.27	0.26	0.25	0.24	0.23	0.22
22.500	0.21	0.20	0.19	0.17			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		0.868		12.21	50.43	458.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.36	1.84	21.28	27.21	9.36	6.97	5.85
14.500	5.07	4.50	3.91	3.28	2.87	2.60	2.32
18.000	2.04	1.87	1.79	1.71	1.62	1.55	1.49
21.500	1.43	1.36	1.29	1.23	1.16	1.09	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		1.204		12.19	8.71	658.97

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.16	0.30	0.61	4.15	4.48	1.46	1.06
14.000	0.88	0.76	0.67	0.58	0.48	0.42	0.38
17.500	0.34	0.30	0.27	0.26	0.25	0.23	0.22
21.000	0.21	0.20	0.20	0.19	0.18	0.17	0.16

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Upstream	1.204		12.19	8.71	658.97

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.16	0.30	0.61	4.15	4.48	1.46	1.06
14.000	0.88	0.76	0.67	0.58	0.48	0.42	0.38
17.500	0.34	0.30	0.27	0.26	0.25	0.23	0.22
21.000	0.21	0.20	0.20	0.19	0.18	0.17	0.16

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	1.048	205.46	16.17	0.45	34.41

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.500	0.26	0.36	0.40	0.42	0.43	0.45	0.45
16.000	0.45	0.45	0.45	0.45	0.44	0.44	0.43
19.500	0.42	0.42	0.41	0.40	0.40	0.39	0.38
23.000	0.37	0.36	0.35	0.33	0.32	0.30	0.28
26.500	0.27	0.26	0.25	0.25	0.25	0.24	0.24
30.000	0.24	0.23	0.23	0.22	0.22	0.21	0.21
33.500	0.20	0.20	0.19	0.19	0.18	0.18	0.17
37.000	0.17	0.16	0.16	0.15	0.15	0.14	0.14
40.500	0.13	0.13	0.13	0.12	0.12	0.11	0.11
44.000	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		1.828		12.17	6.55	1038.21

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.13	0.18	0.24	0.32	0.43	0.71	3.69
12.500	2.85	0.90	0.65	0.53	0.46	0.40	0.34
16.000	0.29	0.25	0.22	0.20	0.17	0.16	0.15
19.500	0.14	0.14	0.13	0.12	0.12	0.11	0.11
23.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Upstream	1.828		12.17	6.55	1038.21

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.13	0.18	0.24	0.32	0.43	0.71	3.69
12.500	2.85	0.90	0.65	0.53	0.46	0.40	0.34
16.000	0.29	0.25	0.22	0.20	0.17	0.16	0.15
19.500	0.14	0.14	0.13	0.12	0.12	0.11	0.11
23.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Downstream	1.639	190.57	15.28	0.37	58.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	0.11	0.19	0.32	0.35	0.36	0.36	0.37
15.000	0.37	0.37	0.37	0.36	0.36	0.36	0.36
18.500	0.35	0.35	0.34	0.34	0.33	0.33	0.32
22.000	0.32	0.31	0.31	0.30	0.30	0.29	0.28
25.500	0.28	0.27	0.26	0.25	0.24	0.24	0.23
29.000	0.22	0.21	0.20	0.19	0.19	0.18	0.17
32.500	0.16	0.16	0.15	0.14	0.14	0.13	0.12
36.000	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		1.906		12.22	6.04	996.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.20	0.25	0.33	0.44	0.70
12.000	3.08	3.35	0.97	0.66	0.54	0.45	0.40
15.500	0.34	0.29	0.25	0.22	0.20	0.17	0.16
19.000	0.15	0.14	0.13	0.13	0.12	0.12	0.11
22.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Upstream	1.906		12.22	6.04	996.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.20	0.25	0.33	0.44	0.70
12.000	3.08	3.35	0.97	0.66	0.54	0.45	0.40
15.500	0.34	0.29	0.25	0.22	0.20	0.17	0.16
19.000	0.15	0.14	0.13	0.13	0.12	0.12	0.11
22.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Downstream	1.783	188.81	14.54	0.45	74.02

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.12	0.16	0.24	0.40	0.44	0.44	0.45
14.500	0.45	0.45	0.45	0.44	0.44	0.43	0.43
18.000	0.42	0.42	0.41	0.40	0.39	0.39	0.38
21.500	0.37	0.36	0.35	0.34	0.33	0.32	0.31
25.000	0.30	0.29	0.28	0.27	0.25	0.24	0.23
28.500	0.22	0.20	0.19	0.18	0.17	0.15	0.14
32.000	0.13	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	0.944		12.21	62.44	363.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.62	2.51	26.56	36.81	13.82	10.54	9.13
14.500	8.14	7.42	6.67	5.87	5.33	4.86	4.49
18.000	4.11	3.87	3.74	3.61	3.47	3.35	3.23
21.500	3.12	3.00	2.88	2.67	2.55	2.42	1.11
25.000	1.06	1.02	0.97	0.91	0.76	0.74	0.71
28.500	0.69	0.67	0.64	0.61	0.59	0.57	0.54
32.000	0.52	0.49	0.47	0.35	0.34	0.33	0.32
35.500	0.30	0.29	0.27	0.17	0.16	0.16	0.15
39.000	0.15	0.14	0.14	0.13	0.13	0.13	0.12
42.500	0.12	0.11	0.11	0.11	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	0.943	162.54	12.45	41.43	241.01

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.32	1.65	21.74	41.21	24.27	10.75	9.35
14.500	8.25	7.54	6.79	6.00	5.39	4.92	4.55
18.000	4.17	3.90	3.76	3.63	3.49	3.36	3.25
21.500	3.14	3.04	2.93	2.73	2.59	2.47	1.40
25.000	1.10	1.04	0.99	0.94	0.87	0.76	0.72
28.500	0.70	0.68	0.65	0.62	0.60	0.58	0.55
32.000	0.53	0.50	0.48	0.37	0.35	0.34	0.32
35.500	0.31	0.29	0.28	0.18	0.16	0.16	0.15
39.000	0.15	0.14	0.14	0.14	0.13	0.13	0.12
42.500	0.12	0.11	0.11	0.11	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		0.943		12.45	41.43	241.01

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.32	1.65	21.74	41.21	24.27	10.75	9.35
14.500	8.25	7.54	6.79	6.00	5.39	4.92	4.55
18.000	4.17	3.90	3.76	3.63	3.49	3.36	3.25
21.500	3.14	3.04	2.93	2.73	2.59	2.47	1.40
25.000	1.10	1.04	0.99	0.94	0.87	0.76	0.72
28.500	0.70	0.68	0.65	0.62	0.60	0.58	0.55
32.000	0.53	0.50	0.48	0.37	0.35	0.34	0.32
35.500	0.31	0.29	0.28	0.18	0.16	0.16	0.15
39.000	0.15	0.14	0.14	0.14	0.13	0.13	0.12
42.500	0.12	0.11	0.11	0.11	0.10		

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1A	0.003		2.380		12.10	4.44	1700.17

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.12	0.15	0.18	0.24	0.31	0.52	3.83
12.500	1.02	0.45	0.35	0.28	0.25	0.22	0.18
16.000	0.15	0.14	0.12	0.11			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1B	0.002		2.181		12.22	3.12	1262.22

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.10	0.13	0.17	0.23	0.36	1.56	1.83
13.000	0.53	0.35	0.28	0.24	0.21	0.18	0.15
16.500	0.13	0.12	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Upstream	2.282		12.12	7.00	1378.64

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.12	0.24	0.31	0.41	0.54	0.88	5.39
12.500	2.85	0.97	0.70	0.57	0.49	0.43	0.36
16.000	0.30	0.26	0.24	0.21			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Downstream	2.170	177.70	13.06	0.91	179.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.11	0.15	0.19	0.31	0.47	0.91	0.82
14.000	0.69	0.58	0.49	0.49	0.48	0.48	0.47
17.500	0.46	0.45	0.44	0.42	0.41	0.40	0.38
21.000	0.37	0.35	0.34	0.33	0.31	0.30	0.29
24.500	0.28	0.26	0.25	0.23	0.22	0.20	0.18
28.000	0.17	0.16	0.15	0.13	0.11		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.007		1.842		12.33	5.90	824.41

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.19	0.30	0.51	2.20	4.93	1.63
13.500	0.92	0.73	0.61	0.54	0.47	0.40	0.34
17.000	0.30	0.27	0.24	0.21	0.20	0.19	0.18
20.500	0.17	0.17	0.16	0.15	0.14	0.14	0.13
24.000	0.12						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		1.193		12.13	3.70	882.42

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	0.21	2.57	1.10	0.48	0.38	0.32	0.28
15.000	0.24	0.21	0.17	0.16	0.14	0.13	0.11
18.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		1.178		12.24	11.82	591.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.13	0.48	4.56	7.37	2.42	1.72	1.45
14.500	1.24	1.10	0.96	0.81	0.70	0.64	0.57
18.000	0.50	0.46	0.44	0.42	0.39	0.38	0.36
21.500	0.35	0.33	0.31	0.30	0.28	0.27	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		1.430		12.19	86.24	784.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.25	1.07	2.34	5.30	40.66	43.50	14.52
13.500	10.69	8.91	7.68	6.79	5.87	4.92	4.29
17.000	3.88	3.45	3.03	2.78	2.66	2.53	2.40
20.500	2.29	2.20	2.10	2.01	1.91	1.81	1.71
24.000	1.60						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		1.853		12.19	13.50	1021.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.15	0.26	0.41	0.63	1.15	6.83	6.66
13.000	2.12	1.53	1.27	1.08	0.95	0.82	0.69
16.500	0.60	0.54	0.48	0.42	0.38	0.37	0.35
20.000	0.33	0.31	0.30	0.29	0.27	0.26	0.25
23.500	0.23	0.22					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Upstream	1.853		12.19	13.50	1021.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.500	0.15	0.26	0.41	0.63	1.15	6.83	6.66
13.000	2.12	1.53	1.27	1.08	0.95	0.82	0.69
16.500	0.60	0.54	0.48	0.42	0.38	0.37	0.35
20.000	0.33	0.31	0.30	0.29	0.27	0.26	0.25
23.500	0.23	0.22					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	1.693	206.28	16.13	0.66	49.64

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
12.000	0.17	0.50	0.59	0.61	0.63	0.64	0.65
15.500	0.65	0.66	0.66	0.65	0.65	0.65	0.64
19.000	0.64	0.63	0.62	0.62	0.61	0.60	0.60
22.500	0.59	0.58	0.57	0.56	0.55	0.54	0.52
26.000	0.50	0.49	0.47	0.45	0.44	0.42	0.41
29.500	0.39	0.37	0.35	0.33	0.32	0.30	0.29
33.000	0.27	0.26	0.26	0.25	0.25	0.24	0.24
36.500	0.24	0.23	0.23	0.22	0.22	0.21	0.21
40.000	0.20	0.20	0.19	0.19	0.18	0.18	0.17
43.500	0.17	0.16	0.16	0.15	0.15	0.14	0.14
47.000	0.13	0.13	0.13	0.12	0.12	0.11	0.11
50.500	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		2.605		12.17	9.07	1437.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.12	0.17	0.23	0.30	0.38	0.50	0.66
11.500	1.05	5.22	3.88	1.21	0.87	0.72	0.61
15.000	0.53	0.46	0.38	0.33	0.30	0.26	0.23
18.500	0.21	0.20	0.19	0.18	0.17	0.16	0.16
22.000	0.15	0.14	0.13	0.13	0.12		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Upstream	2.605		12.17	9.07	1437.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.12	0.17	0.23	0.30	0.38	0.50	0.66
11.500	1.05	5.22	3.88	1.21	0.87	0.72	0.61
15.000	0.53	0.46	0.38	0.33	0.30	0.26	0.23
18.500	0.21	0.20	0.19	0.18	0.17	0.16	0.16
22.000	0.15	0.14	0.13	0.13	0.12		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Downstream	2.414	190.94	12.58	3.03	479.59

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.13	0.16	0.25	2.61	1.39	0.91	0.75
14.500	0.63	0.55	0.47	0.40	0.39	0.39	0.38
18.000	0.38	0.38	0.37	0.37	0.36	0.36	0.36
21.500	0.35	0.35	0.35	0.34	0.33	0.33	0.32
25.000	0.31	0.31	0.30	0.29	0.29	0.28	0.27
28.500	0.27	0.26	0.25	0.24	0.23	0.23	0.22
32.000	0.21	0.20	0.19	0.18	0.18	0.17	0.16
35.500	0.15	0.15	0.14	0.13	0.12	0.11	0.11

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		2.698		12.21	8.26	1362.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.11	0.14	0.18	0.24	0.32	0.39	0.51
11.000	0.66	1.01	4.32	4.53	1.30	0.87	0.72
14.500	0.60	0.53	0.45	0.38	0.33	0.29	0.26
18.000	0.23	0.21	0.20	0.19	0.18	0.17	0.16
21.500	0.15	0.15	0.14	0.13	0.12	0.12	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Upstream	2.698		12.21	8.26	1362.51

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.11	0.14	0.18	0.24	0.32	0.39	0.51
11.000	0.66	1.01	4.32	4.53	1.30	0.87	0.72
14.500	0.60	0.53	0.45	0.38	0.33	0.29	0.26
18.000	0.23	0.21	0.20	0.19	0.18	0.17	0.16
21.500	0.15	0.15	0.14	0.13	0.12	0.12	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Downstream	2.574	189.62	12.67	2.63	434.35

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.15	0.18	0.22	0.30	0.48	1.47
13.500	0.90	0.74	0.61	0.54	0.49	0.49	0.48
17.000	0.48	0.47	0.47	0.46	0.46	0.45	0.44
20.500	0.44	0.43	0.42	0.42	0.41	0.40	0.39
24.000	0.39	0.37	0.36	0.35	0.34	0.33	0.32
27.500	0.30	0.29	0.29	0.27	0.26	0.25	0.23
31.000	0.22	0.21	0.20	0.18	0.17	0.16	0.15
34.500	0.14	0.12	0.11				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	1.531		12.19	106.83	621.49

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.49	1.52	3.23	7.08	51.00	60.96	23.39
13.500	16.96	14.21	12.27	10.91	9.61	8.32	7.50
17.000	6.95	6.39	5.82	5.47	5.18	5.00	4.81
20.500	4.64	4.49	4.34	4.19	4.03	3.88	3.72
24.000	3.55	1.52	1.47	1.42	1.37	1.33	1.28
27.500	1.23	1.18	1.13	1.08	1.02	0.96	0.82
31.000	0.78	0.74	0.71	0.67	0.63	0.60	0.58
34.500	0.56	0.53	0.51	0.39	0.38	0.36	0.35
38.000	0.34	0.32	0.21	0.21	0.20	0.20	0.19
41.500	0.19	0.18	0.18	0.17	0.17	0.16	0.16

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
45.000	0.15	0.15	0.14	0.14	0.13	0.13	0.13
48.500	0.12	0.12	0.11	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	1.530	163.24	12.48	64.07	372.71

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.23	1.08	2.53	6.28	30.14	64.00	44.42
13.500	26.90	14.39	12.36	11.00	9.81	8.52	7.59
17.000	7.03	6.48	5.91	5.50	5.21	5.02	4.84
20.500	4.67	4.51	4.36	4.21	4.05	3.90	3.74
24.000	3.58	1.94	1.52	1.44	1.39	1.34	1.29
27.500	1.25	1.20	1.15	1.10	1.05	0.99	0.86
31.000	0.80	0.76	0.72	0.68	0.65	0.61	0.59
34.500	0.57	0.54	0.52	0.43	0.38	0.37	0.36
38.000	0.34	0.33	0.28	0.21	0.21	0.20	0.20
41.500	0.19	0.19	0.18	0.18	0.17	0.16	0.16
45.000	0.15	0.15	0.14	0.14	0.14	0.13	0.13
48.500	0.12	0.12	0.12	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		1.530		12.48	64.07	372.71

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.23	1.08	2.53	6.28	30.14	64.00	44.42
13.500	26.90	14.39	12.36	11.00	9.81	8.52	7.59
17.000	7.03	6.48	5.91	5.50	5.21	5.02	4.84
20.500	4.67	4.51	4.36	4.21	4.05	3.90	3.74
24.000	3.58	1.94	1.52	1.44	1.39	1.34	1.29
27.500	1.25	1.20	1.15	1.10	1.05	0.99	0.86
31.000	0.80	0.76	0.72	0.68	0.65	0.61	0.59
34.500	0.57	0.54	0.52	0.43	0.38	0.37	0.36
38.000	0.34	0.33	0.28	0.21	0.21	0.20	0.20
41.500	0.19	0.19	0.18	0.18	0.17	0.16	0.16
45.000	0.15	0.15	0.14	0.14	0.14	0.13	0.13
48.500	0.12	0.12	0.12	0.11	0.11	0.10	

