

## **Appendices**

## **Appendix A**

### **PondPack Modeling Output**

## PondPack Modeling Output

Basin A

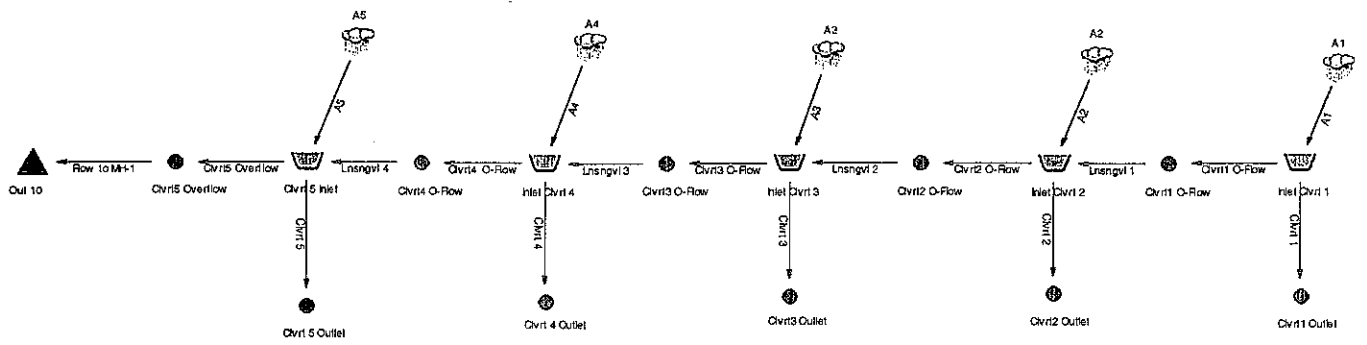




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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID	
1	2.3000	Synthetic Curve	TypeII	24hr
5	3.4000	Synthetic Curve	TypeII	24hr
10	3.9000	Synthetic Curve	TypeII	24hr
25	4.6000	Synthetic Curve	TypeII	24hr
50	4.9000	Synthetic Curve	TypeII	24hr

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
A1	AREA	1	.431		12.1500	3.90		
A1	AREA	5	1.156		12.1000	13.66		
A1	AREA	10	1.553		12.1000	19.07		
A1	AREA	25	2.160		12.1000	27.27		
A1	AREA	50	2.435		12.1000	30.96		
A2	AREA	1	.397		12.1500	3.48		
A2	AREA	5	1.065		12.1000	12.17		
A2	AREA	10	1.431		12.1000	17.05		
A2	AREA	25	1.991		12.1000	24.46		
A2	AREA	50	2.245		12.1000	27.79		
A3	AREA	1	.261		12.2000	2.01		
A3	AREA	5	.701		12.1500	7.15		
A3	AREA	10	.942		12.1500	10.03		
A3	AREA	25	1.311		12.1500	14.41		
A3	AREA	50	1.478		12.1500	16.38		

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
A4	AREA	1	.203		12.1500	1.83		
A4	AREA	5	.544		12.1000	6.46		
A4	AREA	10	.732		12.1000	9.02		
A4	AREA	25	1.018		12.1000	12.90		
A4	AREA	50	1.147		12.1000	14.65		
A5	AREA	1	1.371		12.1000	16.75		
A5	AREA	5	2.890		12.1000	37.00		
A5	AREA	10	3.654		12.1000	47.01		
A5	AREA	25	4.776		12.1000	61.51		
A5	AREA	50	5.271		12.1000	67.85		
*CLVRT 4	OUTLET	JCT	1	.203	12.1500	1.81		
*CLVRT 4	OUTLET	JCT	5	.544	12.1500	6.31		
*CLVRT 4	OUTLET	JCT	10	.732	12.1500	8.75		
*CLVRT 4	OUTLET	JCT	25	1.018	12.1000	12.60		
*CLVRT 4	OUTLET	JCT	50	1.147	12.1000	14.33		
CLVRT 5	INLETIN	POND	1	1.371	12.1000	16.75		
CLVRT 5	INLETIN	POND	5	2.890	12.1000	37.00		
CLVRT 5	INLETIN	POND	10	3.654	12.1000	47.01		
CLVRT 5	INLETIN	POND	25	4.776	12.1000	61.51		
CLVRT 5	INLETIN	POND	50	5.271	12.1000	67.85		
+CLVRT 5	INLETOUT	POND	1	1.371	12.1000	16.30	863.49	.018
+CLVRT 5	INLETOUT	POND	5	2.889	12.1000	36.50	865.03	.041
+CLVRT 5	INLETOUT	POND	10	3.654	12.1000	46.53	865.20	.044
+CLVRT 5	INLETOUT	POND	25	4.776	12.1000	61.09	865.41	.048
+CLVRT 5	INLETOUT	POND	50	5.271	12.1000	67.46	865.49	.049
*CLVRT 5	OUTLET	JCT	1	1.371	12.1000	16.30		
*CLVRT 5	OUTLET	JCT	5	2.726	12.1000	25.90		
*CLVRT 5	OUTLET	JCT	10	3.273	12.1000	26.70		
*CLVRT 5	OUTLET	JCT	25	4.015	12.1000	27.66		
*CLVRT 5	OUTLET	JCT	50	4.328	12.1000	28.02		

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CLVRT1	O-FLOW	JCT	1		.0500	.00		
CLVRT1	O-FLOW	JCT	5		.0500	.00		
CLVRT1	O-FLOW	JCT	10		.0500	.00		
CLVRT1	O-FLOW	JCT	25		.0500	.00		
CLVRT1	O-FLOW	JCT	50		.0500	.00		
*CLVRT1	OUTLET	JCT	1		12.1500	3.84		
*CLVRT1	OUTLET	JCT	5		12.1500	13.36		
*CLVRT1	OUTLET	JCT	10		12.1500	18.55		
*CLVRT1	OUTLET	JCT	25		12.1000	26.63		
*CLVRT1	OUTLET	JCT	50		12.1000	30.30		
CLVRT2	O-FLOW	JCT	1		.0500	.00		
CLVRT2	O-FLOW	JCT	5		.0500	.00		
CLVRT2	O-FLOW	JCT	10		.0500	.00		
CLVRT2	O-FLOW	JCT	25		.0500	.00		
CLVRT2	O-FLOW	JCT	50		.0500	.00		
*CLVRT2	OUTLET	JCT	1		12.1500	3.39		
*CLVRT2	OUTLET	JCT	5		12.1500	12.03		
*CLVRT2	OUTLET	JCT	10		12.1500	16.75		
*CLVRT2	OUTLET	JCT	25		12.1500	23.89		
*CLVRT2	OUTLET	JCT	50		12.1500	27.10		
CLVRT3	O-FLOW	JCT	1		.0500	.00		
CLVRT3	O-FLOW	JCT	5		.0500	.00		
CLVRT3	O-FLOW	JCT	10		.0500	.00		
CLVRT3	O-FLOW	JCT	25		.0500	.00		
CLVRT3	O-FLOW	JCT	50		.0500	.00		
*CLVRT3	OUTLET	JCT	1		12.2000	1.98		
*CLVRT3	OUTLET	JCT	5		12.2000	7.05		
*CLVRT3	OUTLET	JCT	10		12.2000	9.85		
*CLVRT3	OUTLET	JCT	25		12.1500	14.20		
*CLVRT3	OUTLET	JCT	50		12.1500	16.17		

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CLVRT4	O-FLOW	JCT	1	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	5	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	10	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	25	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	50	.000	.0500	.00		
CLVRT5	OVERFLOW	JCT	1	.000	.0500	.00		
CLVRT5	OVERFLOW	JCT	5	.163	12.1000	10.60		
CLVRT5	OVERFLOW	JCT	10	.381	12.1000	19.83		
CLVRT5	OVERFLOW	JCT	25	.761	12.1000	33.43		
CLVRT5	OVERFLOW	JCT	50	.943	12.1000	39.43		
INLET CLVRT 1IN	POND		1	.431	12.1500	3.90		
INLET CLVRT 1IN	POND		5	1.156	12.1000	13.66		
INLET CLVRT 1IN	POND		10	1.553	12.1000	19.07		
INLET CLVRT 1IN	POND		25	2.160	12.1000	27.27		
INLET CLVRT 1IN	POND		50	2.435	12.1000	30.96		
+INLET CLVRT 1OUT	POND		1	.431	12.1500	3.84	965.06	.004
+INLET CLVRT 1OUT	POND		5	1.156	12.1500	13.36	966.18	.012
+INLET CLVRT 1OUT	POND		10	1.553	12.1500	18.55	966.73	.017
+INLET CLVRT 1OUT	POND		25	2.160	12.1000	26.63	968.18	.041
+INLET CLVRT 1OUT	POND		50	2.435	12.1000	30.30	969.02	.061
INLET CLVRT 2IN	POND		1	.397	12.1500	3.48		
INLET CLVRT 2IN	POND		5	1.065	12.1000	12.17		
INLET CLVRT 2IN	POND		10	1.431	12.1000	17.05		
INLET CLVRT 2IN	POND		25	1.991	12.1000	24.46		
INLET CLVRT 2IN	POND		50	2.245	12.1000	27.79		
+INLET CLVRT 2OUT	POND		1	.397	12.1500	3.39	944.99	.003
+INLET CLVRT 2OUT	POND		5	1.065	12.1500	12.03	946.04	.010
+INLET CLVRT 2OUT	POND		10	1.431	12.1500	16.75	946.53	.015
+INLET CLVRT 2OUT	POND		25	1.991	12.1500	23.89	947.62	.031
+INLET CLVRT 2OUT	POND		50	2.245	12.1500	27.10	948.28	.044

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
INLET CLVRT 3IN	POND	1	.261		12.2000	2.01		
INLET CLVRT 3IN	POND	5	.701		12.1500	7.15		
INLET CLVRT 3IN	POND	10	.942		12.1500	10.03		
INLET CLVRT 3IN	POND	25	1.311		12.1500	14.41		
INLET CLVRT 3IN	POND	50	1.478		12.1500	16.38		
+INLET CLVRT 3OUT	POND	1	.261		12.2000	1.98	918.75	.002
+INLET CLVRT 3OUT	POND	5	.701		12.2000	7.05	919.49	.006
+INLET CLVRT 3OUT	POND	10	.942		12.2000	9.85	919.81	.008
+INLET CLVRT 3OUT	POND	25	1.311		12.1500	14.20	920.27	.012
+INLET CLVRT 3OUT	POND	50	1.478		12.1500	16.17	920.47	.015
INLET CLVRT 4IN	POND	1	.203		12.1500	1.83		
INLET CLVRT 4IN	POND	5	.544		12.1000	6.46		
INLET CLVRT 4IN	POND	10	.732		12.1000	9.02		
INLET CLVRT 4IN	POND	25	1.018		12.1000	12.90		
INLET CLVRT 4IN	POND	50	1.147		12.1000	14.65		
+INLET CLVRT 4OUT	POND	1	.203		12.1500	1.81	903.71	.002
+INLET CLVRT 4OUT	POND	5	.544		12.1500	6.31	904.40	.005
+INLET CLVRT 4OUT	POND	10	.732		12.1500	8.75	904.69	.007
+INLET CLVRT 4OUT	POND	25	1.018		12.1000	12.60	905.10	.011
+INLET CLVRT 4OUT	POND	50	1.147		12.1000	14.34	905.28	.013
*OUT 10	JCT	1	.000		.0500	.00		
*OUT 10	JCT	5	.163		12.1000	10.60		
*OUT 10	JCT	10	.381		12.1000	19.83		
*OUT 10	JCT	25	.761		12.1000	33.43		
*OUT 10	JCT	50	.943		12.1000	39.43		

Type.... Design Storms  
Name.... Tompkins County

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

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Title... Project Date: 11/19/2008  
Project Engineer: BMT  
Project Title: Ludlowville Storm Drainage  
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

---

Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 1 yr  
Total Rainfall Depth= 2.3000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

---

Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 5 yr  
Total Rainfall Depth= 3.4000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

---

Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 3.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25

---

Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 25 yr  
Total Rainfall Depth= 4.6000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50

---

Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 50 yr  
Total Rainfall Depth= 4.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs



Type.... Tc Calcs  
Name.... A1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .3000  
Hydraulic Length 100.00 ft  
2yr, 24hr P 2.7000 in  
Slope .050000 ft/ft

Avg.Velocity .13 ft/sec

Segment #1 Time: .2145 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 300.00 ft  
Slope .070000 ft/ft  
Unpaved

Avg.Velocity 4.27 ft/sec

Segment #2 Time: .0195 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 9.0000 sq.ft  
Wetted Perimeter 7.00 ft  
Hydraulic Radius 1.29 ft  
Slope .010000 ft/ft  
Mannings n .0500  
Hydraulic Length 1100.00 ft

Avg.Velocity 3.52 ft/sec

Segment #3 Time: .0867 hrs

=====  
Total Tc: .3208 hrs  
=====

-----  
Tc Equations used...  
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==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

R = Aq / Wp

V = (1.49 \* (R\*\*(2/3)) \* (Sf\*\*-0.5)) / n

Tc = (Lf / V) / (3600sec/hr)

- Where: R = Hydraulic radius
- Aq = Flow area, sq.ft.
- Wp = Wetted perimeter, ft
- V = Velocity, ft/sec
- Sf = Slope, ft/ft
- n = Mannings n
- Tc = Time of concentration, hrs
- Lf = Flow length, ft

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .040000 ft/ft  
  
Avg.Velocity         .12 ft/sec

Segment #1 Time:     .2346 hrs

-----  
Segment #2: Tc: TR-55 Shallow

Hydraulic Length    500.00 ft  
Slope                .060000 ft/ft  
Unpaved  
  
Avg.Velocity         3.95 ft/sec

Segment #2 Time:     .0351 hrs

-----  
Segment #3: Tc: TR-55 Channel

Flow Area           10.0000 sq.ft  
Wetted Perimeter    8.00 ft  
Hydraulic Radius    1.25 ft  
Slope                .018000 ft/ft  
Mannings n           .0500  
Hydraulic Length    1100.00 ft  
  
Avg.Velocity         4.64 ft/sec

Segment #3 Time:     .0659 hrs

=====  
Total Tc:            .3356 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
 $V = 16.1345 * (Sf**0.5)$

Paved surface:  
 $V = 20.3282 * (Sf**0.5)$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... A2

Page 3.06

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

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==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$
$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Name.... A3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

```

:.....:
TIME OF CONCENTRATION CALCULATOR
:.....:

```

Segment #1: Tc: TR-55 Sheet

```

Mannings n      .3000
Hydraulic Length 100.00 ft
2yr, 24hr P     2.7000 in
Slope           .015000 ft/ft

```

Avg.Velocity .08 ft/sec

Segment #1 Time: .3473 hrs

Segment #2: Tc: TR-55 Shallow

```

Hydraulic Length 500.00 ft
Slope            .060000 ft/ft
Unpaved

```

Avg.Velocity 3.95 ft/sec

Segment #2 Time: .0351 hrs

Segment #3: Tc: TR-55 Channel

```

Flow Area        11.0000 sq.ft
Wetted Perimeter 9.00 ft
Hydraulic Radius 1.22 ft
Slope            .030000 ft/ft
Mannings n      .0500
Hydraulic Length 600.00 ft

```

Avg.Velocity 5.90 ft/sec

Segment #3 Time: .0282 hrs

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=====
Total Tc:      .4107 hrs
=====

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-----  
Tc Equations used...  
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==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
 $V = 16.1345 * (Sf**0.5)$

Paved surface:  
 $V = 20.3282 * (Sf**0.5)$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft



==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$
$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .3000  
Hydraulic Length 100.00 ft  
2yr, 24hr P 2.7000 in  
Slope .030000 ft/ft

Avg.Velocity .11 ft/sec

Segment #1 Time: .2632 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 580.00 ft  
Slope .080000 ft/ft  
Unpaved

Avg.Velocity 4.56 ft/sec

Segment #2 Time: .0353 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 11.0000 sq.ft  
Wetted Perimeter 9.00 ft  
Hydraulic Radius 1.22 ft  
Slope .030000 ft/ft  
Mannings n .0500  
Hydraulic Length 470.00 ft

Avg.Velocity 5.90 ft/sec

Segment #3 Time: .0221 hrs

=====  
Total Tc: .3206 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
V = 16.1345 \* (Sf\*\*0.5)

Paved surface:  
V = 20.3282 \* (Sf\*\*0.5)

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

Type.... Tc Calcs  
Name.... A5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

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.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .045000 ft/ft

Avg.Velocity         .12 ft/sec

Segment #1 Time:    .2238 hrs

-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length    715.00 ft  
Slope                .080000 ft/ft  
Unpaved

Avg.Velocity         4.56 ft/sec

Segment #2 Time:    .0435 hrs

-----

Segment #3: Tc: TR-55 Channel

Flow Area           15.0000 sq.ft  
Wetted Perimeter    10.50 ft  
Hydraulic Radius    1.43 ft  
Slope                .030000 ft/ft  
Mannings n           .0500  
Hydraulic Length    1240.00 ft

Avg.Velocity         6.55 ft/sec

Segment #3 Time:    .0526 hrs

-----

=====  
Total Tc:           .3199 hrs  
=====

Type.... Tc Calcs  
Name.... A5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

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-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	15.500			69.00

COMPOSITE AREA & WEIGHTED CN --->                    15.500                    69.00 (69)  
 .....



