25 Fields Lane
TOWN OF SOUTHEAST

Expansion Proposal

STORMWATER MANAGEMENT REPORT

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Stormwater Management Synopsis

The design of the system is to collect disturbed areas and attenuate the resulting increase in stormwater discharge from the site. The project is the expansion of an existing material process yard from 1999 which included an existing swale and detention basin to treat the impervious portions of the site plan and provide attenuation.

The proposed expansion is the use of existing open land areas to the south which are exposed earth with wooded slopes above the south side of the site.

The project expansion is in two phases as follows:

Phase I is the development of the open earth areas beyond the existing concrete bins. The concept is to build Basin #1 and extend the gravel road up the slope. The rear of the site includes a ravine which discharges to the west. This is being filled in during Phase I with a swale extending from the fill area to Basin #1. The Phase I wood processing area also drains to Basin #1. Therefore, the Phase I Analysis considers a watershed extending across this fill area. A temporary swale extends across the hillside above the fill area and diverts stormwater to the west.

Phase II

Construction of Basin #2 is required to accept the final development of the wood process area. This phase requires a second discharge swale from Basin #2 to extend parallel to the swale of Phase I and also discharge into a common swale with basin #1 discharging to the watercourse.

Stormwater Modeling

Two post-analysis computer models are provided.

Phase I Development to Basin #1 & Small wood processing area
Phase II Development to Basin #1 and Basin #2 with modified watershed areas.

Refer to Pre & Post Development maps for areas and travel paths.

Project Drainage Description

Existing Basin

Not impacted by the existing proposed basins. Shall be inspected and cleaned during the construction of Basin #1 during Phase I.

Phase I - Basin #1

The basin is proposed 20 feet from the property line. The basin is excavated into the existing soil by 6.0 feet (test hole data attached). Temporary Swale #6 drains to Swale #5 which drains through Swale #3 to Basin #1. This is defined by WS1B – Phase I.
Refer to D2A – Post Development Phase I

Phase II – Basin #2

The basin is proposed adjacent to the neighboring property owned by the applicant. The basin is a cut/fill within the fill area of Phase I. The basin collects runoff from the wood process expansion area and discharges through Swale #3A to the Common Swale existing below Basin #1 and drains into the existing watercourse. The intent is not to mix stormwater from Basin #2 discharge with Basin #1.

Refer to D2B Post Development – Phase II.

Watershed Descriptions

Existing

EX1 Drains existing site to the Basin (EX) – Analysis A
EX2 Drains to the west – Analysis B
EX3 Drains to the stream on the east side of the site – Analysis A

Areas not disturbed with the proposal are not included in the analysis including EX1A which is the existing paved access driveway.

Proposed Development – Phase I

WS1 Drains to existing site Basin (EX) to Analysis A
WS1B Drains wood process area and soil process area to basin #1, then Stream (Tt) to Analysis A
WS2 A diversion swale above the wood processing area directs the hillside flow to Analysis B
WS3 Drains hillside, on the south side of the site to Analysis A

Proposed Development – Phase II

WS1 Drains existing site to the existing Basin to Analysis A
WS1B Drains soil process area to Basin 1, then Stream (Tt) to Analysis A
WS2 Drains wood process expansion to Basin #2, then Stream (Tt) to Analysis A
WS3 Drains hillside to the Stream (Tt), on the south side of the site – Analysis A
WS4 Drains to the west – Analysis B

Stormwater – Watershed Mapping

Attached is Table 1.0 which defines the various uses across the existing and proposed site. This table verifies that pre-post over watersheds are equal.

Computer Input Data

Pre-Phase I

	Area	C_N	T_C	Tt	Analysis Point
1	6.55	84.5	.266	0	B
2	8.28	70.9	.293	.04	A
3	10.95	70.6	.298	0	A
	25.78				

Post-Phase I

	Area	C_N	T_C	Tt	Analysis Point
1	5.14	83.3	.266	0.04	A
1B	3.10	72.1	.276	0.04	A
2	7.034	69.6	.319	0.0	B
3	10.52	69.9	0.298	0.04	A
	25.79				

Post-Phase II

	Area	C_N	T_C	Tt	Analysis Point
1	5.14	83.3	0.266	0.04	A
1B	1.77	78.2	0.274	0.04	A
2	7.146	78.7	0.270	0.16	A
3	10.5	69.9	0.298	0.04	A
4	1.23	65.9	0.118	0.0	B
	25.78				

Storm Events

Analysis based upon Cornell University extreme precipitation and the U(b) intensity curves from the extreme precipitation web site.

Attenuation Synopsis

The attenuation of flow to pre-development level is noted below for Phases I & II.

Phase I

Year Storm	1	2	10	25	100
Pre-Development	10.0	14.43	34.21	51.33	81.05
Post-Development	8.61	12.77	26.85	41.30	75.66
Change	-1.39	-1.66	-7.36	-10.0	-5.39
% Change	-13.9%	-11%	-21.5%	-19.5%	-7%

The compliance with NYSDEC regulations are as follows:

Compliance met for 10, 25 & 100-year storms.
For the 2-year storm reduction to pre-development 1-year storm could not be met due to large areas of watersheds not impacted by development.
For the 1-year storm reduction by 50% due to the large existing condition not impacted by the proposal.

Phase II

Year Storm	1	2	10	25	100
Pre-Development	10.0	14.43	34.21	51.33	81.05
Post-Development	8.6	12.75	26.81	41.14	79.25
Change	-1.4	-1.68	-7.4	-10.19	-1.82
% Change	-14%	-11.6%	-21.6%	-19.6%	-2.2%

Compliance met for 10, 25 & 100-year storms.
For the 2-year storm reduction to pre-development 1-year storm flow could not be met due to large areas of watersheds not impacted by development.
For the 1-year storm reduction by 50% due to the large existing condition not impacted by the proposal.

Basin Drainage Synopsis

Appendix C reflects the existing & proposed basin geometry and outlet structures. The proposed basin design is based upon a single outlet weir consisting of rip-rap with an embedded stone or concrete outlet weir which eliminates piping considered impervious by the NYCDEP. The weir is a straight concrete beam extending along the outlet to form a notched outlet structure as noted on the plans. Each basin routing synopsis is provided below. During construction Basin #1 & Basin #2 shall serve as sediment collection basin with temporary outlet risers.

I. Existing Basin
   1) Geometry
      Excavated into earth with berms and line with safety fence geometry from topography.
   2) Outlet Structure
      Concrete outlet box – 3^0 x 2^6 with 12" ∅ orifice and rectangular weir.
      Note: Top is open for emergency discharge.

II. Basin #1
   1) Geometry
      Excavated into existing grades
      Top: 480.0
      Bottom: 474.0 – No water found.
      Side Slopes: 3 on 1
      Volume at Top: 0.560 acre-ft
   2) Outlet Structure
      Variable width weir
      Top: 480.0 Width: 8.0 ft
      Bottom (LIP): 478.5 Width: 2.0 ft
      Weir includes holes for drain down.
   3) Emergency Overflow

Due to simplicity of outlet - emergency outflow through variable width weir.

III) Basin #2

1) Geometry
   Cut & fill at location noted
   Top: 486.0
   Bottom: 476.0 (bottom 4' below grade – no water found)
   Side Slopes: 3 on 1
   Volume at Top: 1.60 acre-ft
2) Outlet Structure
   Variable width weir
   Top: 486.0 Width: 13.0 ft
   Bottom (LIP): 483.5 Width: 3.0 ft
   Weir includes holes for drain down.
   Not considered in routing.
3) Emergency Overflow
   Due to simplicity of outlet - emergency outflow through variable width weir.

The routing of the basins vary for the post Phase I or Phase II watersheds. These are summarized as follows:

Phase I Routing

Basin EX

Storm Event	Input (CFS)	Discharge (CFS)	Elevation	Volume (acre-feet)
1 Year	6.35	3.96	462.6	0.083
2 Year	8.72	4.93	463.20	0.123
10 Year	14.81	9.69	464.55	0.225
25 Year	19.31	15.37	465.03	0.268
100 Year	28.35	27.5	465.6	0.30

Basin #1

Storm Event	Input (CFS)	Discharge (CFS)	Elevation	Volume (acre-feet)
1 Year	1.77	0.0	477.14	0.179
2 Year	2.82	0.0	477.98	0.269
10 Year	5.96	0.48	478.68	0.357
25 Year	8.5	2.14	478.95	0.395
100 Year	13.81	10.09	479.55	0.489

Phase II Routing

Basin EX

Storm Event	Input (CFS)	Discharge (CFS)	Elevation	Volume (acre-feet)
1 Year	6.35	3.97	462.61	0.083
2 Year	8.72	4.94	463.21	0.123
10 Year	14.81	9.71	464.55	0.225
25 Year	19.32	15.47	465.21	0.268
100 Year	28.35	27.50	465.38	0.300

Basin #1

Storm Event	Input (CFS)	Discharge (CFS)	Elevation	Volume (acre-feet)
1 Year	1.52	0.0	476.70	0.140
2 Year	2.21	0.0	477.34	0.198
10 Year	4.11	0.11	478.56	0.341
25 Year	5.58	0.49	478.68	0.357
100 Year	8.55	3.62	479.10	0.418

Basin #2

Storm Event	Input (CFS)	Discharge (CFS)	Elevation	Volume (acre-feet)
1 Year	6.71	0.0	482.01	0.610
2 Year	9.70	0.0	483.24	0.859
10 Year	17.81	1.93	483.84	1.00
25 Year	23.97	7.71	484.24	1.107
100 Year	36.55	28.4	485.09	1.323

Stormwater Treatment

Both Basin #1 and Basin #2 proposed do not include any impervious areas, since the outlet is controlled by a gravel rectangular weir with collection of all disturbed areas through grass lined swales. Since the anticipated cover does not include any impervious area, the entire expansion project has an A*i* impervious area of 0.0 since required RRv = 0.0. Then RRv – required green practice treatment required is not required and no treatment is proposed except for attenuation with the proposed basins.

Swale Analysis

All runoff is collected with grass lined swales as analyzed below.

Swale Chart

Swale 1	Phase II – West PL Peak Flow WS4
Swale 2	Phase II – East PL Flow from wood process area
Swale 3	Phase I Flow from temp Swale #6 & Swale #5
Swale 3A	Flow from Basin #2 outflow
Swale 4	Flow from Basin #1 & Basin #2
Swale 5	Phases I & II Flow from wood process area
Swale 6	Phase I Temp swale from graded area
Swale 7	Phase I Temp diversion swale from W2.

All of the swales are designed based upon the FlowMaster computer program for open channel flow based upon the Rational Method, refer to the attached worksheets in Appendix. Analysis based upon $I_{25} = 230/Tc + 30$.

Watershed Calculations – Refer to Figure V

Swale ID	WS#	Area	Cover C Soils		Cover B Soils			C Weighted	Tc Cumulative	I 25-year	Q 25-year
			Brush Woods C = .20	Exposed Earth C = .89	Brush Woods C = .18	Exposed Earth C = .84	Gravel C = .89				
1	SW1	1.8	–	–	.64	1.16	–	.605	15.6	5.0	5.5
2	SW2	2.6	–	–	2.6	–	–	0.18	28.0	4.0	1.9
3	SW3	0.64	.19	.33			.12	0.68	18.0	4.8	2.0
3A	SW3A	Basin #2 Out 25-year							–	–	7.71
4	SW4	Basins #1 & #2 Out 25-year : 0.49 cfs + 7.71 cfs							–	–	8.2
5	SW5	0.60	.13	0.47				0.74	11.4	5.5	2.4
6	SW6	0.77	–	0.77	–	0.77		0.89	11.0	5.6	3.8
7	SW7	4.30	–	–	3.01	1.29		.38	28.0	4.0	6.5
Note: Swale #3 Flow = SW 3 + 5 + 6 = C Total = 0.77 A Total = 2.01 Tc Governs = Tc 3 = 18 min.										4.8	7.4

Swales sized using Flow Master Software with n value from Figure L – NYS DEC Manual for Grass Swales – Side Slopes 3/1

Swale #	25-year Flow cfs	Slopes %	Shape	Bottom Width ft	Overall Depth	n Value	Flow Depth ft	Velocity fps
1	5.5	1.5	Trapezoid	3.0	1.25	0.08	0.74	1.43
2	1.9	2.0	Trapezoid	2.0	1.0	0.11	0.54	0.97
3	7.4	1.5	Trapezoid	4.0	1.25	0.075	0.74	1.6
3A	7.71	1.5	Trapezoid	4.0	1.25	0.075	0.76	1.61
4	8.2	2.8	Trapezoid	4.0	1.25	0.082	0.70	1.93
5	2.7	1.0	Trapezoid	2.0	1.25	0.09	0.68	0.97
6	6.5	1.5	Trapezoid	4.0	1.25	0.08	0.72	1.47
7	7.4	1.5	Trapezoid	4.0	1.25	0.075	0.74	1.6

All of the swales have adequate velocities for grass slopes.

ATTACHMENTS

- D1 Pre-Development Overlay Map
- D2A Post Development Overlay – Phase I
- D2B Post Development Overlay – Phase II
- Computer Model – Pre Development – Appendix A
- Computer Model – Post Development – Appendix B (Phase I)
- Computer Model – Post Development – Appendix B1 (Phase II)
- Extreme Precipitation Tables
- Area Calculation Models – Phases I & II
- Appendix C Basin Modeling
- Basin Existing (EX)
- Basin #1
- Basin #2