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1A	0.003		3.392		12.11	5.90	2261.61

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.10	0.14	0.18	0.22	0.26	0.34	0.43
11.500	0.72	5.14	1.35	0.58	0.46	0.37	0.32
15.000	0.28	0.24	0.20	0.18	0.16	0.14	0.12
18.500	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1B	0.002		3.156		12.22	4.23	1712.86

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.12	0.16	0.20	0.26	0.34	0.52	2.16
12.500	2.45	0.70	0.46	0.38	0.32	0.28	0.24
16.000	0.20	0.17	0.15	0.14	0.12	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Upstream	3.277		12.12	9.41	1852.65

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.10	0.14	0.30	0.38	0.47	0.60	0.77
11.500	1.24	7.30	3.79	1.28	0.92	0.75	0.64
15.000	0.56	0.48	0.40	0.35	0.31	0.28	0.24
18.500	0.22	0.21	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Downstream	3.165	178.48	12.53	3.45	678.98

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.14	0.17	0.21	0.26	0.38	3.42	2.01
13.500	1.28	0.97	0.78	0.66	0.56	0.49	0.49
17.000	0.48	0.48	0.47	0.46	0.45	0.45	0.43
20.500	0.42	0.41	0.40	0.38	0.36	0.35	0.34
24.000	0.32	0.31	0.30	0.29	0.27	0.26	0.24
27.500	0.23	0.21	0.20	0.18	0.17	0.15	0.14
31.000	0.12	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		2.708		12.33	8.65	1208.25

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.11	0.18	0.26	0.37	0.54	0.87	3.42
12.500	7.11	2.29	1.27	1.02	0.85	0.74	0.64
16.000	0.54	0.46	0.41	0.37	0.32	0.29	0.27
19.500	0.26	0.25	0.24	0.23	0.22	0.21	0.19
23.000	0.18	0.17	0.16				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		2.053		12.12	5.81	1386.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.13	0.21	0.43	4.25	1.64	0.70	0.56
14.000	0.46	0.40	0.35	0.30	0.25	0.22	0.20
17.500	0.18	0.16	0.15	0.14	0.13	0.13	0.12
21.000	0.12	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		1.893		12.23	19.61	981.32

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.28	0.59	1.26	8.49	11.59	3.68	2.59
14.000	2.16	1.85	1.63	1.41	1.19	1.03	0.93

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.500	0.83	0.73	0.66	0.63	0.60	0.57	0.55
21.000	0.52	0.50	0.48	0.45	0.43	0.41	0.38

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		2.210		12.19	135.11	1229.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.21	0.94	1.91	3.37	5.50	10.55	68.04
12.500	65.08	21.24	15.53	12.87	11.04	9.74	8.39
16.000	7.02	6.12	5.52	4.90	4.29	3.94	3.76
19.500	3.58	3.39	3.24	3.10	2.96	2.82	2.68
23.000	2.54	2.41	2.25				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		2.719		12.18	19.79	1496.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.14	0.24	0.37	0.54	0.78	1.11	1.91
12.000	10.40	9.45	2.96	2.13	1.75	1.49	1.31
15.500	1.13	0.94	0.82	0.74	0.65	0.57	0.52
19.000	0.50	0.47	0.45	0.43	0.41	0.39	0.37
22.500	0.35	0.34	0.32	0.30			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1	0.013	Upstream	2.719		12.18	19.79	1496.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.14	0.24	0.37	0.54	0.78	1.11	1.91
12.000	10.40	9.45	2.96	2.13	1.75	1.49	1.31
15.500	1.13	0.94	0.82	0.74	0.65	0.57	0.52
19.000	0.50	0.47	0.45	0.43	0.41	0.39	0.37
22.500	0.35	0.34	0.32	0.30			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	2.557	207.14	14.14	1.66	125.37

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.500	0.14	0.24	0.70	0.78	1.39	1.65	1.62
15.000	1.51	1.36	1.20	1.04	0.91	0.80	0.79
18.500	0.78	0.78	0.77	0.77	0.76	0.76	0.75
22.000	0.74	0.73	0.73	0.72	0.71	0.70	0.68
25.500	0.67	0.65	0.64	0.62	0.61	0.60	0.58
29.000	0.57	0.55	0.54	0.53	0.51	0.49	0.48
32.500	0.46	0.44	0.43	0.41	0.39	0.37	0.35
36.000	0.34	0.32	0.30	0.29	0.28	0.26	0.26
39.500	0.25	0.25	0.24	0.24	0.24	0.23	0.23
43.000	0.22	0.22	0.21	0.21	0.20	0.20	0.20
46.500	0.19	0.19	0.18	0.17	0.17	0.16	0.16
50.000	0.15	0.15	0.14	0.14	0.13	0.13	0.13
53.500	0.12	0.12	0.11	0.11	0.11	0.10	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		3.570		12.16	12.19	1930.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.13	0.17	0.21	0.28	0.37	0.46	0.57
10.500	0.74	0.95	1.49	7.13	5.14	1.60	1.15
14.000	0.94	0.80	0.70	0.60	0.50	0.43	0.39
17.500	0.34	0.30	0.28	0.26	0.25	0.24	0.22
21.000	0.22	0.21	0.20	0.19	0.18	0.17	0.15

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Upstream	3.570		12.16	12.19	1930.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.13	0.17	0.21	0.28	0.37	0.46	0.57
10.500	0.74	0.95	1.49	7.13	5.14	1.60	1.15
14.000	0.94	0.80	0.70	0.60	0.50	0.43	0.39
17.500	0.34	0.30	0.28	0.26	0.25	0.24	0.22
21.000	0.22	0.21	0.20	0.19	0.18	0.17	0.15

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Downstream	3.378	191.14	12.32	8.92	1413.23

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.12	0.15	0.18	0.22	0.31	6.14	1.85
13.500	1.20	0.98	0.82	0.72	0.62	0.52	0.44
17.000	0.40	0.39	0.39	0.38	0.38	0.38	0.38
20.500	0.37	0.37	0.37	0.36	0.36	0.36	0.35
24.000	0.35	0.34	0.33	0.32	0.32	0.31	0.30
27.500	0.30	0.29	0.28	0.28	0.27	0.26	0.25
31.000	0.24	0.24	0.23	0.22	0.21	0.20	0.19
34.500	0.19	0.18	0.17	0.16	0.16	0.15	0.14
38.000	0.14	0.13	0.12	0.11	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		3.671		12.22	11.03	1819.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.11	0.15	0.18	0.23	0.29	0.38	0.47
10.000	0.58	0.73	0.93	1.41	5.85	5.98	1.71
13.500	1.15	0.94	0.79	0.69	0.59	0.49	0.42
17.000	0.38	0.34	0.30	0.27	0.26	0.24	0.23
20.500	0.22	0.21	0.20	0.19	0.18	0.17	0.16
24.000	0.15						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Upstream	3.671		12.22	11.03	1819.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.11	0.15	0.18	0.23	0.29	0.38	0.47
10.000	0.58	0.73	0.93	1.41	5.85	5.98	1.71
13.500	1.15	0.94	0.79	0.69	0.59	0.49	0.42
17.000	0.38	0.34	0.30	0.27	0.26	0.24	0.23
20.500	0.22	0.21	0.20	0.19	0.18	0.17	0.16
24.000	0.15						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Downstream	3.544	189.92	12.40	7.73	1274.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.11	0.15	0.17	0.20	0.24	0.28	0.36
12.500	6.91	1.93	1.18	0.96	0.80	0.70	0.61
16.000	0.51	0.49	0.49	0.48	0.48	0.47	0.47
19.500	0.46	0.46	0.45	0.45	0.44	0.43	0.43
23.000	0.42	0.42	0.41	0.40	0.39	0.37	0.36
26.500	0.35	0.34	0.33	0.32	0.31	0.30	0.29
30.000	0.27	0.26	0.25	0.24	0.22	0.21	0.20
33.500	0.18	0.17	0.16	0.15	0.14	0.12	0.11

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	2.335		12.21	169.47	985.91

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.43	1.26	2.61	4.68	7.47	14.00	85.56
12.500	102.59	34.48	25.00	21.07	18.16	16.05	13.90
16.000	11.72	10.28	9.33	8.43	7.62	7.15	6.89
19.500	6.64	6.37	6.15	5.94	5.74	5.53	5.22
23.000	5.01	4.81	4.59	1.75	1.70	1.65	1.60
26.500	1.55	1.51	1.46	1.42	1.37	1.32	1.27
30.000	1.23	1.18	1.12	1.07	0.93	0.89	0.85
33.500	0.81	0.78	0.74	0.70	0.67	0.62	0.59
37.000	0.45	0.43	0.41	0.39	0.37	0.36	0.35
40.500	0.24	0.24	0.24	0.23	0.23	0.22	0.22
44.000	0.21	0.21	0.20	0.20	0.20	0.19	0.19
47.500	0.18	0.17	0.17	0.16	0.16	0.15	0.15
51.000	0.14	0.14	0.13	0.13	0.13	0.12	0.12
54.500	0.11	0.11	0.11	0.10	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	2.335	164.19	12.53	95.55	555.90

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.17	0.93	2.13	4.29	7.00	13.38	37.70
12.500	95.35	73.38	45.51	31.41	18.30	16.19	14.04
16.000	11.85	10.44	9.48	8.57	7.75	7.19	6.93
19.500	6.68	6.42	6.18	5.97	5.77	5.56	5.30
23.000	5.04	4.84	4.63	2.25	1.75	1.67	1.62
26.500	1.57	1.52	1.48	1.43	1.39	1.34	1.29
30.000	1.25	1.20	1.14	1.09	0.95	0.91	0.87
33.500	0.83	0.79	0.75	0.72	0.68	0.64	0.60
37.000	0.52	0.45	0.42	0.40	0.38	0.37	0.35
40.500	0.26	0.24	0.24	0.23	0.23	0.23	0.22
44.000	0.22	0.21	0.21	0.20	0.20	0.19	0.19
47.500	0.18	0.18	0.17	0.17	0.16	0.16	0.15
51.000	0.15	0.14	0.14	0.13	0.13	0.12	0.12
54.500	0.12	0.11	0.11	0.11	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		2.335		12.53	95.55	555.90

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.17	0.93	2.13	4.29	7.00	13.38	37.70
12.500	95.35	73.38	45.51	31.41	18.30	16.19	14.04
16.000	11.85	10.44	9.48	8.57	7.75	7.19	6.93
19.500	6.68	6.42	6.18	5.97	5.77	5.56	5.30
23.000	5.04	4.84	4.63	2.25	1.75	1.67	1.62
26.500	1.57	1.52	1.48	1.43	1.39	1.34	1.29
30.000	1.25	1.20	1.14	1.09	0.95	0.91	0.87
33.500	0.83	0.79	0.75	0.72	0.68	0.64	0.60
37.000	0.52	0.45	0.42	0.40	0.38	0.37	0.35
40.500	0.26	0.24	0.24	0.23	0.23	0.23	0.22
44.000	0.22	0.21	0.21	0.20	0.20	0.19	0.19
47.500	0.18	0.18	0.17	0.17	0.16	0.16	0.15
51.000	0.15	0.14	0.14	0.13	0.13	0.12	0.12
54.500	0.12	0.11	0.11	0.11	0.10		

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		3.930		12.11	6.63	2539.84

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Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.10	0.13	0.16	0.21	0.26	0.31	0.40
11.000	0.50	0.82	5.79	1.51	0.65	0.51	0.42
14.500	0.36	0.32	0.27	0.22	0.20	0.18	0.16
18.000	0.13	0.13	0.12	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		3.676		12.23	4.78	1937.80

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.19	0.24	0.30	0.39	0.60
12.000	2.46	2.75	0.79	0.52	0.42	0.35	0.31
15.500	0.27	0.22	0.19	0.17	0.15	0.13	0.12
19.000	0.11	0.11	0.10				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Upstream	3.806		12.13	10.60	2088.01

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.10	0.13	0.28	0.36	0.45	0.55	0.70
11.000	0.89	1.42	8.26	4.26	1.44	1.03	0.84
14.500	0.72	0.63	0.53	0.44	0.39	0.35	0.31
18.000	0.27	0.25	0.24	0.22	0.21	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Downstream	3.694	178.79	12.46	4.99	983.38

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.14	0.17	0.20	0.24	0.29	0.41	4.91
13.000	2.33	1.39	1.08	0.87	0.73	0.63	0.53
16.500	0.49	0.48	0.48	0.47	0.47	0.46	0.45
20.000	0.45	0.44	0.43	0.42	0.40	0.39	0.37
23.500	0.36	0.34	0.33	0.32	0.30	0.29	0.28
27.000	0.27	0.25	0.24	0.22	0.20	0.19	0.17

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
30.500	0.16	0.15	0.13	0.11			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		3.156		12.32	10.05	1404.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.16	0.24	0.34	0.47	0.67	1.05	4.06
12.500	8.22	2.62	1.45	1.16	0.96	0.84	0.73
16.000	0.62	0.52	0.47	0.42	0.37	0.33	0.31
19.500	0.30	0.28	0.27	0.26	0.24	0.23	0.22
23.000	0.21	0.20	0.19				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		2.497		12.12	6.91	1651.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.10	0.18	0.28	0.55	5.14	1.91	0.82
13.500	0.65	0.53	0.46	0.41	0.35	0.29	0.26
17.000	0.23	0.21	0.18	0.17	0.16	0.15	0.14
20.500	0.14	0.13	0.13	0.12	0.11	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		2.278		12.22	23.79	1190.66

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.000	0.23	0.48	0.86	1.71	10.62	13.78	4.33
13.500	3.04	2.52	2.16	1.90	1.65	1.38	1.20
17.000	1.08	0.96	0.84	0.77	0.73	0.70	0.66
20.500	0.63	0.61	0.58	0.55	0.52	0.50	0.47
24.000	0.44						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		2.623		12.18	160.77	1463.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.12	0.77	1.70	2.90	4.71	7.29	13.47
12.000	82.71	76.17	24.66	17.98	14.88	12.74	11.22
15.500	9.67	8.08	7.03	6.34	5.63	4.93	4.52
19.000	4.31	4.11	3.89	3.71	3.55	3.40	3.24
22.500	3.07	2.91	2.75	2.58			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		3.167		12.19	22.98	1738.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.13	0.22	0.34	0.50	0.69	0.98	1.37
11.500	2.32	12.27	10.86	3.38	2.42	2.00	1.70
15.000	1.49	1.28	1.07	0.93	0.84	0.74	0.65
18.500	0.59	0.57	0.54	0.51	0.49	0.46	0.44
22.000	0.42	0.40	0.38	0.36	0.34		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Upstream	3.167		12.19	22.98	1738.72

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.13	0.22	0.34	0.50	0.69	0.98	1.37
11.500	2.32	12.27	10.86	3.38	2.42	2.00	1.70
15.000	1.49	1.28	1.07	0.93	0.84	0.74	0.65
18.500	0.59	0.57	0.54	0.51	0.49	0.46	0.44
22.000	0.42	0.40	0.38	0.36	0.34		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	3.005	207.32	13.04	3.24	244.98

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.12	0.17	0.31	0.78	3.23	2.85	2.40
14.500	2.01	1.80	1.59	1.38	1.19	1.04	0.91
18.000	0.80	0.79	0.78	0.78	0.77	0.77	0.76
21.500	0.76	0.75	0.75	0.74	0.73	0.72	0.71
25.000	0.70	0.68	0.67	0.65	0.64	0.62	0.61
28.500	0.60	0.58	0.57	0.55	0.54	0.53	0.51
32.000	0.49	0.48	0.46	0.44	0.43	0.41	0.39
35.500	0.37	0.36	0.34	0.32	0.31	0.29	0.28
39.000	0.26	0.26	0.25	0.25	0.24	0.24	0.24
42.500	0.23	0.23	0.22	0.22	0.21	0.21	0.20
46.000	0.20	0.20	0.19	0.19	0.18	0.17	0.17
49.500	0.16	0.16	0.15	0.15	0.14	0.14	0.13
53.000	0.13	0.13	0.12	0.12	0.11	0.11	0.11
56.500	0.10	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2B	0.006		4.057		12.17	13.75	2178.20