Type.... Runoff CN-Area  
Name.... A2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

RUNOFF CURVE NUMBER DATA

.....

---

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	14.300			69.00

COMPOSITE AREA & WEIGHTED CN ---> 14.300 69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	9.400			69.00

COMPOSITE AREA & WEIGHTED CN --->                    9.400                    69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	7.300			69.00

COMPOSITE AREA & WEIGHTED CN ---> 7.300 69.00 (69)

.....

Type.... Runoff CN-Area  
Name.... A5

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	79	23.300			79.00

COMPOSITE AREA & WEIGHTED CN ---> 23.300 79.00 (79)

.....

Name.... LNSNGVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1  
 Reach Length = 1135.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)  
 Overflow Elev. = 969.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 965.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
965.00	.00	.000	.0000	.00	.00	.00
965.01	.00	.001	.0526	.00	.00	.26
965.08	.15	.004	.0563	.00	.15	2.24
965.16	.46	.009	.0604	.00	.46	4.82
965.24	.91	.014	.0646	.00	.91	7.69
965.32	1.47	.019	.0688	.00	1.47	10.84
965.40	2.15	.025	.0730	.00	2.15	14.26
965.48	2.94	.031	.0771	.00	2.94	17.95
965.56	3.84	.037	.0813	.00	3.84	21.91
965.64	4.84	.044	.0855	.00	4.84	26.15
965.72	5.96	.051	.0896	.00	5.96	30.66
965.80	7.19	.058	.0938	.00	7.19	35.44
965.88	8.53	.066	.0980	.00	8.53	40.49
965.96	9.99	.074	.1021	.00	9.99	45.83
966.04	11.57	.082	.1063	.00	11.57	51.44
966.12	13.27	.091	.1105	.00	13.27	57.33
966.20	15.09	.100	.1146	.00	15.09	63.52
966.28	17.03	.109	.1188	.00	17.03	69.98
966.36	19.11	.119	.1230	.00	19.11	76.73
966.44	21.31	.129	.1272	.00	21.31	83.78

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1  
 Reach Length = 1135.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)  
 Overflow Elev. = 969.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 965.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
966.52	23.65	.139	.1313	.00	23.65	91.13
966.60	26.12	.150	.1355	.00	26.12	98.76
966.68	28.73	.161	.1397	.00	28.73	106.70
966.76	31.48	.172	.1438	.00	31.48	114.94
966.84	34.37	.184	.1480	.00	34.37	123.48
966.92	37.41	.196	.1522	.00	37.41	132.32
967.00	40.60	.208	.1563	.00	40.60	141.48
967.08	43.93	.221	.1605	.00	43.93	150.96
967.16	47.42	.234	.1647	.00	47.42	160.73
967.24	51.06	.247	.1688	.00	51.06	170.83
967.32	54.86	.261	.1730	.00	54.86	181.26
967.40	58.82	.275	.1772	.00	58.82	192.00
967.48	62.94	.289	.1813	.00	62.94	203.05
967.56	67.23	.304	.1855	.00	67.23	214.45
967.64	71.68	.319	.1897	.00	71.68	226.17
967.72	76.30	.335	.1939	.00	76.30	238.21
967.80	81.10	.350	.1980	.00	81.10	250.59
967.88	86.07	.366	.2022	.00	86.07	263.31
967.96	91.22	.383	.2064	.00	91.22	276.37
968.04	96.54	.399	.2105	.00	96.54	289.76

Name.... LNSNGVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1  
 Reach Length = 1135.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)  
 Overflow Elev. = 969.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 965.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
968.12	102.04	.416	.2147	.00	102.04	303.50
968.20	107.73	.434	.2189	.00	107.73	317.58
968.28	113.61	.451	.2230	.00	113.61	332.02
968.36	119.67	.469	.2272	.00	119.67	346.79
968.44	125.92	.488	.2314	.00	125.92	361.92
968.52	132.37	.506	.2355	.00	132.37	377.41
968.60	139.00	.525	.2397	.00	139.00	393.24
968.68	145.84	.545	.2439	.00	145.84	409.44
968.76	152.87	.564	.2481	.00	152.87	426.00
968.84	160.11	.584	.2522	.00	160.11	442.92
968.92	167.54	.605	.2564	.00	167.54	460.20
969.00	175.19	.625	.2606	.00	175.19	477.86

Name.... LNSNGVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2  
 Reach Length = 650.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)  
 Overflow Elev. = 949.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 945.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
945.00	.00	.000	.0000	.00	.00	.00
945.01	.01	.000	.0301	.00	.01	.15
945.08	.22	.002	.0322	.00	.22	1.42
945.16	.70	.005	.0346	.00	.70	3.19
945.24	1.37	.008	.0370	.00	1.37	5.25
945.32	2.22	.011	.0394	.00	2.22	7.58
945.40	3.24	.014	.0418	.00	3.24	10.18
945.48	4.43	.018	.0442	.00	4.43	13.03
945.56	5.78	.021	.0466	.00	5.78	16.14
945.64	7.30	.025	.0489	.00	7.30	19.50
945.72	8.98	.029	.0513	.00	8.98	23.13
945.80	10.84	.033	.0537	.00	10.84	27.01
945.88	12.86	.038	.0561	.00	12.86	31.17
945.96	15.06	.042	.0585	.00	15.06	35.59
946.04	17.44	.047	.0609	.00	17.44	40.27
946.12	20.00	.052	.0633	.00	20.00	45.24
946.20	22.75	.057	.0657	.00	22.75	50.48
946.28	25.68	.063	.0680	.00	25.68	56.00
946.36	28.81	.068	.0704	.00	28.81	61.81
946.44	32.13	.074	.0728	.00	32.13	67.91



Name.... LNSNGVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2  
 Reach Length = 650.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)  
 Overflow Elev. = 949.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 945.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
946.52	35.65	.080	.0752	.00	35.65	74.30
946.60	39.38	.086	.0776	.00	39.38	80.98
946.68	43.31	.092	.0800	.00	43.31	87.96
946.76	47.46	.099	.0824	.00	47.46	95.25
946.84	51.82	.105	.0848	.00	51.82	102.85
946.92	56.40	.112	.0871	.00	56.40	110.75
947.00	61.20	.119	.0895	.00	61.20	118.98
947.08	66.23	.127	.0919	.00	66.23	127.52
947.16	71.48	.134	.0943	.00	71.48	136.38
947.24	76.98	.142	.0967	.00	76.98	145.57
947.32	82.71	.150	.0991	.00	82.71	155.09
947.40	88.68	.158	.1015	.00	88.68	164.95
947.48	94.89	.166	.1039	.00	94.89	175.13
947.56	101.35	.174	.1062	.00	101.35	185.66
947.64	108.07	.183	.1086	.00	108.07	196.54
947.72	115.03	.192	.1110	.00	115.03	207.75
947.80	122.26	.201	.1134	.00	122.26	219.33
947.88	129.76	.210	.1158	.00	129.76	231.26
947.96	137.51	.219	.1182	.00	137.51	243.55
948.04	145.54	.229	.1206	.00	145.54	256.19

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2  
 Reach Length = 650.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)  
 Overflow Elev. = 949.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 945.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
948.12	153.84	.238	.1230	.00	153.84	269.21
948.20	162.41	.248	.1253	.00	162.41	282.59
948.28	171.27	.258	.1277	.00	171.27	296.35
948.36	180.40	.269	.1301	.00	180.40	310.47
948.44	189.83	.279	.1325	.00	189.83	324.99
948.52	199.55	.290	.1349	.00	199.55	339.88
948.60	209.55	.301	.1373	.00	209.55	355.15
948.68	219.86	.312	.1397	.00	219.86	370.82
948.76	230.46	.323	.1421	.00	230.46	386.88
948.84	241.37	.335	.1444	.00	241.37	403.34
948.92	252.58	.346	.1468	.00	252.58	420.18
949.00	264.11	.358	.1492	.00	264.11	437.44

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3  
 Reach Length = 540.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)  
 Overflow Elev. = 923.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 919.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
919.00	.00	.000	.0000	.00	.00	.00
919.01	.01	.000	.0253	.00	.01	.13
919.08	.19	.002	.0288	.00	.19	1.23
919.16	.61	.005	.0327	.00	.61	2.84
919.24	1.24	.007	.0367	.00	1.24	4.81
919.32	2.06	.010	.0407	.00	2.06	7.13
919.40	3.09	.014	.0446	.00	3.09	9.81
919.48	4.32	.018	.0486	.00	4.32	12.85
919.56	5.78	.022	.0526	.00	5.78	16.26
919.64	7.45	.026	.0565	.00	7.45	20.05
919.72	9.37	.031	.0605	.00	9.37	24.23
919.80	11.52	.036	.0645	.00	11.52	28.80
919.88	13.93	.041	.0684	.00	13.93	33.78
919.96	16.60	.047	.0724	.00	16.60	39.18
920.04	19.55	.053	.0764	.00	19.55	45.00
920.12	22.77	.059	.0803	.00	22.77	51.26
920.20	26.29	.065	.0843	.00	26.29	57.97
920.28	30.10	.072	.0883	.00	30.10	65.12
920.36	34.22	.080	.0922	.00	34.22	72.74
920.44	38.66	.087	.0962	.00	38.66	80.82

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3  
 Reach Length = 540.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)  
 Overflow Elev. = 923.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 919.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
920.52	43.42	.095	.1002	.00	43.42	89.39
920.60	48.52	.103	.1041	.00	48.52	98.44
920.68	53.96	.112	.1081	.00	53.96	107.99
920.76	59.75	.120	.1121	.00	59.75	118.05
920.84	65.91	.130	.1160	.00	65.91	128.61
920.92	72.42	.139	.1200	.00	72.42	139.70
921.00	79.32	.149	.1240	.00	79.32	151.32
921.08	86.59	.159	.1279	.00	86.59	163.47
921.16	94.26	.169	.1319	.00	94.26	176.17
921.24	102.33	.180	.1359	.00	102.33	189.42
921.32	110.81	.191	.1398	.00	110.81	203.24
921.40	119.70	.202	.1438	.00	119.70	217.62
921.48	129.01	.214	.1478	.00	129.01	232.57
921.56	138.76	.226	.1517	.00	138.76	248.12
921.64	148.94	.238	.1557	.00	148.94	264.26
921.72	159.57	.251	.1597	.00	159.57	280.99
921.80	170.65	.264	.1636	.00	170.65	298.33
921.88	182.20	.277	.1676	.00	182.20	316.29
921.96	194.21	.291	.1716	.00	194.21	334.87
922.04	206.69	.304	.1755	.00	206.69	354.07

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3  
 Reach Length = 540.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)  
 Overflow Elev. = 923.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 919.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
922.12	219.66	.319	.1795	.00	219.66	373.91
922.20	233.12	.333	.1835	.00	233.12	394.40
922.28	247.08	.348	.1874	.00	247.08	415.54
922.36	261.53	.363	.1914	.00	261.53	437.32
922.44	276.50	.379	.1954	.00	276.50	459.79
922.52	291.99	.394	.1993	.00	291.99	482.92
922.60	308.00	.411	.2033	.00	308.00	506.71
922.68	324.54	.427	.2073	.00	324.54	531.21
922.76	341.63	.444	.2112	.00	341.63	556.40
922.84	359.26	.461	.2152	.00	359.26	582.29
922.92	377.43	.478	.2192	.00	377.43	608.86
923.00	396.17	.496	.2231	.00	396.17	636.17

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4  
 Reach Length = 1290.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)  
 Overflow Elev. = 908.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 904.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation. ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
904.00	.00	.000	.0000	.00	.00	.00
904.01	.01	.001	.0604	.00	.01	.30
904.08	.20	.005	.0687	.00	.20	2.68
904.16	.65	.011	.0782	.00	.65	5.97
904.24	1.32	.018	.0877	.00	1.32	9.85
904.32	2.21	.025	.0971	.00	2.21	14.31
904.40	3.30	.033	.1066	.00	3.30	19.36
904.48	4.62	.042	.1161	.00	4.62	24.99
904.56	6.18	.052	.1256	.00	6.18	31.22
904.64	7.97	.062	.1350	.00	7.97	38.06
904.72	10.01	.073	.1445	.00	10.01	45.51
904.80	12.32	.085	.1540	.00	12.32	53.60
904.88	14.89	.098	.1635	.00	14.89	62.32
904.96	17.75	.111	.1730	.00	17.75	71.69
905.04	20.90	.126	.1824	.00	20.90	81.71
905.12	24.34	.141	.1919	.00	24.34	92.41
905.20	28.10	.156	.2014	.00	28.10	103.78
905.28	32.18	.173	.2109	.00	32.18	115.84
905.36	36.58	.190	.2203	.00	36.58	128.59
905.44	41.33	.208	.2298	.00	41.33	142.05

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4  
 Reach Length = 1290.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)  
 Overflow Elev. = 908.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 904.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
905.52	46.42	.227	.2393	.00	46.42	156.23
905.60	51.87	.246	.2488	.00	51.87	171.12
905.68	57.69	.267	.2582	.00	57.69	186.76
905.76	63.88	.288	.2677	.00	63.88	203.13
905.84	70.46	.310	.2772	.00	70.46	220.26
905.92	77.42	.332	.2867	.00	77.42	238.14
906.00	84.79	.355	.2961	.00	84.79	256.79
906.08	92.57	.379	.3056	.00	92.57	276.23
906.16	100.77	.404	.3151	.00	100.77	296.43
906.24	109.40	.430	.3246	.00	109.40	317.45
906.32	118.46	.456	.3341	.00	118.46	339.26
906.40	127.97	.483	.3435	.00	127.97	361.89
906.48	137.92	.511	.3530	.00	137.92	385.32
906.56	148.34	.540	.3625	.00	148.34	409.60
906.64	159.23	.569	.3720	.00	159.23	434.71
906.72	170.59	.599	.3814	.00	170.59	460.64
906.80	182.43	.630	.3909	.00	182.43	487.45
906.88	194.78	.662	.4004	.00	194.78	515.11
906.96	207.62	.694	.4099	.00	207.62	543.64
907.04	220.96	.727	.4193	.00	220.96	573.03