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	73.610 degrees West
Latitude	41.363 degrees North
Elevation	0 feet
Date/Time	Wed, 23 Jan 2019 14:44:58 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.33	0.50	0.62	0.82	1.02	1.28	**1yr**	0.88	1.21	1.47	1.82	2.26	2.80	3.14	**1yr**	2.47	3.02	3.49	4.18	4.82	**1yr**
2yr	0.39	0.60	0.74	0.98	1.23	1.55	**2yr**	1.06	1.44	1.78	2.21	2.73	3.36	3.76	**2yr**	2.98	3.62	4.15	4.91	5.56	**2yr**
5yr	0.46	0.71	0.89	1.20	1.53	1.93	**5yr**	1.32	1.78	2.24	2.78	3.43	4.22	4.76	**5yr**	3.74	4.58	5.29	6.14	6.91	**5yr**
10yr	0.51	0.81	1.02	1.38	1.80	2.29	**10yr**	1.55	2.08	2.66	3.31	4.09	5.02	5.69	**10yr**	4.44	5.47	6.35	7.28	8.14	**10yr**
25yr	0.60	0.95	1.21	1.68	2.24	2.88	**25yr**	1.93	2.57	3.36	4.19	5.17	6.30	7.22	**25yr**	5.58	6.94	8.10	9.13	10.12	**25yr**
50yr	0.68	1.09	1.40	1.96	2.64	3.43	**50yr**	2.28	3.01	4.00	5.00	6.15	7.50	8.64	**50yr**	6.64	8.31	9.73	10.82	11.94	**50yr**
100yr	0.77	1.25	1.61	2.29	3.12	4.08	**100yr**	2.69	3.53	4.78	5.97	7.34	8.92	10.34	**100yr**	7.90	9.95	11.71	12.84	14.09	**100yr**
200yr	0.88	1.44	1.86	2.67	3.69	4.86	**200yr**	3.19	4.15	5.70	7.13	8.76	10.62	12.39	**200yr**	9.40	11.91	14.09	15.24	16.63	**200yr**
500yr	1.06	1.74	2.27	3.30	4.63	6.12	**500yr**	3.99	5.13	7.20	9.01	11.06	13.38	15.74	**500yr**	11.84	15.14	18.00	19.13	20.71	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.43	0.58	0.72	1.03	1yr	0.62	1.01	1.18	1.55	2.01	2.51	2.81	1yr	2.22	2.70	3.27	3.80	4.51	1yr
2yr	0.38	0.58	0.72	0.97	1.20	1.44	2yr	1.04	1.40	1.64	2.09	2.65	3.29	3.67	2yr	2.91	3.53	4.06	4.79	5.44	2yr
5yr	0.42	0.64	0.80	1.09	1.39	1.68	5yr	1.20	1.64	1.91	2.46	3.09	3.93	4.46	5yr	3.48	4.29	4.94	5.72	6.46	5yr
10yr	0.45	0.70	0.86	1.20	1.56	1.89	10yr	1.34	1.84	2.15	2.79	3.47	4.51	5.14	10yr	3.99	4.95	5.72	6.52	7.31	10yr
25yr	0.49	0.75	0.94	1.34	1.76	2.17	25yr	1.52	2.12	2.48	3.29	4.04	5.38	6.22	25yr	4.76	5.98	6.94	7.78	8.63	25yr
50yr	0.53	0.80	1.00	1.44	1.93	2.39	50yr	1.67	2.34	2.78	3.74	4.53	6.15	7.17	50yr	5.45	6.90	8.04	8.90	9.77	50yr
100yr	0.56	0.85	1.07	1.54	2.11	2.64	100yr	1.82	2.58	3.12	4.25	5.01	7.06	8.30	100yr	6.24	7.98	9.37	10.18	11.05	100yr
200yr	0.60	0.90	1.14	1.66	2.31	2.91	200yr	1.99	2.84	3.51	4.84	5.60	8.09	9.66	200yr	7.16	9.29	10.92	11.65	12.55	200yr
500yr	0.65	0.97	1.25	1.81	2.58	3.33	500yr	2.23	3.26	4.12	5.79	6.49	9.71	11.84	500yr	8.59	11.38	13.41	13.98	14.83	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.57	0.69	0.93	1.15	1.40	1yr	0.99	1.37	1.57	1.99	2.48	3.01	3.38	1yr	2.67	3.25	3.74	4.44	5.09	1yr
2yr	0.41	0.64	0.79	1.07	1.31	1.54	2yr	1.13	1.50	1.77	2.23	2.82	3.46	3.91	2yr	3.06	3.76	4.29	5.06	5.77	2yr
5yr	0.49	0.76	0.95	1.30	1.65	1.95	5yr	1.43	1.91	2.23	2.90	3.65	4.51	5.11	5yr	3.99	4.91	5.63	6.57	7.37	5yr
								1.73	2.30	2.69	3.54	4.48	5.51	6.29	10yr	4.88	6.05	6.95	8.02	8.93	10yr
								2.26	2.97	3.46	4.61	5.87	7.21	8.30	25yr	6.38	7.98	9.17	10.44	11.54	25yr
								2.76	3.61	4.19	5.62	7.23	8.85	10.23	50yr	7.83	9.83	11.30	12.75	14.02	50yr
							r	3.39	4.39	5.07	6.87	9.30	10.84	12.59	100yr	9.59	12.11	13.91	15.57	17.02	100yr
							r	4.17	5.33	6.12	8.38	11.50	13.29	15.50	200yr	11.76	14.91	17.14	19.01	20.67	200yr
							r	5.52	6.88	7.89	10.93	15.32	17.38	20.40	500yr	15.38	19.61	22.53	24.71	26.73	500yr

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FINAL AREA CALCS

PHASE I

WATER SHED ID		Square Feet				Acres			
		EX1	WS1	EX1A	WS1A	EX1	WS1	EX1A	WS1A
	SOIL TYPE	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
IMPERVIOUS	C	10,100	10,100	11,961	11,961	0.232	0.232	0.275	0.275
WOODS	C	32,709	28,644	-	-	0.751	0.658	0.000	0.000
BRUSH/MEADOWS	C	20,900	18,640	-	-	0.480	0.428	0.000	0.000
EARTH	C	76,550	131,454	-	-	1.757	3.018	0.000	0.000
GRASS	C	7,098	7,098	15,519	15,519	0.163	0.163	0.356	0.356
GRAVEL	C	137,999	27,638	-	-	3.168	0.634	0.000	0.000
		285,356	223,574	27,480	27,480	6.551	5.133	0.631	0.631

WATER SHED ID		EX2	WS2	WS1B	EX2	WS2	WS1B
	SOIL TYPE	EXISTING	PROPOSED	PROPOSED	EXISTING	PROPOSED	PROPOSED
IMPERVIOUS	C	-	-	-	0.000	0.000	0.000
WOODS	C	329,760	284,500	9,061	7.570	6.531	0.208
BRUSH/MEADOWS	C	8,755	21,894	81,068	0.201	0.503	1.861
EARTH	C	22,295		21,581	0.512	0.000	0.495
GRASS	C	-	-	7,564	0.000	0.000	0.174
GRAVEL	C	-	-	15,729	0.000	0.000	0.361
		360,810	306,394	135,003	8.283	7.034	3.099

WATER SHED ID		EX3	WS3	EX3	WS3	WS4
	SOIL TYPE	EXISTING	PROPOSED	EXISTING	PROPOSED	PROPOSED
IMPERVIOUS	C	-	-	0.000	0.000	0.000
WOODS	C	459,323	448,525	10.545	10.297	0.000
BRUSH/MEADOWS	C	-	9,775	0.000	0.224	0.000
EARTH	C	17,789	-	0.408	0.000	0.000
GRASS	C	-	-	0.000	0.000	0.000
GRAVEL	C	-	-	0.000	0.000	0.000
		477,112	458,300	10.953	10.521	0.000

* - OFFSITE DRAINAGE FROM BREWSTER TRANSIT INCLUDED IN WATERSHED #1

TOTAL PRE	TOTAL POST
25.787	25.787

Path:S\open projects\northwood\drainage\final area calcs

FINAL AREA CALCS

PHASE II

WATER SHED ID		Square Feet				Acres			
		EX1	WS1	EX1A	WS1A	EX1	WS1	EX1A	WS1A
	SOIL TYPE	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
IMPERVIOUS	C	10,100	10,100	11,961	11,961	0.232	0.232	0.275	0.275
GRAVEL	C	137,999	27,638	-	-	3.168	0.634	0.000	0.000
GRASS	C	7,098	7,098	15,519	15,519	0.163	0.163	0.356	0.356
BRUSH/MEADOWS	C	20,900	18,640	-	-	0.480	0.428	0.000	0.000
WOODS	C	32,709	28,644	-	-	0.751	0.658	0.000	0.000
EARTH	C	76,550	131,454	-	-	1.757	3.018	0.000	0.000
		285,356	223,574	27,480	27,480	6.551	5.133	0.631	0.631

WATER SHED ID		EX2	WS2		WS1B	EX2	WS2		WS1B
	SOIL TYPE	EXISTING	PROPOSED		PROPOSED	EXISTING	PROPOSED		PROPOSED
IMPERVIOUS	C	-	-		-	0.000	0.000		0.000
WOODS	C	329,760	135,485		9,061	7.570	3.110		0.208
BRUSH/MEADOWS	C	8,755	8,900		20,744	0.201	0.204		0.476
EARTH	C	22,295	159,409		23,931	0.512	3.660		0.549
GRASS	C	-	7,500	BASIN	7,564	0.000	0.172		0.174
GRAVEL	C	-	-		15,729	0.000	0.000		0.361
		360,810	311,294		77,029	8.283	7.146		1.768

WATER SHED ID		EX3	WS3	WS4	EX3	WS3	WS4
	SOIL TYPE	EXISTING	PROPOSED	PROPOSED	EXISTING	PROPOSED	PROPOSED
IMPERVIOUS	C	-	-	-	0.000	0.000	0.000
WOODS	C	459,323	447,498	9,995	10.545	10.273	0.229
BRUSH/MEADOWS	C	-	9,775	43,760	0.000	0.224	1.005
EARTH	C	17,789	-	-	0.408	0.000	0.000
GRASS	C	-	-	-	0.000	0.000	0.000
GRAVEL	C	-	-	-	0.000	0.000	0.000
		477,112	457,273	53,755	10.953	10.498	1.234

* - OFFSITE DRAINAGE FROM BREWSTER TRANSIT INCLUDED IN WATERSHED #1

TOTAL PRE	TOTAL POST
25.787	25.779

Path:S\open projects\northwood\drainage\final area calcs

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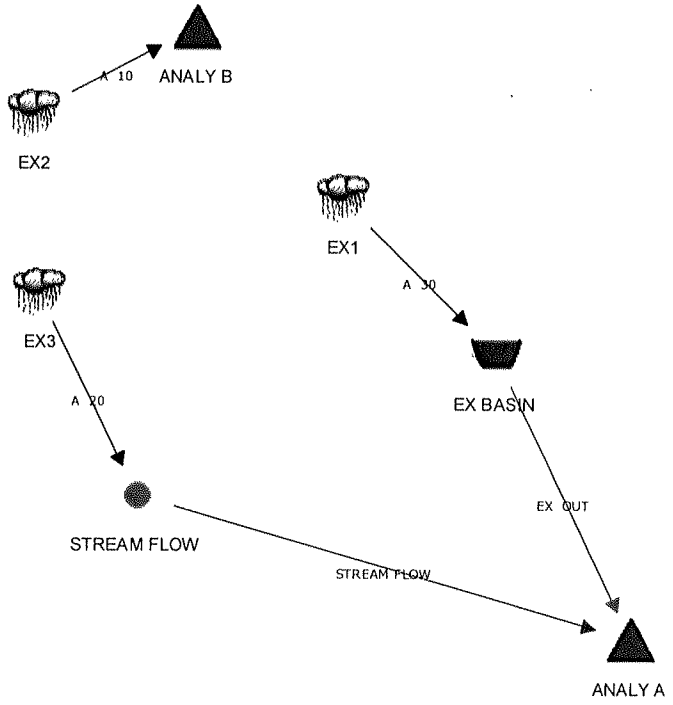
APPENDIX A

Pre-Development Watersheds

1. Pondpack Model Schematic
2. Watershed Worksheets: EX #1, 2 &3
3. Pondpack Computer Printout
    a. Watershed Summary
    b. Tc Analysis
    c. Hydrographs
4. Existing Basin Modeling


ANALY B
A 10
EX2
EX1
A 30
EX3
EX BASIN
A 20
EX OUT
STREAM FLOW
STREAM FLOW
ANALY A

Drainage Area # EX 1			
Development	Pre		285,318
	Post		
		TOTAL	6.55

Drainage Area Description

Use	Soil Type	Soil Class	CN	Area	CN x Area
Pavement	PnC	C	98	0.23	22.736
Gravel	PnC	C	89	3.17	281.952
Grass/Lawn	PnC	C	74	0.16	12.062
Brush	PnC	C	65	0.48	31.200
Woods	PnC	C	70	0.75	52.570
Earth	PnC	C	87	1.76	152.859
		TOTAL =		6.55	553.379
CN (Weighted) =sum(CN x A) divided by Sum (A) =					84.5

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations

A	Sheet Flow			Tc	Flow Length:	78.0	
				0.221	Slope:	3.80%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.045	Unpaved:		YES
					Hydraulic Length:		514
			Velocity	3.2	Average Land		4%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
			Minimum Tc = 0.10		V	Wp	
			Total T_C	0.266			

TRAVEL TIME TO A INSIGNIFICANT FROM BASIN 0.0 HR.

Drainage Area # EX 2			
Development	Pre		**360,807**
	Post		
		TOTAL	**8.28**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	**C**	**98**	**0.00**	**0.000**
Gravel	PnC	**C**	**89**	**0.00**	**0.000**
Grass/Lawn	PnC	**C**	**74**	**0.00**	**0.000**
Brush	PnC	**C**	**65**	**0.20**	**13.065**
Woods	PnC	**C**	**70**	**7.57**	**529.900**
Exposed earth		**C**	**87**	**0.51**	**44.544**
		TOTAL =		**8.28**	**587.509**
CN (Weighted) =sum(CN x A) divided by Sum (A) =					**70.9**

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		**2.80**	in
	2 Year =	3.50	in		**3.37**	in
	10 Year =	5.00	in		**5.04**	in
	25 Year =	6.00	in		**6.33**	in
	100 Year	7.50	in		**8.96**	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			**Tc**	Flow Length:	**78.0**	
				0.221	Slope:	**3.80%**	
					Cover:	**WOODS**	
B	Shallow Concentrated Flow				Paved:		
				0.072	Unpaved:		**YES**
					Hydraulic Length:		**982**
			Velocity	3.8	Average Land		**5.4%**
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
			Minimum Tc = 0.10		V	Wp	
			Total T_c	**0.293**			

TRAVEL TIME TO A 625 LF STREAM@3.2 0.04 HR
N = .035

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Drainage Area # EX 3			
Development	Pre		**477,113**
	Post		
		TOTAL	**10.95**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	**C**	**98**	**0.00**	**0.000**
Gravel	PnC	**C**	**89**	**0.00**	**0.000**
Grass/Lawn	PnC	**C**	**74**	**0.00**	**0.000**
Brush	PnC	**C**	**65**	**0.00**	**0.000**
Woods	PnC	**C**	**70**	**10.55**	**738.150**
Earth	PnC	**C**	**87**	**0.41**	**35.496**
		TOTAL =		**10.95**	**773.646**
CN (Weighted) =sum(CN x A) divided by Sum (A) =					**70.6**

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		**2.80**	in
	2 Year =	3.50	in		**3.37**	in
	10 Year =	5.00	in		**5.04**	in
	25 Year =	6.00	in		**6.33**	in
	100 Year	7.50	in		**8.96**	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			**Tc**	Flow Length:	**75.0**	
				0.210	Slope:	**4.00%**	
					Cover:	**WOODS**	
B	Shallow Concentrated Flow				Paved:		
				0.088	Unpaved:		**YES**
					Hydraulic Length:		**1012**
			Velocity	3.2	Average Land		**3.8%**
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
	Minimum Tc = 0.10				V	Wp	
				Total T_C	**0.298**		

TRAVEL TIME TO B NONE 0 HR

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EX1..... 2 YR
SCS Unit Hyd. Summary 3.02

EX1..... 10 YR
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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID STORMS.RNQ PUTNAM NRCC

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
100 YR	8.9492	Synthetic Curve	PUTNAM	NRCC 100 YEAR
25 YR	6.3224	Synthetic Curve	PUTNAM	NRCC 25 YEAR
10 YR	5.0340	Synthetic Curve	PUTNAM	NRCC 10 YEAR
2 YR	3.3656	Synthetic Curve	PUTNAM	NRCC 2 YEAR
1 YR	2.7964	Synthetic Curve	PUTNAM	NRCC 1 YR