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.13	0.17	0.21	0.26	0.34	0.44	0.55
10.000	0.67	0.86	1.09	1.71	8.09	5.77	1.79
13.500	1.29	1.05	0.90	0.78	0.67	0.56	0.48
17.000	0.43	0.39	0.34	0.31	0.29	0.28	0.26
20.500	0.25	0.24	0.23	0.22	0.21	0.20	0.18
24.000	0.17						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Upstream	4.057		12.17	13.75	2178.20

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.13	0.17	0.21	0.26	0.34	0.44	0.55
10.000	0.67	0.86	1.09	1.71	8.09	5.77	1.79
13.500	1.29	1.05	0.90	0.78	0.67	0.56	0.48
17.000	0.43	0.39	0.34	0.31	0.29	0.28	0.26
20.500	0.25	0.24	0.23	0.22	0.21	0.20	0.18
24.000	0.17						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Downstream	3.864	191.21	12.27	11.80	1869.82

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.12	0.15	0.17	0.21	0.25	0.33	6.85
13.000	2.06	1.34	1.10	0.92	0.80	0.69	0.58
16.500	0.49	0.44	0.39	0.39	0.39	0.39	0.38
20.000	0.38	0.38	0.37	0.37	0.37	0.36	0.36
23.500	0.36	0.36	0.35	0.34	0.33	0.32	0.31
27.000	0.31	0.30	0.30	0.29	0.28	0.28	0.27
30.500	0.26	0.25	0.24	0.23	0.23	0.22	0.21
34.000	0.20	0.19	0.19	0.18	0.17	0.16	0.16
37.500	0.15	0.14	0.13	0.13	0.12	0.11	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		4.163		12.21	12.40	2046.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.14	0.18	0.22	0.27	0.35	0.45
9.500	0.56	0.67	0.84	1.07	1.61	6.63	6.70
13.000	1.91	1.28	1.05	0.88	0.77	0.66	0.55
16.500	0.47	0.43	0.38	0.33	0.30	0.29	0.27
20.000	0.26	0.24	0.23	0.22	0.21	0.20	0.19
23.500	0.18	0.17					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Upstream	4.163		12.21	12.40	2046.07

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.14	0.18	0.22	0.27	0.35	0.45
9.500	0.56	0.67	0.84	1.07	1.61	6.63	6.70
13.000	1.91	1.28	1.05	0.88	0.77	0.66	0.55
16.500	0.47	0.43	0.38	0.33	0.30	0.29	0.27
20.000	0.26	0.24	0.23	0.22	0.21	0.20	0.19
23.500	0.18	0.17					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Downstream	4.035	190.04	12.33	10.34	1704.86

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.500	0.11	0.14	0.16	0.19	0.23	0.26	0.30
12.000	0.40	7.89	2.16	1.32	1.08	0.90	0.79
15.500	0.68	0.57	0.49	0.49	0.49	0.48	0.48
19.000	0.47	0.47	0.46	0.46	0.45	0.45	0.44
22.500	0.44	0.43	0.42	0.42	0.41	0.40	0.39
26.000	0.37	0.36	0.35	0.34	0.33	0.32	0.30
29.500	0.29	0.28	0.27	0.26	0.25	0.23	0.22
33.000	0.21	0.20	0.18	0.17	0.16	0.15	0.14
36.500	0.12	0.11					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	2.758		12.22	211.91	1232.82

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.500	0.23	1.08	2.36	4.08	6.44	9.93	17.79
12.000	103.98	120.52	42.21	30.02	24.73	21.02	18.50
15.500	15.98	13.42	11.67	10.57	9.50	8.47	7.91
19.000	7.62	7.34	7.05	6.80	6.57	6.34	6.11
22.500	5.87	5.63	5.40	5.05	1.80	1.75	1.70
26.000	1.65	1.61	1.56	1.51	1.47	1.42	1.37
29.500	1.33	1.28	1.23	1.18	1.13	1.07	0.93
33.000	0.89	0.85	0.81	0.77	0.74	0.70	0.66
36.500	0.62	0.58	0.45	0.43	0.41	0.39	0.37
40.000	0.36	0.31	0.24	0.24	0.24	0.23	0.23
43.500	0.22	0.22	0.21	0.21	0.20	0.20	0.20
47.000	0.19	0.19	0.18	0.17	0.17	0.16	0.16
50.500	0.15	0.15	0.14	0.14	0.13	0.13	0.13
54.000	0.12	0.12	0.11	0.11	0.11	0.10	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	2.758	164.52	12.51	118.18	687.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.76	1.88	3.63	6.01	9.36	17.06	42.66
12.500	118.15	81.89	56.20	37.80	25.90	18.66	16.15
16.000	13.59	11.75	10.73	9.66	8.63	7.96	7.67
19.500	7.38	7.09	6.83	6.60	6.37	6.14	5.90
23.000	5.67	5.43	5.09	2.33	1.81	1.73	1.67
26.500	1.63	1.58	1.53	1.49	1.44	1.39	1.35
30.000	1.30	1.25	1.20	1.15	1.10	1.00	0.91
33.500	0.86	0.83	0.79	0.75	0.71	0.68	0.64
37.000	0.60	0.50	0.44	0.42	0.40	0.38	0.36
40.500	0.35	0.25	0.24	0.24	0.23	0.23	0.23
44.000	0.22	0.22	0.21	0.21	0.20	0.20	0.19
47.500	0.19	0.18	0.18	0.17	0.17	0.16	0.16
51.000	0.15	0.15	0.14	0.14	0.13	0.13	0.12
54.500	0.12	0.12	0.11	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		2.758		12.51	118.18	687.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.76	1.88	3.63	6.01	9.36	17.06	42.66
12.500	118.15	81.89	56.20	37.80	25.90	18.66	16.15
16.000	13.59	11.75	10.73	9.66	8.63	7.96	7.67
19.500	7.38	7.09	6.83	6.60	6.37	6.14	5.90
23.000	5.67	5.43	5.09	2.33	1.81	1.73	1.67
26.500	1.63	1.58	1.53	1.49	1.44	1.39	1.35
30.000	1.30	1.25	1.20	1.15	1.10	1.00	0.91
33.500	0.86	0.83	0.79	0.75	0.71	0.68	0.64
37.000	0.60	0.50	0.44	0.42	0.40	0.38	0.36
40.500	0.35	0.25	0.24	0.24	0.23	0.23	0.23
44.000	0.22	0.22	0.21	0.21	0.20	0.20	0.19
47.500	0.19	0.18	0.18	0.17	0.17	0.16	0.16
51.000	0.15	0.15	0.14	0.14	0.13	0.13	0.12
54.500	0.12	0.12	0.11	0.11	0.11	0.10	

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		5.002		12.10	8.07	3093.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.14	0.17	0.22	0.27	0.33	0.39
10.500	0.50	0.62	1.02	7.08	1.82	0.79	0.62
14.000	0.50	0.44	0.38	0.32	0.27	0.24	0.21
17.500	0.19	0.16	0.15	0.15	0.14	0.13	0.12
21.000	0.12	0.11	0.11	0.10			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		4.746		12.22	5.89	2387.11

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.10	0.12	0.16	0.21	0.26	0.31	0.40
11.000	0.51	0.76	3.07	3.37	0.96	0.63	0.51
14.500	0.43	0.38	0.32	0.27	0.23	0.21	0.18
18.000	0.16	0.15	0.14	0.13	0.13	0.12	0.11
21.500	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Upstream	4.877		12.12	12.98	2556.09

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.24	0.29	0.37	0.48	0.59	0.71
10.500	0.90	1.13	1.78	10.15	5.19	1.75	1.25
14.000	1.02	0.87	0.76	0.65	0.54	0.47	0.42
17.500	0.37	0.32	0.30	0.28	0.27	0.26	0.24
21.000	0.23	0.22	0.21	0.10			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Downstream	4.763	179.33	12.36	7.99	1573.39

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.11	0.15	0.18	0.21	0.25	0.29	0.33
12.000	0.47	7.04	2.82	1.57	1.27	1.04	0.88
15.500	0.76	0.64	0.54	0.49	0.49	0.48	0.48

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.000	0.47	0.47	0.46	0.45	0.45	0.44	0.43
22.500	0.43	0.41	0.40	0.39	0.37	0.36	0.34
26.000	0.33	0.32	0.30	0.29	0.28	0.26	0.25
29.500	0.23	0.22	0.20	0.19	0.17	0.16	0.15
33.000	0.13	0.11					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		4.073		12.31	12.89	1800.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.12	0.18	0.27	0.38	0.51	0.69	0.95
11.500	1.45	5.36	10.44	3.29	1.81	1.44	1.20
15.000	1.05	0.91	0.76	0.65	0.58	0.52	0.45
18.500	0.41	0.38	0.37	0.35	0.33	0.31	0.30
22.000	0.29	0.27	0.26	0.24	0.23		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		3.355		12.12	9.18	2192.59

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.13	0.19	0.29	0.43	0.81	6.98	2.47
13.000	1.05	0.83	0.68	0.59	0.52	0.44	0.37
16.500	0.33	0.29	0.26	0.23	0.21	0.20	0.19
20.000	0.18	0.17	0.17	0.16	0.15	0.14	0.14
23.500	0.13	0.12					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		3.086		12.21	32.44	1623.04

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.12	0.31	0.56	0.93	1.47	2.69	15.18
12.500	18.30	5.64	3.94	3.26	2.78	2.45	2.11
16.000	1.77	1.53	1.38	1.23	1.08	0.98	0.94

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.500	0.89	0.85	0.81	0.77	0.74	0.70	0.67
23.000	0.63	0.60	0.56				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		3.479		12.19	212.89	1937.33

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.40	1.09	2.11	3.47	5.14	7.67	11.19
11.500	19.72	113.13	98.53	31.54	22.91	18.90	16.16
15.000	14.20	12.22	10.19	8.87	7.99	7.09	6.20
18.500	5.69	5.42	5.16	4.89	4.66	4.46	4.26
22.000	4.06	3.85	3.65	3.45	3.23		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		4.085		12.18	29.43	2226.40

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.10	0.17	0.26	0.38	0.56	0.78	1.03
10.500	1.41	1.92	3.16	16.04	13.67	4.22	3.02
14.000	2.48	2.11	1.85	1.59	1.32	1.15	1.03
17.500	0.92	0.80	0.73	0.70	0.66	0.63	0.60
21.000	0.57	0.55	0.52	0.49	0.47	0.44	0.41

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1	0.013	Upstream	4.085		12.18	29.43	2226.40

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.10	0.17	0.26	0.38	0.56	0.78	1.03
10.500	1.41	1.92	3.16	16.04	13.67	4.22	3.02
14.000	2.48	2.11	1.85	1.59	1.32	1.15	1.03
17.500	0.92	0.80	0.73	0.70	0.66	0.63	0.60
21.000	0.57	0.55	0.52	0.49	0.47	0.44	0.41

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	3.922	207.75	12.60	9.73	735.96

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.13	0.18	0.23	0.49	8.83	6.53	4.07
14.000	3.03	2.50	2.14	1.90	1.68	1.45	1.27
17.500	1.12	0.99	0.88	0.80	0.79	0.79	0.78
21.000	0.78	0.78	0.77	0.77	0.76	0.76	0.75
24.500	0.74	0.72	0.71	0.69	0.68	0.66	0.65
28.000	0.63	0.62	0.61	0.59	0.58	0.56	0.55
31.500	0.54	0.52	0.50	0.49	0.47	0.46	0.44
35.000	0.42	0.41	0.39	0.37	0.35	0.33	0.32
38.500	0.30	0.29	0.27	0.26	0.26	0.25	0.25
42.000	0.24	0.24	0.24	0.23	0.23	0.22	0.22
45.500	0.21	0.21	0.20	0.20	0.19	0.19	0.19
49.000	0.18	0.17	0.17	0.16	0.16	0.15	0.15
52.500	0.14	0.14	0.13	0.13	0.13	0.12	0.12
56.000	0.11	0.11	0.11	0.10			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		5.043		12.17	16.84	2667.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.500	0.12	0.15	0.19	0.24	0.30	0.36	0.46
9.000	0.58	0.72	0.87	1.10	1.39	2.15	9.98
12.500	7.02	2.17	1.56	1.28	1.09	0.95	0.81
16.000	0.67	0.59	0.53	0.47	0.41	0.37	0.35
19.500	0.34	0.32	0.30	0.29	0.28	0.26	0.25
23.000	0.24	0.22	0.21				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Upstream	5.043		12.17	16.84	2667.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.500	0.12	0.15	0.19	0.24	0.30	0.36	0.46
9.000	0.58	0.72	0.87	1.10	1.39	2.15	9.98
12.500	7.02	2.17	1.56	1.28	1.09	0.95	0.81

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.000	0.67	0.59	0.53	0.47	0.41	0.37	0.35
19.500	0.34	0.32	0.30	0.29	0.28	0.26	0.25
23.000	0.24	0.22	0.21				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Downstream	4.847	191.31	12.21	16.11	2551.44

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.13	0.16	0.18	0.22	0.25	0.29	0.50
12.500	8.19	2.49	1.63	1.33	1.11	0.97	0.84
16.000	0.70	0.60	0.54	0.48	0.42	0.39	0.39
19.500	0.39	0.39	0.38	0.38	0.38	0.38	0.37
23.000	0.37	0.37	0.36	0.36	0.35	0.35	0.34
26.500	0.33	0.32	0.31	0.31	0.30	0.29	0.29
30.000	0.28	0.27	0.26	0.25	0.25	0.24	0.23
33.500	0.22	0.22	0.21	0.20	0.19	0.18	0.17
37.000	0.17	0.16	0.15	0.15	0.14	0.13	0.12
40.500	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		5.154		12.22	15.14	2496.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.000	0.11	0.14	0.16	0.20	0.25	0.31	0.37
8.500	0.46	0.59	0.72	0.86	1.07	1.35	2.01
12.000	8.13	8.14	2.32	1.55	1.27	1.06	0.93
15.500	0.80	0.67	0.57	0.51	0.46	0.40	0.36
19.000	0.34	0.33	0.31	0.29	0.28	0.27	0.26
22.500	0.24	0.23	0.22	0.20			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Upstream	5.154		12.22	15.14	2496.50

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.000	0.11	0.14	0.16	0.20	0.25	0.31	0.37
8.500	0.46	0.59	0.72	0.86	1.07	1.35	2.01
12.000	8.13	8.14	2.32	1.55	1.27	1.06	0.93
15.500	0.80	0.67	0.57	0.51	0.46	0.40	0.36
19.000	0.34	0.33	0.31	0.29	0.28	0.27	0.26
22.500	0.24	0.23	0.22	0.20			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Downstream	5.024	190.17	12.26	14.54	2398.53

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.13	0.15	0.18	0.21	0.24	0.27	0.31
11.500	0.35	0.45	9.10	2.62	1.60	1.30	1.08
15.000	0.95	0.82	0.68	0.58	0.52	0.49	0.49
18.500	0.49	0.48	0.48	0.47	0.47	0.47	0.46
22.000	0.46	0.45	0.45	0.44	0.43	0.43	0.41
25.500	0.40	0.39	0.38	0.37	0.36	0.34	0.33
29.000	0.32	0.31	0.30	0.29	0.28	0.27	0.25
32.500	0.24	0.23	0.22	0.20	0.19	0.18	0.17
36.000	0.15	0.14	0.13	0.12	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	3.632		12.19	297.35	1729.89

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.65	1.54	2.96	4.83	7.04	10.45	15.06
11.500	25.87	142.70	162.91	55.98	38.36	31.21	26.46
15.000	23.16	19.99	16.80	14.55	13.06	11.68	10.34
18.500	9.52	9.08	8.73	8.37	8.06	7.79	7.51
22.000	7.24	6.95	6.67	6.39	6.08	1.90	1.85
25.500	1.80	1.75	1.70	1.65	1.61	1.56	1.52
29.000	1.47	1.42	1.38	1.33	1.28	1.23	1.18
32.500	1.13	1.08	1.03	0.87	0.83	0.80	0.76
36.000	0.72	0.69	0.65	0.61	0.57	0.45	0.43
39.500	0.40	0.38	0.37	0.36	0.25	0.24	0.24
43.000	0.24	0.23	0.23	0.22	0.22	0.21	0.21
46.500	0.20	0.20	0.19	0.19	0.19	0.18	0.17
50.000	0.17	0.16	0.16	0.15	0.15	0.14	0.14
53.500	0.13	0.13	0.13	0.12	0.12	0.11	0.11