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1  
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4  
 Reach Length = 1290.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)  
 Overflow Elev. = 908.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 904.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
907.12	234.83	.761	.4288	.00	234.83	603.32
907.20	249.22	.796	.4383	.00	249.22	634.50
907.28	264.14	.831	.4478	.00	264.14	666.58
907.36	279.59	.868	.4572	.00	279.59	699.54
907.44	295.59	.905	.4667	.00	295.59	733.44
907.52	312.15	.942	.4762	.00	312.15	768.26
907.60	329.26	.981	.4857	.00	329.26	803.97
907.68	346.95	1.020	.4952	.00	346.95	840.66
907.76	365.21	1.060	.5046	.00	365.21	878.28
907.84	384.06	1.101	.5141	.00	384.06	916.86
907.92	403.49	1.142	.5236	.00	403.49	956.36
908.00	423.52	1.185	.5331	.00	423.52	996.85



Name.... Clvrt 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 964.00 ft  
 Increment = .10 ft  
 Max. Elev.= 971.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	964.000	971.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.0000 ft  
Upstream Invert = 964.00 ft  
Dnstream Invert = 963.00 ft  
Horiz. Length = 50.00 ft  
Barrel Length = 50.01 ft  
Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160  
Ke = .5000 (forward entrance loss)  
Kb = .018800 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.150  
T2 ratio (HW/D) = 1.297  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 966.30 ft ---> Flow = 15.55 cfs  
At T2 Elev = 966.59 ft ---> Flow = 17.77 cfs

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 918.00 ft  
 Increment = .10 ft  
 Max. Elev.= 924.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	918.000	924.000

Name.... Clvrt 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular

-----

No. Barrels = 1  
 Barrel Diameter = 2.0000 ft  
 Upstream Invert = 918.00 ft  
 Dnstream Invert = 917.00 ft  
 Horiz. Length = 50.00 ft  
 Barrel Length = 50.01 ft  
 Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160  
 Ke = .5000 (forward entrance loss)  
 Kb = .018800 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.150  
 T2 ratio (HW/D) = 1.297  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 920.30 ft ---> Flow = 15.55 cfs  
 At T2 Elev = 920.59 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data  
Name.... Clvrt 3

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File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Name.... Clvrt 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 903.00 ft  
 Increment = .10 ft  
 Max. Elev.= 909.00 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
Culvert-Circular TW SETUP, DS Channel	CO	---> TW	903.000	909.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.0000 ft  
Upstream Invert = 903.00 ft  
Dnstream Invert = 902.00 ft  
Horiz. Length = 50.00 ft  
Barrel Length = 50.01 ft  
Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160  
Ke = .5000 (forward entrance loss)  
Kb = .018800 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.150  
T2 ratio (HW/D) = 1.297  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 905.30 ft ---> Flow = 15.55 cfs  
At T2 Elev = 905.59 ft ---> Flow = 17.77 cfs



Type.... Outlet Input Data  
Name.... Clvrt 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 861.00 ft  
 Increment = .10 ft  
 Max. Elev.= 868.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	861.000	868.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular

-----  
No. Barrels = 1  
Barrel Diameter = 2.0000 ft  
Upstream Invert = 861.00 ft  
Dnstream Invert = 860.20 ft  
Horiz. Length = 50.00 ft  
Barrel Length = 50.01 ft  
Barrel Slope = .01600 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160  
Ke = .5000 (forward entrance loss)  
Kb = .018800 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = .000  
T2 ratio (HW/D) = 1.299  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 861.00 ft ---> Flow = 15.55 cfs  
At T2 Elev = 863.60 ft ---> Flow = 17.77 cfs

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 944.00 ft  
Increment = .10 ft  
Max. Elev.= 950.00 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
Culvert-Circular	CO	---> TW	944.000	950.000
TW SETUP, DS Channel				

Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

## OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular

-----  
 No. Barrels = 1  
 Barrel Diameter = 2.0000 ft  
 Upstream Invert = 944.00 ft  
 Dnstream Invert = 943.00 ft  
 Horiz. Length = 50.00 ft  
 Barrel Length = 50.01 ft  
 Barrel Slope = .02000 ft/ft

## OUTLET CONTROL DATA...

Mannings n = .0160  
 Ke = .5000 (forward entrance loss)  
 Kb = .018800 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

## INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.150  
 T2 ratio (HW/D) = 1.297  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.

Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 946.30 ft ---> Flow = 15.55 cfs

At T2 Elev = 946.59 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data  
Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Weir 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 918.00 ft  
Increment = .10 ft  
Max. Elev.= 924.00 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-Rectangular	W0	---> TW	922.000	890.000
TW SETUP, DS Channel				



Type.... Outlet Input Data  
Name.... Weir 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 922.00 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.800000

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 903.00 ft  
 Increment = .10 ft  
 Max. Elev.= 909.00 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-Rectangular	W0	--->	TW	907.000	890.000
TW SETUP, DS Channel					

Name.... Weir 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 907.00 ft  
Weir Length = 10.00 ft  
Weir Coeff. = 2.800000  
  
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

Type.... Outlet Input Data  
Name.... Weir1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 964.00 ft  
Increment = .10 ft  
Max. Elev.= 971.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	968.000	890.000

Name.... Weir1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 968.00 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.800000

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 944.00 ft  
Increment = .10 ft  
Max. Elev.= 950.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	948.000	890.000

Type.... Outlet Input Data  
Name.... Weir2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 948.00 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.800000

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

Name.... Weir5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 861.00 ft  
 Increment = .10 ft  
 Max. Elev.= 868.00 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-Rectangular	W0	---> TW	864.700	890.000
TW SETUP, DS Channel				



Name.... Weir5

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 864.70 ft  
Weir Length = 20.00 ft  
Weir Coeff. = 2.800000

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

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**PondPack Modeling Output**

**Basin B**

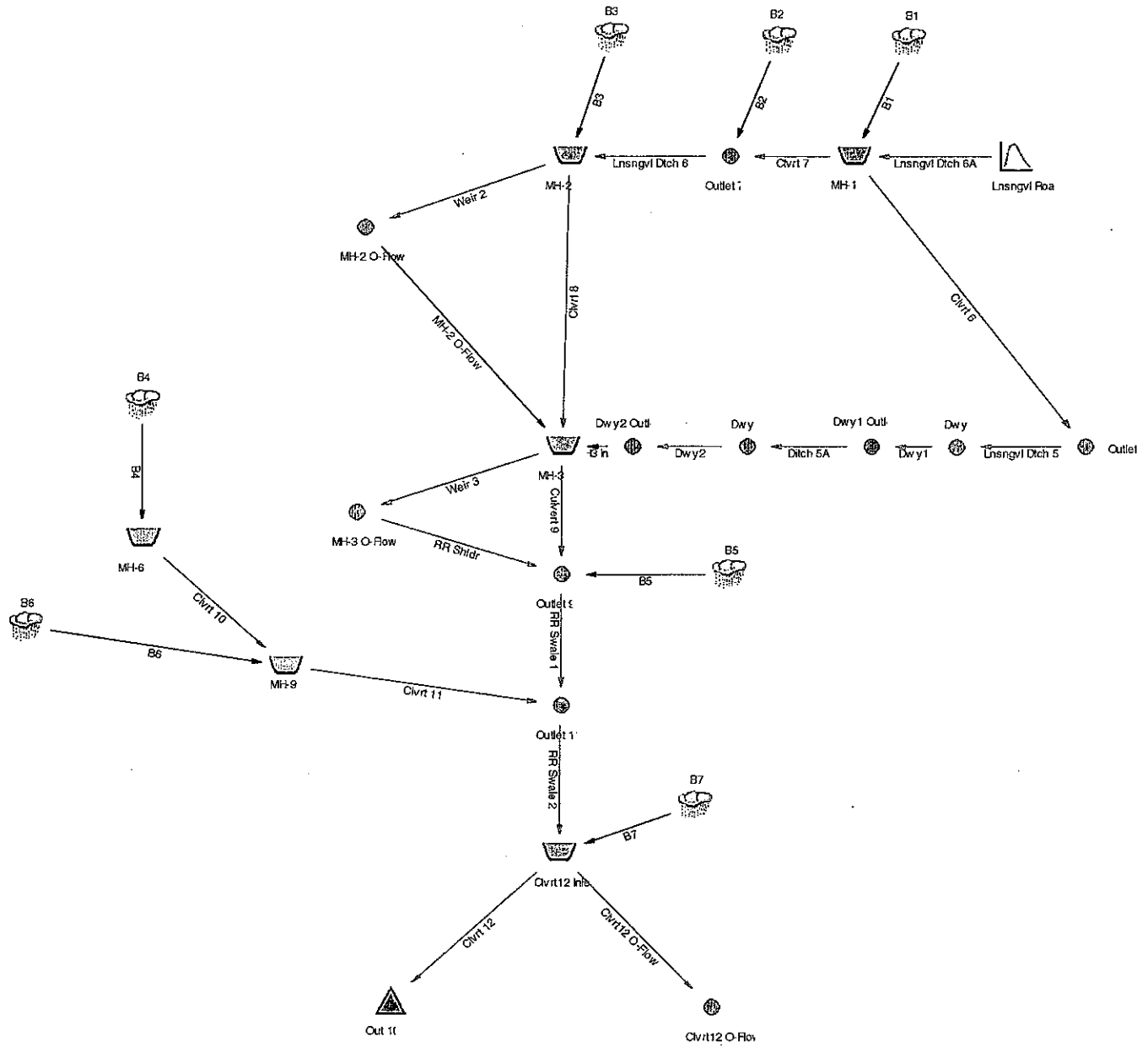


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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID
1	2.3000	Synthetic Curve	TypeII 24hr
5	3.4000	Synthetic Curve	TypeII 24hr
10	3.9000	Synthetic Curve	TypeII 24hr
25	4.6000	Synthetic Curve	TypeII 24hr
50	4.9000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY

SCS Unit Hydrograph Method

Hydrograph File Import Option Used For 1 node(s)

(\*Node=Outfall; +Node=Diversion;)

(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
B1	AREA	1	.900		12.1000	8.55		
B1	AREA	5	2.416		12.1000	29.86		
B1	AREA	10	3.246		12.1000	41.44		
B1	AREA	25	4.515		12.1000	58.94		
B1	AREA	50	5.090		12.1000	66.81		
B2	AREA	1	1.348		12.1000	15.35		
B2	AREA	5	3.163		12.1000	40.38		
B2	AREA	10	4.113		12.1000	53.27		
B2	AREA	25	5.534		12.1000	72.33		
B2	AREA	50	6.169		12.1000	80.77		



MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
B3	AREA	1	.801		12.1000	9.54		
B3	AREA	5	1.837		12.1000	23.89		
B3	AREA	10	2.375		12.1000	31.21		
B3	AREA	25	3.176		12.0500	42.22		
B3	AREA	50	3.533		12.0500	47.14		
B4	AREA	1	.348		12.0000	5.63		
B4	AREA	5	.680		12.0000	11.11		
B4	AREA	10	.843		12.0000	13.73		
B4	AREA	25	1.079		12.0000	17.46		
B4	AREA	50	1.182		12.0000	19.07		
B5	AREA	1	.132		12.0000	2.03		
B5	AREA	5	.262		12.0000	4.14		
B5	AREA	10	.326		12.0000	5.16		
B5	AREA	25	.420		12.0000	6.62		
B5	AREA	50	.461		12.0000	7.25		
B6	AREA	1	.339		12.0500	4.96		
B6	AREA	5	.701		12.0500	10.48		
B6	AREA	10	.882		12.0500	13.18		
B6	AREA	25	1.146		12.0500	17.07		
B6	AREA	50	1.263		12.0500	18.75		
B7	AREA	1	.149		11.9500	2.69		
B7	AREA	5	.298		11.9500	5.37		
B7	AREA	10	.371		11.9000	6.69		
B7	AREA	25	.477		11.9000	8.63		
B7	AREA	50	.523		11.9000	9.47		
CLVRT12	INLETIN	POND	1		12.2000	38.18		
CLVRT12	INLETIN	POND	5		12.2000	106.59		
CLVRT12	INLETIN	POND	10		12.2000	140.67		
CLVRT12	INLETIN	POND	25		12.2500	196.91		
CLVRT12	INLETIN	POND	50		12.2500	236.56		

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
+CLVRT12	INLETOUT	POND	1	4.016	12.2000	37.49	668.88	.004
+CLVRT12	INLETOUT	POND	5	9.519	12.2000	104.83	670.67	.007
+CLVRT12	INLETOUT	POND	10	12.535	12.2500	140.51	670.83	.008
+CLVRT12	INLETOUT	POND	25	17.106	12.2500	196.16	671.01	.008
+CLVRT12	INLETOUT	POND	50	19.420	12.3000	234.63	671.12	.008
*CLVRT12	O-FLOW	JCT	1	.000	.0500	.00		
*CLVRT12	O-FLOW	JCT	5	.336	12.2000	20.83		
*CLVRT12	O-FLOW	JCT	10	1.230	12.2500	52.37		
*CLVRT12	O-FLOW	JCT	25	2.969	12.2500	102.95		
*CLVRT12	O-FLOW	JCT	50	4.083	12.3000	138.39		
DWY1		JCT	1	.000	.0500	.00		
DWY1		JCT	5	.009	12.1500	.76		
DWY1		JCT	10	.094	12.1500	6.00		
DWY1		JCT	25	.390	12.1500	21.03		
DWY1		JCT	50	.574	12.1500	29.01		
DWY1	OUTLET	JCT	1	.000	.0500	.00		
DWY1	OUTLET	JCT	5	.009	12.2000	.75		
DWY1	OUTLET	JCT	10	.094	12.2000	5.87		
DWY1	OUTLET	JCT	25	.390	12.2000	20.25		
DWY1	OUTLET	JCT	50	.689	12.1500	49.76		
DWY2		JCT	1	.000	.0500	.00		
DWY2		JCT	5	.009	12.2000	.64		
DWY2		JCT	10	.094	12.2000	5.45		
DWY2		JCT	25	.390	12.2000	19.58		
DWY2		JCT	50	.689	12.2000	41.24		
DWY2	OUTLET	JCT	1	.000	.0500	.00		
DWY2	OUTLET	JCT	5	.009	12.2500	.64		
DWY2	OUTLET	JCT	10	.094	12.2500	5.37		
DWY2	OUTLET	JCT	25	.390	12.2500	19.00		
DWY2	OUTLET	JCT	50	.832	12.2000	69.95		