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
*ANALY A	JCT	100 YR	8.755		12.2500	81.05		
*ANALY A	JCT	25 YR	5.334		12.2500	51.33		
*ANALY A	JCT	10 YR	3.754		12.3000	34.21		
*ANALY A	JCT	2 YR	1.890		12.3000	14.43		
*ANALY A	JCT	1 YR	1.330		12.3000	10.00		
*ANALY B	JCT	100 YR	3.727		12.2000	34.78		
*ANALY B	JCT	25 YR	2.174		12.2500	21.14		
*ANALY B	JCT	10 YR	1.473		12.2500	14.74		
*ANALY B	JCT	2 YR	.672		12.2500	6.78		
*ANALY B	JCT	1 YR	.443		12.2500	4.13		
EX BASIN	IN POND	100 YR	3.860		12.2000	36.67		
EX BASIN	IN POND	25 YR	2.485		12.2000	25.21		
EX BASIN	IN POND	10 YR	1.829		12.2000	19.48		
EX BASIN	IN POND	2 YR	1.016		12.2000	11.70		
EX BASIN	IN POND	1 YR	.756		12.2000	8.62		
EX BASIN	OUT POND	100 YR	3.860		12.2500	35.61	465.55	.317
EX BASIN	OUT POND	25 YR	2.485		12.2500	23.95	465.30	.293
EX BASIN	OUT POND	10 YR	1.829		12.3000	15.04	465.02	.266
EX BASIN	OUT POND	2 YR	1.015		12.4000	5.94	463.97	.178

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
EX BASIN	OUT POND	1 YR	.755		12.4000	4.87	463.16	.120
EX1	AREA	100 YR	3.860		12.2000	36.67		
EX1	AREA	25 YR	2.485		12.2000	25.21		
EX1	AREA	10 YR	1.829		12.2000	19.48		
EX1	AREA	2 YR	1.016		12.2000	11.70		
EX1	AREA	1 YR	.756		12.2000	8.62		
EX2	AREA	100 YR	3.727		12.2000	34.78		
EX2	AREA	25 YR	2.174		12.2500	21.14		
EX2	AREA	10 YR	1.473		12.2500	14.74		
EX2	AREA	2 YR	.672		12.2500	6.78		
EX2	AREA	1 YR	.443		12.2500	4.13		
EX3	AREA	100 YR	4.895		12.2000	45.44		
EX3	AREA	25 YR	2.849		12.2500	27.61		
EX3	AREA	10 YR	1.925		12.2500	19.18		
EX3	AREA	2 YR	.874		12.2500	8.73		
EX3	AREA	1 YR	.574		12.2500	5.28		
STREAM FLOW	JCT	100 YR	4.895		12.2000	45.44		
STREAM FLOW	JCT	25 YR	2.849		12.2500	27.61		
STREAM FLOW	JCT	10 YR	1.925		12.2500	19.18		
STREAM FLOW	JCT	2 YR	.874		12.2500	8.73		
STREAM FLOW	JCT	1 YR	.574		12.2500	5.28		

File.... C:\HAESTAD\PPKW\RAINFALL\STORMS.RNQ
Title... EXISTING SITE PLAN WITH ONE BASIN

DESIGN STORMS SUMMARY

Design Storm File,ID = STORMS.RNQ PUTNAM NRCC

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 100 YEAR
Storm Frequency = 100 YR yr
Total Rainfall Depth= 8.9492 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 25 YR
Description: 25 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 25 YEAR
Storm Frequency = 25 YR yr
Total Rainfall Depth= 6.3224 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 10 YR
Description: 10 YEAR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 10 YEAR
Storm Frequency = 10 YR yr
Total Rainfall Depth= 5.0340 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 2 YEAR
Storm Frequency = 2 YR yr
Total Rainfall Depth= 3.3656 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 1 YR
Description: NRCC STORM

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 1 YR
Storm Frequency = 1 YR yr
Total Rainfall Depth= 2.7964 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX1 1 YR
Tc            = .2660 hrs
Drainage Area = 6.550 acres  Runoff CN= 85

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =     8.62 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     8.62 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   85
               Area =       6.550 acres
               S    =   1.8343 in
               0.2S =    .3669 in

                Cumulative Runoff
               -------------------
                       1.3843 in
                         .756 ac-ft

HYG Volume...            .756 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    27.90 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX1 2 YR
Tc            = .2660 hrs
Drainage Area = 6.550 acres  Runoff CN= 85

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    11.71 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    11.70 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   85
               Area =       6.550 acres
               S    =   1.8343 in
               0.2S =    .3669 in

                Cumulative Runoff
               -------------------
                       1.8606 in
                        1.016 ac-ft

HYG Volume...          1.016 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    27.90 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX1 10 YR
Tc            = .2660 hrs
Drainage Area = 6.550 acres  Runoff CN= 85

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    19.49 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    19.48 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   85
               Area =       6.550 acres
               S    =   1.8343 in
               0.2S =    .3669 in

                Cumulative Runoff
               -------------------
                       3.3503 in
                        1.829 ac-ft

HYG Volume...           1.829 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    27.90 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX1 25 YR
Tc            = .2660 hrs
Drainage Area = 6.550 acres  Runoff CN= 85

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    25.22 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    25.21 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   85
               Area =       6.550 acres
               S    =   1.8343 in
               0.2S =    .3669 in

                Cumulative Runoff
               -------------------
                       4.5532 in
                        2.485 ac-ft

HYG Volume...          2.485 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    27.90 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX1 100 YR
Tc            = .2660 hrs
Drainage Area = 6.550 acres  Runoff CN= 85

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    36.69 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    36.67 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   85
              Area =       6.550 acres
              S    =   1.8343 in
              0.2S =    .3669 in

               Cumulative Runoff
              -------------------
                      7.0711 in
                       3.860 ac-ft

HYG Volume...          3.860 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    27.90 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX2 1 YR
Tc            = .2930 hrs
Drainage Area = 8.280 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03907 hrs
Computed Peak Time             =  12.2279 hrs
Computed Peak Flow             =     4.15 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     4.13 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =       8.280 acres
               S    =   4.1044 in
               0.2S =    .8209 in

                Cumulative Runoff
               -------------------
                        .6419 in
                         .443 ac-ft

HYG Volume...            .443 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29300 hrs (ID: None Selected)
Computational Incr, Tm =   .03907 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    32.02 cfs
Unit peak time      Tp =   .19533 hrs
Unit receding limb, Tr =   .78133 hrs
Total unit time,    Tb =   .97667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX2 2 YR
Tc            = .2930 hrs
Drainage Area = 8.280 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03907 hrs
Computed Peak Time             =  12.2279 hrs
Computed Peak Flow             =     6.85 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     6.78 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =       8.280 acres
               S    =   4.1044 in
               0.2S =    .8209 in

                Cumulative Runoff
               -------------------
                         .9739 in
                          .672 ac-ft

HYG Volume...             .672 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29300 hrs (ID: None Selected)
Computational Incr, Tm =   .03907 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    32.02 cfs
Unit peak time      Tp =   .19533 hrs
Unit receding limb, Tr =   .78133 hrs
Total unit time,    Tb =   .97667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX2 10 YR
Tc            = .2930 hrs
Drainage Area = 8.280 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03907 hrs
Computed Peak Time             =  12.2279 hrs
Computed Peak Flow             =    14.99 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    14.74 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   71
              Area =       8.280 acres
              S    =   4.1044 in
              0.2S =    .8209 in

               Cumulative Runoff
              -------------------
                      2.1341 in
                       1.473 ac-ft

HYG Volume...          1.473 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29300 hrs (ID: None Selected)
Computational Incr, Tm =   .03907 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    32.02 cfs
Unit peak time      Tp =   .19533 hrs
Unit receding limb, Tr =   .78133 hrs
Total unit time,    Tb =   .97667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX2 25 YR
Tc            = .2930 hrs
Drainage Area = 8.280 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03907 hrs
Computed Peak Time             =  12.2279 hrs
Computed Peak Flow             =    21.56 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    21.14 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   71
              Area =       8.280 acres
              S    =   4.1044 in
              0.2S =    .8209 in

               Cumulative Runoff
              -------------------
                      3.1509 in
                       2.174 ac-ft

HYG Volume...          2.174 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29300 hrs (ID: None Selected)
Computational Incr, Tm =   .03907 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    32.02 cfs
Unit peak time      Tp =   .19533 hrs
Unit receding limb, Tr =   .78133 hrs
Total unit time,    Tb =   .97667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX2 100 YR
Tc            = .2930 hrs
Drainage Area = 8.280 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03907 hrs
Computed Peak Time             =  12.2279 hrs
Computed Peak Flow             =    35.41 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    34.78 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   71
              Area =       8.280 acres
              S    =   4.1044 in
              0.2S =    .8209 in

               Cumulative Runoff
              -------------------
                      5.4011 in
                       3.727 ac-ft

HYG Volume...          3.727 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29300 hrs (ID: None Selected)
Computational Incr, Tm =   .03907 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    32.02 cfs
Unit peak time      Tp =   .19533 hrs
Unit receding limb, Tr =   .78133 hrs
Total unit time,    Tb =   .97667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX3 1 YR
Tc            = .2980 hrs
Drainage Area = 10.950 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     5.30 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     5.28 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =      10.950 acres
               S    =   4.1643 in
               0.2S =    .8329 in

                Cumulative Runoff
               -------------------
                         .6292 in
                          .574 ac-ft

HYG Volume...             .574 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    41.63 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX3 2 YR
Tc            = .2980 hrs
Drainage Area = 10.950 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     8.80 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     8.73 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =      10.950 acres
               S    =   4.1643 in
               0.2S =    .8329 in

                Cumulative Runoff
               -------------------
                         .9579 in
                          .874 ac-ft

HYG Volume...             .874 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    41.63 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX3 10 YR
Tc            = .2980 hrs
Drainage Area = 10.950 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    19.40 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    19.18 cfs
============================================

                DRAINAGE AREA
             -------------------
             ID:None Selected
             CN   =   71
             Area =      10.950 acres
             S    =   4.1643 in
             0.2S =    .8329 in

              Cumulative Runoff
             -------------------
                     2.1098 in
                      1.925 ac-ft

HYG Volume...          1.925 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    41.63 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