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
57.000	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	3.631	165.05	12.48	172.18	1001.67

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.41	1.14	2.37	4.51	6.68	9.85	14.74
11.500	23.48	54.55	171.90	106.56	72.26	48.45	36.03
15.000	28.21	20.20	17.00	14.65	13.15	11.76	10.53
18.500	9.60	9.15	8.78	8.42	8.11	7.83	7.56
22.000	7.28	6.99	6.71	6.43	6.13	2.49	1.91
25.500	1.82	1.77	1.72	1.67	1.63	1.58	1.53
29.000	1.49	1.44	1.40	1.35	1.30	1.25	1.20
32.500	1.15	1.10	1.05	0.94	0.85	0.81	0.78
36.000	0.74	0.70	0.66	0.62	0.59	0.47	0.44
39.500	0.41	0.39	0.37	0.36	0.28	0.25	0.24
43.000	0.24	0.23	0.23	0.22	0.22	0.21	0.21
46.500	0.21	0.20	0.20	0.19	0.19	0.18	0.18
50.000	0.17	0.16	0.16	0.15	0.15	0.14	0.14
53.500	0.14	0.13	0.13	0.12	0.12	0.12	0.11
57.000	0.11	0.10					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		3.631		12.48	172.18	1001.67

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.41	1.14	2.37	4.51	6.68	9.85	14.74
11.500	23.48	54.55	171.90	106.56	72.26	48.45	36.03
15.000	28.21	20.20	17.00	14.65	13.15	11.76	10.53
18.500	9.60	9.15	8.78	8.42	8.11	7.83	7.56
22.000	7.28	6.99	6.71	6.43	6.13	2.49	1.91
25.500	1.82	1.77	1.72	1.67	1.63	1.58	1.53
29.000	1.49	1.44	1.40	1.35	1.30	1.25	1.20
32.500	1.15	1.10	1.05	0.94	0.85	0.81	0.78
36.000	0.74	0.70	0.66	0.62	0.59	0.47	0.44
39.500	0.41	0.39	0.37	0.36	0.28	0.25	0.24
43.000	0.24	0.23	0.23	0.22	0.22	0.21	0.21
46.500	0.21	0.20	0.20	0.19	0.19	0.18	0.18
50.000	0.17	0.16	0.16	0.15	0.15	0.14	0.14

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
53.500	0.14	0.13	0.13	0.12	0.12	0.12	0.11
57.000	0.11	0.10					

STORM 50-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		6.057		12.10	9.51	3644.45

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.12	0.15	0.18	0.21	0.27	0.34	0.41
10.000	0.48	0.61	0.75	1.21	8.37	2.14	0.93
13.500	0.73	0.59	0.51	0.45	0.38	0.31	0.28
17.000	0.25	0.22	0.19	0.18	0.17	0.16	0.15
20.500	0.15	0.14	0.13	0.13	0.12	0.11	0.11
24.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		5.803		12.23	6.99	2829.60

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.11	0.13	0.16	0.20	0.26	0.32	0.39
10.500	0.49	0.62	0.92	3.67	3.98	1.13	0.74
14.000	0.60	0.51	0.44	0.38	0.32	0.27	0.24
17.500	0.22	0.19	0.17	0.16	0.15	0.15	0.14
21.000	0.13	0.13	0.12	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Upstream	5.933		12.12	15.35	3022.19

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.12	0.26	0.32	0.38	0.47	0.60	0.73
10.000	0.87	1.09	1.37	2.13	12.04	6.12	2.05
13.500	1.47	1.19	1.02	0.89	0.76	0.63	0.55

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.000	0.49	0.44	0.38	0.35	0.33	0.32	0.30
20.500	0.29	0.27	0.26	0.25	0.23	0.22	0.21
24.000	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1A	0.005	Downstream	5.819	179.78	12.29	10.89	2144.60

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.12	0.15	0.18	0.22	0.25	0.29	0.33
11.500	0.38	1.89	8.69	3.23	1.83	1.43	1.20
15.000	1.03	0.89	0.75	0.64	0.56	0.49	0.49
18.500	0.48	0.48	0.48	0.47	0.46	0.46	0.45
22.000	0.45	0.44	0.44	0.43	0.42	0.41	0.39
25.500	0.38	0.36	0.35	0.34	0.32	0.31	0.30
29.000	0.29	0.27	0.26	0.24	0.23	0.21	0.19
32.500	0.18	0.17	0.15	0.14	0.12	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1	0.007		5.009		12.32	15.73	2198.37

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.14	0.20	0.28	0.39	0.53	0.70	0.92
11.000	1.24	1.86	6.69	12.67	3.95	2.17	1.72
14.500	1.43	1.25	1.08	0.91	0.77	0.69	0.61
18.000	0.54	0.48	0.46	0.43	0.41	0.39	0.37
21.500	0.36	0.34	0.32	0.31	0.29	0.27	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2D	0.004		4.231		12.12	11.50	2746.19

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.14	0.20	0.29	0.42	0.59	1.08	8.89
12.500	3.03	1.28	1.01	0.82	0.72	0.63	0.54

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.000	0.44	0.39	0.35	0.31	0.27	0.26	0.24
19.500	0.23	0.22	0.21	0.20	0.19	0.18	0.17
23.000	0.16	0.15	0.14				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#3	0.020		3.933		12.20	41.37	2070.08

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.500	0.15	0.35	0.61	0.95	1.44	2.15	3.76
12.000	19.97	22.89	6.97	4.85	4.01	3.41	3.00
15.500	2.58	2.16	1.87	1.68	1.50	1.31	1.20
19.000	1.14	1.08	1.03	0.98	0.94	0.90	0.85
22.500	0.81	0.77	0.73	0.68			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#4	0.110		4.366		12.18	266.83	2428.12

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.60	1.28	2.26	3.68	5.49	7.65	10.94
11.000	15.43	26.39	144.59	121.15	38.44	27.84	22.92
14.500	19.57	17.18	14.76	12.31	10.70	9.63	8.55
18.000	7.47	6.85	6.53	6.21	5.88	5.61	5.36
21.500	5.12	4.88	4.63	4.39	4.15	3.88	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2C	0.013		5.021		12.18	35.93	2717.96

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.12	0.20	0.29	0.41	0.57	0.80	1.08
10.000	1.39	1.86	2.49	4.03	19.84	16.47	5.06
13.500	3.61	2.96	2.52	2.20	1.89	1.58	1.37
17.000	1.23	1.09	0.95	0.87	0.83	0.79	0.75
20.500	0.71	0.68	0.65	0.62	0.59	0.55	0.52

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
24.000	0.49						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Upstream	5.021		12.18	35.93	2717.96

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
6.500	0.12	0.20	0.29	0.41	0.57	0.80	1.08
10.000	1.39	1.86	2.49	4.03	19.84	16.47	5.06
13.500	3.61	2.96	2.52	2.20	1.89	1.58	1.37
17.000	1.23	1.09	0.95	0.87	0.83	0.79	0.75
20.500	0.71	0.68	0.65	0.62	0.59	0.55	0.52
24.000	0.49						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1	0.013	Downstream	4.857	208.14	12.48	17.25	1305.21

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
9.500	0.10	0.14	0.19	0.23	0.31	0.61	17.23
13.000	8.40	4.88	3.63	2.92	2.53	2.19	1.92
16.500	1.69	1.49	1.33	1.17	1.04	0.95	0.88
20.000	0.82	0.79	0.79	0.79	0.78	0.78	0.78
23.500	0.77	0.77	0.76	0.74	0.73	0.71	0.70
27.000	0.68	0.67	0.65	0.64	0.63	0.61	0.60
30.500	0.58	0.57	0.55	0.54	0.53	0.51	0.49
34.000	0.48	0.46	0.44	0.43	0.41	0.39	0.37
37.500	0.36	0.34	0.32	0.31	0.29	0.28	0.26
41.000	0.26	0.25	0.25	0.24	0.24	0.24	0.23
44.500	0.23	0.22	0.22	0.21	0.21	0.20	0.20
48.000	0.20	0.19	0.19	0.18	0.18	0.17	0.16
51.500	0.16	0.15	0.15	0.14	0.14	0.14	0.13
55.000	0.13	0.12	0.12	0.11	0.11	0.11	0.10
58.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		6.032		12.18	19.91	3154.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.11	0.14	0.17	0.20	0.25	0.32	0.39
8.000	0.46	0.58	0.73	0.90	1.07	1.34	1.68
11.500	2.58	11.86	8.26	2.55	1.83	1.50	1.27
15.000	1.11	0.95	0.79	0.69	0.62	0.55	0.48
18.500	0.44	0.42	0.39	0.37	0.36	0.34	0.32
22.000	0.31	0.29	0.28	0.26	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Upstream	6.032		12.18	19.91	3154.26

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.11	0.14	0.17	0.20	0.25	0.32	0.39
8.000	0.46	0.58	0.73	0.90	1.07	1.34	1.68
11.500	2.58	11.86	8.26	2.55	1.83	1.50	1.27
15.000	1.11	0.95	0.79	0.69	0.62	0.55	0.48
18.500	0.44	0.42	0.39	0.37	0.36	0.34	0.32
22.000	0.31	0.29	0.28	0.26	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2B	0.006	Downstream	5.836	191.37	12.21	19.36	3066.83

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.000	0.11	0.14	0.16	0.19	0.22	0.25	0.29
11.500	0.33	8.91	9.62	2.91	1.91	1.56	1.31
15.000	1.14	0.98	0.82	0.70	0.63	0.56	0.49
18.500	0.44	0.42	0.40	0.39	0.39	0.39	0.39
22.000	0.38	0.38	0.38	0.38	0.37	0.37	0.36
25.500	0.35	0.35	0.34	0.33	0.32	0.31	0.31
29.000	0.30	0.29	0.29	0.28	0.27	0.26	0.26
32.500	0.25	0.24	0.23	0.23	0.22	0.21	0.20
36.000	0.19	0.18	0.18	0.17	0.16	0.15	0.15
39.500	0.14	0.13	0.12	0.11	0.11		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#2A	0.006		6.147		12.22	17.86	2945.46

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.12	0.16	0.19	0.22	0.27	0.33	0.40
8.000	0.47	0.58	0.73	0.89	1.05	1.30	1.63
11.500	2.41	9.64	9.57	2.72	1.82	1.48	1.25
15.000	1.09	0.94	0.78	0.67	0.60	0.53	0.47
18.500	0.42	0.40	0.38	0.36	0.34	0.33	0.31
22.000	0.30	0.28	0.27	0.25	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Upstream	6.147		12.22	17.86	2945.46

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.500	0.12	0.16	0.19	0.22	0.27	0.33	0.40
8.000	0.47	0.58	0.73	0.89	1.05	1.30	1.63
11.500	2.41	9.64	9.57	2.72	1.82	1.48	1.25
15.000	1.09	0.94	0.78	0.67	0.60	0.53	0.47
18.500	0.42	0.40	0.38	0.36	0.34	0.33	0.31
22.000	0.30	0.28	0.27	0.25	0.24		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#2A	0.006	Downstream	6.017	190.26	12.24	17.43	2875.27

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.11	0.14	0.16	0.18	0.21	0.24	0.28
10.500	0.31	0.35	0.40	4.35	10.66	3.07	1.88
14.000	1.53	1.27	1.11	0.96	0.80	0.68	0.61
17.500	0.54	0.49	0.49	0.49	0.48	0.48	0.48
21.000	0.47	0.47	0.47	0.46	0.46	0.45	0.45
24.500	0.44	0.43	0.42	0.41	0.40	0.38	0.37
28.000	0.36	0.35	0.33	0.32	0.31	0.30	0.29
31.500	0.28	0.27	0.26	0.24	0.23	0.22	0.21
35.000	0.19	0.18	0.17	0.16	0.15	0.14	0.12
38.500	0.11						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Upstream	4.532		12.20	377.04	2193.48

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.11	0.88	1.86	3.16	5.12	7.59	10.48
10.500	14.75	20.60	34.50	195.89	205.94	68.25	46.36
14.000	37.62	31.82	27.86	23.97	20.11	17.44	15.65
17.500	13.90	12.23	11.24	10.70	10.19	9.70	9.31
21.000	8.99	8.66	8.34	8.00	7.67	7.34	6.98
24.500	1.97	1.93	1.88	1.83	1.78	1.73	1.68
28.000	1.63	1.59	1.55	1.50	1.45	1.41	1.36
31.500	1.31	1.26	1.21	1.16	1.11	1.06	1.00
35.000	0.95	0.81	0.77	0.73	0.70	0.66	0.62
38.500	0.58	0.45	0.43	0.41	0.39	0.37	0.36
42.000	0.25	0.24	0.24	0.24	0.23	0.23	0.22
45.500	0.22	0.21	0.21	0.20	0.20	0.20	0.19
49.000	0.19	0.18	0.18	0.17	0.16	0.16	0.15
52.500	0.15	0.14	0.14	0.14	0.13	0.13	0.12
56.000	0.12	0.11	0.11	0.11	0.10	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WETLAND	0.172	Downstream	4.531	165.52	12.46	229.60	1335.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.63	1.48	2.61	4.79	7.15	10.01	14.42
11.000	20.19	29.40	69.22	228.08	131.81	80.54	60.66
14.500	43.52	34.81	29.03	20.38	17.56	15.76	14.01
18.000	12.34	11.28	10.78	10.27	9.78	9.36	9.03
21.500	8.71	8.39	8.05	7.72	7.39	7.04	2.61
25.000	1.99	1.90	1.85	1.80	1.75	1.70	1.65
28.500	1.61	1.56	1.52	1.47	1.43	1.38	1.33
32.000	1.28	1.23	1.18	1.13	1.08	1.03	0.97
35.500	0.83	0.79	0.75	0.71	0.67	0.63	0.60
39.000	0.49	0.44	0.42	0.39	0.38	0.36	0.30
42.500	0.25	0.24	0.24	0.23	0.23	0.23	0.22
46.000	0.22	0.21	0.21	0.20	0.20	0.19	0.19
49.500	0.18	0.18	0.17	0.17	0.16	0.16	0.15
53.000	0.15	0.14	0.14	0.13	0.13	0.12	0.12
56.500	0.12	0.11	0.11	0.11	0.10		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.172		4.531		12.46	229.60	1335.75

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.500	0.63	1.48	2.61	4.79	7.15	10.01	14.42
11.000	20.19	29.40	69.22	228.08	131.81	80.54	60.66
14.500	43.52	34.81	29.03	20.38	17.56	15.76	14.01
18.000	12.34	11.28	10.78	10.27	9.78	9.36	9.03
21.500	8.71	8.39	8.05	7.72	7.39	7.04	2.61
25.000	1.99	1.90	1.85	1.80	1.75	1.70	1.65
28.500	1.61	1.56	1.52	1.47	1.43	1.38	1.33
32.000	1.28	1.23	1.18	1.13	1.08	1.03	0.97
35.500	0.83	0.79	0.75	0.71	0.67	0.63	0.60
39.000	0.49	0.44	0.42	0.39	0.38	0.36	0.30
42.500	0.25	0.24	0.24	0.23	0.23	0.23	0.22
46.000	0.22	0.21	0.21	0.20	0.20	0.19	0.19
49.500	0.18	0.18	0.17	0.17	0.16	0.16	0.15
53.000	0.15	0.14	0.14	0.13	0.13	0.12	0.12
56.500	0.12	0.11	0.11	0.11	0.10		

STORM 100-YR

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1A	0.003		6.562		12.11	10.23	3920.59

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.11	0.14	0.17	0.20	0.24	0.30	0.37
9.500	0.44	0.52	0.66	0.81	1.31	9.01	2.30
13.000	0.99	0.78	0.63	0.55	0.48	0.41	0.34
16.500	0.30	0.27	0.24	0.20	0.19	0.18	0.17
20.000	0.16	0.16	0.15	0.14	0.14	0.13	0.12
23.500	0.11	0.11					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
WS#1B	0.002		6.314		12.23	7.54	3052.60

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.12	0.15	0.18	0.23	0.29	0.36	0.43
10.500	0.53	0.68	1.00	3.97	4.28	1.21	0.79
14.000	0.65	0.54	0.47	0.41	0.34	0.29	0.26
17.500	0.23	0.20	0.18	0.18	0.17	0.16	0.15
21.000	0.14	0.14	0.13	0.12	0.12	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Upstream	6.441		12.12	16.54	3256.61