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
LNSNGVL ROAD	HYG	1	.000		11.9000	.00		
LNSNGVL ROAD	HYG	5	.163		12.1000	10.60		
LNSNGVL ROAD	HYG	10	.381		12.1000	19.83		
LNSNGVL ROAD	HYG	25	.761		12.1000	33.43		
LNSNGVL ROAD	HYG	50	.942	R	12.1000	39.43		
MH-1	IN POND	1	.900		12.1000	8.55		
MH-1	IN POND	5	2.579		12.1000	36.26		
MH-1	IN POND	10	3.627		12.1000	56.93		
MH-1	IN POND	25	5.276		12.1000	88.24		
MH-1	IN POND	50	6.032		12.1000	102.18		
+MH-1	OUT POND	1	.900		12.1500	8.44	804.81	.001
+MH-1	OUT POND	5	2.579		12.1500	36.12	806.58	.003
+MH-1	OUT POND	10	3.627		12.1500	56.22	807.41	.003
+MH-1	OUT POND	25	5.276		12.1500	86.32	808.70	.004
+MH-1	OUT POND	50	6.032		12.1500	99.68	809.29	.005
MH-2	IN POND	1	3.049		12.1500	32.00		
MH-2	IN POND	5	7.570		12.1500	94.31		
MH-2	IN POND	10	10.020		12.1000	128.35		
MH-2	IN POND	25	13.595		12.1000	174.62		
MH-2	IN POND	50	15.160		12.1000	193.60		
+MH-2	OUT POND	1	3.048		12.1500	31.69	772.79	.002
+MH-2	OUT POND	5	7.570		12.1500	94.17	775.91	.005
+MH-2	OUT POND	10	10.020		12.1500	127.93	776.22	.005
+MH-2	OUT POND	25	13.595		12.1500	172.42	776.40	.005
+MH-2	OUT POND	50	15.159		12.1500	190.75	776.46	.005
MH-2 O-FLOW	JCT	1	.000		.0500	.00		
MH-2 O-FLOW	JCT	5	.000		.0500	.00		
MH-2 O-FLOW	JCT	10	.387		12.1500	28.83		
MH-2 O-FLOW	JCT	25	1.369		12.1500	70.49		
MH-2 O-FLOW	JCT	50	1.865		12.1500	87.87		

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
MH-3	IN	POND	1		12.1500	31.69		
MH-3	IN	POND	5		12.1500	94.38		
MH-3	IN	POND	10		12.1500	130.79		
MH-3	IN	POND	25		12.1500	185.18		
MH-3	IN	POND	50		12.2000	248.24		
+MH-3	OUT	POND	1		12.2000	31.14	766.97	.002
+MH-3	OUT	POND	5		12.2000	92.49	770.01	.004
+MH-3	OUT	POND	10		12.2000	128.53	770.70	.005
+MH-3	OUT	POND	25		12.2000	182.36	770.92	.005
+MH-3	OUT	POND	50		12.2000	231.85	771.08	.005
MH-3	O-FLOW	JCT	1		.0500	.00		
MH-3	O-FLOW	JCT	5		.0500	.00		
MH-3	O-FLOW	JCT	10		12.2000	25.05		
MH-3	O-FLOW	JCT	25		12.2000	75.60		
MH-3	O-FLOW	JCT	50		12.2000	122.73		
MH-6	IN	POND	1		12.0000	5.63		
MH-6	IN	POND	5		12.0000	11.11		
MH-6	IN	POND	10		12.0000	13.73		
MH-6	IN	POND	25		12.0000	17.46		
MH-6	IN	POND	50		12.0000	19.07		
MH-6	OUT	POND	1		12.0500	5.48	733.52	.001
MH-6	OUT	POND	5		12.0000	10.78	734.01	.001
MH-6	OUT	POND	10		12.0000	13.37	734.21	.001
MH-6	OUT	POND	25		12.0000	17.07	734.48	.002
MH-6	OUT	POND	50		12.0000	18.68	734.58	.002
MH-9	IN	POND	1		12.0500	10.44		
MH-9	IN	POND	5		12.0500	21.17		
MH-9	IN	POND	10		12.0000	26.40		
MH-9	IN	POND	25		12.0000	34.07		
MH-9	IN	POND	50		12.0000	37.40		

Name.... Watershed

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method  
Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
MH-9	OUT	POND	1		12.0500	10.27	704.97	.001
MH-9	OUT	POND	5		12.0500	21.11	705.74	.002
MH-9	OUT	POND	10		12.0500	26.37	706.07	.002
MH-9	OUT	POND	25		12.0500	33.91	706.51	.002
MH-9	OUT	POND	50		12.0500	37.18	706.69	.003
*OUT 10	JCT		1		12.2000	37.49		
*OUT 10	JCT		5		12.2000	84.00		
*OUT 10	JCT		10		12.2500	88.14		
*OUT 10	JCT		25		12.2500	93.21		
*OUT 10	JCT		50		12.3000	96.24		
OUTLET 11	JCT		1		12.1500	37.75		
OUTLET 11	JCT		5		12.1500	105.81		
OUTLET 11	JCT		10		12.2000	141.22		
OUTLET 11	JCT		25		12.2000	197.73		
OUTLET 11	JCT		50		12.2500	239.29		
OUTLET 6	JCT		1		.0500	.00		
OUTLET 6	JCT		5		12.1500	.96		
OUTLET 6	JCT		10		12.1500	6.50		
OUTLET 6	JCT		25		12.1500	21.71		
OUTLET 6	JCT		50		12.1500	29.60		
OUTLET 7	JCT		1		12.1000	23.28		
OUTLET 7	JCT		5		12.1000	73.49		
OUTLET 7	JCT		10		12.1000	101.06		
OUTLET 7	JCT		25		12.1000	135.94		
OUTLET 7	JCT		50		12.1000	150.08		
OUTLET 9	JCT		1		12.2000	31.96		
OUTLET 9	JCT		5		12.1500	94.07		
OUTLET 9	JCT		10		12.2000	129.83		
OUTLET 9	JCT		25		12.2000	183.76		
OUTLET 9	JCT		50		12.2500	228.12		

Type.... Design Storms  
Name.... Tompkins County

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

Title... Project Date: 11/19/2008  
Project Engineer: BMT  
Project Title: Ludlowville Storm Drainage  
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 1 yr  
Total Rainfall Depth= 2.3000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 5 yr  
Total Rainfall Depth= 3.4000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 3.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 25 yr  
Total Rainfall Depth= 4.6000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 50 yr  
Total Rainfall Depth= 4.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Tc Calcs  
Name.... B1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length   100.00 ft  
2yr, 24hr P        2.7000 in  
Slope               .100000 ft/ft

Avg.Velocity        .17 ft/sec

Segment #1 Time:    .1626 hrs

-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length   1230.00 ft  
Slope               .052000 ft/ft  
Unpaved

Avg.Velocity        3.68 ft/sec

Segment #2 Time:    .0929 hrs

-----

Segment #3: Tc: TR-55 Channel

Flow Area           15.0000 sq.ft  
Wetted Perimeter    10.50 ft  
Hydraulic Radius    1.43 ft  
Slope               .022000 ft/ft  
Mannings n           .0300  
Hydraulic Length    1350.00 ft

Avg.Velocity        9.34 ft/sec

Segment #3 Time:    .0401 hrs

-----

=====  
Total Tc:           .2956 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft



==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

::  
 TIME OF CONCENTRATION CALCULATOR  
 ::

Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
 Hydraulic Length    100.00 ft  
 2yr, 24hr P        2.7000 in  
 Slope               .100000 ft/ft

Avg.Velocity           .17 ft/sec

Segment #1 Time:       .1626 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length    1900.00 ft  
 Slope               .052000 ft/ft  
 Unpaved

Avg.Velocity           3.68 ft/sec

Segment #2 Time:       .1434 hrs

=====  
 Total Tc:            .3060 hrs  
 =====

-----  
 Tc Equations used...  
 -----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
 n = Mannings n  
 Lf = Flow length, ft  
 P = 2yr, 24hr Rain depth, inches  
 Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
 Sf = Slope, ft/ft  
 Tc = Time of concentration, hrs  
 Lf = Flow length, ft

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .050000 ft/ft

Avg.Velocity           .13 ft/sec

Segment #1 Time:       .2145 hrs

-----  
Segment #2: Tc: TR-55 Shallow

Hydraulic Length    600.00 ft  
Slope                .060000 ft/ft  
Unpaved

Avg.Velocity           3.95 ft/sec

Segment #2 Time:       .0422 hrs

-----  
Segment #3: Tc: TR-55 Channel

Flow Area            15.0000 sq.ft  
Wetted Perimeter    10.50 ft  
Hydraulic Radius     1.43 ft  
Slope                .044000 ft/ft  
Mannings n           .0250  
Hydraulic Length    2250.00 ft

Avg.Velocity           15.86 ft/sec

Segment #3 Time:       .0394 hrs

=====  
Total Tc:             .2961 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
V = 16.1345 \* (Sf\*\*0.5)

Paved surface:  
V = 20.3282 \* (Sf\*\*0.5)

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length    50.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .050000 ft/ft

Avg.Velocity         .11 ft/sec

Segment #1 Time:    .1232 hrs

-----  
Segment #2: Tc: TR-55 Channel

Flow Area           15.0000 sq.ft  
Wetted Perimeter    10.50 ft  
Hydraulic Radius    1.43 ft  
Slope                .044000 ft/ft  
Mannings n           .0300  
Hydraulic Length    2250.00 ft

Avg.Velocity         13.21 ft/sec

Segment #2 Time:    .0473 hrs

-----  
Total Tc:            .1705 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft



```

:.....:
TIME OF CONCENTRATION CALCULATOR
:.....:

```

Segment #1: Tc: TR-55 Sheet

```

Mannings n      .2500
Hydraulic Length 100.00 ft
2yr, 24hr P     2.7000 in
Slope           .080000 ft/ft

```

Avg.Velocity .18 ft/sec

Segment #1 Time: .1536 hrs

Segment #2: Tc: TR-55 Shallow

```

Hydraulic Length 600.00 ft
Slope            .075000 ft/ft
Unpaved

```

Avg.Velocity 4.42 ft/sec

Segment #2 Time: .0377 hrs

```

=====
Total Tc:      .1914 hrs
=====

```

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
V = 16.1345 \* (Sf\*\*0.5)

Paved surface:  
V = 20.3282 \* (Sf\*\*0.5)

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... B6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

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.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .2500  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .070000 ft/ft

Avg.Velocity           .17 ft/sec

Segment #1 Time:     .1621 hrs

-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length    900.00 ft  
Slope                .067000 ft/ft  
Unpaved

Avg.Velocity           4.18 ft/sec

Segment #2 Time:     .0599 hrs

-----

=====  
Total Tc:            .2219 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... B7

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n            .0250  
Hydraulic Length     50.00 ft  
2yr, 24hr P          2.7000 in  
Slope                 .100000 ft/ft

Avg.Velocity         1.09 ft/sec

Segment #1 Time:     .0128 hrs  
-----

Segment #2: Tc: TR-55 Channel

Flow Area            128.0000 sq.ft  
Wetted Perimeter     30.00 ft  
Hydraulic Radius     4.27 ft  
Slope                 .080000 ft/ft  
Mannings n            .0500  
Hydraulic Length     725.00 ft

Avg.Velocity         22.17 ft/sec

Segment #2 Time:     .0091 hrs  
-----

=====  
Total Tc:             .0219 hrs

Calculated Tc < Min.Tc:  
Use Minimum Tc...  
Use Tc =             .0833 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-.5)) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	32.400			69.00
COMPOSITE AREA & WEIGHTED CN --->		32.400			69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - good	74	32.400			74.00

COMPOSITE AREA & WEIGHTED CN --->                    32.400                    74.00 (74)

.....



RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - good	74	17.100			74.00
Impervious Areas - Paved parking lo	98	.800			98.00

COMPOSITE AREA & WEIGHTED CN ---> 17.900 75.07 (75)

.....

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/2 acre	80	3.800			80.00
Impervious Areas - Paved parking lo	98	.800			98.00

COMPOSITE AREA & WEIGHTED CN --->                    4.600                    83.13 (83)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/2 acre	80	1.650			80.00
Impervious Areas - Paved parking	98	.200			98.00

COMPOSITE AREA & WEIGHTED CN ---> 1.850 81.95 (82)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1 acre	79	5.100			79.00
Impervious Areas - Paved parking lo	98	.300			98.00

COMPOSITE AREA & WEIGHTED CN --->                    5.400                    80.06 (80)

.....

Type.... Runoff CN-Area  
Name.... B7

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RUNOFF CURVE NUMBER DATA

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Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Impervious Areas - Paved parking lo	98	0.300			98.00
Open space (Lawns,parks etc.) - Fai	79	1.800			79.00
COMPOSITE AREA & WEIGHTED CN --->		2.100			81.71 (82)

.....

Name.... DITCH 5A

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 OUTLET 1  
 Outflow HYG file = NONE STORED - DITCH 5A 1

Reach Link Data = DITCH 5A  
 Reach Length = 150.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch 5A (Chn-Trapz.)  
 Overflow Elev. = 791.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 788.80 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
788.80	.00	.000	.0000	.00	.00	.00
788.81	.02	.000	.0070	.00	.02	.05
788.84	.16	.000	.0074	.00	.16	.30
788.88	.50	.001	.0080	.00	.50	.79
788.92	1.00	.001	.0085	.00	1.00	1.45
788.96	1.64	.001	.0091	.00	1.64	2.25
789.00	2.41	.002	.0096	.00	2.41	3.21
789.04	3.31	.002	.0102	.00	3.31	4.30
789.08	4.35	.002	.0107	.00	4.35	5.54
789.12	5.51	.003	.0113	.00	5.51	6.92
789.16	6.82	.003	.0118	.00	6.82	8.45
789.20	8.26	.004	.0124	.00	8.26	10.12
789.24	9.84	.004	.0129	.00	9.84	11.95
789.28	11.56	.005	.0135	.00	11.56	13.92
789.32	13.43	.005	.0140	.00	13.43	16.06
789.36	15.44	.006	.0146	.00	15.44	18.35
789.40	17.60	.007	.0152	.00	17.60	20.80
789.44	19.92	.007	.0157	.00	19.92	23.42
789.48	22.40	.008	.0163	.00	22.40	26.20
789.52	25.03	.009	.0168	.00	25.03	29.16

Name.... DITCH 5A

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 OUTLET 1  
 Outflow HYG file = NONE STORED - DITCH 5A 1

Reach Link Data = DITCH 5A  
 Reach Length = 150.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch 5A (Chn-Trapz.)  
 Overflow Elev. = 791.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 788.80 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
789.56	27.83	.009	.0174	.00	27.83	32.29
789.60	30.79	.010	.0179	.00	30.79	35.59
789.64	33.93	.011	.0185	.00	33.93	39.08
789.68	37.23	.011	.0190	.00	37.23	42.75
789.72	40.71	.012	.0196	.00	40.71	46.60
789.76	44.38	.013	.0201	.00	44.38	50.65
789.80	48.22	.014	.0207	.00	48.22	54.88
789.84	52.24	.015	.0212	.00	52.24	59.31
789.88	56.46	.015	.0218	.00	56.46	63.94
789.92	60.86	.016	.0223	.00	60.86	68.77
789.96	65.45	.017	.0229	.00	65.45	73.81
790.00	70.25	.018	.0234	.00	70.25	79.05
790.04	75.25	.019	.0240	.00	75.25	84.50
790.08	80.45	.020	.0245	.00	80.45	90.18
790.12	85.85	.021	.0251	.00	85.85	96.06
790.16	91.46	.022	.0256	.00	91.46	102.16
790.20	97.29	.023	.0262	.00	97.29	108.49
790.24	103.32	.024	.0267	.00	103.32	115.04
790.28	109.58	.025	.0273	.00	109.58	121.81
790.32	116.06	.026	.0278	.00	116.06	128.83