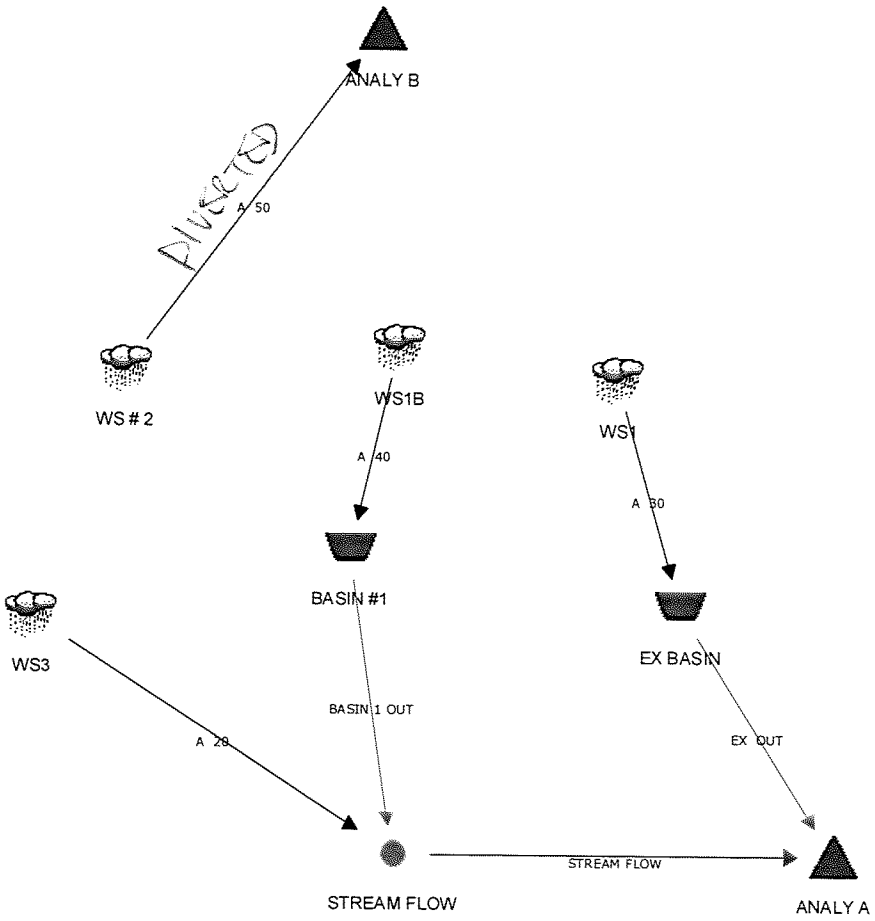
```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX3 25 YR
Tc            = .2980 hrs
Drainage Area = 10.950 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    27.97 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    27.61 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =      10.950 acres
               S    =   4.1643 in
               0.2S =    .8329 in

                Cumulative Runoff
               -------------------
                       3.1216 in
                        2.848 ac-ft

HYG Volume...          2.849 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    41.63 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - EX3 100 YR
Tc            = .2980 hrs
Drainage Area = 10.950 acres  Runoff CN= 71

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    46.05 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    45.44 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   71
               Area =      10.950 acres
               S    =   4.1643 in
               0.2S =    .8329 in

                Cumulative Runoff
               -------------------
                       5.3642 in
                        4.895 ac-ft

HYG Volume...          4.895 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    41.63 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

APPENDIX B

Post-Development Watersheds
Phase I

1. Pondpack Model Schematic
2. Watershed Worksheets: WS # 1 to 3
3. Pondpack Computer Printout
    a. Watershed Summary
    b. Tc Analysis
    c. Hydrographs


ANALY B
DIVERTED
A 50
WS # 2
WS1B
A 40
BASIN #1
WS1
A 30
EX BASIN
WS3
A 20
BASIN 1 OUT
EX OUT
STREAM FLOW
STREAM FLOW
ANALY A

Drainage Area # WS 1 PHASE I & II			
Development	Pre		0
	Post		223,774
		TOTAL	5.14

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious`	PnC	C	98	0.23	22.736
Gravel	PnC	C	89	0.64	56.960
Grass/Lawn	PnC	C	74	0.16	12.062
Brush	PnC	C	65	0.43	27.820
Woods	PnC	C	70	0.66	46.060
Earth	PnC	C	87	3.02	262.566
		TOTAL =		5.14	428.204
CN (Weighted) =sum(CN x A) divided by Sum (A) =					83.3

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	78.0	
				0.221	Slope:	3.80%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.045	Unpaved:		YES
					Hydraulic Length:		514
			Velocity	3.2	Average Land		4%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
			Minimum Tc = 0.10		V	Wp	
				Total T_c	0.266		

TRAVEL TIME TO A INSIG FROM BASIN 0.0 HR

Drainage Area # WS 1B PHASE I			
Development	Pre		**0**
	Post		**135,003**
		TOTAL	**3.10**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious`	PnC	**C**	**98**	**0.00**	**0.000**
Gravel	PnC	**C**	**89**	**0.36**	**32.040**
Grass/Lawn	PnC	**C**	**74**	**0.18**	**13.024**
Brush	PnC	**C**	**65**	**1.86**	**120.965**
Woods	PnC	**C**	**70**	**0.21**	**14.560**
Earth	PnC	**C**	**87**	**0.50**	**43.065**
		TOTAL =		**3.10**	**223.654**
CN (Weighted) =sum(CN x A) divided by Sum (A) =					**72.1**

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		**2.80**	in
	2 Year =	3.50	in		**3.37**	in
	10 Year =	5.00	in		**5.04**	in
	25 Year =	6.00	in		**6.33**	in
	100 Year	7.50	in		**8.96**	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			**Tc**	Flow Length:	**78.0**	
				0.213	Slope:	**1.50%**	
					Cover:	**brush**	
B	Shallow Concentrated Flow				Paved:		
				0.063	Unpaved:		**YES**
					Hydraulic Length:		**383**
			Velocity	1.7	Average Land		**1%**
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
			Minimum Tc = 0.10		V	Wp	
			Total T_c	**0.276**			

TRAVEL TIME TO A 600LF @ 3.2% STREAM 0.4 HR
N = .035

Drainage Area # WS 2 PHASE 1			
Development	Pre		0
	Post		306,394
		TOTAL	7.03

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	C	98	0.000	0.000
Gravel	PnC	C	89	0.00	0.000
Grass/Lawn	PnC	C	74	0.00	0.000
Brush	PnC	C	65	0.50	32.695
Woods	PnC	C	70	6.53	457.170
Exposed Earth		C	87	0.00	0.000
		TOTAL =		7.034	489.865
CN (Weighted) =sum(CN x A) divided by Sum (A) =					69.6

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	78.0	
				0.221	Slope:	3.80%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.050	Unpaved:		YES
					Hydraulic Length:		607
			Velocity	3.4	Average Land		4.6%
C	Channel Flow-TEMP				FlowArea:	Q	
				0.048	Descrip.	GRASS	N=	0.1
					Length:	552	Width:	2
					Depth	1	Slope:	4.00%
					V	3.2	Wp	
				Minimum Tc = 0.10	tc=L/V		Wp	
				Total T_c	0.319			

TRAVEL TIME TO B DIRECT 0.0 HR

Drainage Area # WS 3 PHASE I			
Development	Pre		0
	Post		458,295
		TOTAL	10.52

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	C	98	0.00	0.000
Gravel	PnC	C	89	0.00	0.000
Grass/Lawn	PnC	C	74	0.00	0.000
Brush	PnC	C	65	0.22	14.560
Woods	PnC	C	70	10.30	720.790
Earth	PnC	C	87	0.00	0.000
		TOTAL =		10.52	735.350
CN (Weighted) =sum(CN x A) divided by Sum (A) =					69.9

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	75.0	
				0.210	Slope:	4.00%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.088	Unpaved:		YES
					Hydraulic Length:		1012
			Velocity	3.2	Average Land		3.8%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
				Minimum Tc = 0.10	V	Wp	
				Total T_C 0.298			

TRAVEL TIME TO A 626 LF STREAM @ 3.2% 0.0.40 HR

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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID STORMS.RNQ PUTNAM NRCC

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
100 YR	8.9492	Synthetic Curve	PUTNAM	NRCC 100 YEAR
25 YR	6.3224	Synthetic Curve	PUTNAM	NRCC 25 YEAR
10 YR	5.0340	Synthetic Curve	PUTNAM	NRCC 10 YEAR
2 YR	3.3656	Synthetic Curve	PUTNAM	NRCC 2 YEAR
1 YR	2.7964	Synthetic Curve	PUTNAM	NRCC 1 YR

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
*ANALY A	JCT	100 YR	8.694		12.3000	75.66		
*ANALY A	JCT	25 YR	5.084		12.3000	41.30		
*ANALY A	JCT	10 YR	3.429		12.3000	26.85		
*ANALY A	JCT	2 YR	1.565		12.3000	12.77		
*ANALY A	JCT	1 YR	1.084		12.3000	8.61		
*ANALY B	JCT	100 YR	3.073		12.2500	28.07		
*ANALY B	JCT	25 YR	1.773		12.2500	16.82		
*ANALY B	JCT	10 YR	1.190		12.2500	11.53		
*ANALY B	JCT	2 YR	.531		12.2500	5.06		
*ANALY B	JCT	1 YR	.345		12.2500	2.96		
BASIN #1	IN POND	100 YR	1.433		12.2000	13.81		
BASIN #1	IN POND	25 YR	.844		12.2000	8.50		
BASIN #1	IN POND	10 YR	.577		12.2000	5.96		
BASIN #1	IN POND	2 YR	.269		12.2500	2.82		
BASIN #1	IN POND	1 YR	.179		12.2500	1.77		
BASIN #1	OUT POND	100 YR	1.101		12.3500	10.09	479.55	.484
BASIN #1	OUT POND	25 YR	.512		12.7000	2.14	478.95	.394
BASIN #1	OUT POND	10 YR	.244		14.3500	.48	478.68	.357
BASIN #1	OUT POND	2 YR	.000		10.6000	.00	477.98	.269

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
BASIN #1	OUT POND	1 YR	.000		11.2000	.00	477.14	.179
EX BASIN	IN POND	100 YR	2.966		12.2000	28.35		
EX BASIN	IN POND	25 YR	1.895		12.2000	19.31		
EX BASIN	IN POND	10 YR	1.385		12.2000	14.81		
EX BASIN	IN POND	2 YR	.758		12.2000	8.72		
EX BASIN	IN POND	1 YR	.559		12.2000	6.35		
EX BASIN	OUT POND	100 YR	2.966		12.2500	27.50	465.38	.300
EX BASIN	OUT POND	25 YR	1.895		12.3000	15.37	465.03	.268
EX BASIN	OUT POND	10 YR	1.385		12.3500	9.69	464.55	.225
EX BASIN	OUT POND	2 YR	.757		12.4000	4.93	463.20	.123
EX BASIN	OUT POND	1 YR	.558		12.3500	3.96	462.60	.083
STREAM FLOW	JCT	100 YR	5.728		12.2500	50.59		
STREAM FLOW	JCT	25 YR	3.189		12.2500	25.93		
STREAM FLOW	JCT	10 YR	2.044		12.2500	17.89		
STREAM FLOW	JCT	2 YR	.807		12.2500	7.99		
STREAM FLOW	JCT	1 YR	.526		12.2500	4.74		
WS # 2	AREA	100 YR	3.073		12.2500	28.07		
WS # 2	AREA	25 YR	1.773		12.2500	16.82		
WS # 2	AREA	10 YR	1.190		12.2500	11.53		
WS # 2	AREA	2 YR	.531		12.2500	5.06		
WS # 2	AREA	1 YR	.345		12.2500	2.96		
WS1	AREA	100 YR	2.966		12.2000	28.35		
WS1	AREA	25 YR	1.895		12.2000	19.31		
WS1	AREA	10 YR	1.385		12.2000	14.81		
WS1	AREA	2 YR	.758		12.2000	8.72		
WS1	AREA	1 YR	.559		12.2000	6.35		
WS1B	AREA	100 YR	1.433		12.2000	13.81		
WS1B	AREA	25 YR	.844		12.2000	8.50		
WS1B	AREA	10 YR	.577		12.2000	5.96		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
WS1B	AREA	2 YR	.269		12.2500	2.82		
WS1B	AREA	1 YR	.179		12.2500	1.77		
WS3	AREA	100 YR	4.627		12.2500	42.99		
WS3	AREA	25 YR	2.677		12.2500	25.93		
WS3	AREA	10 YR	1.800		12.2500	17.89		
WS3	AREA	2 YR	.807		12.2500	7.99		
WS3	AREA	1 YR	.526		12.2500	4.74		

File.... C:\HAESTAD\PPKW\RAINFALL\STORMS.RNQ
Title... PROPOSED SITE PLAN WITH BASIN #1 ADDED FOR THE
PROCESS AREA AT THE REAR OFTHE SITE

DESIGN STORMS SUMMARY

Design Storm File,ID = STORMS.RNQ PUTNAM NRCC

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 100 YEAR
Storm Frequency = 100 YR yr
Total Rainfall Depth= 8.9492 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 25 YR
Description: 25 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 25 YEAR
Storm Frequency = 25 YR yr
Total Rainfall Depth= 6.3224 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 10 YR
Description: 10 YEAR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 10 YEAR
Storm Frequency = 10 YR yr
Total Rainfall Depth= 5.0340 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 2 YEAR
Storm Frequency = 2 YR yr
Total Rainfall Depth= 3.3656 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

File.... C:\HAESTAD\PPKW\RAINFALL\STORMS.RNQ
Title... PROPOSED SITE PLAN WITH BASIN #1 ADDED FOR THE
PROCESS AREA AT THE REAR OFTHE SITE

DESIGN STORMS SUMMARY

Design Storm File,ID = STORMS.RNQ PUTNAM NRCC

Storm Tag Name = 1 YR
Description: NRCC STORM

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 1 YR
Storm Frequency = 1 YR yr
Total Rainfall Depth= 2.7964 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 1 YR
Tc            = .3190 hrs
Drainage Area = 7.034 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .04253 hrs
Computed Peak Time             =  12.2496 hrs
Computed Peak Flow             =     2.96 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     2.96 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =       7.034 acres
               S    =   4.3678 in
               0.2S =    .8736 in

                Cumulative Runoff
               -------------------
                         .5877 in
                          .345 ac-ft

HYG Volume...             .345 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .31900 hrs (ID: None Selected)
Computational Incr, Tm =   .04253 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    24.98 cfs
Unit peak time      Tp =   .21267 hrs
Unit receding limb, Tr =   .85067 hrs
Total unit time,    Tb =  1.06333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 2 YR
Tc            = .3190 hrs
Drainage Area = 7.034 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .04253 hrs
Computed Peak Time             =  12.2496 hrs
Computed Peak Flow             =     5.06 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     5.06 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =       7.034 acres
               S    =   4.3678 in
               0.2S =    .8736 in

                Cumulative Runoff
               -------------------
                         .9053 in
                          .531 ac-ft

HYG Volume...            .531 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .31900 hrs (ID: None Selected)
Computational Incr, Tm =   .04253 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    24.98 cfs
Unit peak time      Tp =   .21267 hrs
Unit receding limb, Tr =   .85067 hrs
Total unit time,    Tb =  1.06333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 10 YR
Tc            = .3190 hrs
Drainage Area = 7.034 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .04253 hrs
Computed Peak Time             =  12.2496 hrs
Computed Peak Flow             =    11.53 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    11.53 cfs
============================================

                DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   70
              Area =       7.034 acres
              S    =   4.3678 in
              0.2S =    .8736 in

               Cumulative Runoff
              -------------------
                      2.0296 in
                       1.190 ac-ft

HYG Volume...          1.190 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .31900 hrs (ID: None Selected)
Computational Incr, Tm =   .04253 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    24.98 cfs
Unit peak time      Tp =   .21267 hrs
Unit receding limb, Tr =   .85067 hrs
Total unit time,    Tb =  1.06333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 25 YR
Tc            = .3190 hrs
Drainage Area = 7.034 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .04253 hrs
Computed Peak Time             =  12.2496 hrs
Computed Peak Flow             =    16.82 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    16.82 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =       7.034 acres
               S    =   4.3678 in
               0.2S =    .8736 in

                Cumulative Runoff
               -------------------
                       3.0244 in
                        1.773 ac-ft

HYG Volume...           1.773 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .31900 hrs (ID: None Selected)
Computational Incr, Tm =   .04253 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    24.98 cfs
Unit peak time      Tp =   .21267 hrs
Unit receding limb, Tr =   .85067 hrs
Total unit time,    Tb =  1.06333 hrs
```


J2

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 100 YR
Tc            = .3190 hrs
Drainage Area = 7.034 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .04253 hrs
Computed Peak Time             =  12.2496 hrs
Computed Peak Flow             =    28.08 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    28.07 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =       7.034 acres
               S    =   4.3678 in
               0.2S =    .8736 in

                Cumulative Runoff
               -------------------
                       5.2410 in
                        3.072 ac-ft

HYG Volume...          3.073 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .31900 hrs (ID: None Selected)
Computational Incr, Tm =   .04253 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    24.98 cfs
Unit peak time      Tp =   .21267 hrs
Unit receding limb, Tr =   .85067 hrs
Total unit time,    Tb =  1.06333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 1 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =     6.35 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     6.35 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       1.3040 in
                         .559 ac-ft

HYG Volume...            .559 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 2 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =     8.73 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     8.72 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   83
              Area =       5.140 acres
              S    =   2.0048 in
              0.2S =    .4010 in

               Cumulative Runoff
              -------------------
                      1.7686 in
                        .758 ac-ft

HYG Volume...           .758 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 10 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    14.82 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    14.81 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   83
              Area =       5.140 acres
              S    =   2.0048 in
              0.2S =    .4010 in

               Cumulative Runoff
              -------------------
                      3.2337 in
                       1.385 ac-ft

HYG Volume...          1.385 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 25 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    19.32 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    19.31 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       4.4237 in
                        1.895 ac-ft

HYG Volume...          1.895 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 100 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    28.36 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    28.35 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       6.9243 in
                        2.966 ac-ft

HYG Volume...          2.966 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```


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```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 1 YR
Tc            = .2760 hrs
Drainage Area = 3.100 acres  Runoff CN= 72

============================================
Computational Time Increment   =   .03680 hrs
Computed Peak Time             =  12.2176 hrs
Computed Peak Flow             =     1.79 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     1.77 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   72
               Area =       3.100 acres
               S    =   3.8696 in
               0.2S =    .7739 in

                Cumulative Runoff
               -------------------
                         .6942 in
                          .179 ac-ft

HYG Volume...             .179 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27600 hrs (ID: None Selected)
Computational Incr, Tm =   .03680 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    12.73 cfs
Unit peak time      Tp =   .18400 hrs
Unit receding limb, Tr =   .73600 hrs
Total unit time,    Tb =   .92000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 2 YR
Tc            = .2760 hrs
Drainage Area = 3.100 acres  Runoff CN= 72

============================================
Computational Time Increment   =   .03680 hrs
Computed Peak Time             =  12.2176 hrs
Computed Peak Flow             =     2.87 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     2.82 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   72
              Area =       3.100 acres
              S    =   3.8696 in
              0.2S =    .7739 in

               Cumulative Runoff
              -------------------
                      1.0396 in
                        .269 ac-ft

HYG Volume...           .269 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27600 hrs (ID: None Selected)
Computational Incr, Tm =   .03680 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    12.73 cfs
Unit peak time      Tp =   .18400 hrs
Unit receding limb, Tr =   .73600 hrs
Total unit time,    Tb =   .92000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 10 YR
Tc            = .2760 hrs
Drainage Area = 3.100 acres  Runoff CN= 72

============================================
Computational Time Increment   =   .03680 hrs
Computed Peak Time             =  12.2176 hrs
Computed Peak Flow             =     6.07 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     5.96 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   72
              Area =       3.100 acres
              S    =   3.8696 in
              0.2S =    .7739 in

               Cumulative Runoff
              -------------------
                      2.2323 in
                        .577 ac-ft

HYG Volume...           .577 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27600 hrs (ID: None Selected)
Computational Incr, Tm =   .03680 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    12.73 cfs
Unit peak time      Tp =   .18400 hrs
Unit receding limb, Tr =   .73600 hrs
Total unit time,    Tb =   .92000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 25 YR
Tc            = .2760 hrs
Drainage Area = 3.100 acres  Runoff CN= 72