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
6.000	0.11	0.14	0.29	0.35	0.42	0.53	0.66
9.500	0.80	0.95	1.19	1.49	2.31	12.98	6.58
13.000	2.21	1.57	1.28	1.09	0.95	0.81	0.68
16.500	0.59	0.53	0.47	0.41	0.38	0.36	0.34
20.000	0.32	0.31	0.29	0.28	0.27	0.25	0.24
23.500	0.22	0.21					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#1A	0.005	Downstream	6.326	179.98	12.27	12.26	2414.58

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.500	0.10	0.14	0.17	0.20	0.24	0.27	0.31
11.000	0.35	0.41	3.46	9.43	3.41	1.96	1.50
14.500	1.28	1.10	0.95	0.81	0.68	0.60	0.53
18.000	0.49	0.49	0.48	0.48	0.47	0.47	0.46
21.500	0.46	0.45	0.45	0.44	0.44	0.43	0.42
25.000	0.40	0.39	0.37	0.36	0.35	0.33	0.32
28.500	0.31	0.29	0.28	0.27	0.25	0.24	0.22
32.000	0.21	0.19	0.18	0.16	0.15	0.14	0.11

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#1	0.007		5.482		12.31	17.16	2397.99

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.000	0.12	0.18	0.24	0.33	0.46	0.61	0.79
10.500	1.03	1.38	2.06	7.36	13.78	4.28	2.34
14.000	1.86	1.54	1.35	1.17	0.98	0.83	0.74
17.500	0.66	0.58	0.52	0.49	0.47	0.44	0.42
21.000	0.40	0.38	0.37	0.35	0.33	0.31	0.29

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2D	0.004		4.678		12.12	12.66	3023.42

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.500	0.11	0.17	0.25	0.34	0.49	0.68	1.23
12.000	9.86	3.32	1.39	1.10	0.90	0.78	0.68
15.500	0.58	0.48	0.43	0.38	0.34	0.30	0.28
19.000	0.26	0.25	0.24	0.23	0.22	0.21	0.20
22.500	0.19	0.18	0.17	0.16			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#3	0.020		4.367		12.21	45.96	2299.66

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.500	0.24	0.47	0.78	1.16	1.71	2.51	4.32
12.000	22.44	25.22	7.64	5.31	4.38	3.72	3.27
15.500	2.82	2.36	2.04	1.84	1.63	1.43	1.30
19.000	1.24	1.18	1.12	1.07	1.02	0.97	0.93
22.500	0.88	0.84	0.79	0.74			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#4	0.110		4.818		12.18	293.96	2675.00

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
7.000	0.36	0.99	1.77	2.91	4.54	6.57	8.99
10.500	12.66	17.64	29.83	160.71	132.43	41.89	30.30
14.000	24.93	21.27	18.66	16.03	13.36	11.61	10.45
17.500	9.28	8.10	7.43	7.08	6.73	6.38	6.08
21.000	5.81	5.55	5.29	5.02	4.75	4.49	4.20

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2C	0.013		5.495		12.18	39.09	2957.13

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.16	0.25	0.36	0.49	0.67	0.93	1.24
10.000	1.58	2.10	2.78	4.47	21.78	17.87	5.47
13.500	3.90	3.20	2.72	2.38	2.04	1.70	1.47
17.000	1.33	1.18	1.03	0.94	0.89	0.85	0.81
20.500	0.77	0.73	0.70	0.67	0.63	0.60	0.57
24.000	0.53						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1	0.013	Upstream	5.495		12.18	39.09	2957.13

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.16	0.25	0.36	0.49	0.67	0.93	1.24
10.000	1.58	2.10	2.78	4.47	21.78	17.87	5.47
13.500	3.90	3.20	2.72	2.38	2.04	1.70	1.47
17.000	1.33	1.18	1.03	0.94	0.89	0.85	0.81
20.500	0.77	0.73	0.70	0.67	0.63	0.60	0.57
24.000	0.53						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
POND#1	0.013	Downstream	5.331	208.32	12.44	21.23	1605.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.500	0.12	0.16	0.21	0.25	0.38	0.66	20.77
13.000	9.18	5.23	3.91	3.13	2.72	2.36	2.02
16.500	1.79	1.60	1.42	1.26	1.12	1.02	0.95
20.000	0.89	0.84	0.79	0.79	0.79	0.78	0.78
23.500	0.78	0.77	0.76	0.75	0.74	0.72	0.70
27.000	0.69	0.67	0.66	0.65	0.63	0.62	0.61
30.500	0.59	0.58	0.56	0.55	0.53	0.52	0.50
34.000	0.48	0.47	0.45	0.43	0.42	0.40	0.38
37.500	0.36	0.35	0.33	0.31	0.30	0.28	0.27
41.000	0.26	0.25	0.25	0.25	0.24	0.24	0.23
44.500	0.23	0.23	0.22	0.22	0.21	0.21	0.20
48.000	0.20	0.19	0.19	0.18	0.18	0.17	0.17
51.500	0.16	0.16	0.15	0.15	0.14	0.14	0.13
55.000	0.13	0.12	0.12	0.12	0.11	0.11	0.11
58.500	0.10						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2B	0.006		6.528		12.17	21.44	3396.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
4.500	0.13	0.16	0.20	0.23	0.29	0.36	0.43
8.000	0.51	0.64	0.81	0.99	1.17	1.46	1.83
11.500	2.80	12.80	8.88	2.74	1.97	1.61	1.37
15.000	1.19	1.02	0.85	0.74	0.66	0.59	0.51
18.500	0.47	0.45	0.42	0.40	0.38	0.36	0.35
22.000	0.33	0.31	0.30	0.28	0.26		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Upstream	6.528		12.17	21.44	3396.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
4.500	0.13	0.16	0.20	0.23	0.29	0.36	0.43
8.000	0.51	0.64	0.81	0.99	1.17	1.46	1.83
11.500	2.80	12.80	8.88	2.74	1.97	1.61	1.37
15.000	1.19	1.02	0.85	0.74	0.66	0.59	0.51
18.500	0.47	0.45	0.42	0.40	0.38	0.36	0.35
22.000	0.33	0.31	0.30	0.28	0.26		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2B	0.006	Downstream	6.331	191.41	12.20	20.87	3306.76

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
8.000	0.13	0.15	0.18	0.21	0.24	0.27	0.30
11.500	0.35	10.48	10.32	3.12	2.05	1.68	1.40
15.000	1.23	1.05	0.88	0.75	0.68	0.60	0.53
18.500	0.47	0.45	0.43	0.41	0.39	0.39	0.39
22.000	0.39	0.39	0.38	0.38	0.38	0.37	0.36
25.500	0.36	0.35	0.34	0.33	0.32	0.32	0.31
29.000	0.30	0.30	0.29	0.28	0.28	0.27	0.26
32.500	0.25	0.24	0.24	0.23	0.22	0.21	0.20
36.000	0.19	0.19	0.18	0.17	0.16	0.16	0.15
39.500	0.14	0.14	0.13	0.12	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WS#2A	0.006		6.645		12.22	19.21	3168.65

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
4.000	0.11	0.15	0.18	0.21	0.25	0.30	0.37
7.500	0.44	0.52	0.64	0.80	0.97	1.15	1.41
11.000	1.77	2.60	10.40	10.28	2.92	1.95	1.59
14.500	1.34	1.17	1.00	0.84	0.72	0.65	0.57
18.000	0.50	0.45	0.43	0.41	0.39	0.37	0.35
21.500	0.34	0.32	0.30	0.29	0.27	0.25	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Upstream	6.645		12.22	19.21	3168.65

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
4.000	0.11	0.15	0.18	0.21	0.25	0.30	0.37
7.500	0.44	0.52	0.64	0.80	0.97	1.15	1.41
11.000	1.77	2.60	10.40	10.28	2.92	1.95	1.59
14.500	1.34	1.17	1.00	0.84	0.72	0.65	0.57
18.000	0.50	0.45	0.43	0.41	0.39	0.37	0.35
21.500	0.34	0.32	0.30	0.29	0.27	0.25	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
POND#2A	0.006	Downstream	6.515	190.31	12.26	18.76	3095.19

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)						
6.500	0.10	0.13	0.15	0.17	0.20	0.23	0.26
10.000	0.29	0.33	0.37	0.42	7.33	11.46	3.30
13.500	2.01	1.64	1.36	1.19	1.03	0.86	0.73
17.000	0.66	0.58	0.51	0.49	0.49	0.49	0.48
20.500	0.48	0.48	0.48	0.47	0.47	0.46	0.46
24.000	0.45	0.45	0.43	0.42	0.41	0.40	0.39
27.500	0.38	0.37	0.35	0.34	0.33	0.32	0.31
31.000	0.30	0.29	0.28	0.26	0.25	0.24	0.23
34.500	0.21	0.20	0.19	0.18	0.16	0.15	0.14
38.000	0.13	0.11					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Upstream	4.989		12.19	419.47	2440.32

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.500	0.10	0.61	1.49	2.45	4.11	6.25	9.04
10.000	12.25	17.01	23.48	39.00	222.31	226.71	74.22
13.500	50.30	40.79	34.48	30.20	25.99	21.75	18.87
17.000	16.94	15.05	13.20	12.10	11.52	10.97	10.43
20.500	9.97	9.58	9.23	8.88	8.52	8.16	7.81
24.000	7.43	2.00	1.95	1.91	1.86	1.81	1.76
27.500	1.71	1.66	1.61	1.57	1.53	1.48	1.43
31.000	1.39	1.34	1.29	1.24	1.19	1.14	1.09
34.500	1.04	0.98	0.83	0.79	0.75	0.72	0.68
38.000	0.64	0.60	0.46	0.44	0.42	0.40	0.38
41.500	0.36	0.35	0.25	0.24	0.24	0.23	0.23
45.000	0.23	0.22	0.22	0.21	0.21	0.20	0.20
48.500	0.19	0.19	0.18	0.18	0.17	0.17	0.16
52.000	0.16	0.15	0.15	0.14	0.14	0.13	0.13
55.500	0.12	0.12	0.12	0.11	0.11	0.11	0.10

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
WETLAND	0.172	Downstream	4.989	165.74	12.45	260.71	1516.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.37	1.06	2.07	3.69	5.89	8.59	12.02
10.500	16.63	22.55	30.79	74.52	257.93	144.61	84.34
14.000	66.04	46.89	37.76	31.53	23.27	19.00	17.06
17.500	15.17	13.32	12.14	11.55	11.00	10.51	10.04
21.000	9.64	9.28	8.94	8.57	8.22	7.86	7.49
24.500	2.66	2.02	1.93	1.88	1.83	1.78	1.73
28.000	1.68	1.63	1.59	1.54	1.50	1.45	1.41
31.500	1.36	1.31	1.26	1.21	1.16	1.11	1.06
35.000	1.00	0.91	0.81	0.77	0.73	0.69	0.66
38.500	0.62	0.57	0.46	0.43	0.41	0.38	0.37
42.000	0.36	0.26	0.24	0.24	0.24	0.23	0.23
45.500	0.22	0.22	0.21	0.21	0.20	0.20	0.20
49.000	0.19	0.19	0.18	0.17	0.17	0.16	0.16
52.500	0.15	0.15	0.14	0.14	0.13	0.13	0.13
56.000	0.12	0.12	0.11	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.172		4.989		12.45	260.71	1516.74

Line Start Time (hr)	Flow Values @ time increment of 0.500 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.000	0.37	1.06	2.07	3.69	5.89	8.59	12.02
10.500	16.63	22.55	30.79	74.52	257.93	144.61	84.34
14.000	66.04	46.89	37.76	31.53	23.27	19.00	17.06
17.500	15.17	13.32	12.14	11.55	11.00	10.51	10.04
21.000	9.64	9.28	8.94	8.57	8.22	7.86	7.49
24.500	2.66	2.02	1.93	1.88	1.83	1.78	1.73
28.000	1.68	1.63	1.59	1.54	1.50	1.45	1.41
31.500	1.36	1.31	1.26	1.21	1.16	1.11	1.06
35.000	1.00	0.91	0.81	0.77	0.73	0.69	0.66
38.500	0.62	0.57	0.46	0.43	0.41	0.38	0.37
42.000	0.36	0.26	0.24	0.24	0.24	0.23	0.23
45.500	0.22	0.22	0.21	0.21	0.20	0.20	0.20
49.000	0.19	0.19	0.18	0.17	0.17	0.16	0.16
52.500	0.15	0.15	0.14	0.14	0.13	0.13	0.13
56.000	0.12	0.12	0.11	0.11	0.11	0.10	

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 1-YR (cfs)	2-YR (cfs)	5-YR (cfs)	10-YR (cfs)	25-YR (cfs)
WS#1	0.007		3.80	5.90	8.65	10.05	12.89
WS#1A	0.003		3.26	4.44	5.90	6.63	8.07
WS#1B	0.002		2.22	3.12	4.23	4.78	5.89
WS#2A	0.006		6.04	8.26	11.03	12.40	15.14
WS#2B	0.006		6.55	9.07	12.19	13.75	16.84
WS#2C	0.013		8.71	13.50	19.79	22.98	29.43
WS#2D	0.004		2.15	3.70	5.81	6.91	9.18
WS#3	0.020		6.34	11.82	19.61	23.79	32.44
WS#4	0.110		50.43	86.24	135.11	160.77	212.89
WETLAND	0.172		62.44	106.83	169.47	211.91	297.35
DOWNSTREAM			41.43	64.07	95.55	118.18	172.18
POND#1	0.013		8.71	13.50	19.79	22.98	29.43
DOWNSTREAM			0.45	0.66	1.66	3.24	9.73
POND#2B	0.006		6.55	9.07	12.19	13.75	16.84
DOWNSTREAM			0.37	3.03	8.92	11.80	16.11
POND#2A	0.006		6.04	8.26	11.03	12.40	15.14
DOWNSTREAM			0.45	2.63	7.73	10.34	14.54
POND#1A	0.005		5.07	7.00	9.41	10.60	12.98
DOWNSTREAM			0.42	0.91	3.45	4.99	7.99
OUTLET	0.172		41.43	64.07	95.55	118.18	172.18

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 50-YR (cfs)	100-YR (cfs)	(cfs)	(cfs)	(cfs)
WS#1	0.007		15.73	17.16			
WS#1A	0.003		9.51	10.23			
WS#1B	0.002		6.99	7.54			
WS#2A	0.006		17.86	19.21			
WS#2B	0.006		19.91	21.44			
WS#2C	0.013		35.93	39.09			
WS#2D	0.004		11.50	12.66			
WS#3	0.020		41.37	45.96			
WS#4	0.110		266.83	293.96			
WETLAND	0.172		377.04	419.47			
DOWNSTREAM			229.60	260.71			
POND#1	0.013		35.93	39.09			
DOWNSTREAM			17.25	21.23			
POND#2B	0.006		19.91	21.44			
DOWNSTREAM			19.36	20.87			
POND#2A	0.006		17.86	19.21			
DOWNSTREAM			17.43	18.76			
POND#1A	0.005		15.35	16.54			
DOWNSTREAM			10.89	12.26			
OUTLET	0.172		229.60	260.71			