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 OUTLET 1  
 Outflow HYG file = NONE STORED - DITCH 5A 1

Reach Link Data = DITCH 5A  
 Reach Length = 150.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch 5A (Chn-Trapz.)  
 Overflow Elev. = 791.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 788.80 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
790.36	122.75	.028	.0284	.00	122.75	136.07
790.40	129.67	.029	.0289	.00	129.67	143.54
790.44	136.84	.030	.0295	.00	136.84	151.27
790.48	144.22	.031	.0300	.00	144.22	159.23
790.52	151.83	.032	.0306	.00	151.83	167.43
790.56	159.70	.033	.0311	.00	159.70	175.89
790.60	167.79	.035	.0317	.00	167.79	184.59
790.64	176.14	.036	.0322	.00	176.14	193.56
790.68	184.72	.037	.0328	.00	184.72	202.77
790.72	193.55	.039	.0333	.00	193.55	212.24
790.76	202.65	.040	.0339	.00	202.65	221.98
790.80	211.98	.041	.0344	.00	211.98	231.98
790.84	221.57	.043	.0350	.00	221.57	242.24
790.88	231.43	.044	.0355	.00	231.43	252.79
790.92	241.54	.046	.0361	.00	241.54	263.59
790.96	251.92	.047	.0366	.00	251.92	274.67
791.00	262.58	.048	.0372	.00	262.58	286.04



Name.... DWY1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 1  
 Outflow HYG file = NONE STORED - DWY1 1

Reach Link Data = DWY1  
 Reach Length = 36.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Dwyl (Chn-Circular)  
 Overflow Elev. = 792.14 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 790.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
790.30	.00	.000	.0000	.00	.00	.00
790.34	.03	.000	.0005	.00	.03	.04
790.38	.14	.000	.0006	.00	.14	.16
790.42	.33	.000	.0008	.00	.33	.36
790.46	.60	.000	.0009	.00	.60	.65
790.50	.97	.000	.0010	.00	.97	1.03
790.54	1.42	.000	.0011	.00	1.42	1.50
790.58	1.95	.000	.0011	.00	1.95	2.06
790.62	2.57	.000	.0012	.00	2.57	2.70
790.66	3.28	.000	.0013	.00	3.28	3.43
790.70	4.06	.000	.0013	.00	4.06	4.24
790.74	4.92	.000	.0014	.00	4.92	5.13
790.78	5.86	.000	.0014	.00	5.86	6.09
790.82	6.86	.001	.0015	.00	6.86	7.12
790.86	7.94	.001	.0015	.00	7.94	8.23
790.90	9.08	.001	.0015	.00	9.08	9.39
790.94	10.28	.001	.0015	.00	10.28	10.63
790.98	11.54	.001	.0016	.00	11.54	11.92
791.02	12.85	.001	.0016	.00	12.85	13.26
791.06	14.22	.001	.0016	.00	14.22	14.65

Name.... DWY1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 1  
 Outflow HYG file = NONE STORED - DWY1 1

Reach Link Data = DWY1  
 Reach Length = 36.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Dwy1 (Chn-Circular)  
 Overflow Elev. = 792.14 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 790.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
791.10	15.62	.001	.0016	.00	15.62	16.09
791.14	17.07	.001	.0016	.00	17.07	17.57
791.18	18.56	.001	.0016	.00	18.56	19.09
791.22	20.07	.001	.0016	.00	20.07	20.64
791.26	21.62	.001	.0017	.00	21.62	22.21
791.30	23.18	.001	.0017	.00	23.18	23.81
791.34	24.76	.001	.0017	.00	24.76	25.42
791.38	26.35	.001	.0017	.00	26.35	27.05
791.42	27.95	.001	.0017	.00	27.95	28.68
791.46	29.55	.002	.0017	.00	29.55	30.31
791.50	31.15	.002	.0017	.00	31.15	31.93
791.54	32.73	.002	.0017	.00	32.73	33.55
791.58	34.29	.002	.0017	.00	34.29	35.14
791.62	35.83	.002	.0017	.00	35.83	36.71
791.66	37.34	.002	.0017	.00	37.34	38.25
791.70	38.81	.002	.0017	.00	38.81	39.75
791.74	40.24	.002	.0017	.00	40.24	41.21
791.78	41.61	.002	.0017	.00	41.61	42.61
791.82	42.92	.002	.0017	.00	42.92	43.95
791.86	44.16	.002	.0017	.00	44.16	45.21

Name.... DWY1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY1 1  
 Outflow HYG file = NONE STORED - DWY1 1

Reach Link Data = DWY1  
 Reach Length = 36.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Dwy1 (Chn-Circular)  
 Overflow Elev. = 792.14 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 790.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
791.90	45.31	.002	.0017	.00	45.31	46.39
791.94	46.38	.002	.0017	.00	46.38	47.48
791.98	47.34	.002	.0017	.00	47.34	48.46
792.02	48.17	.002	.0017	.00	48.17	49.32
792.06	48.87	.002	.0017	.00	48.87	50.04
792.10	49.41	.002	.0017	.00	49.41	50.60
792.14	49.76	.002	.0017	.00	49.76	50.97

Name.... DWY2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY2 1  
 Outflow HYG file = NONE STORED - DWY2 1

Reach Link Data = DWY2  
 Reach Length = 125.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Dwy2 (Chn-Circular)  
 Overflow Elev. = 785.44 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 783.60 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
783.60	.00	.000	.0000	.00	.00	.00
783.64	.04	.000	.0016	.00	.04	.06
783.68	.19	.000	.0022	.00	.19	.25
783.72	.46	.000	.0027	.00	.46	.57
783.76	.85	.000	.0031	.00	.85	1.01
783.80	1.36	.000	.0034	.00	1.36	1.59
783.84	1.99	.001	.0037	.00	1.99	2.29
783.88	2.75	.001	.0040	.00	2.75	3.12
783.92	3.62	.001	.0042	.00	3.62	4.07
783.96	4.61	.001	.0044	.00	4.61	5.14
784.00	5.71	.001	.0046	.00	5.71	6.33
784.04	6.92	.001	.0048	.00	6.92	7.63
784.08	8.23	.002	.0049	.00	8.23	9.04
784.12	9.65	.002	.0050	.00	9.65	10.55
784.16	11.16	.002	.0052	.00	11.16	12.16
784.20	12.76	.002	.0053	.00	12.76	13.86
784.24	14.45	.002	.0054	.00	14.45	15.66
784.28	16.22	.003	.0054	.00	16.22	17.53
784.32	18.07	.003	.0055	.00	18.07	19.48
784.36	19.98	.003	.0056	.00	19.98	21.51

Name.... DWY2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
Inflow HYG file = NONE STORED - DWY2 1
Outflow HYG file = NONE STORED - DWY2 1

Reach Link Data = DWY2
Reach Length = 125.00 ft
Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
Reach Channel = Dwy2 (Chn-Circular)
Overflow Elev. = 785.44 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 783.60 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = .0500 hrs

Table with 7 columns: Elevation ft, Outflow cfs, Storage ac-ft, Area acres, Infiltr. cfs, Q Total cfs, 2S/t + O cfs. It contains 20 rows of data showing the relationship between elevation and various flow/storage parameters.

Name.... DWY2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - DWY2 1  
 Outflow HYG file = NONE STORED - DWY2 1

Reach Link Data = DWY2  
 Reach Length = 125.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Dwy2 (Chn-Circular)  
 Overflow Elev. = 785.44 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 783.60 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
785.20	63.70	.008	.0057	.00	63.70	67.44
785.24	65.20	.008	.0057	.00	65.20	69.03
785.28	66.54	.008	.0057	.00	66.54	70.46
785.32	67.72	.008	.0057	.00	67.72	71.71
785.36	68.70	.008	.0057	.00	68.70	72.77
785.40	69.46	.009	.0057	.00	69.46	73.60
785.44	69.95	.009	.0057	.00	69.95	74.15

Name.... LNSNGVL DTCH 5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 6 1  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 5 1

Reach Link Data = LNSNGVL DTCH 5  
 Reach Length = 225.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch5 (Chn-Trapz.)  
 Overflow Elev. = 805.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 802.80 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
802.80	.00	.000	.0000	.00	.00	.00
802.81	.02	.000	.0105	.00	.02	.07
802.84	.16	.000	.0112	.00	.16	.36
802.88	.50	.001	.0120	.00	.50	.94
802.92	1.00	.001	.0128	.00	1.00	1.67
802.96	1.64	.002	.0136	.00	1.64	2.56
803.00	2.41	.002	.0145	.00	2.41	3.61
803.04	3.31	.003	.0153	.00	3.31	4.80
803.08	4.35	.004	.0161	.00	4.35	6.14
803.12	5.51	.004	.0169	.00	5.51	7.63
803.16	6.82	.005	.0178	.00	6.82	9.26
803.20	8.26	.006	.0186	.00	8.26	11.06
803.24	9.84	.007	.0194	.00	9.84	13.00
803.28	11.56	.007	.0202	.00	11.56	15.11
803.32	13.43	.008	.0211	.00	13.43	17.38
803.36	15.44	.009	.0219	.00	15.44	19.81
803.40	17.60	.010	.0227	.00	17.60	22.40
803.44	19.92	.011	.0236	.00	19.92	25.17
803.48	22.40	.012	.0244	.00	22.40	28.11
803.52	25.03	.013	.0252	.00	25.03	31.22

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
Inflow HYG file = NONE STORED - OUTLET 6 1
Outflow HYG file = NONE STORED - LNSNGVL DTCH 5 1

Reach Link Data = LNSNGVL DTCH 5
Reach Length = 225.00 ft
Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
Reach Channel = Lnsngvl Ditch5 (Chn-Trapz.)
Overflow Elev. = 805.00 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 802.80 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .0500 hrs

Table with 7 columns: Elevation ft, Outflow cfs, Storage ac-ft, Area acres, Infiltr. cfs, Q Total cfs, 2S/t + O cfs. It contains 20 rows of data showing the relationship between elevation and various flow/storage parameters.



Name.... LNSNGVL DTCH 5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 6 1  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 5 1

Reach Link Data = LNSNGVL DTCH 5  
 Reach Length = 225.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch5 (Chn-Trapz.)  
 Overflow Elev. = 805.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 802.80 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
804.36	122.75	.041	.0426	.00	122.75	142.72
804.40	129.67	.043	.0434	.00	129.67	150.47
804.44	136.84	.045	.0442	.00	136.84	158.48
804.48	144.22	.047	.0450	.00	144.22	166.73
804.52	151.83	.048	.0459	.00	151.83	175.23
804.56	159.70	.050	.0467	.00	159.70	183.99
804.60	167.79	.052	.0475	.00	167.79	192.99
804.64	176.14	.054	.0483	.00	176.14	202.27
804.68	184.72	.056	.0492	.00	184.72	211.79
804.72	193.55	.058	.0500	.00	193.55	221.58
804.76	202.65	.060	.0508	.00	202.65	231.65
804.80	211.98	.062	.0517	.00	211.98	241.98
804.84	221.57	.064	.0525	.00	221.57	252.58
804.88	231.43	.066	.0533	.00	231.43	263.47
804.92	241.54	.068	.0541	.00	241.54	274.62
804.96	251.92	.071	.0550	.00	251.92	286.05
805.00	262.58	.073	.0558	.00	262.58	297.78

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 7 1  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6 1

Reach Link Data = LNSNGVL DTCH 6  
 Reach Length = 530.00 ft  
 Approx. Total Tt = .0264 hrs (based on Wtd.Q = 7.11 cfs)  
 Reach Channel = Lnsngvl Dtch 6 (Chn-Trapz.)  
 Overflow Elev. = 805.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 802.70 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
802.70	.00	.000	.0000	.00	.00	.00
802.71	.01	.000	.0248	.00	.01	.13
802.75	.16	.001	.0268	.00	.16	.78
802.80	.52	.003	.0292	.00	.52	1.82
802.85	1.05	.004	.0316	.00	1.05	3.08
802.90	1.72	.006	.0341	.00	1.72	4.55
802.95	2.54	.008	.0365	.00	2.54	6.22
803.00	3.51	.009	.0389	.00	3.51	8.10
803.05	4.63	.011	.0414	.00	4.63	10.20
803.10	5.90	.014	.0438	.00	5.90	12.50
803.15	7.33	.016	.0462	.00	7.33	15.02
803.20	8.92	.018	.0487	.00	8.92	17.75
803.25	10.67	.021	.0511	.00	10.67	20.71
803.30	12.58	.023	.0535	.00	12.58	23.89
803.35	14.68	.026	.0560	.00	14.68	27.31
803.40	16.94	.029	.0584	.00	16.94	30.96
803.45	19.38	.032	.0608	.00	19.38	34.84
803.50	22.01	.035	.0633	.00	22.01	38.97
803.55	24.83	.038	.0657	.00	24.83	43.35
803.60	27.85	.042	.0681	.00	27.85	47.99

Name.... LNSNGVL DTCH 6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 7 1  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6 1

Reach Link Data = LNSNGVL DTCH 6  
 Reach Length = 530.00 ft  
 Approx. Total Tt = .0264 hrs (based on Wtd.Q = 7.11 cfs)  
 Reach Channel = Lnsngvl Dtch 6 (Chn-Trapz.)  
 Overflow Elev. = 805.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 802.70 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
803.65	31.06	.045	.0706	.00	31.06	52.88
803.70	34.47	.049	.0730	.00	34.47	58.03
803.75	38.09	.052	.0754	.00	38.09	63.44
803.80	41.92	.056	.0779	.00	41.92	69.12
803.85	45.96	.060	.0803	.00	45.96	75.09
803.90	50.23	.064	.0827	.00	50.23	81.32
803.95	54.71	.068	.0852	.00	54.71	87.84
804.00	59.42	.073	.0876	.00	59.42	94.64
804.05	64.37	.077	.0900	.00	64.37	101.73
804.10	69.55	.082	.0925	.00	69.55	109.13
804.15	74.97	.086	.0949	.00	74.97	116.81
804.20	80.64	.091	.0973	.00	80.64	124.80
804.25	86.55	.096	.0998	.00	86.55	133.10
804.30	92.71	.101	.1022	.00	92.71	141.70
804.35	99.13	.106	.1046	.00	99.13	150.63
804.40	105.81	.112	.1071	.00	105.81	159.87
804.45	112.75	.117	.1095	.00	112.75	169.43
804.50	119.96	.123	.1119	.00	119.96	179.32
804.55	127.44	.128	.1144	.00	127.44	189.53
804.60	135.20	.134	.1168	.00	135.20	200.10

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 7 1  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6 1

Reach Link Data = LNSNGVL DTCH 6  
 Reach Length = 530.00 ft  
 Approx. Total Tt = .0264 hrs (based on Wtd.Q = 7.11 cfs)  
 Reach Channel = Lnsngvl Dtch 6 (Chn-Trapz.)  
 Overflow Elev. = 805.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 802.70 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
804.65	143.23	.140	.1192	.00	143.23	210.99
804.70	151.55	.146	.1217	.00	151.55	222.22
804.75	160.15	.152	.1241	.00	160.15	233.79
804.80	169.04	.158	.1265	.00	169.04	245.71
804.85	178.24	.165	.1290	.00	178.24	258.01
804.90	187.72	.171	.1314	.00	187.72	270.64
804.95	197.51	.178	.1338	.00	197.51	283.63
805.00	207.60	.185	.1363	.00	207.60	296.99