============================================
Computational Time Increment   =   .03680 hrs
Computed Peak Time             =  12.2176 hrs
Computed Peak Flow             =     8.63 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     8.50 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   72
               Area =       3.100 acres
               S    =   3.8696 in
               0.2S =    .7739 in

                Cumulative Runoff
               -------------------
                       3.2688 in
                         .844 ac-ft

HYG Volume...            .844 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27600 hrs (ID: None Selected)
Computational Incr, Tm =   .03680 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    12.73 cfs
Unit peak time      Tp =   .18400 hrs
Unit receding limb, Tr =   .73600 hrs
Total unit time,    Tb =   .92000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 100 YR
Tc            = .2760 hrs
Drainage Area = 3.100 acres  Runoff CN= 72

============================================
Computational Time Increment   =   .03680 hrs
Computed Peak Time             =  12.2176 hrs
Computed Peak Flow             =    13.96 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    13.81 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   72
               Area =       3.100 acres
               S    =   3.8696 in
               0.2S =    .7739 in

                Cumulative Runoff
               -------------------
                       5.5489 in
                        1.433 ac-ft

HYG Volume...          1.433 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27600 hrs (ID: None Selected)
Computational Incr, Tm =   .03680 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    12.73 cfs
Unit peak time      Tp =   .18400 hrs
Unit receding limb, Tr =   .73600 hrs
Total unit time,    Tb =   .92000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 1 YR
Tc            = .2980 hrs
Drainage Area = 10.520 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     4.76 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     4.74 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.520 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                        .6000 in
                         .526 ac-ft

HYG Volume...            .526 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    40.00 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 2 YR
Tc            = .2980 hrs
Drainage Area = 10.520 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     8.05 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     7.99 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.520 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                         .9209 in
                          .807 ac-ft

HYG Volume...             .807 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    40.00 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 10 YR
Tc            = .2980 hrs
Drainage Area = 10.520 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    18.09 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    17.89 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.520 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       2.0535 in
                        1.800 ac-ft

HYG Volume...          1.800 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    40.00 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

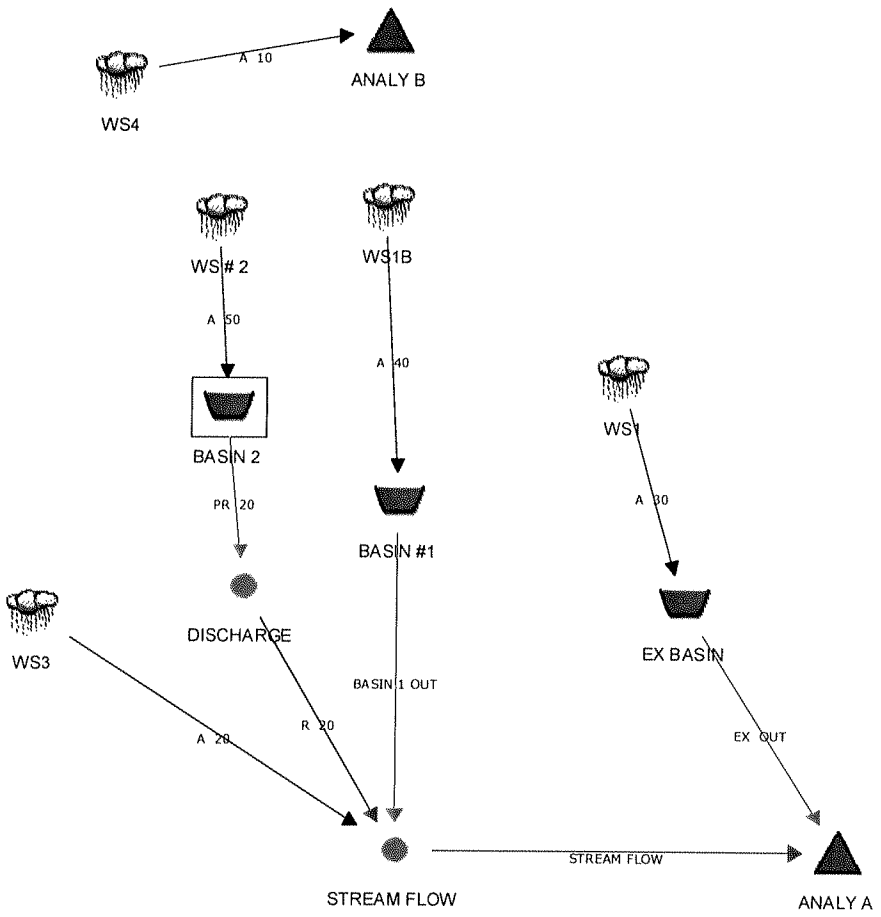
```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 25 YR
Tc            = .2980 hrs
Drainage Area = 10.520 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    26.26 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    25.93 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.520 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       3.0535 in
                        2.677 ac-ft

HYG Volume...           2.677 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    40.00 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 100 YR
Tc            = .2980 hrs
Drainage Area = 10.520 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    43.57 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    42.99 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.520 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       5.2780 in
                        4.627 ac-ft

HYG Volume...          4.627 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    40.00 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

APPENDIX B1

Post-Development Watersheds
Phase II

1. Pondpack Model Schematic
2. Watershed Worksheets: WS # 1 to 4
3. Pondpack Computer Printout
    a. Watershed Summary
    b. Tc Analysis
    c. Hydrographs


WS4
A 10
ANALY B
WS # 2
WS1B
A 50
A 40
BASIN 2
WS1
PR 20
A 30
BASIN #1
DISCHARGE
WS3
EX BASIN
BASIN 1 OUT
R 20
A 20
EX OUT
STREAM FLOW
STREAM FLOW
ANALY A

Drainage Area # WS 1 PHASE I & II			
Development	Pre		0
	Post		223,774
		TOTAL	5.14

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious`	PnC	C	98	0.23	22.736
Gravel	PnC	C	89	0.64	56.960
Grass/Lawn	PnC	C	74	0.16	12.062
Brush	PnC	C	65	0.43	27.820
Woods	PnC	C	70	0.66	46.060
Earth	PnC	C	87	3.02	262.566
		TOTAL =		5.14	428.204
CN (Weighted) =sum(CN x A) divided by Sum (A) =					83.3

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	78.0	
				0.221	Slope:	3.80%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.045	Unpaved:		YES
					Hydraulic Length:		514
			Velocity	3.2	Average Land		4%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
				Minimum Tc = 0.10	V	Wp	
				Total T_c	0.266		

TRAVEL TIME TO A INSIG FROM BASIN 0.0 HR

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Drainage Area # WS 1B PHASE II			
Development	Pre		0
	Post		77,029
		TOTAL	1.77

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious`	PnC	C	98	0.00	0.000
Gravel	PnC	C	89	0.36	32.040
Grass/lawn	PnC	C	74	0.18	13.024
Brush	PnC	C	65	0.48	30.940
Woods	PnC	C	70	0.21	14.560
Earth	PnC	C	87	0.55	47.763
		TOTAL =		1.77	138.327
CN (Weighted) =sum(CN x A) divided by Sum (A) =					78.2

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	78.0	
				0.213	Slope:	1.50%	
					Cover:	brush	
B	Shallow Concentrated Flow				Paved:		
				0.060	Unpaved:		YES
					Hydraulic Length:		370
			Velocity	1.7	Average Land		1%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
			Minimum Tc = 0.10		V	Wp	
			Total T_c	0.274			

TRAVEL TIME TO A 600LF @ 3.2% STREAM 0.4 HR
N = .035

Drainage Area # WS 2 PHASE II			
Development	Pre		**0**
	Post		**311,294**
		TOTAL	**7.146**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	**C**	**98**	**0.000**	**0.000**
Gravel	PnC	**C**	**89**	**0.00**	**0.000**
Grass/Lawn	PnC	**C**	**74**	**0.17**	**12.728**
Brush	PnC	**C**	**65**	**0.20**	**13.260**
Woods	PnC	**C**	**70**	**3.11**	**217.700**
Exposed Earth		**C**	**87**	**3.66**	**318.420**
		TOTAL =		**7.146**	**562.108**
CN (Weighted) =sum(CN x A) divided by Sum (A) =					**78.7**

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		**2.80**	in
	2 Year =	3.50	in		**3.37**	in
	10 Year =	5.00	in		**5.04**	in
	25 Year =	6.00	in		**6.33**	in
	100 Year	7.50	in		**8.96**	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			**Tc**	Flow Length:	**78.0**	
				0.221	Slope:	**3.80%**	
					Cover:	**WOODS**	
B	Shallow Concentrated Flow				Paved:		
				0.041	Unpaved:		**YES**
					Hydraulic Length:		**496**
			Velocity	3.4	Average Land		**4%**
C	Channel Flow				FlowArea:		Q
				0.009	Descrip.	**GRASS**	N= **0.1**
					Length:	**100**	Width: **2**
					Depth	**1**	Slope: **4.60%**
					V	**3.2**	Wp
	Minimum Tc = 0.10				tc=L/V		Wp
				Total T_c	**0.270**		

TRAVEL TIME TO A	685 LF conc @ 1.0%	0.12 HR
	626 LF STREAM @ 3.2%	0.04 HR
		0.16 HR

Drainage Area # WS 3 PHASE II			
Development	Pre		0
	Post		457,293
		TOTAL	**10.50**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	C	98	0.00	0.000
Gravel	PnC	C	89	0.00	0.000
Grass/Lawn	PnC	C	74	0.00	0.000
Brush	PnC	C	65	0.22	14.560
Woods	PnC	C	70	10.27	719.110
Earth	PnC	C	87	0.00	0.000
		TOTAL =		10.50	733.670
CN (Weighted) =sum(CN x A) divided by Sum (A) =					69.9

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		2.80	in
	2 Year =	3.50	in		3.37	in
	10 Year =	5.00	in		5.04	in
	25 Year =	6.00	in		6.33	in
	100 Year	7.50	in		8.96	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			Tc	Flow Length:	75.0	
				0.210	Slope:	4.00%	
					Cover:	WOODS	
B	Shallow Concentrated Flow				Paved:		
				0.088	Unpaved:		YES
					Hydraulic Length:		1012
			Velocity	3.2	Average Land		3.8%
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
				Minimum Tc = 0.10	V	Wp	
				Total T_c 0.298			

TRAVEL TIME TO A 626 LF STREAM @ 3.2% 0.40 HR

Drainage Area # WS 4 PHASE II ONLY			
Development	Pre		0
	Post		53,753
		TOTAL	**1.23**

Drainage Area Description					
Use	Soil Type	Soil Class	CN	Area	CN x Area
Impervious	PnC	**C**	**98**	**0.00**	**0.000**
Gravel	PnC	**C**	**89**	**0.00**	**0.000**
Grass/Lawn	PnC	**C**	**74**	**0.00**	**0.000**
Brush	PnC	**C**	**65**	**1.01**	**65.325**
Woods	PnC	**C**	**70**	**0.23**	**16.030**
Earth	PnC	**C**		**0.00**	**0.000**
		TOTAL =		**1.23**	**81.355**
CN (Weighted) =sum(CN x A) divided by Sum (A) =					**65.9**

Runoff:	Storm Event Type III = 24 Hour Rainfall				NRCC	
	1 Year =	2.70	in		**2.80**	in
	2 Year =	3.50	in		**3.37**	in
	10 Year =	5.00	in		**5.04**	in
	25 Year =	6.00	in		**6.33**	in
	100 Year	7.50	in		**8.96**	in

Annual Rainfall: 40.2 in

Tc Analysis Calculations							
A	Sheet Flow			**Tc**	Flow Length:	**64.0**	
				0.094	Slope:	**7.80%**	
					Cover:	**BRUSH**	
B	Shallow Concentrated Flow				Paved:		
				0.023	Unpaved:		**YES**
					Hydraulic Length:		**380**
			Velocity	4.5	Average Land		**8%**
C	Channel Flow				FlowArea:	Q	
					Descrip.	N=	
					Length:	Width:	
					Depth	Slope:	
					V	Wp	
	Minimum Tc = 0.10				V	Wp	
	Total T_c			**0.118**			

TRAVEL TIME TO B NONE 0.0 HR

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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID STORMS.RNQ PUTNAM NRCC

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
100 YR	8.9492	Synthetic Curve	PUTNAM	NRCC 100 YEAR
25 YR	6.3224	Synthetic Curve	PUTNAM	NRCC 25 YEAR
10 YR	5.0340	Synthetic Curve	PUTNAM	NRCC 10 YEAR
2 YR	3.3656	Synthetic Curve	PUTNAM	NRCC 2 YEAR
1 YR	2.7964	Synthetic Curve	PUTNAM	NRCC 1 YR

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
*ANALY A	JCT	100 YR	10.978		12.3600	79.25		
*ANALY A	JCT	25 YR	6.200		12.2900	41.14		
*ANALY A	JCT	10 YR	3.987		12.3100	26.81		
*ANALY A	JCT	2 YR	1.563		12.2900	12.72		
*ANALY A	JCT	1 YR	1.083		12.3100	8.62		
*ANALY B	JCT	100 YR	.491		12.1300	6.55		
*ANALY B	JCT	25 YR	.274		12.1300	3.88		
*ANALY B	JCT	10 YR	.179		12.1300	2.63		
*ANALY B	JCT	2 YR	.074		12.1300	1.08		
*ANALY B	JCT	1 YR	.046		12.1400	.57		
BASIN #1	IN POND	100 YR	.891		12.2000	8.55		
BASIN #1	IN POND	25 YR	.549		12.2000	5.58		
BASIN #1	IN POND	10 YR	.389		12.2000	4.11		
BASIN #1	IN POND	2 YR	.199		12.2100	2.21		
BASIN #1	IN POND	1 YR	.140		12.2100	1.52		
BASIN #1	OUT POND	100 YR	.553		12.5100	3.62	479.10	.416
BASIN #1	OUT POND	25 YR	.216		13.8100	.49	478.68	.357
BASIN #1	OUT POND	10 YR	.057		20.2600	.11	478.56	.341
BASIN #1	OUT POND	2 YR	.000		9.0800	.00	477.34	.199

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
BASIN #1	OUT POND	1 YR	.000		9.8800	.00	476.70	.140
BASIN 2	IN POND	100 YR	3.788		12.2000	36.55		
BASIN 2	IN POND	25 YR	2.345		12.2000	23.98		
BASIN 2	IN POND	10 YR	1.670		12.2100	17.81		
BASIN 2	IN POND	2 YR	.859		12.2100	9.70		
BASIN 2	IN POND	1 YR	.610		12.2100	6.71		
BASIN 2	OUT POND	100 YR	2.847		12.3200	28.40	485.09	1.323
BASIN 2	OUT POND	25 YR	1.423		12.5900	7.71	484.28	1.107
BASIN 2	OUT POND	10 YR	.750		13.5800	1.93	483.84	.998
BASIN 2	OUT POND	2 YR	.000		8.7700	.00	483.24	.859
BASIN 2	OUT POND	1 YR	.000		9.6100	.00	482.01	.610
DISCHARGE	JCT	100 YR	2.847		12.3200	28.40		
DISCHARGE	JCT	25 YR	1.423		12.5900	7.71		
DISCHARGE	JCT	10 YR	.750		13.5800	1.93		
DISCHARGE	JCT	2 YR	.000		.0100	.00		
DISCHARGE	JCT	1 YR	.000		.0100	.00		
EX BASIN	IN POND	100 YR	2.966		12.2000	28.35		
EX BASIN	IN POND	25 YR	1.895		12.2000	19.32		
EX BASIN	IN POND	10 YR	1.385		12.2000	14.81		
EX BASIN	IN POND	2 YR	.758		12.2000	8.72		
EX BASIN	IN POND	1 YR	.559		12.2000	6.35		
EX BASIN	OUT POND	100 YR	2.960		12.2300	27.49	465.38	.300
EX BASIN	OUT POND	25 YR	1.890		12.3100	15.41	465.04	.268
EX BASIN	OUT POND	10 YR	1.383		12.3500	9.71	464.55	.225
EX BASIN	OUT POND	2 YR	.757		12.3700	4.94	463.21	.123
EX BASIN	OUT POND	1 YR	.558		12.3500	3.97	462.61	.084
STREAM FLOW	JCT	100 YR	8.018		12.3700	60.15		
STREAM FLOW	JCT	25 YR	4.310		12.2400	26.15		
STREAM FLOW	JCT	10 YR	2.604		12.2400	18.02		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
STREAM FLOW	JCT	2 YR	.806		12.2400	8.02		
STREAM FLOW	JCT	1 YR	.525		12.2400	4.75		
WS # 2	AREA	100 YR	3.788		12.2000	36.55		
WS # 2	AREA	25 YR	2.345		12.2000	23.98		
WS # 2	AREA	10 YR	1.670		12.2100	17.81		
WS # 2	AREA	2 YR	.859		12.2100	9.70		
WS # 2	AREA	1 YR	.610		12.2100	6.71		
WS1	AREA	100 YR	2.966		12.2000	28.35		
WS1	AREA	25 YR	1.895		12.2000	19.32		
WS1	AREA	10 YR	1.385		12.2000	14.81		
WS1	AREA	2 YR	.758		12.2000	8.72		
WS1	AREA	1 YR	.559		12.2000	6.35		
WS1B	AREA	100 YR	.891		12.2000	8.55		
WS1B	AREA	25 YR	.549		12.2000	5.58		
WS1B	AREA	10 YR	.389		12.2000	4.11		
WS1B	AREA	2 YR	.199		12.2100	2.21		
WS1B	AREA	1 YR	.140		12.2100	1.52		
WS3	AREA	100 YR	4.618		12.2400	43.38		
WS3	AREA	25 YR	2.672		12.2400	26.15		
WS3	AREA	10 YR	1.797		12.2400	18.02		
WS3	AREA	2 YR	.806		12.2400	8.02		
WS3	AREA	1 YR	.525		12.2400	4.75		
WS4	AREA	100 YR	.491		12.1300	6.55		
WS4	AREA	25 YR	.274		12.1300	3.88		
WS4	AREA	10 YR	.179		12.1300	2.63		
WS4	AREA	2 YR	.074		12.1300	1.08		
WS4	AREA	1 YR	.046		12.1400	.57		

File.... C:\HAESTAD\PPKW\RAINFALL\STORMS.RNQ
Title... PROPOSED SITE PLAN WITH BASIN #2 ADDED FOR THE WOOD
PROCESS AREA AT THE REAR OF THE SITE

DESIGN STORMS SUMMARY

Design Storm File,ID = STORMS.RNQ PUTNAM NRCC

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 100 YEAR
Storm Frequency = 100 YR yr
Total Rainfall Depth= 8.9492 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 25 YR
Description: 25 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 25 YEAR
Storm Frequency = 25 YR yr
Total Rainfall Depth= 6.3224 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 10 YR
Description: 10 YEAR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 10 YEAR
Storm Frequency = 10 YR yr
Total Rainfall Depth= 5.0340 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 2 YEAR
Storm Frequency = 2 YR yr
Total Rainfall Depth= 3.3656 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

File.... C:\HAESTAD\PPKW\RAINFALL\STORMS.RNQ
Title... PROPOSED SITE PLAN WITH BASIN #2 ADDED FOR THE WOOD
PROCESS AREA AT THE REAR OF THE SITE

DESIGN STORMS SUMMARY

Design Storm File,ID = STORMS.RNQ PUTNAM NRCC

Storm Tag Name = 1 YR
Description: NRCC STORM

Data Type, File, ID = Synthetic Storm PUTNAM.RNF NRCC 1 YR
Storm Frequency = 1 YR yr
Total Rainfall Depth= 2.7964 in
Duration Multiplier = 1
Resulting Duration = 23.9000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 23.9000 hrs

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 1 YR
Tc            = .2700 hrs
Drainage Area = 7.146 acres  Runoff CN= 79

============================================
Computational Time Increment   =   .03600 hrs
Computed Peak Time             =  12.2040 hrs
Computed Peak Flow             =     6.72 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     6.67 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   79
              Area =       7.146 acres
              S    =   2.7065 in
              0.2S =    .5413 in

               Cumulative Runoff
              -------------------
                      1.0249 in
                        .610 ac-ft

HYG Volume...           .610 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27000 hrs (ID: None Selected)
Computational Incr, Tm =   .03600 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    29.99 cfs
Unit peak time      Tp =   .18000 hrs
Unit receding limb, Tr =   .72000 hrs
Total unit time,    Tb =   .90000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 2 YR
Tc            = .2700 hrs
Drainage Area = 7.146 acres  Runoff CN= 79

============================================
Computational Time Increment   =   .03600 hrs
Computed Peak Time             =  12.2040 hrs
Computed Peak Flow             =     9.73 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     9.66 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   79
              Area =       7.146 acres
              S    =   2.7065 in
              0.2S =    .5413 in

               Cumulative Runoff
              -------------------
                      1.4423 in
                        .859 ac-ft

HYG Volume...           .859 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27000 hrs (ID: None Selected)
Computational Incr, Tm =   .03600 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    29.99 cfs
Unit peak time      Tp =   .18000 hrs
Unit receding limb, Tr =   .72000 hrs
Total unit time,    Tb =   .90000 hrs
```