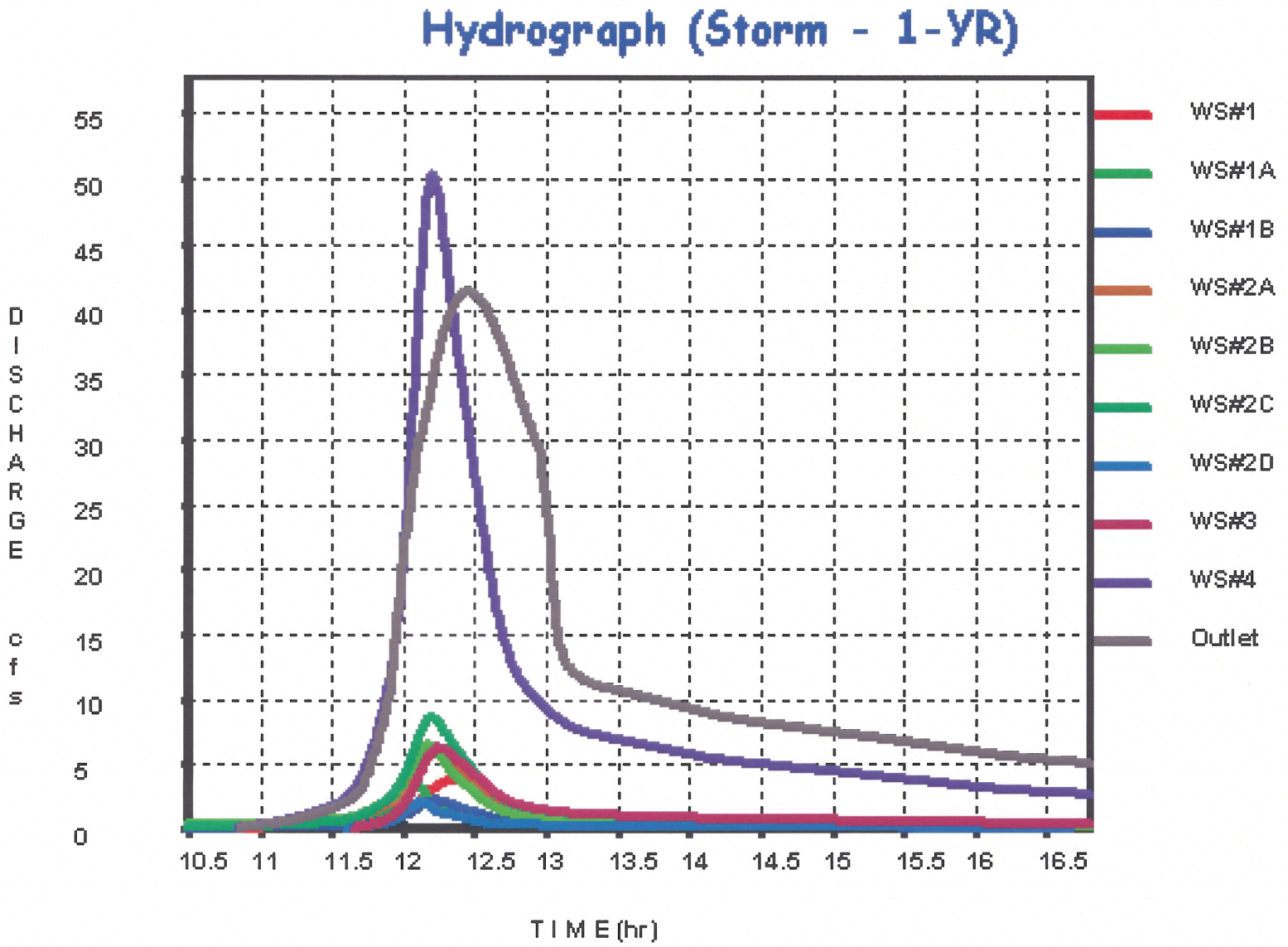

Figure D-8: Routing hydrograph of the proposed drainage system for **1 year** storm peak runoff for at upstream, downstream and outlet.

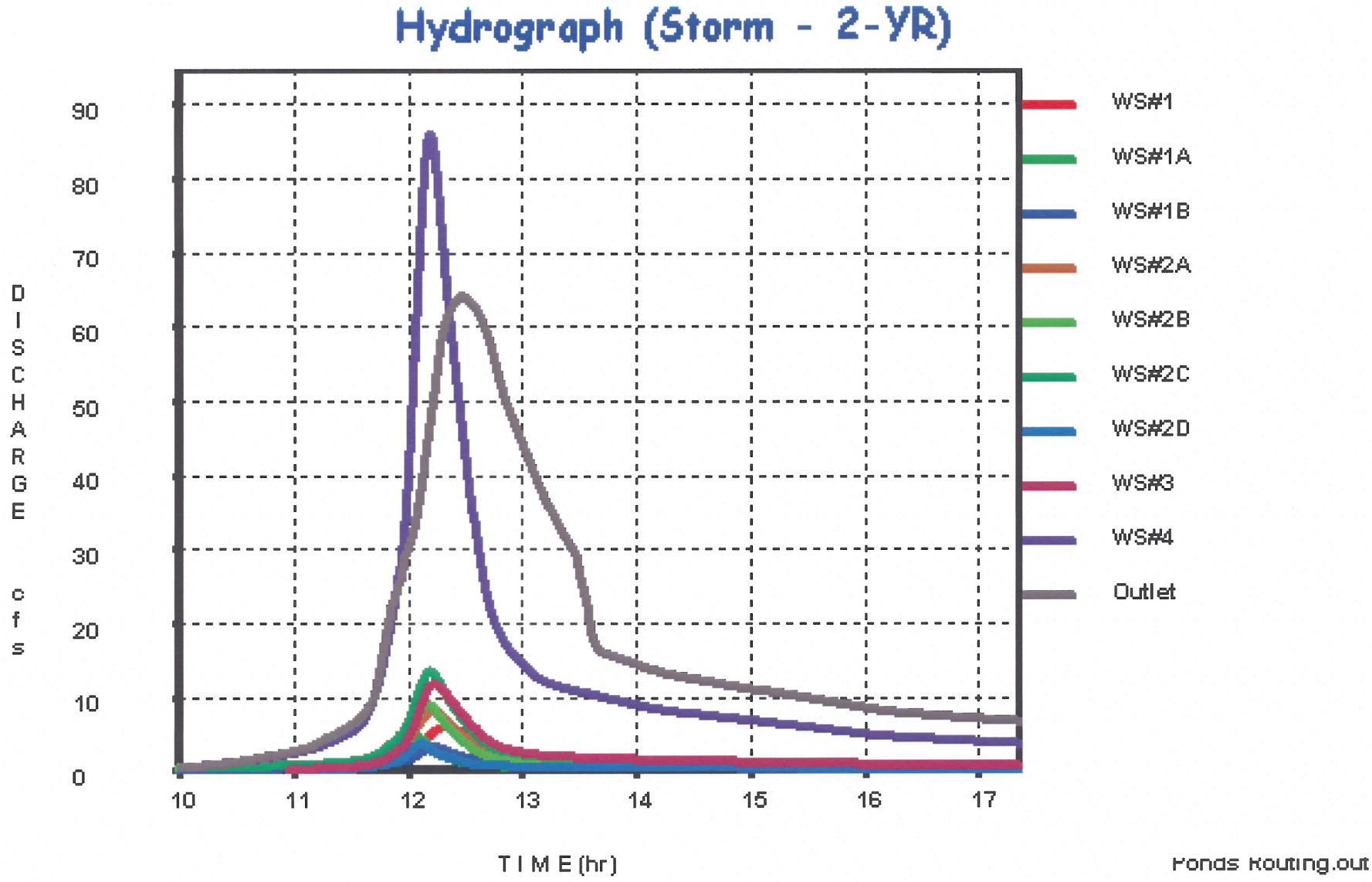

Figure D-9: Routing hydrograph of the proposed drainage system for **2 year** storm peak runoff for at upstream, downstream and outlet.

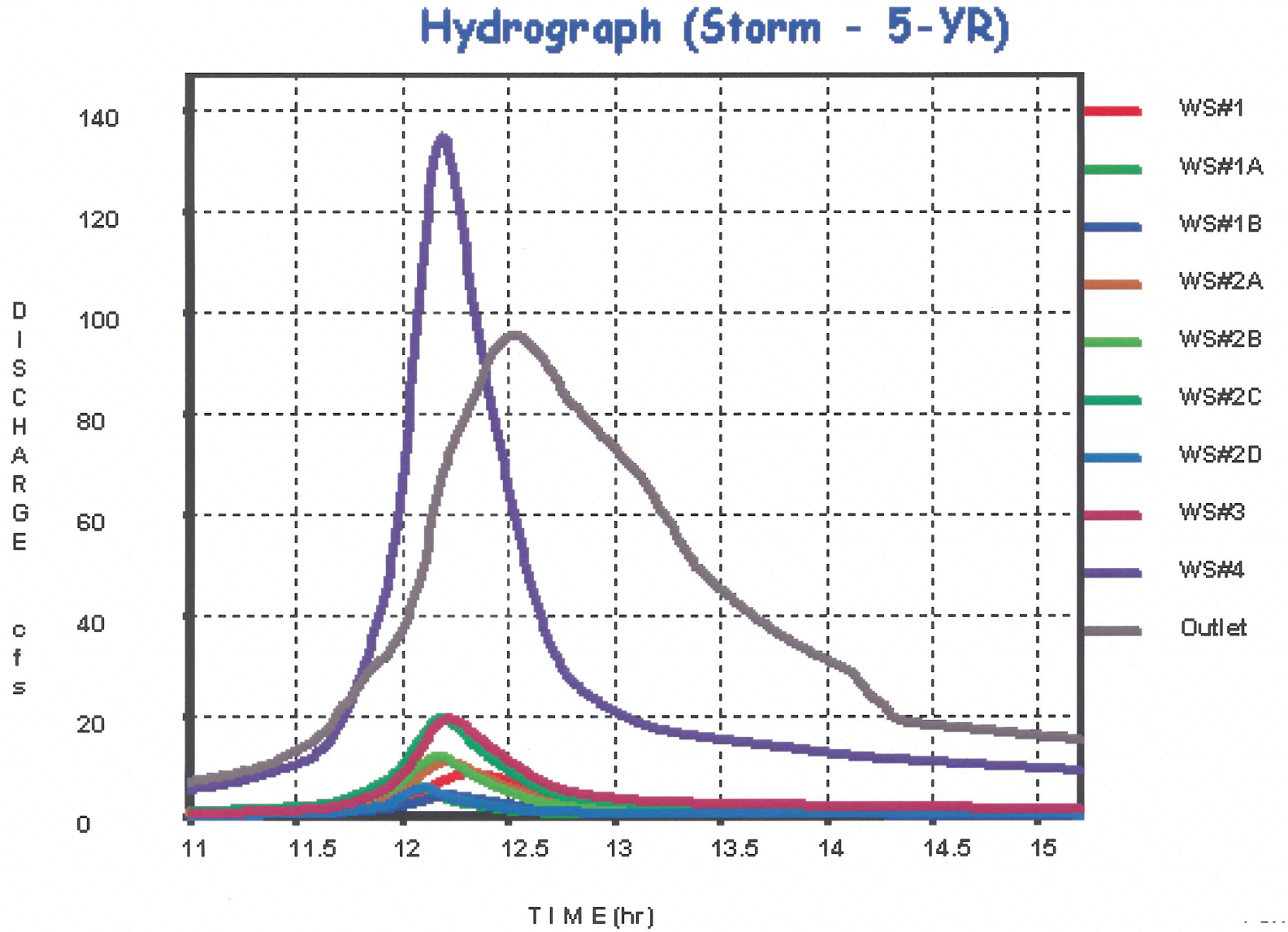

Figure D-10: Routing hydrograph of the proposed drainage system for **5 year** storm peak runoff for at upstream, downstream and outlet.

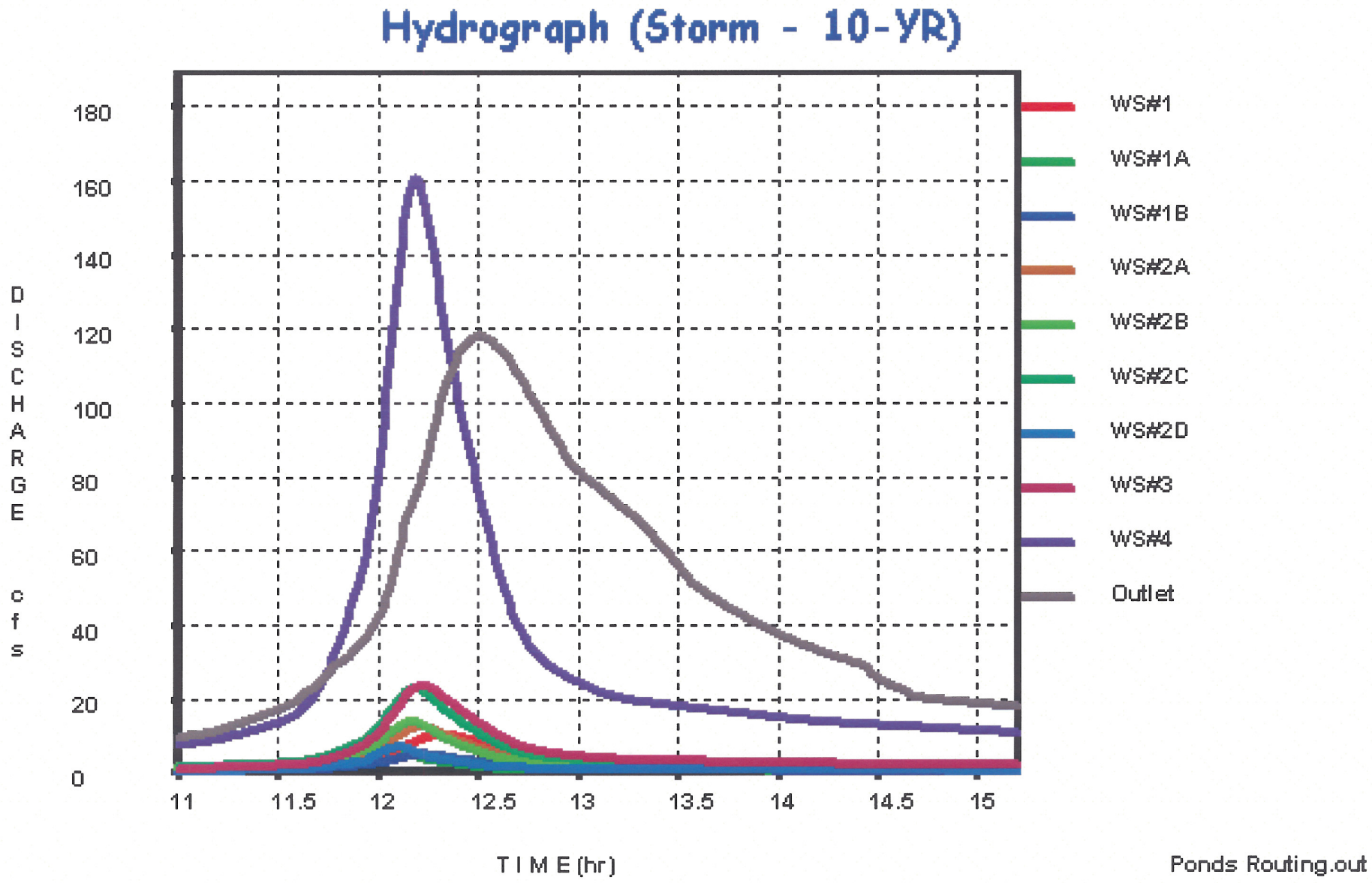

Figure D-11: Routing hydrograph of the proposed drainage system for **10 year** storm peak runoff for at upstream, downstream and outlet.