Name.... LNSNGVL DTCH 6A

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - Lnsngvl Rd 1YR  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6A 1

Reach Link Data = LNSNGVL DTCH 6A  
 Reach Length = 1400.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch6A (Chn-Trapz.)  
 Overflow Elev. = 866.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 863.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
863.00	.00	.000	.0000	.00	.00	.00
863.01	.01	.001	.0656	.00	.01	.32
863.06	.19	.004	.0720	.00	.19	2.17
863.12	.60	.009	.0797	.00	.60	4.78
863.18	1.21	.014	.0874	.00	1.21	7.82
863.24	2.00	.019	.0951	.00	2.00	11.26
863.30	2.97	.025	.1028	.00	2.97	15.10
863.36	4.11	.031	.1106	.00	4.11	19.35
863.42	5.45	.038	.1183	.00	5.45	24.00
863.48	6.98	.046	.1260	.00	6.98	29.08
863.54	8.70	.053	.1337	.00	8.70	34.57
863.60	10.63	.062	.1414	.00	10.63	40.49
863.66	12.76	.070	.1491	.00	12.76	46.84
863.72	15.11	.080	.1568	.00	15.11	53.64
863.78	17.68	.089	.1646	.00	17.68	60.88
863.84	20.48	.099	.1723	.00	20.48	68.57
863.90	23.52	.110	.1800	.00	23.52	76.72
863.96	26.79	.121	.1877	.00	26.79	85.33
864.02	30.31	.132	.1954	.00	30.31	94.41
864.08	34.08	.144	.2031	.00	34.08	103.97

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - Lnsngvl Rd 1YR  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6A 1

Reach Link Data = LNSNGVL DTCH 6A  
 Reach Length = 1400.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch6A (Chn-Trapz.)  
 Overflow Elev. = 866.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 863.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
864.14	38.11	.157	.2108	.00	38.11	114.01
864.20	42.41	.170	.2186	.00	42.41	124.55
864.26	46.98	.183	.2263	.00	46.98	135.57
864.32	51.83	.197	.2340	.00	51.83	147.10
864.38	56.96	.211	.2417	.00	56.96	159.14
864.44	62.38	.226	.2494	.00	62.38	171.69
864.50	68.09	.241	.2571	.00	68.09	184.76
864.56	74.11	.257	.2648	.00	74.11	198.35
864.62	80.43	.273	.2725	.00	80.43	212.48
864.68	87.06	.289	.2803	.00	87.06	227.14
864.74	94.02	.306	.2880	.00	94.02	242.34
864.80	101.29	.324	.2957	.00	101.29	258.09
864.86	108.90	.342	.3034	.00	108.90	274.40
864.92	116.85	.360	.3111	.00	116.85	291.26
864.98	125.13	.379	.3188	.00	125.13	308.69
865.04	133.76	.399	.3265	.00	133.76	326.70
865.10	142.74	.418	.3342	.00	142.74	345.27
865.16	152.08	.439	.3420	.00	152.08	364.43
865.22	161.78	.459	.3497	.00	161.78	384.17
865.28	171.86	.481	.3574	.00	171.86	404.53

Name.... LNSNGVL DTCH 6A

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - Lnsngvl Rd 1YR  
 Outflow HYG file = NONE STORED - LNSNGVL DTCH 6A 1

Reach Link Data = LNSNGVL DTCH 6A  
 Reach Length = 1400.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = Lnsngvl Ditch6A (Chn-Trapz.)  
 Overflow Elev. = 866.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 863.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
865.34	182.31	.502	.3651	.00	182.31	425.47
865.40	193.13	.525	.3728	.00	193.13	447.00
865.46	204.34	.547	.3805	.00	204.34	469.15
865.52	215.93	.570	.3882	.00	215.93	491.91
865.58	227.92	.594	.3960	.00	227.92	515.28
865.64	240.31	.618	.4037	.00	240.31	539.28
865.70	253.11	.642	.4114	.00	253.11	563.91
865.76	266.31	.667	.4191	.00	266.31	589.17
865.82	279.93	.692	.4268	.00	279.93	615.07
865.88	293.96	.718	.4345	.00	293.96	641.61
865.94	308.43	.745	.4422	.00	308.43	668.81
866.00	323.32	.771	.4500	.00	323.32	696.65

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-3 O-FLOW 1  
 Outflow HYG file = NONE STORED - RR SHLDR 1

Reach Link Data = RR SHLDR  
 Reach Length = 570.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = RR Shldr (Chn-Trapz.)  
 Overflow Elev. = 772.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 770.40 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
770.40	.00	.000	.0000	.00	.00	.00
770.41	.20	.001	.1335	.00	.20	.84
770.43	1.25	.004	.1387	.00	1.25	3.21
770.46	4.01	.008	.1466	.00	4.01	8.04
770.49	7.98	.013	.1544	.00	7.98	14.20
770.52	13.04	.018	.1623	.00	13.04	21.55
770.55	19.16	.023	.1701	.00	19.16	30.09
770.58	26.29	.028	.1780	.00	26.29	39.74
770.61	34.44	.033	.1858	.00	34.44	50.54
770.64	43.58	.039	.1937	.00	43.58	62.43
770.67	53.75	.045	.2015	.00	53.75	75.47
770.70	64.92	.051	.2094	.00	64.92	89.62
770.73	77.14	.057	.2172	.00	77.14	104.94
770.76	90.37	.064	.2251	.00	90.37	121.37
770.79	104.68	.071	.2329	.00	104.68	139.01
770.82	120.02	.078	.2408	.00	120.02	157.79
770.85	136.48	.085	.2486	.00	136.48	177.81
770.88	154.00	.093	.2565	.00	154.00	198.99
770.91	172.68	.101	.2643	.00	172.68	221.45
770.94	192.44	.109	.2722	.00	192.44	245.11



Name.... RR SHLDR

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-3 O-FLOW 1  
 Outflow HYG file = NONE STORED - RR SHLDR 1

Reach Link Data = RR SHLDR  
 Reach Length = 570.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = RR Shldr (Chn-Trapz.)  
 Overflow Elev. = 772.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 770.40 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
770.97	213.40	.117	.2800	.00	213.40	270.08
771.00	235.48	.126	.2879	.00	235.48	296.28
771.03	258.79	.134	.2957	.00	258.79	323.83
771.06	283.25	.143	.3036	.00	283.25	352.64
771.09	308.99	.153	.3114	.00	308.99	382.84
771.12	335.91	.162	.3193	.00	335.91	414.34
771.15	364.15	.172	.3271	.00	364.15	447.27
771.18	393.66	.182	.3350	.00	393.66	481.60
771.21	424.40	.192	.3428	.00	424.40	517.26
771.24	456.53	.202	.3507	.00	456.53	554.42
771.27	489.91	.213	.3585	.00	489.91	592.95
771.30	524.71	.224	.3664	.00	524.71	633.02
771.33	560.81	.235	.3742	.00	560.81	674.48
771.36	598.36	.246	.3821	.00	598.36	717.54
771.39	637.24	.258	.3899	.00	637.24	762.01
771.42	677.62	.270	.3978	.00	677.62	808.12
771.45	719.36	.282	.4056	.00	719.36	855.68
771.48	762.64	.294	.4135	.00	762.64	904.91
771.51	807.30	.306	.4213	.00	807.30	955.63
771.54	853.55	.319	.4292	.00	853.55	1008.06

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-3 O-FLOW 1  
 Outflow HYG file = NONE STORED - RR SHLDR 1

Reach Link Data = RR SHLDR  
 Reach Length = 570.00 ft  
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)  
 Reach Channel = RR Shldr (Chn-Trapz.)  
 Overflow Elev. = 772.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 770.40 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
771.57	901.21	.332	.4370	.00	901.21	1062.00
771.60	950.49	.345	.4449	.00	950.49	1117.69
771.63	1001.22	.359	.4527	.00	1001.22	1174.93
771.66	1053.61	.373	.4606	.00	1053.61	1233.96
771.69	1107.48	.387	.4685	.00	1107.48	1294.57
771.72	1163.05	.401	.4763	.00	1163.05	1357.00
771.75	1220.12	.415	.4842	.00	1220.12	1421.04
771.78	1278.94	.430	.4920	.00	1278.94	1486.95
771.81	1339.28	.445	.4999	.00	1339.28	1554.49
771.84	1401.42	.460	.5077	.00	1401.42	1623.94
771.87	1465.10	.475	.5156	.00	1465.10	1695.05
771.90	1530.62	.491	.5234	.00	1530.62	1768.12
771.93	1597.85	.507	.5313	.00	1597.85	1843.02
771.96	1666.68	.523	.5391	.00	1666.68	1919.61
771.99	1737.40	.539	.5470	.00	1737.40	1998.22
772.00	1761.22	.544	.5496	.00	1761.22	2024.68

Name.... RR SWALE 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 9 1  
 Outflow HYG file = NONE STORED - RR SWALE 1 1

Reach Link Data = RR SWALE 1  
 Reach Length = 350.00 ft  
 Approx. Total Tt = .0266 hrs (based on Wtd.Q = 10.18 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
694.00	.00	.000	.0000	.00	.00	.00
694.01	.03	.001	.0644	.00	.03	.34
694.16	2.95	.010	.0668	.00	2.95	8.03
694.32	9.36	.021	.0694	.00	9.36	19.71
694.48	18.37	.033	.0720	.00	18.37	34.20
694.64	29.67	.044	.0746	.00	29.67	51.17
694.80	43.05	.057	.0771	.00	43.05	70.43
694.96	58.42	.069	.0797	.00	58.42	91.87
695.12	75.67	.082	.0823	.00	75.67	115.40
695.28	94.78	.095	.0848	.00	94.78	140.97
695.44	115.68	.109	.0874	.00	115.68	168.54
695.60	138.36	.123	.0900	.00	138.36	198.09
695.76	162.82	.138	.0926	.00	162.82	229.62
695.92	189.03	.153	.0951	.00	189.03	263.10
696.08	217.00	.168	.0977	.00	217.00	298.54
696.24	246.72	.184	.1003	.00	246.72	335.92
696.40	278.21	.201	.1028	.00	278.21	375.28
696.56	311.46	.217	.1054	.00	311.46	416.60
696.72	346.49	.234	.1080	.00	346.49	459.89
696.88	383.33	.252	.1106	.00	383.33	505.18

Name.... RR SWALE 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 9 1  
 Outflow HYG file = NONE STORED - RR SWALE 1 1

Reach Link Data = RR SWALE 1  
 Reach Length = 350.00 ft  
 Approx. Total Tt = .0266 hrs (based on Wtd.Q = 10.18 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
697.04	421.95	.270	.1131	.00	421.95	552.47
697.20	462.41	.288	.1157	.00	462.41	601.79
697.36	504.68	.307	.1183	.00	504.68	653.12
697.52	548.82	.326	.1208	.00	548.82	706.52
697.68	594.81	.345	.1234	.00	594.81	761.96
697.84	642.70	.365	.1260	.00	642.70	819.51
698.00	692.47	.386	.1286	.00	692.47	879.13
698.16	744.16	.406	.1311	.00	744.16	940.88
698.32	797.80	.428	.1337	.00	797.80	1004.78
698.48	853.39	.449	.1363	.00	853.39	1070.81
698.64	910.97	.471	.1388	.00	910.97	1139.05
698.80	970.52	.494	.1414	.00	970.52	1209.45
698.96	1032.11	.516	.1440	.00	1032.11	1282.10
699.12	1095.71	.540	.1466	.00	1095.71	1356.94
699.28	1161.39	.563	.1491	.00	1161.39	1434.07
699.44	1229.12	.587	.1517	.00	1229.12	1513.45
699.60	1298.94	.612	.1543	.00	1298.94	1595.11
699.76	1370.90	.637	.1568	.00	1370.90	1679.12
699.92	1444.96	.662	.1594	.00	1444.96	1765.43
700.08	1521.21	.688	.1620	.00	1521.21	1854.13

Name.... RR SWALE 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 9 1  
 Outflow HYG file = NONE STORED - RR SWALE 1 1

Reach Link Data = RR SWALE 1  
 Reach Length = 350.00 ft  
 Approx. Total Tt = .0266 hrs (based on Wtd.Q = 10.18 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
700.24	1599.60	.714	.1646	.00	1599.60	1945.16
700.40	1680.22	.741	.1671	.00	1680.22	2038.62
700.56	1763.02	.767	.1697	.00	1763.02	2134.46
700.72	1848.05	.795	.1723	.00	1848.05	2232.73
700.88	1935.37	.823	.1748	.00	1935.37	2333.50
701.04	2024.93	.851	.1774	.00	2024.93	2436.69
701.20	2116.82	.879	.1800	.00	2116.82	2542.42
701.36	2210.99	.908	.1826	.00	2210.99	2650.62
701.52	2307.52	.938	.1851	.00	2307.52	2761.40
701.68	2406.38	.968	.1877	.00	2406.38	2874.69
701.84	2507.64	.998	.1903	.00	2507.64	2990.59
702.00	2611.26	1.028	.1928	.00	2611.26	3109.04

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 11 1  
 Outflow HYG file = NONE STORED - RR SWALE 2 1

Reach Link Data = RR SWALE 2  
 Reach Length = 400.00 ft  
 Approx. Total Tt = .0280 hrs (based on Wtd.Q = 12.56 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
694.00	.00	.000	.0000	.00	.00	.00
694.01	.03	.001	.0736	.00	.03	.39
694.16	2.95	.012	.0764	.00	2.95	8.76
694.32	9.36	.024	.0793	.00	9.36	21.19
694.48	18.37	.037	.0823	.00	18.37	36.46
694.64	29.67	.051	.0852	.00	29.67	54.25
694.80	43.05	.065	.0882	.00	43.05	74.34
694.96	58.42	.079	.0911	.00	58.42	96.65
695.12	75.67	.094	.0940	.00	75.67	121.07
695.28	94.78	.109	.0970	.00	94.78	147.57
695.44	115.68	.125	.0999	.00	115.68	176.10
695.60	138.36	.141	.1028	.00	138.36	206.63
695.76	162.82	.158	.1058	.00	162.82	239.17
695.92	189.03	.175	.1087	.00	189.03	273.68
696.08	217.00	.193	.1117	.00	217.00	310.19
696.24	246.72	.211	.1146	.00	246.72	348.66
696.40	278.21	.229	.1175	.00	278.21	389.15
696.56	311.46	.248	.1205	.00	311.46	431.61
696.72	346.49	.268	.1234	.00	346.49	476.09
696.88	383.33	.288	.1264	.00	383.33	522.59

Name.... RR SWALE 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 11 1  
 Outflow HYG file = NONE STORED - RR SWALE 2 1