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```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 10 YR
Tc            = .2700 hrs
Drainage Area = 7.146 acres  Runoff CN= 79

============================================
Computational Time Increment   =   .03600 hrs
Computed Peak Time             =  12.2040 hrs
Computed Peak Flow             =    17.88 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    17.78 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   79
               Area =       7.146 acres
               S    =   2.7065 in
               0.2S =    .5413 in

                Cumulative Runoff
               -------------------
                       2.8037 in
                        1.670 ac-ft

HYG Volume...          1.669 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27000 hrs (ID: None Selected)
Computational Incr, Tm =   .03600 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    29.99 cfs
Unit peak time      Tp =   .18000 hrs
Unit receding limb, Tr =   .72000 hrs
Total unit time,    Tb =   .90000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 25 YR
Tc            = .2700 hrs
Drainage Area = 7.146 acres  Runoff CN= 79

============================================
Computational Time Increment   =   .03600 hrs
Computed Peak Time             =  12.2040 hrs
Computed Peak Flow             =    24.09 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    23.97 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   79
               Area =       7.146 acres
               S    =   2.7065 in
               0.2S =    .5413 in

                Cumulative Runoff
               -------------------
                       3.9377 in
                        2.345 ac-ft

HYG Volume...          2.345 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27000 hrs (ID: None Selected)
Computational Incr, Tm =   .03600 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    29.99 cfs
Unit peak time      Tp =   .18000 hrs
Unit receding limb, Tr =   .72000 hrs
Total unit time,    Tb =   .90000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS # 2 100 YR
Tc            = .2700 hrs
Drainage Area = 7.146 acres  Runoff CN= 79

============================================
Computational Time Increment   =   .03600 hrs
Computed Peak Time             =  12.2040 hrs
Computed Peak Flow             =    36.69 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    36.55 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   79
              Area =       7.146 acres
              S    =   2.7065 in
              0.2S =    .5413 in

               Cumulative Runoff
              -------------------
                      6.3605 in
                       3.788 ac-ft

HYG Volume...          3.788 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27000 hrs (ID: None Selected)
Computational Incr, Tm =   .03600 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    29.99 cfs
Unit peak time      Tp =   .18000 hrs
Unit receding limb, Tr =   .72000 hrs
Total unit time,    Tb =   .90000 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 1 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =     6.35 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     6.35 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       1.3040 in
                         .559 ac-ft

HYG Volume...            .559 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 2 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =     8.73 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     8.72 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       1.7686 in
                         .758 ac-ft

HYG Volume...            .758 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 10 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    14.82 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    14.81 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   83
               Area =       5.140 acres
               S    =   2.0048 in
               0.2S =    .4010 in

                Cumulative Runoff
               -------------------
                       3.2337 in
                        1.385 ac-ft

HYG Volume...          1.385 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 25 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    19.32 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    19.31 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   83
              Area =       5.140 acres
              S    =   2.0048 in
              0.2S =    .4010 in

               Cumulative Runoff
              -------------------
                      4.4237 in
                       1.895 ac-ft

HYG Volume...          1.895 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1 100 YR
Tc            = .2660 hrs
Drainage Area = 5.140 acres  Runoff CN= 83

============================================
Computational Time Increment   =   .03547 hrs
Computed Peak Time             =  12.2005 hrs
Computed Peak Flow             =    28.36 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =    28.35 cfs
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   83
              Area =       5.140 acres
              S    =   2.0048 in
              0.2S =    .4010 in

               Cumulative Runoff
              -------------------
                      6.9243 in
                       2.966 ac-ft

HYG Volume...          2.966 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .26600 hrs (ID: None Selected)
Computational Incr, Tm =   .03547 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    21.89 cfs
Unit peak time      Tp =   .17733 hrs
Unit receding limb, Tr =   .70933 hrs
Total unit time,    Tb =   .88667 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 1 YR
Tc            = .2740 hrs
Drainage Area = 1.700 acres  Runoff CN= 78

============================================
Computational Time Increment   =   .03653 hrs
Computed Peak Time             =  12.2021 hrs
Computed Peak Flow             =     1.52 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     1.51 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   78
               Area =       1.700 acres
               S    =   2.8041 in
               0.2S =    .5608 in

                Cumulative Runoff
               -------------------
                        .9917 in
                         .140 ac-ft

HYG Volume...            .140 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27400 hrs (ID: None Selected)
Computational Incr, Tm =   .03653 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =     7.03 cfs
Unit peak time      Tp =   .18267 hrs
Unit receding limb, Tr =   .73067 hrs
Total unit time,    Tb =   .91333 hrs
```


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```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 2 YR
Tc            = .2740 hrs
Drainage Area = 1.700 acres  Runoff CN= 78

============================================
Computational Time Increment   =   .03653 hrs
Computed Peak Time             =  12.2021 hrs
Computed Peak Flow             =     2.22 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     2.21 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   78
               Area =       1.700 acres
               S    =   2.8041 in
               0.2S =    .5608 in

                Cumulative Runoff
               -------------------
                       1.4026 in
                         .199 ac-ft

HYG Volume...            .199 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27400 hrs (ID: None Selected)
Computational Incr, Tm =   .03653 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =     7.03 cfs
Unit peak time      Tp =   .18267 hrs
Unit receding limb, Tr =   .73067 hrs
Total unit time,    Tb =   .91333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 10 YR
Tc            = .2740 hrs
Drainage Area = 1.700 acres  Runoff CN= 78

============================================
Computational Time Increment   =   .03653 hrs
Computed Peak Time             =  12.2021 hrs
Computed Peak Flow             =     4.13 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     4.11 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   78
               Area =       1.700 acres
               S    =   2.8041 in
               0.2S =    .5608 in

                Cumulative Runoff
               -------------------
                       2.7495 in
                         .390 ac-ft

HYG Volume...            .390 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27400 hrs (ID: None Selected)
Computational Incr, Tm =   .03653 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =     7.03 cfs
Unit peak time      Tp =   .18267 hrs
Unit receding limb, Tr =   .73067 hrs
Total unit time,    Tb =   .91333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 25 YR
Tc            = .2740 hrs
Drainage Area = 1.700 acres  Runoff CN= 78

============================================
Computational Time Increment   =   .03653 hrs
Computed Peak Time             =  12.2021 hrs
Computed Peak Flow             =     5.59 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     5.58 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   78
               Area =       1.700 acres
               S    =   2.8041 in
               0.2S =    .5608 in

                Cumulative Runoff
               -------------------
                       3.8754 in
                         .549 ac-ft

HYG Volume...            .549 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27400 hrs (ID: None Selected)
Computational Incr, Tm =   .03653 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =     7.03 cfs
Unit peak time      Tp =   .18267 hrs
Unit receding limb, Tr =   .73067 hrs
Total unit time,    Tb =   .91333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS1B 100 YR
Tc            = .2740 hrs
Drainage Area = 1.700 acres  Runoff CN= 78

============================================
Computational Time Increment   =   .03653 hrs
Computed Peak Time             =  12.2021 hrs
Computed Peak Flow             =     8.57 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2000 hrs
Peak Flow, Interpolated Output =     8.55 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   78
               Area =       1.700 acres
               S    =   2.8041 in
               0.2S =    .5608 in

                Cumulative Runoff
               -------------------
                       6.2869 in
                         .891 ac-ft

HYG Volume...            .891 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .27400 hrs (ID: None Selected)
Computational Incr, Tm =   .03653 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =     7.03 cfs
Unit peak time      Tp =   .18267 hrs
Unit receding limb, Tr =   .73067 hrs
Total unit time,    Tb =   .91333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 1 YR
Tc            = .2980 hrs
Drainage Area = 10.500 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     4.75 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     4.73 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.500 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                        .6000 in
                         .525 ac-ft

HYG Volume...            .525 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =     .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    39.92 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```


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```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 2 YR
Tc            = .2980 hrs
Drainage Area = 10.500 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =     8.03 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =     7.97 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.500 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                         .9209 in
                          .806 ac-ft

HYG Volume...             .806 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    39.92 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 10 YR
Tc            = .2980 hrs
Drainage Area = 10.500 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    18.06 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    17.86 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.500 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       2.0535 in
                        1.797 ac-ft

HYG Volume...          1.797 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    39.92 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 25 YR
Tc            = .2980 hrs
Drainage Area = 10.500 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    26.21 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    25.88 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.500 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       3.0535 in
                        2.672 ac-ft

HYG Volume...          2.672 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    39.92 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS3 100 YR
Tc            = .2980 hrs
Drainage Area = 10.500 acres  Runoff CN= 70

============================================
Computational Time Increment   =   .03973 hrs
Computed Peak Time             =  12.2379 hrs
Computed Peak Flow             =    43.49 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.2500 hrs
Peak Flow, Interpolated Output =    42.91 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   70
               Area =      10.500 acres
               S    =   4.3062 in
               0.2S =    .8612 in

                Cumulative Runoff
               -------------------
                       5.2780 in
                        4.618 ac-ft

HYG Volume...          4.619 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .29800 hrs (ID: None Selected)
Computational Incr, Tm =   .03973 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    39.92 cfs
Unit peak time      Tp =   .19867 hrs
Unit receding limb, Tr =   .79467 hrs
Total unit time,    Tb =   .99333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 2.7964 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 1 YR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS4 1 YR
Tc            = .1180 hrs
Drainage Area = 1.230 acres  Runoff CN= 66

============================================
Computational Time Increment   =   .01573 hrs
Computed Peak Time             =  12.1461 hrs
Computed Peak Flow             =      .57 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.1500 hrs
Peak Flow, Interpolated Output =      .57 cfs
============================================

                 DRAINAGE AREA
               -------------------
               ID:None Selected
               CN   =   66
               Area =       1.230 acres
               S    =   5.1745 in
               0.2S =   1.0349 in

                Cumulative Runoff
               -------------------
                        .4473 in
                         .046 ac-ft

HYG Volume...            .046 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .11800 hrs (ID: None Selected)
Computational Incr, Tm =   .01573 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    11.81 cfs
Unit peak time      Tp =   .07867 hrs
Unit receding limb, Tr =   .31467 hrs
Total unit time,    Tb =   .39333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 3.3656 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 2 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS4 2 YR
Tc            = .1180 hrs
Drainage Area = 1.230 acres  Runoff CN= 66

============================================
Computational Time Increment   =   .01573 hrs
Computed Peak Time             =  12.1304 hrs
Computed Peak Flow             =     1.08 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.1500 hrs
Peak Flow, Interpolated Output =     1.05 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   66
              Area =       1.230 acres
              S    =   5.1745 in
              0.2S =   1.0349 in

               Cumulative Runoff
              -------------------
                       .7238 in
                        .074 ac-ft

HYG Volume...            .074 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .11800 hrs (ID: None Selected)
Computational Incr, Tm =   .01573 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    11.81 cfs
Unit peak time      Tp =   .07867 hrs
Unit receding limb, Tr =   .31467 hrs
Total unit time,    Tb =   .39333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 5.0340 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 10 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS4 10 YR
Tc            = .1180 hrs
Drainage Area = 1.230 acres  Runoff CN= 66

============================================
Computational Time Increment   =   .01573 hrs
Computed Peak Time             =  12.1304 hrs
Computed Peak Flow             =     2.63 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.1500 hrs
Peak Flow, Interpolated Output =     2.51 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   66
              Area =       1.230 acres
              S    =   5.1745 in
              0.2S =   1.0349 in

               Cumulative Runoff
              -------------------
                      1.7433 in
                        .179 ac-ft

HYG Volume...           .179 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .11800 hrs (ID: None Selected)
Computational Incr, Tm =   .01573 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    11.81 cfs
Unit peak time      Tp =   .07867 hrs
Unit receding limb, Tr =   .31467 hrs
Total unit time,    Tb =   .39333 hrs
```