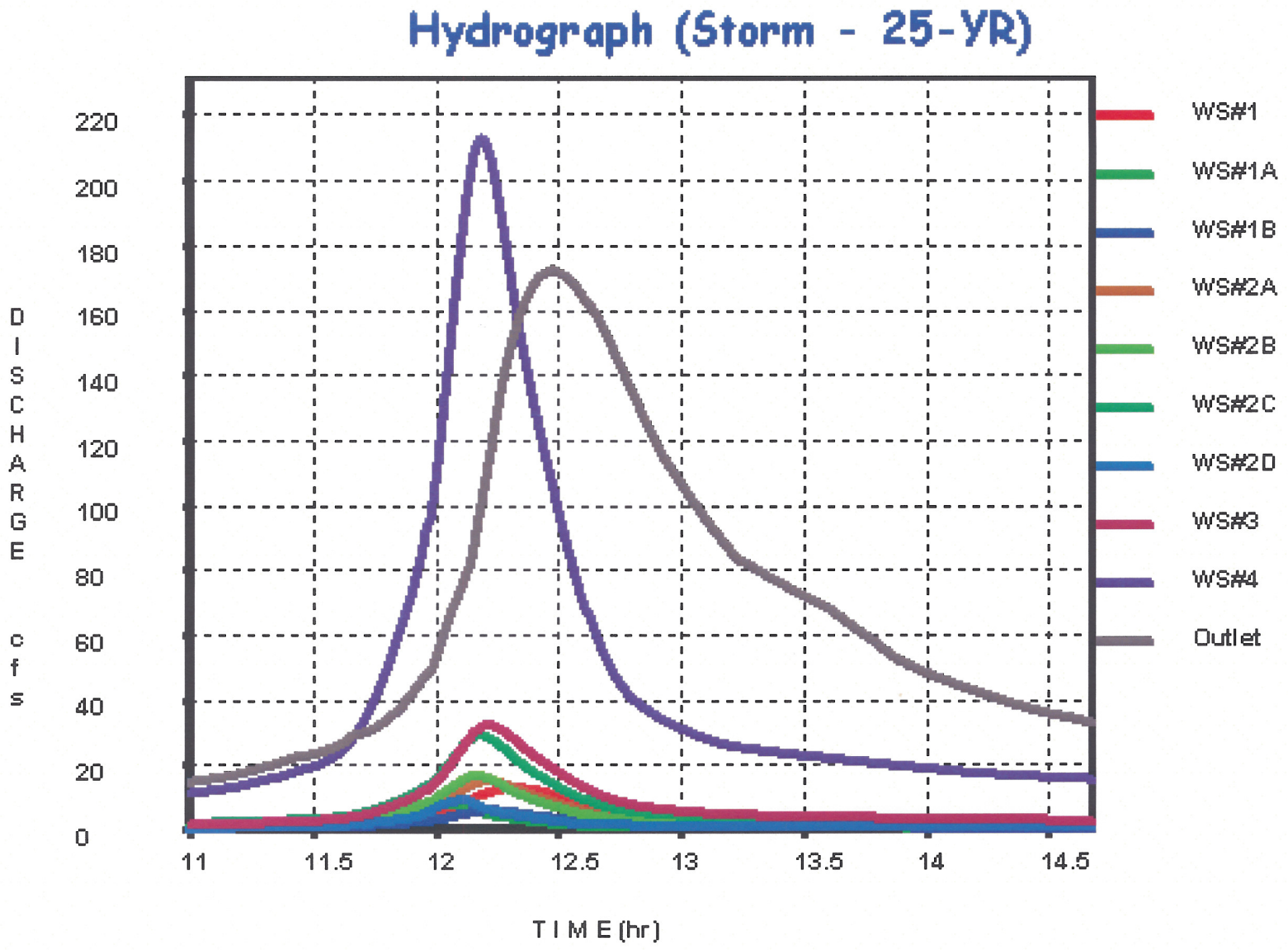

Figure D-12: Routing hydrograph of the proposed drainage system for **25 year** storm peak runoff for at upstream, downstream and outlet.

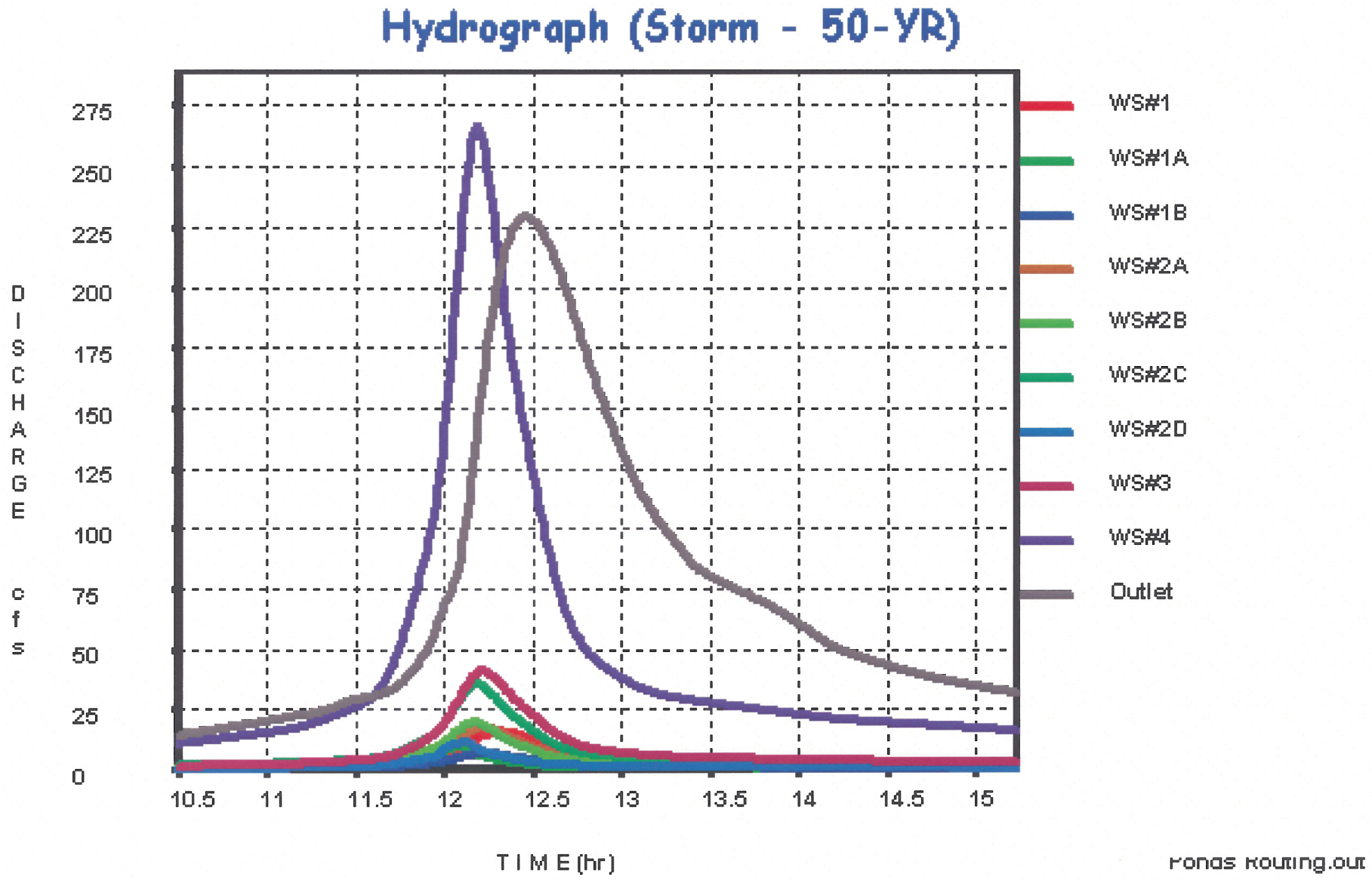

Figure D-13: Routing hydrograph of the proposed drainage system for **50 year** storm peak runoff for at upstream, downstream and outlet.

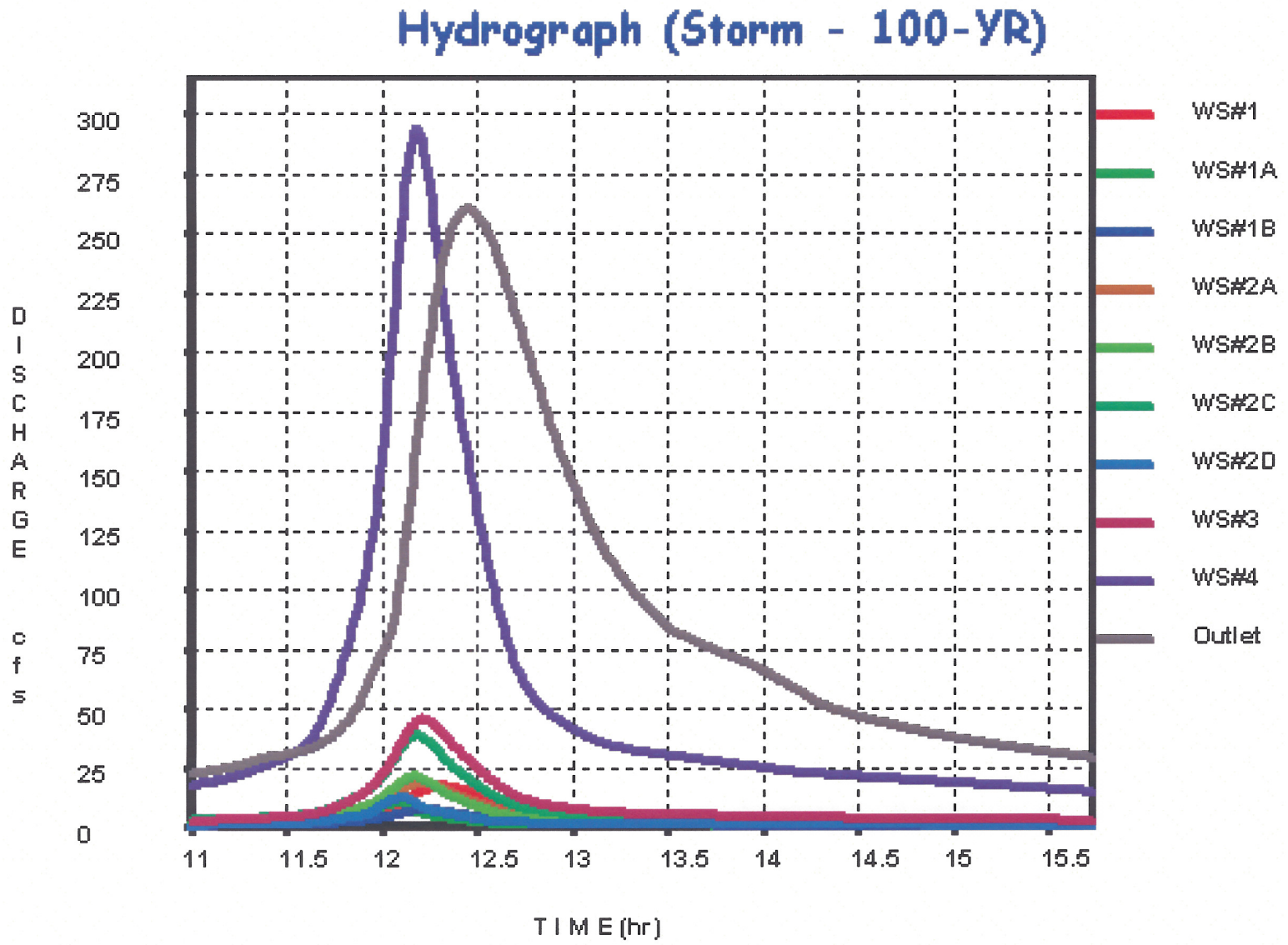

Figure D-14: Routing hydrograph of the proposed drainage system for **100 year** storm peak runoff for at upstream, downstream and outlet.

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ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY
NEW YORK

DRAINAGE MAPS

BY

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NEW CITY, NY 10956
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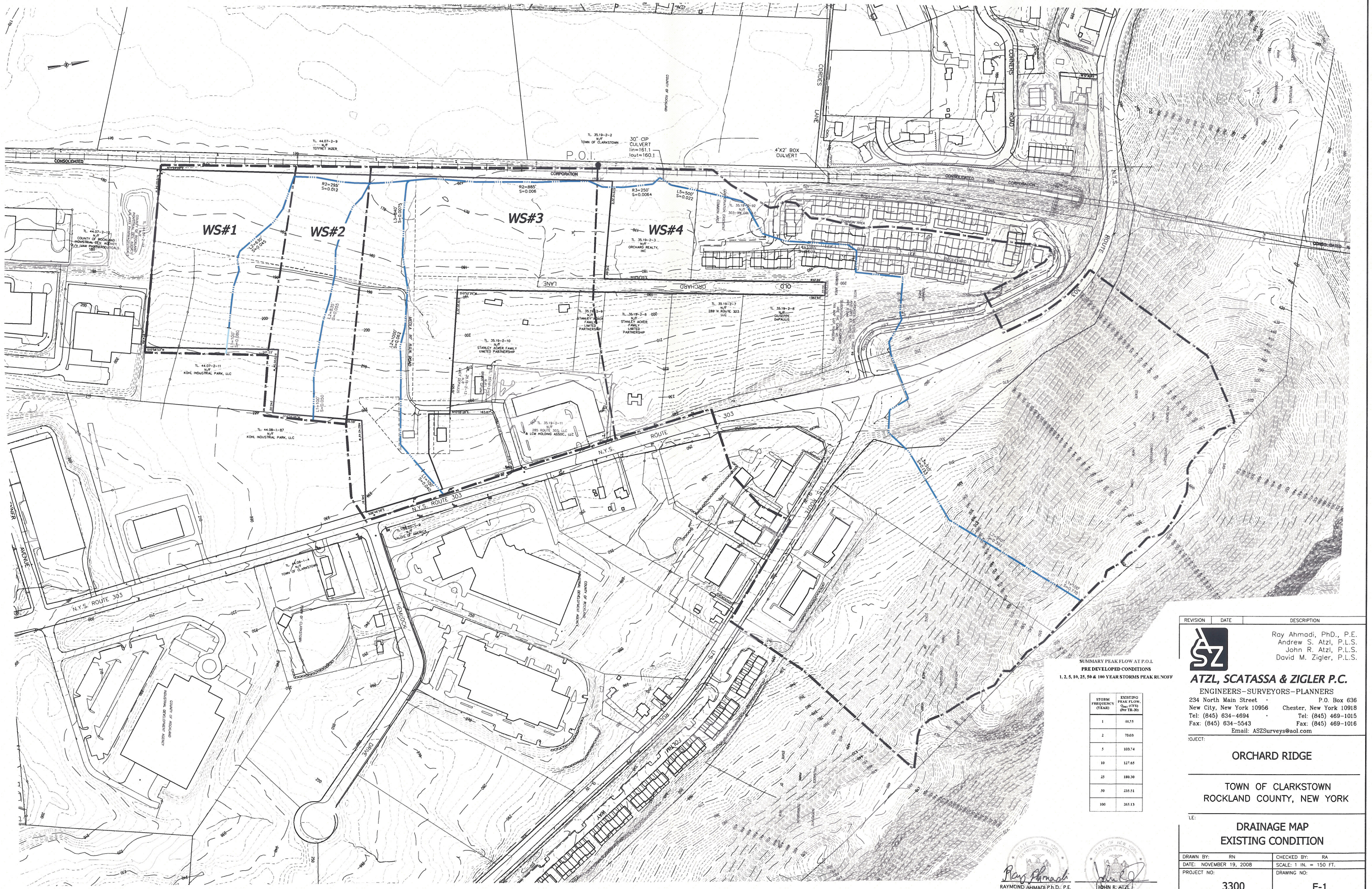
P.O.I.
WS#1
WS#2
WS#3
WS#4
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4'X2' BOX CULVERT
CONSOLIDATED RAIL CORPORATION
N.Y.S. ROUTE 303
OLD ORCHARD LANE
CORNERS ROAD
HEMLOCK AVENUE
TL 35.19-2-2 N/F TOWN OF CLARKSTOWN
TL 44.07-2-9 N/F TEFFRET AIZER
TL 35.19-2-3 N/F ORCHARD REALTY, INC
TL 35.19-2-8 N/F GIUSEPPE DIFALCO
TL 35.19-2-7 N/F 289 N ROUTE 303 LLC
TL 35.19-2-9 N/F STANLEY ACKER FAMILY LIMITED PARTNERSHIP
TL 35.19-2-10 N/F STANLEY ACKER FAMILY LIMITED PARTNERSHIP
TL 35.19-2-11 N/F 285 ROUTE 303 LLC & LOW HOLDING ASSOC., LLC
TL 44.07-2-11 N/F KOHL INDUSTRIAL PARK, LLC
TL 44.08-1-87 N/F KOHL INDUSTRIAL PARK, LLC
TL 44.07-2-10 N/F COUNTY OF ROCKLAND INDUSTRIAL DEV. AGENCY & JUAN PHARMACEUTICALS
TL 44.08-1-4 N/F TOWN OF CLARKSTOWN
TL 44.08-1-5 N/F VILLAGE OF NEW CITY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
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R2=885' S=0.006
R3=250' S=0.0064
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L1=400' S=0.050
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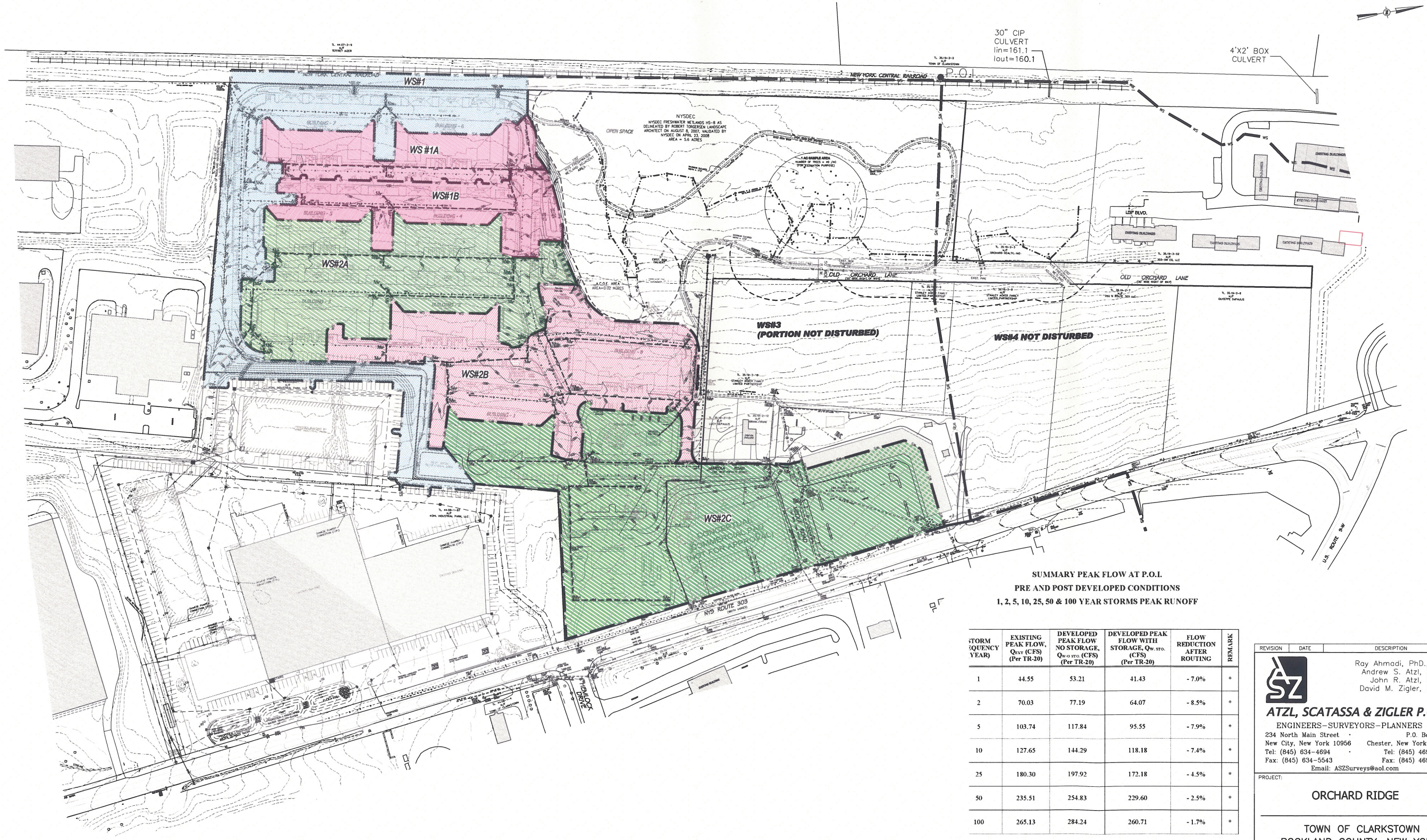