Reach Link Data = RR SWALE 2  
 Reach Length = 400.00 ft  
 Approx. Total Tt = .0280 hrs (based on Wtd.Q = 12.56 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
697.04	421.95	.308	.1293	.00	421.95	571.11
697.20	462.41	.329	.1322	.00	462.41	621.70
697.36	504.68	.350	.1352	.00	504.68	674.32
697.52	548.82	.372	.1381	.00	548.82	729.04
697.68	594.81	.395	.1410	.00	594.81	785.84
697.84	642.70	.418	.1440	.00	642.70	844.77
698.00	692.47	.441	.1469	.00	692.47	905.80
698.16	744.16	.465	.1499	.00	744.16	968.98
698.32	797.80	.489	.1528	.00	797.80	1034.35
698.48	853.39	.513	.1557	.00	853.39	1101.88
698.64	910.97	.539	.1587	.00	910.97	1171.63
698.80	970.52	.564	.1616	.00	970.52	1243.59
698.96	1032.11	.590	.1646	.00	1032.11	1317.81
699.12	1095.71	.617	.1675	.00	1095.71	1394.26
699.28	1161.39	.644	.1704	.00	1161.39	1473.03
699.44	1229.12	.671	.1734	.00	1229.12	1554.07
699.60	1298.94	.699	.1763	.00	1298.94	1637.42
699.76	1370.90	.728	.1792	.00	1370.90	1723.15
699.92	1444.96	.757	.1822	.00	1444.96	1811.21
700.08	1521.21	.786	.1851	.00	1521.21	1901.69

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - OUTLET 11 1  
 Outflow HYG file = NONE STORED - RR SWALE 2 1

Reach Link Data = RR SWALE 2  
 Reach Length = 400.00 ft  
 Approx. Total Tt = .0280 hrs (based on Wtd.Q = 12.56 cfs)  
 Reach Channel = RR Swale2 (Chn-Trapz.)  
 Overflow Elev. = 702.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 694.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
700.24	1599.60	.816	.1881	.00	1599.60	1994.53
700.40	1680.22	.846	.1910	.00	1680.22	2089.82
700.56	1763.02	.877	.1939	.00	1763.02	2187.53
700.72	1848.05	.908	.1969	.00	1848.05	2287.69
700.88	1935.37	.940	.1998	.00	1935.37	2390.37
701.04	2024.93	.972	.2028	.00	2024.93	2495.51
701.20	2116.82	1.005	.2057	.00	2116.82	2603.22
701.36	2210.99	1.038	.2086	.00	2210.99	2713.43
701.52	2307.52	1.072	.2116	.00	2307.52	2826.24
701.68	2406.38	1.106	.2145	.00	2406.38	2941.59
701.84	2507.64	1.140	.2174	.00	2507.64	3059.58
702.00	2611.26	1.175	.2204	.00	2611.26	3180.15



REQUESTED POND WS ELEVATIONS:

Min. Elev.= 732.40 ft  
 Increment = .10 ft  
 Max. Elev.= 738.40 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	732.400	738.400

Type.... Outlet Input Data  
Name.... Clvrt 10

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 3.0000 ft  
Upstream Invert = 732.40 ft  
Dnstream Invert = 703.60 ft  
Horiz. Length = 420.00 ft  
Barrel Length = 420.99 ft  
Barrel Slope = .06857 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0120  
Ke = .5000 (forward entrance loss)  
Kb = .006159 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.125  
T2 ratio (HW/D) = 1.273  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 735.78 ft ---> Flow = 42.85 cfs  
At T2 Elev = 736.22 ft ---> Flow = 48.97 cfs

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt 11

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 703.40 ft  
Increment = .10 ft  
Max. Elev.= 725.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	703.400	725.000

Name.... Clvrt 11

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular  
 -----  
 No. Barrels = 1  
 Barrel Diameter = 3.0000 ft  
 Upstream Invert = 703.40 ft  
 Dnstream Invert = 701.00 ft  
 Horiz. Length = 120.00 ft  
 Barrel Length = 120.02 ft  
 Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0120  
 Ke = .5000 (forward entrance loss)  
 Kb = .006159 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.150  
 T2 ratio (HW/D) = 1.297  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 706.85 ft ---> Flow = 42.85 cfs  
 At T2 Elev = 707.29 ft ---> Flow = 48.97 cfs

Type.... Outlet Input Data  
Name.... Clvrt 11

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 803.40 ft  
Increment = .10 ft  
Max. Elev.= 820.00 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
Culvert-Circular	C0	---> TW	803.400	820.000
TW SETUP, DS Channel				

Name.... Clvrt 7

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

## OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular

-----  
 No. Barrels = 1  
 Barrel Diameter = 3.0000 ft  
 Upstream Invert = 803.40 ft  
 Dnstream Invert = 802.70 ft  
 Horiz. Length = 35.00 ft  
 Barrel Length = 35.01 ft  
 Barrel Slope = .02000 ft/ft

## OUTLET CONTROL DATA...

Mannings n = .0100  
 Ke = .5000 (forward entrance loss)  
 Kb = .004277 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

## INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.150  
 T2 ratio (HW/D) = 1.297  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.

Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 806.85 ft ---> Flow = 42.85 cfs

At T2 Elev = 807.29 ft ---> Flow = 48.97 cfs



OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 770.20 ft  
 Increment = .10 ft  
 Max. Elev.= 780.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	770.200	780.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular  
 -----  
 No. Barrels = 1  
 Barrel Diameter = 3.0000 ft  
 Upstream Invert = 770.20 ft  
 Dnstream Invert = 764.60 ft  
 Horiz. Length = 75.00 ft  
 Barrel Length = 75.21 ft  
 Barrel Slope = .07467 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
 Ke = .0000 (forward entrance loss)  
 Kb = .007228 (per ft of full flow)  
 Kr = .0100 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 0  
 Inlet Control K = .0001  
 Inlet Control M = .0001  
 Inlet Control c = .00010  
 Inlet Control Y = .0001  
 T1 ratio (HW/D) = 1.190  
 T2 ratio (HW/D) = .151  
 Slope Factor = 2.000

Use unsubmerged inlet control Form 0 equ. below T1 elev.  
 Use submerged inlet control Form 0 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 773.77 ft ---> Flow = 42.85 cfs  
 At T2 Elev = 770.65 ft ---> Flow = 48.97 cfs

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 764.40 ft  
 Increment = .10 ft  
 Max. Elev.= 790.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	764.400	790.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular

-----  
No. Barrels = 1  
Barrel Diameter = 3.0000 ft  
Upstream Invert = 764.40 ft  
Dnstream Invert = 724.60 ft  
Horiz. Length = 560.00 ft  
Barrel Length = 561.41 ft  
Barrel Slope = .07107 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .0000 (forward entrance loss)  
Kb = .007228 (per ft of full flow)  
Kr = .0000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 0  
Inlet Control K = .0010  
Inlet Control M = .0010  
Inlet Control c = .00100  
Inlet Control Y = .0010  
T1 ratio (HW/D) = 1.006  
T2 ratio (HW/D) = -.019  
Slope Factor = -.500

Use unsubmerged inlet control Form 0 equ. below T1 elev.  
Use submerged inlet control Form 0 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 767.42 ft ---> Flow = 42.85 cfs  
At T2 Elev = 764.34 ft ---> Flow = 48.97 cfs

OUTLET STRUCTURE INPUT DATA

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

Type.... Outlet Input Data  
Name.... Clvrt12

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 666.00 ft  
Increment = .10 ft  
Max. Elev.= 672.00 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
Culvert-Circular	C0	---> TW	666.000	672.000
TW SETUP, DS Channel				



Name.... Clvrt12

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

## OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular

-----  
No. Barrels = 1  
Barrel Diameter = 4.0000 ft  
Upstream Invert = 666.00 ft  
Dnstream Invert = 660.10 ft  
Horiz. Length = 80.00 ft  
Barrel Length = 80.22 ft  
Barrel Slope = .07375 ft/ft

## OUTLET CONTROL DATA...

Mannings n = .0240  
Ke = .5000 (forward entrance loss)  
Kb = .016787 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

## INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0078  
Inlet Control M = 2.0000  
Inlet Control c = .03790  
Inlet Control Y = .6900  
T1 ratio (HW/D) = 1.099  
T2 ratio (HW/D) = 1.260  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 670.40 ft ---> Flow = 87.96 cfs  
At T2 Elev = 671.04 ft ---> Flow = 100.53 cfs

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 803.40 ft  
Increment = .10 ft  
Max. Elev.= 820.00 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
Culvert-Circular	C0	---> TW	806.100	820.000
TW SETUP, DS Channel				

Name.... Clvrt6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

## OUTLET STRUCTURE INPUT DATA

```

Structure ID      = C0
Structure Type    = Culvert-Circular
-----
No. Barrels      = 1
Barrel Diameter   = 2.5000 ft
Upstream Invert  = 806.10 ft
Dnstream Invert  = 802.80 ft
Horiz. Length    = 55.00 ft
Barrel Length     = 55.10 ft
Barrel Slope     = .06000 ft/ft

```

## OUTLET CONTROL DATA...

```

Mannings n       = .0100
Ke                = .5000 (forward entrance loss)
Kb                = .005454 (per ft of full flow)
Kr                = .5000 (reverse entrance loss)
HW Convergence   = .001 +/- ft

```

## INLET CONTROL DATA...

```

Equation form    = 1
Inlet Control K  = .0098
Inlet Control M  = 2.0000
Inlet Control c  = .03980
Inlet Control Y  = .6700
T1 ratio (HW/D)  = .000
T2 ratio (HW/D)  = 1.277
Slope Factor     = -.500

```

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

```

At T1 Elev = 806.10 ft ---> Flow = 27.16 cfs
At T2 Elev = 809.29 ft ---> Flow = 31.05 cfs

```

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 666.00 ft  
 Increment = .10 ft  
 Max. Elev.= 672.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	670.500	672.000

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 670.50 ft  
Weir Length = 100.00 ft  
Weir Coeff. = 2.800000  
  
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

Type.... Outlet Input Data  
Name.... Weir 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 764.40 ft  
Increment = .10 ft  
Max. Elev.= 790.00 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-Rectangular	W0	---> TW	770.500	790.000
TW SETUP, DS Channel				



Type.... Outlet Input Data  
Name.... Weir 3

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 770.50 ft  
Weir Length = 100.00 ft  
Weir Coeff. = 2.800000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

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PondPack Modeling Output

Basin C

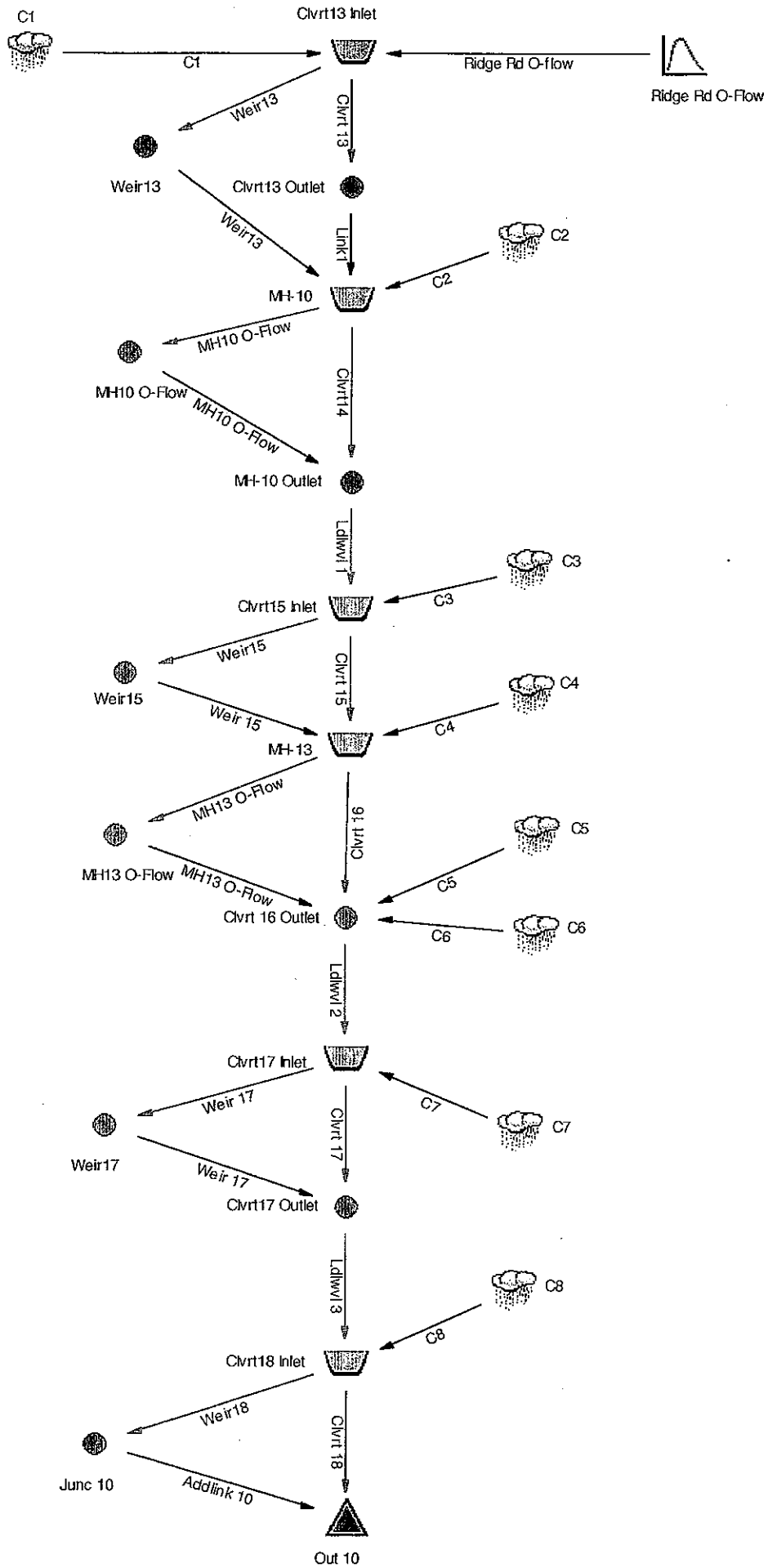


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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID
1	2.3000	Synthetic Curve	TypeII 24hr
5	3.4000	Synthetic Curve	TypeII 24hr
10	3.9000	Synthetic Curve	TypeII 24hr
25	4.6000	Synthetic Curve	TypeII 24hr
50	4.9000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY

SCS Unit Hydrograph Method

Hydrograph File Import Option Used For 1 node(s)

(\*Node=Outfall; +Node=Diversion;)

(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
C1	AREA	1	.008		12.0000	.13		
C1	AREA	5	.017		12.0000	.28		
C1	AREA	10	.022		12.0000	.36		
C1	AREA	25	.029		12.0000	.46		
C1	AREA	50	.032		12.0000	.51		
C2	AREA	1	.011		12.0000	.18		
C2	AREA	5	.024		12.0000	.39		
C2	AREA	10	.030		12.0000	.49		
C2	AREA	25	.039		12.0000	.64		
C2	AREA	50	.043		12.0000	.71		



Name.... Watershed

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method  
Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
C3	AREA	1	.016		11.9500	.28		
C3	AREA	5	.035		11.9500	.62		
C3	AREA	10	.044		11.9500	.79		
C3	AREA	25	.057		11.9500	1.03		
C3	AREA	50	.063		11.9500	1.13		
C4	AREA	1	.013		11.9500	.23		
C4	AREA	5	.027		11.9500	.49		
C4	AREA	10	.034		11.9500	.62		
C4	AREA	25	.045		11.9000	.81		
C4	AREA	50	.050		11.9000	.90		
C5	AREA	1	.000		.0500	.00		
C5	AREA	5	.005		12.0500	.03		
C5	AREA	10	.009		12.0000	.09		
C5	AREA	25	.016		12.0000	.22		
C5	AREA	50	.019		12.0000	.28		
C6	AREA	1	.380		12.0500	5.03		
C6	AREA	5	1.021		12.0000	16.47		
C6	AREA	10	1.372		12.0000	22.62		
C6	AREA	25	1.909		12.0000	31.89		
C6	AREA	50	2.152		12.0000	36.05		
C7	AREA	1	.000		.0500	.00		
C7	AREA	5	.000		.0500	.00		
C7	AREA	10	.000		.0500	.00		
C7	AREA	25	.002		13.4500	.00		
C7	AREA	50	.004		14.6000	.00		
C8	AREA	1	.004		14.4000	.00		
C8	AREA	5	.026		12.0500	.25		
C8	AREA	10	.041		12.0000	.50		
C8	AREA	25	.067		12.0000	.99		
C8	AREA	50	.080		12.0000	1.22		