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```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 6.3224 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 25 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS4 25 YR
Tc            = .1180 hrs
Drainage Area = 1.230 acres  Runoff CN= 66

============================================
Computational Time Increment   =   .01573 hrs
Computed Peak Time             =  12.1304 hrs
Computed Peak Flow             =     3.89 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.1500 hrs
Peak Flow, Interpolated Output =     3.69 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   66
              Area =       1.230 acres
              S    =   5.1745 in
              0.2S =   1.0349 in

               Cumulative Runoff
              -------------------
                      2.6723 in
                        .274 ac-ft

HYG Volume...           .274 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .11800 hrs (ID: None Selected)
Computational Incr, Tm =   .01573 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    11.81 cfs
Unit peak time      Tp =   .07867 hrs
Unit receding limb, Tr =   .31467 hrs
Total unit time,    Tb =   .39333 hrs
```

```
SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 YR year storm
Duration      = 23.9000 hrs     Rain Depth = 8.9492 in
Rain Dir      = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = PUTNAM.RNF - NRCC 100 YEAR
Unit Hyd Type = Default Curvilinear
HYG Dir       = Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\
HYG File - ID =  - WS4 100 YR
Tc            = .1180 hrs
Drainage Area = 1.230 acres  Runoff CN= 66

============================================
Computational Time Increment   =   .01573 hrs
Computed Peak Time             =  12.1304 hrs
Computed Peak Flow             =     6.55 cfs

Time Increment for HYG File    =    .0500 hrs
Peak Time, Interpolated Output =  12.1500 hrs
Peak Flow, Interpolated Output =     6.21 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
============================================

                 DRAINAGE AREA
              -------------------
              ID:None Selected
              CN   =   66
              Area =       1.230 acres
              S    =   5.1745 in
              0.2S =   1.0349 in

               Cumulative Runoff
              -------------------
                      4.7855 in
                        .491 ac-ft

HYG Volume...           .491 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc =   .11800 hrs (ID: None Selected)
Computational Incr, Tm =   .01573 hrs = 0.20000 Tp

Unit Hyd. Shape Factor =  483.432 (37.46% under rising limb)
K =  483.43/645.333,  K =    .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp =   1.6698 (solved from K =   .7491)

Unit peak,          qp =    11.81 cfs
Unit peak time      Tp =   .07867 hrs
Unit receding limb, Tr =   .31467 hrs
Total unit time,    Tb =   .39333 hrs
```

APPENDIX C
Existing

- Basin EX Volumes
- Basin EX Outlet
- Basin EX Routing (1, 2, 10, 25, 100 yr Storm)

APPENDIX C
Basin #1

- Basin #1 Volumes
- Basin #1 Outlet
- Basin #1 Routing (1, 2, 10, 25, 100 yr Storm)

APPENDIX C
Basin #2

- Basin #2 Volumes
- Basin #2 Outlet
- Basin #2 Routing (1, 2, 10, 25, 100 yr Storm)

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE I.PPW
Title... EXISTING BASIN

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
461.00	1800.000	.0413	.0000	.000	.000
462.00	2426.000	.0557	.1450	.048	.048
464.00	3364.000	.0772	.1985	.132	.181
466.00	4600.000	.1056	.2731	.182	.363
466.50	5600.000	.1286	.3507	.058	.421

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE I.PPW
Title... EXISTING OUTLET STRUCTURE

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 461.00 ft
Increment = .10 ft
Max. Elev.= 466.50 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Inlet Box	A	--->	TW	465.000	466.500
Weir-Rectangular	B	--->	TW	464.000	466.500
Orifice-Circular	C	--->	TW	461.000	466.500
Weir-XY Points	D	--->	TW	461.000	461.500

TW SETUP, DS Channel

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File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE I.PPW
Title... EXISTING OUTLET STRUCTURE

OUTLET STRUCTURE INPUT DATA

```
Structure ID      = A
Structure Type    = Inlet Box
-------------------------------------
# of Openings     =         1
Invert Elev.      =    465.00 ft
Orifice Area      =    7.5000 sq.ft
Orifice Coeff.    =      .600
Weir Length       =     11.00 ft
Weir Coeff.       =     3.000
K, Submerged      =      .000
K, Reverse        =     1.000
Kb,Barrel         =   .000000  (per ft of full flow)
Barrel Length     =       .00 ft
Mannings n        =     .0000


Structure ID      = B
Structure Type    = Weir-Rectangular
-------------------------------------
# of Openings     =         1
Crest Elev.       =    464.00 ft
Weir Length       =      2.50 ft
Weir Coeff.       =  3.000000

Weir TW effects     (Use adjustment equation)


Structure ID      = C
Structure Type    = Orifice-Circular
-------------------------------------
# of Openings     =         1
Invert Elev.      =    461.00 ft
Diameter          =    1.0000 ft
Orifice Coeff.    =      .600
```

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE I.PPW
Title... EXISTING OUTLET STRUCTURE

OUTLET STRUCTURE INPUT DATA

Structure ID = D
Structure Type = Weir-XY Points

# of Openings = 1
WEIR X-Y GROUND POINTS

X, ft	Elev, ft
.00	461.50
.25	461.20
.50	461.00
.75	461.20
1.00	461.50

Lowest Elev. = 461.00 ft

Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE I.PPW
Title... PROPOSED BASIN #1

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
474.00	1032.000	.0237	.0000	.000	.000
476.00	2947.000	.0677	.1314	.088	.088
478.00	5120.000	.1175	.2744	.183	.270
480.00	7564.000	.1736	.4340	.289	.560

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 474.00 ft
Increment = .10 ft
Max. Elev.= 480.00 ft

```
*********************************************
                OUTLET CONNECTIVITY
*********************************************

 ---> Forward Flow Only (UpStream to DnStream)
<---  Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed
```

Structure	No.		Outfall	E1, ft	E2, ft
Weir-XY Points TW SETUP, DS Channel	A	--->	TW	478.500	480.000

OUTLET STRUCTURE INPUT DATA

Structure ID = A
Structure Type = Weir-XY Points

# of Openings = 1
WEIR X-Y GROUND POINTS

X, ft	Elev, ft
.00	480.00
2.50	478.50
4.50	478.50
7.00	480.00

Lowest Elev. = 478.50 ft

Weir Coeff. = 2.700000

Weir TW effects (Use adjustment equation)

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE II.PPW
Title... BASIN #2

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
476.00	1406.000	.0323	.0000	.000	.000
478.00	3337.000	.0766	.1586	.106	.106
480.00	5340.000	.1226	.2961	.197	.303
482.00	8013.000	.1840	.4567	.304	.608
484.00	10713.000	.2459	.6426	.428	1.036
486.00	13677.000	.3140	.8378	.559	1.595

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE II.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 476.00 ft
Increment = .10 ft
Max. Elev.= 486.00 ft

```
*********************************************
                OUTLET CONNECTIVITY
*********************************************