SUMMARY PEAK FLOW AT P.O.I.
PRE AND POST DEVELOPED CONDITIONS
1, 2, 5, 10, 25, 50 & 100 YEAR STORMS PEAK RUNOFF

STORM (FREQUENCY YEAR)	EXISTING PEAK FLOW, Q_{EXT} (CFS) (Per TR-20)	DEVELOPED PEAK FLOW NO STORAGE, $Q_{W/O\ STO.}$ (CFS) (Per TR-20)	DEVELOPED PEAK FLOW WITH STORAGE, $Q_{W.\ STO.}$ (CFS) (Per TR-20)	FLOW REDUCTION AFTER ROUTING	REMARK
1	44.55	53.21	41.43	- 7.0%	*
2	70.03	77.19	64.07	- 8.5%	*
5	103.74	117.84	95.55	- 7.9%	*
10	127.65	144.29	118.18	- 7.4%	*
25	180.30	197.92	172.18	- 4.5%	*
50	235.51	254.83	229.60	- 2.5%	*
100	265.13	284.24	260.71	- 1.7%	*

ro net increase of peak runoff and water quality treatment will be achieved by the combination of the
oposed Micropool Extended Detention Pond (Pond#1), Pond#1A, Pond#2A, Pond#2B and the Existing
etland at Outlet (P.O.I.). The location of the stormwater facilities are shown on the site plan.

RAYMOND AHMADI P.h.D., P.E.
N.Y.S.P.E. LIC. No. 59392

JOHN R. ATZL
N.Y.S. P.L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION

Ray Ahmadi, PhD., P.E.
Andrew S. Atzl, P.L.S.
John R. Atzl, P.L.S.
David M. Zigler, P.L.S.

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Email: ASZSurveys@aol.com

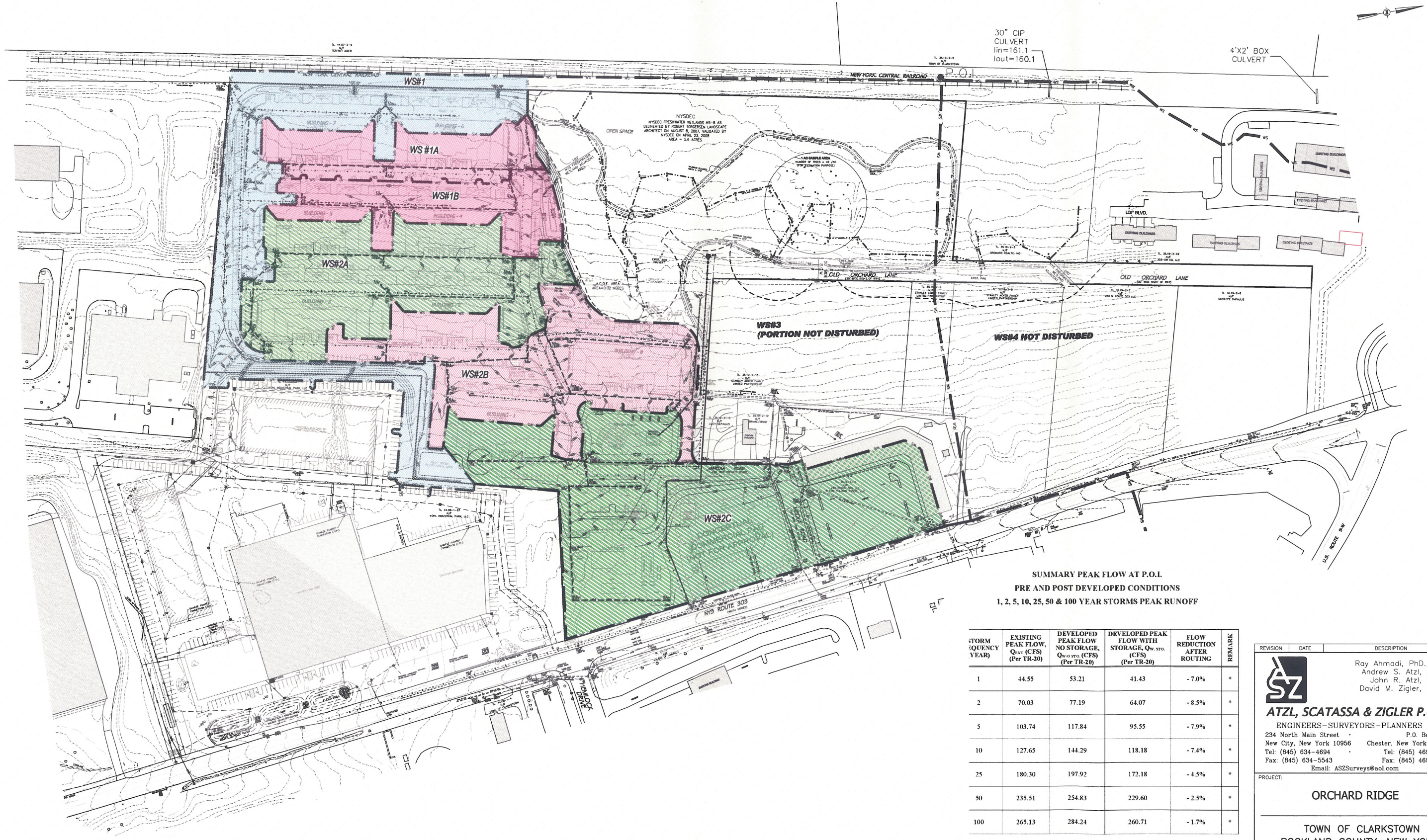
PROJECT:

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

DRAINAGE MAP
DEVELOPED CONDITION

DRAWN BY: RN	CHECKED BY: RA
DATE: NOVEMBER 19, 2008	SCALE: 1 IN. = 100 FT.
PROJECT NO: 3300	DRAWING NO: D-1



SUMMARY PEAK FLOW AT P.O.I.
PRE AND POST DEVELOPED CONDITIONS
1, 2, 5, 10, 25, 50 & 100 YEAR STORMS PEAK RUNOFF

STORM (FREQUENCY YEAR)	EXISTING PEAK FLOW, Q_{EXT} (CFS) (Per TR-20)	DEVELOPED PEAK FLOW NO STORAGE, $Q_{W/O\ STO.}$ (CFS) (Per TR-20)	DEVELOPED PEAK FLOW WITH STORAGE, $Q_{W.\ STO.}$ (CFS) (Per TR-20)	FLOW REDUCTION AFTER ROUTING	REMARK
1	44.55	53.21	41.43	- 7.0%	*
2	70.03	77.19	64.07	- 8.5%	*
5	103.74	117.84	95.55	- 7.9%	*
10	127.65	144.29	118.18	- 7.4%	*
25	180.30	197.92	172.18	- 4.5%	*
50	235.51	254.83	229.60	- 2.5%	*
100	265.13	284.24	260.71	- 1.7%	*

ro net increase of peak runoff and water quality treatment will be achieved by the combination of the
oposed Micropool Extended Detention Pond (Pond#1), Pond#1A, Pond#2A, Pond#2B and the Existing
etland at Outlet (P.O.I.). The location of the stormwater facilities are shown on the site plan.

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JOHN R. ATZL
N.Y.S. P.L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION

Ray Ahmadi, PhD., P.E.
Andrew S. Atzl, P.L.S.
John R. Atzl, P.L.S.
David M. Zigler, P.L.S.

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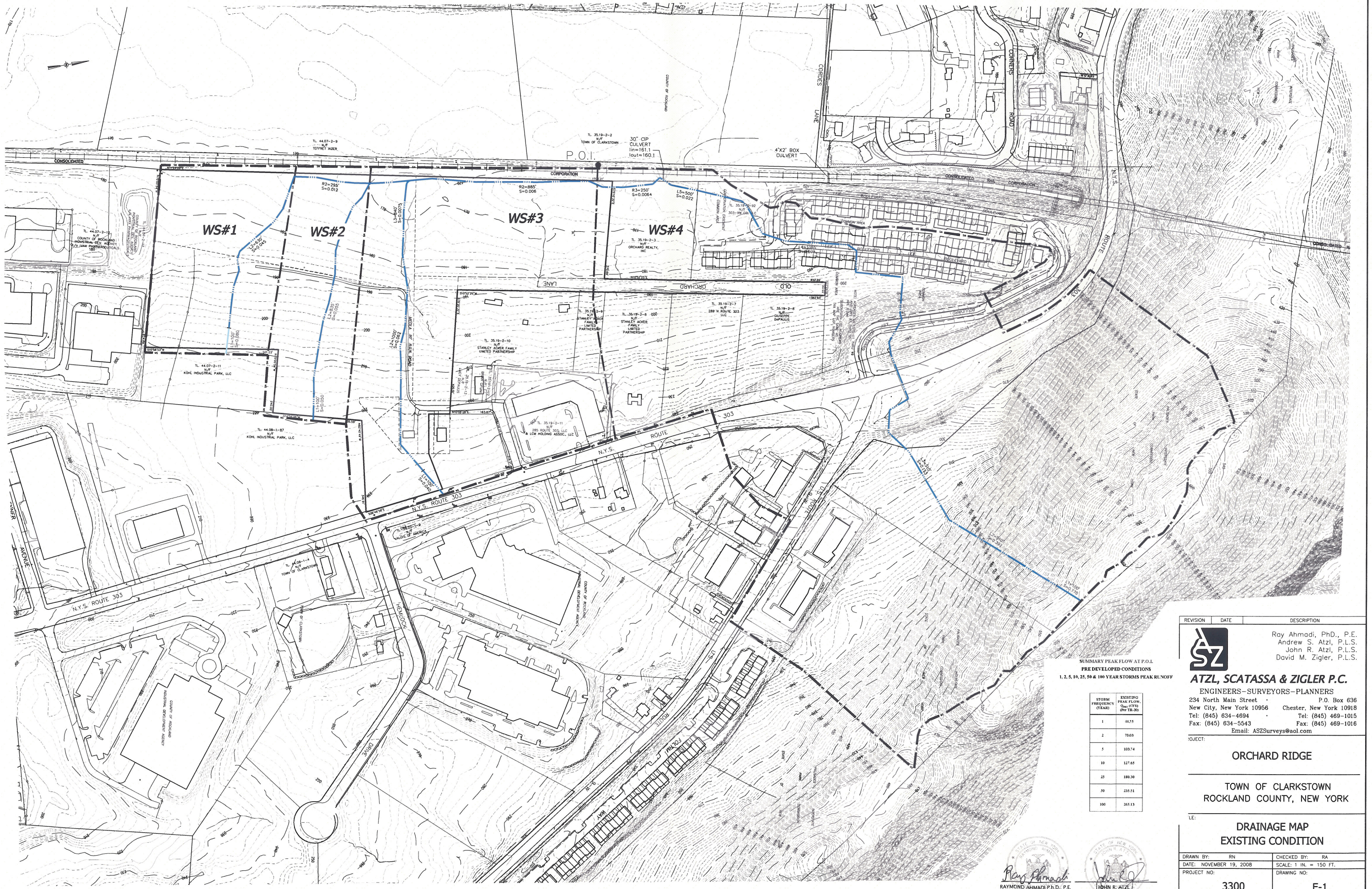
PROJECT:

ORCHARD RIDGE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

DRAINAGE MAP
DEVELOPED CONDITION

DRAWN BY: RN	CHECKED BY: RA
DATE: NOVEMBER 19, 2008	SCALE: 1 IN. = 100 FT.
PROJECT NO: 3300	DRAWING NO: D-1


P.O.I.
WS#1
WS#2
WS#3
WS#4
30" CIP CULVERT inv=161.1 Iout=160.1
4'X2' BOX CULVERT
CONSOLIDATED RAIL CORPORATION
N.Y.S. ROUTE 303
OLD ORCHARD LANE
CORNERS ROAD
HEMLOCK AVENUE
TL 35.19-2-2 N/F TOWN OF CLARKSTOWN
TL 44.07-2-9 N/F TEFFRET AIZER
TL 35.19-2-3 N/F ORCHARD REALTY, INC
TL 35.19-2-8 N/F GIUSEPPE DIFALCO
TL 35.19-2-7 N/F 289 N ROUTE 303 LLC
TL 35.19-2-9 N/F STANLEY ACKER FAMILY LIMITED PARTNERSHIP
TL 35.19-2-10 N/F STANLEY ACKER FAMILY LIMITED PARTNERSHIP
TL 35.19-2-11 N/F 285 ROUTE 303 LLC & LOW HOLDING ASSOC., LLC
TL 44.07-2-11 N/F KOHL INDUSTRIAL PARK, LLC
TL 44.08-1-87 N/F KOHL INDUSTRIAL PARK, LLC
TL 44.07-2-10 N/F COUNTY OF ROCKLAND INDUSTRIAL DEV. AGENCY & JUAN PHARMACEUTICALS
TL 44.08-1-4 N/F TOWN OF CLARKSTOWN
TL 44.08-1-5 N/F VILLAGE OF NEW CITY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
COUNTY OF ROCKLAND INDUSTRIAL DEVELOPMENT AGENCY
R2=795' S=0.012
R2=885' S=0.006
R3=250' S=0.0064
L5=500' S=0.022
L1=400' S=0.045
L2=400' S=0.055
L3=400' S=0.0075
L4=400' S=0.062
L1=100' S=0.080
L1=100' S=0.050
L1=400' S=0.050
L1=400' S=0.020
L1=400' S=0.045
L1=400' S=0.020
L1=400' S=0.020
L1=400' S=0.020