 ---> Forward Flow Only (UpStream to DnStream)
<---  Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed
```

Structure	No.		Outfall	E1, ft	E2, ft
Weir-XY Points TW SETUP, DS Channel	A	--->	TW	483.500	486.000

File.... Z:\PROGRAMS\PONDPACK\NORTHWOOD TREE CARE\POST-DEVELOPMENT- 2 BASINS-PHASE II.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = A
Structure Type = Weir-XY Points

# of Openings = 1
WEIR X-Y GROUND POINTS

X, ft	Elev, ft
.00	486.00
5.00	483.50
8.00	483.50
9.00	486.00

Lowest Elev. = 483.50 ft

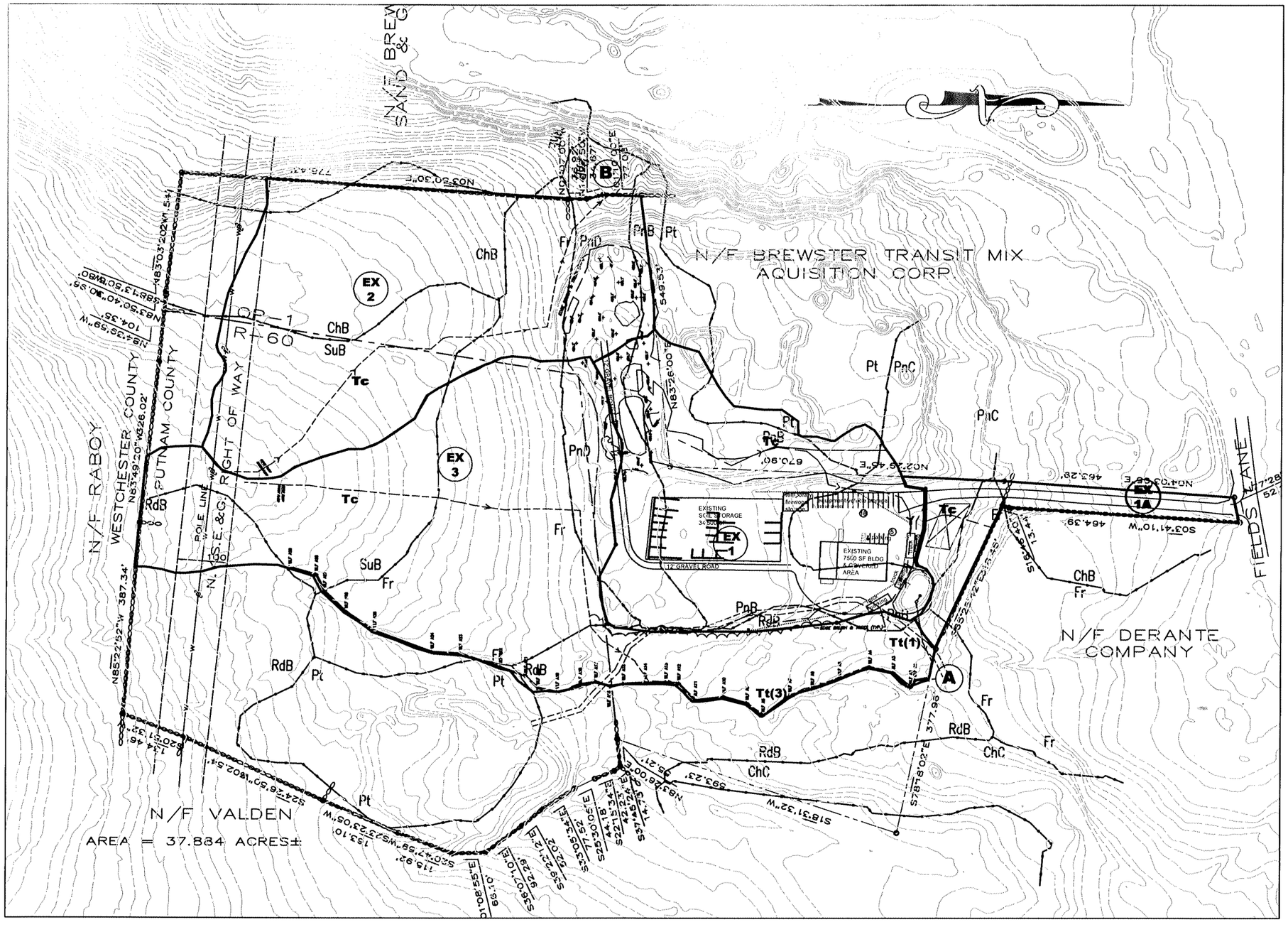
Weir Coeff. = 2.700000

Weir TW effects (Use adjustment equation)

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs



Soil Types

Symbol	Soil Series Name	Hydrologic Soil Group
CHB	Charlot Loam	B
ChC	Charlton Fine Sandy Loam	B
FR	Predon Silt Loam	C
PAB	Paxton Fine Sandy Loam	C
PNC	Paxton Fine Sandy Loam	C
PND	Paxton Fine Sandy Loam	C
Pt	Pits Gravel	A
RdB	Ridgebury Loam	C
Sub	Sutton Loam	C

LEGEND
NOT TO SCALE

- PROPERTY LINE
- CATCH BASIN: CB
- STORM DRAINAGE PIPE
- PROPOSED EDGE OF GRAVEL
- BUILDING EXISTING
- PROPOSED GRADE
- EXISTING GRADE
- FLARED END SECTION
- SOIL LINE

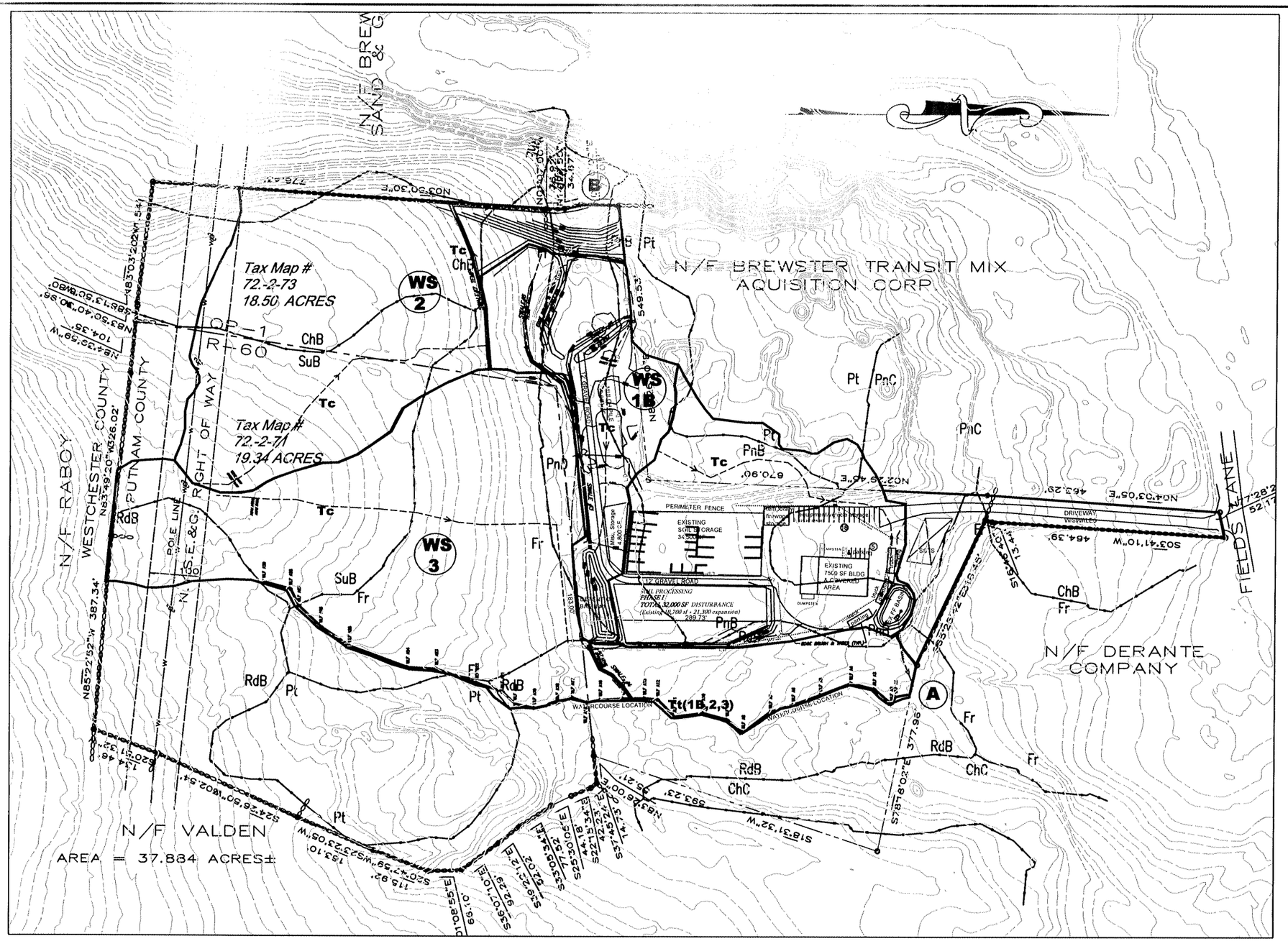
SYMBOL DEFINTIONS

CB = CATCH BASIN
YD = YARD DRAIN (ROOF DRAINAGE ONLY)
FES = FLARED END SECTION

PRE DEVELOPMENT OVERLAY

GRAPHIC SCALE
100 50 0 100 200
(IN FEET)
1 inch = 100 ft.

P.W. SCOTT	REVISION	DATE	NATURE OF REVISION	Dwg. Title: PRE DEVELOPMENT OVERLAY	Dwg. No.
ENGINEERING & ARCHITECTURE, P.C.				Project Title: 25 FIELDS LANE, SOUTHEAST, NY	D1
3871 ROUTE 6				Proj. No.: 18-105 — Drawn by: PWS	
BREWSTER, NY 10509 845-278-2110				Date: 1/30/19 — Scale: AS NOTED	



Soil Types

Symbol	Soil Series Name	Hydrologic Soil Group
CHB	Charlot Loam	B
ClC	Charlton Fine Sandy Loam	B
FR	Predon Silt Loam	C
PAB	Paxton Fine Sandy Loam	C
PNC	Paxton Fine Sandy Loam	C
PND	Paxton Fine Sandy Loam	C
Pt	Pits Gravel	A
RdB	Ridgebury Loam	C
Sub	Sutton Loam	C

LEGEND

NOT TO SCALE

- PROPERTY LINE
- CATCH BASIN: CB
- STORM DRAINAGE PIPE
- PROPOSED EDGE OF GRAVEL
- BUILDING EXISTING
- PROPOSED GRADE
- EXISTING GRADE
- FLARED END SECTION
- SOIL LINE

SYMBOL DEFINTIONS

CB = CATCH BASIN
YD = YARD DRAIN (ROOF DRAINAGE ONLY)
FES = FLARED END SECTION

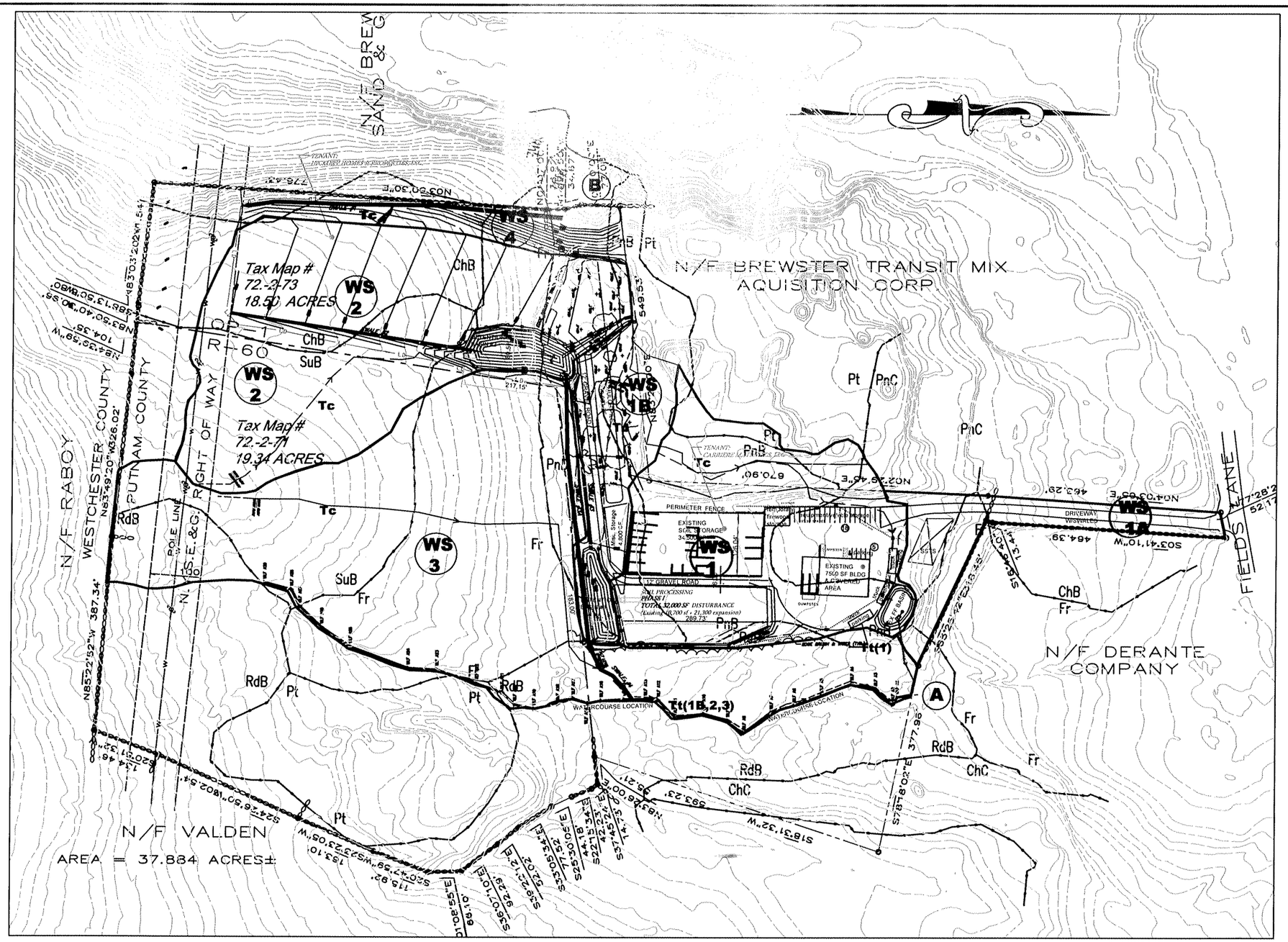
POST DEVELOPMENT OVERLAY–phase I

GRAPHIC SCALE
100 50 0 100 200
(IN FEET)
1 inch = 100 ft.

P.W. SCOTT
ENGINEERING & ARCHITECTURE, P.C.
3871 ROUTE 6
BREWSTER, NY 10509 845-278-2110

REVISION	DATE	NATURE OF REVISION

Dwg. Title	POST DEVELOPMENT OVERLAY		Dwg. No.
Project Title	25 FIELDS LANE, SOUTHEAST, NY		D2A
Proj. No.	18–105	Drawn by PWS	
Date	1/30/19	Scale AS NOTED	



Soil Types

Symbol	Soil Series Name	Hydrologic Soil Group
CHB	Charlot Loam	B
ChC	Charlton Fine Sandy Loam	B
FR	Predon Silt Loam	C
PAB	Paxton Fine Sandy Loam	C
PNC	Paxton Fine Sandy Loam	C
PND	Paxton Fine Sandy Loam	C
Pt	Pits Gravel	A
RdB	Ridgebury Loam	C
Sub	Sutton Loam	C

LEGEND
NOT TO SCALE

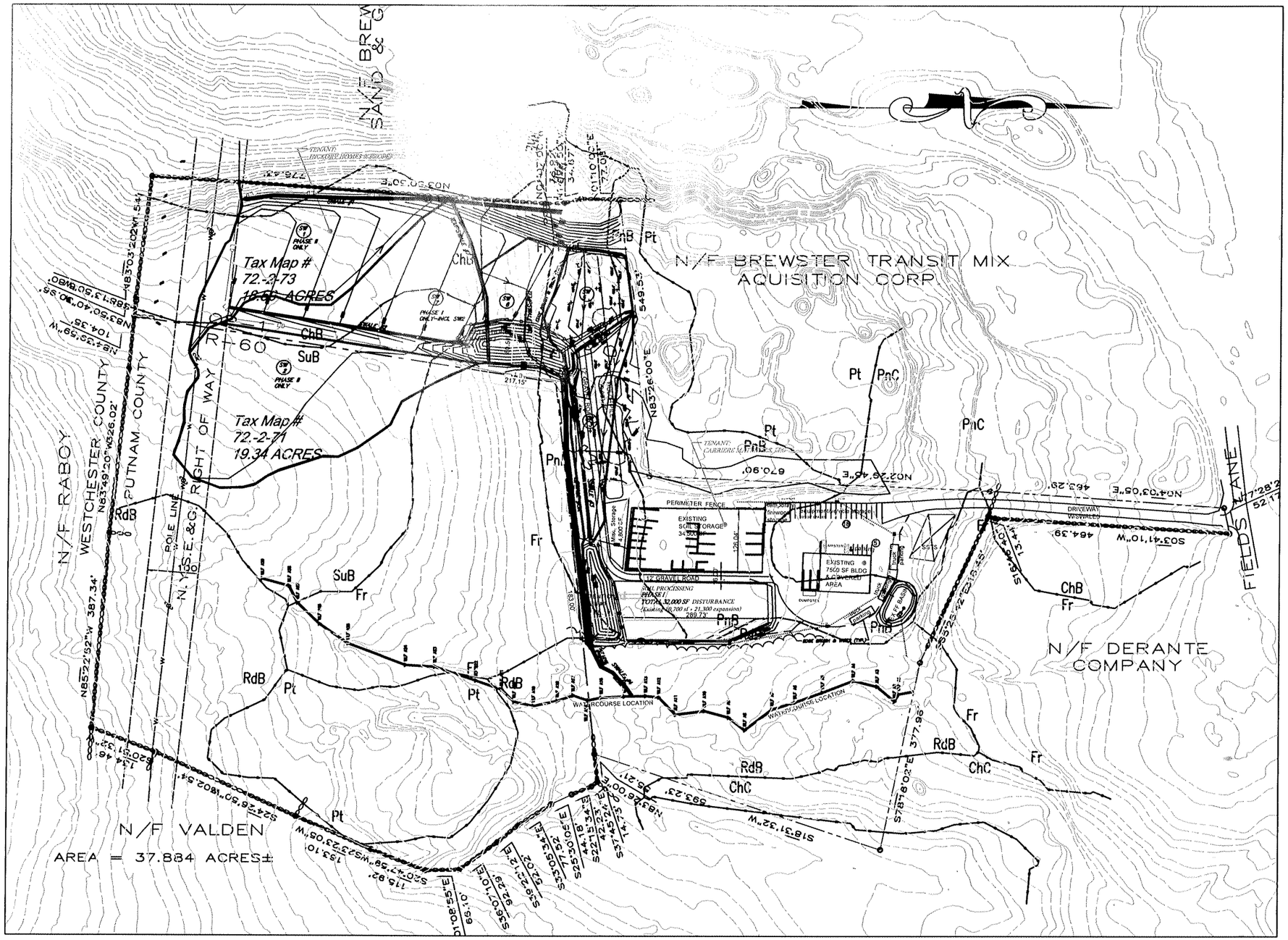
- PROPERTY LINE
- CATCH BASIN: CB
- STORM DRAINAGE PIPE
- PROPOSED EDGE OF GRAVEL
- BUILDING EXISTING
- PROPOSED GRADE
- EXISTING GRADE
- FLARED END SECTION
- SOIL LINE

SYMBOL DEFINTIONS
CB = CATCH BASIN
YD = YARD DRAIN (ROOF DRAINAGE ONLY)
FES = FLARED END SECTION

POST DEVELOPMENT OVERLAY–phase II

GRAPHIC SCALE
100 50 0 100 200
(IN FEET)
1 inch = 100 ft.

P.W. SCOTT	REVISION	DATE	NATURE OF REVISION	Dwg. Title POST DEVELOPMENT OVERLAY	Dwg. No.
ENGINEERING & ARCHITECTURE, P.C.				Project Title 25 FIELDS LANE, SOUTHEAST, NY	D2B
3871 ROUTE 6				Proj. No. 18–105 / Drawn by PWS	
BREWSTER, NY 10509 845–278–2110				Date 1/30/19 / Scale AS NOTED	



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RdB	Ridgebury Loam	C
Sub	Sutton Loam	C

SWALE OVERLAY

GRAPHIC SCALE

100 50 0 100 200

(IN FEET)
1 inch = 100 ft.

P.W. SCOTT	REVISION	DATE	NATURE OF REVISION	Dwg. Title SWALE OVERLAY	Dwg. No.
ENGINEERING & ARCHITECTURE, P.C.				Project Title 25 FIELDS LANE, SOUTHEAST, NY	D3
3871 ROUTE 6				Proj. No. 18-105 / Drawn by M.A.	
BREWSTER, NY 10509 845-278-2110				Date 1/30/19 / Scale AS NOTED	