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method  
Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CLVRT 16	OUTLET	JCT	1		12.0500	5.73		
CLVRT 16	OUTLET	JCT	5		12.3500	21.39		
CLVRT 16	OUTLET	JCT	10		12.3500	52.88		
CLVRT 16	OUTLET	JCT	25		12.4000	101.79		
CLVRT 16	OUTLET	JCT	50		12.4000	135.81		
CLVRT13	INLETIN	POND	1		12.0000	.13		
CLVRT13	INLETIN	POND	5		12.2000	20.92		
CLVRT13	INLETIN	POND	10		12.2500	52.46		
CLVRT13	INLETIN	POND	25		12.2500	103.06		
CLVRT13	INLETIN	POND	50		12.3000	138.49		
+CLVRT13	INLETOUT	POND	1		12.0500	.13	652.90	.000
+CLVRT13	INLETOUT	POND	5		12.2500	20.86	655.75	.006
+CLVRT13	INLETOUT	POND	10		12.2500	51.35	656.04	.007
+CLVRT13	INLETOUT	POND	25		12.3000	101.18	656.36	.007
+CLVRT13	INLETOUT	POND	50		12.3000	136.64	656.56	.008
CLVRT13	OUTLET	JCT	1		12.0500	.13		
CLVRT13	OUTLET	JCT	5		12.2500	12.93		
CLVRT13	OUTLET	JCT	10		12.2500	13.77		
CLVRT13	OUTLET	JCT	25		12.3000	14.67		
CLVRT13	OUTLET	JCT	50		12.3000	15.18		
CLVRT15	INLETIN	POND	1		12.0000	.53		
CLVRT15	INLETIN	POND	5		12.3000	19.58		
CLVRT15	INLETIN	POND	10		12.3000	50.19		
CLVRT15	INLETIN	POND	25		12.3500	99.01		
CLVRT15	INLETIN	POND	50		12.3500	133.43		
+CLVRT15	INLETOUT	POND	1		12.0500	.53	616.11	.000
+CLVRT15	INLETOUT	POND	5		12.3500	18.24	620.08	.004
+CLVRT15	INLETOUT	POND	10		12.3500	49.69	620.62	.004
+CLVRT15	INLETOUT	POND	25		12.3500	98.48	621.14	.004
+CLVRT15	INLETOUT	POND	50		12.4000	130.48	621.43	.005

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CLVRT17	INLETIN	POND	1		12.0500	5.67		
CLVRT17	INLETIN	POND	5		12.3500	20.38		
CLVRT17	INLETIN	POND	10		12.4000	52.13		
CLVRT17	INLETIN	POND	25		12.4000	101.62		
CLVRT17	INLETIN	POND	50		12.4000	133.11		
+CLVRT17	INLETOUT	POND	1		12.0500	5.34	517.08	.002
+CLVRT17	INLETOUT	POND	5		12.4000	20.25	518.40	.005
+CLVRT17	INLETOUT	POND	10		12.4000	51.45	520.29	.009
+CLVRT17	INLETOUT	POND	25		12.4500	99.65	520.89	.010
+CLVRT17	INLETOUT	POND	50		12.4500	132.80	521.20	.011
CLVRT17	OUTLET	JCT	1		12.0500	5.34		
CLVRT17	OUTLET	JCT	5		12.4000	20.25		
CLVRT17	OUTLET	JCT	10		12.4000	51.45		
CLVRT17	OUTLET	JCT	25		12.4500	99.65		
CLVRT17	OUTLET	JCT	50		12.4500	132.80		
CLVRT18	INLETIN	POND	1		12.1000	5.33		
CLVRT18	INLETIN	POND	5		12.4000	19.51		
CLVRT18	INLETIN	POND	10		12.4500	50.78		
CLVRT18	INLETIN	POND	25		12.4500	99.75		
CLVRT18	INLETIN	POND	50		12.4500	130.77		
+CLVRT18	INLETOUT	POND	1		12.1500	5.06	496.54	.003
+CLVRT18	INLETOUT	POND	5		12.4500	19.37	497.83	.006
+CLVRT18	INLETOUT	POND	10		12.4500	50.18	499.14	.008
+CLVRT18	INLETOUT	POND	25		12.4500	97.81	499.37	.009
+CLVRT18	INLETOUT	POND	50		12.5000	130.18	499.50	.009
JUNC 10	JCT		1		.0500	.00		
JUNC 10	JCT		5		.0500	.00		
JUNC 10	JCT		10		12.4500	14.25		
JUNC 10	JCT		25		12.4500	59.95		
JUNC 10	JCT		50		12.5000	91.35		

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
MH-10	IN	POND	1		12.0000	.31		
MH-10	IN	POND	5		12.2500	20.95		
MH-10	IN	POND	10		12.2500	51.46		
MH-10	IN	POND	25		12.3000	101.30		
MH-10	IN	POND	50		12.3000	136.77		
+MH-10	OUT	POND	1		12.0500	.30	644.37	.000
+MH-10	OUT	POND	5		12.2500	19.50	647.48	.001
+MH-10	OUT	POND	10		12.3000	51.08	648.65	.002
+MH-10	OUT	POND	25		12.3000	100.66	649.19	.002
+MH-10	OUT	POND	50		12.3500	134.17	649.49	.002
MH-10	OUTLET	JCT	1		12.0500	.30		
MH-10	OUTLET	JCT	5		12.2500	19.50		
MH-10	OUTLET	JCT	10		12.3000	51.08		
MH-10	OUTLET	JCT	25		12.3000	100.66		
MH-10	OUTLET	JCT	50		12.3500	134.16		
MH-13	IN	POND	1		12.0000	.72		
MH-13	IN	POND	5		12.3500	18.31		
MH-13	IN	POND	10		12.3500	49.77		
MH-13	IN	POND	25		12.3500	98.58		
MH-13	IN	POND	50		12.4000	130.59		
+MH-13	OUT	POND	1		12.0500	.70	584.73	.000
+MH-13	OUT	POND	5		12.3500	18.30	587.00	.001
+MH-13	OUT	POND	10		12.3500	48.84	588.76	.002
+MH-13	OUT	POND	25		12.4000	96.82	589.31	.002
+MH-13	OUT	POND	50		12.4000	130.28	589.62	.002
MH10	O-FLOW	JCT	1		.0500	.00		
MH10	O-FLOW	JCT	5		.0500	.00		
MH10	O-FLOW	JCT	10		12.3000	26.33		
MH10	O-FLOW	JCT	25		12.3000	73.80		
MH10	O-FLOW	JCT	50		12.3500	106.24		

MASTER NETWORK SUMMARY  
 SCS Unit Hydrograph Method  
 Hydrograph File Import Option Used For 1 node(s)

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
MH13	O-FLOW	JCT	1		.0500	.00		
MH13	O-FLOW	JCT	5		.0500	.00		
MH13	O-FLOW	JCT	10		12.3500	20.57		
MH13	O-FLOW	JCT	25		12.4000	66.24		
MH13	O-FLOW	JCT	50		12.4000	98.47		
*OUT 10		JCT	1		12.1500	5.06		
*OUT 10		JCT	5		12.4500	19.37		
*OUT 10		JCT	10		12.4500	50.18		
*OUT 10		JCT	25		12.4500	97.81		
*OUT 10		JCT	50		12.5000	130.18		
RIDGE RD	O-FLOW	HYG	1		11.9500	.00		
RIDGE RD	O-FLOW	HYG	5		12.2000	20.83		
RIDGE RD	O-FLOW	HYG	10		12.2500	52.37		
RIDGE RD	O-FLOW	HYG	25		12.2500	102.95		
RIDGE RD	O-FLOW	HYG	50	R	12.3000	138.39		
WEIR13		JCT	1		.0500	.00		
WEIR13		JCT	5		12.2500	7.93		
WEIR13		JCT	10		12.2500	37.58		
WEIR13		JCT	25		12.3000	86.51		
WEIR13		JCT	50		12.3000	121.46		
WEIR15		JCT	1		.0500	.00		
WEIR15		JCT	5		12.3500	1.74		
WEIR15		JCT	10		12.3500	31.95		
WEIR15		JCT	25		12.3500	79.63		
WEIR15		JCT	50		12.4000	111.05		
WEIR17		JCT	1		.0500	.00		
WEIR17		JCT	5		.0500	.00		
WEIR17		JCT	10		12.4000	10.13		
WEIR17		JCT	25		12.4500	54.17		
WEIR17		JCT	50		12.4500	85.28		

Type.... Design Storms  
Name.... Tompkins County

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

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Title... Project Date: 11/19/2008  
Project Engineer: BMT  
Project Title: Ludlowville Storm Drainage  
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 1 yr  
Total Rainfall Depth= 2.3000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 5 yr  
Total Rainfall Depth= 3.4000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 3.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 25 yr  
Total Rainfall Depth= 4.6000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 50 yr  
Total Rainfall Depth= 4.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Tc Calcs  
Name.... C1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .2500  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .060000 ft/ft  
  
Avg.Velocity         .16 ft/sec

Segment #1 Time:     .1724 hrs  
-----

Segment #2: Tc: TR-55 Channel

Flow Area            3.0000 sq.ft  
Wetted Perimeter     4.00 ft  
Hydraulic Radius     .75 ft  
Slope                .120000 ft/ft  
Mannings n           .0300  
Hydraulic Length     150.00 ft  
  
Avg.Velocity         14.20 ft/sec

Segment #2 Time:     .0029 hrs  
-----

=====  
Total Tc:            .1753 hrs  
=====

-----  
Tc Equations used...  
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==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft



.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .2500  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope                .100000 ft/ft

Avg.Velocity         .20 ft/sec

Segment #1 Time:    .1405 hrs  
-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length    250.00 ft  
Slope                .100000 ft/ft  
Unpaved

Avg.Velocity         5.10 ft/sec

Segment #2 Time:    .0136 hrs  
-----

Segment #3: Tc: TR-55 Channel

Flow Area           4.0000 sq.ft  
Wetted Perimeter    3.00 ft  
Hydraulic Radius    1.33 ft  
Slope                .110000 ft/ft  
Mannings n           .0300  
Hydraulic Length    70.00 ft

Avg.Velocity         19.96 ft/sec

Segment #3 Time:    .0010 hrs  
-----

=====  
Total Tc:            .1551 hrs  
=====

Type.... Tc Calcs  
Name.... C2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

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-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
V = 16.1345 \* (Sf\*\*0.5)

Paved surface:  
V = 20.3282 \* (Sf\*\*0.5)

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... C2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

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==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$
$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... C3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .2500  
Hydraulic Length     70.00 ft  
2yr, 24hr P         2.7000 in  
Slope                 .100000 ft/ft

Avg.Velocity           .18 ft/sec

Segment #1 Time:     .1056 hrs  
-----

Segment #2: Tc: TR-55 Channel

Flow Area            4.0000 sq.ft  
Wetted Perimeter     3.00 ft  
Hydraulic Radius     1.33 ft  
Slope                 .110000 ft/ft  
Mannings n           .0300  
Hydraulic Length     180.00 ft

Avg.Velocity           19.96 ft/sec

Segment #2 Time:     .0025 hrs  
-----

=====  
Total Tc:             .1082 hrs  
=====

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

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-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-.5)) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .0250  
Hydraulic Length 70.00 ft  
2yr, 24hr P 2.7000 in  
Slope .120000 ft/ft

Avg.Velocity 1.25 ft/sec

Segment #1 Time: .0156 hrs

Segment #2: Tc: TR-55 Channel

Flow Area 7.0000 sq.ft  
Wetted Perimeter 5.00 ft  
Hydraulic Radius 1.40 ft  
Slope .100000 ft/ft  
Mannings n .0250  
Hydraulic Length 250.00 ft

Avg.Velocity 23.59 ft/sec

Segment #2 Time: .0029 hrs

=====  
Total Tc: .0185 hrs

Calculated Tc < Min.Tc:  
Use Minimum Tc...  
Use Tc = .0833 hrs  
=====

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-.5)) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... C5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .2500  
Hydraulic Length 60.00 ft  
2yr, 24hr P 2.7000 in  
Slope .120000 ft/ft

Avg.Velocity .19 ft/sec

Segment #1 Time: .0868 hrs

Segment #2: Tc: TR-55 Channel

Flow Area 6.0000 sq.ft  
Wetted Perimeter 7.00 ft  
Hydraulic Radius .86 ft  
Slope .140000 ft/ft  
Mannings n .0300  
Hydraulic Length 270.00 ft

Avg.Velocity 16.77 ft/sec

Segment #2 Time: .0045 hrs

=====  
Total Tc: .0913 hrs  
=====



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 Tc Equations used...  
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==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
 n = Mannings n  
 Lf = Flow length, ft  
 P = 2yr, 24hr Rain depth, inches  
 Sf = Slope, %

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
 Aq = Flow area, sq.ft.  
 Wp = Wetted perimeter, ft  
 V = Velocity, ft/sec  
 Sf = Slope, ft/ft  
 n = Mannings n  
 Tc = Time of concentration, hrs  
 Lf = Flow length, ft

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n .0300  
Hydraulic Length 100.00 ft  
2yr, 24hr P 2.7000 in  
Slope .100000 ft/ft

Avg.Velocity 1.08 ft/sec

Segment #1 Time: .0258 hrs  
-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 1900.00 ft  
Slope .100000 ft/ft  
Unpaved

Avg.Velocity 5.10 ft/sec

Segment #2 Time: .1034 hrs  
-----

Segment #3: Tc: TR-55 Channel

Flow Area 20.0000 sq.ft  
Wetted Perimeter 20.00 ft  
Hydraulic Radius 1.00 ft  
Slope .100000 ft/ft  
Mannings n .0300  
Hydraulic Length 550.00 ft

Avg.Velocity 15.71 ft/sec

Segment #3 Time: .0097 hrs  
-----

=====  
Total Tc: .1389 hrs  
=====

Type.... Tc Calcs  
Name.... C6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

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-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
V = 16.1345 \* (Sf\*\*0.5)

Paved surface:  
V = 20.3282 \* (Sf\*\*0.5)

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

Type.... Tc Calcs  
Name.... C6

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{*-0.5})) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

Where: R = Hydraulic radius  
Aq = Flow area, sq.ft.  
Wp = Wetted perimeter, ft  
V = Velocity, ft/sec  
Sf = Slope, ft/ft  
n = Mannings n  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .220000 ft/ft

Avg.Velocity .23 ft/sec

Segment #1 Time: .1186 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 150.00 ft
Slope .200000 ft/ft
Unpaved

Avg.Velocity 7.22 ft/sec

Segment #2 Time: .0058 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 5.0000 sq.ft
Wetted Perimeter 5.00 ft
Hydraulic Radius 1.00 ft
Slope .120000 ft/ft
Mannings n .0350
Hydraulic Length 150.00 ft

Avg.Velocity 14.75 ft/sec

Segment #3 Time: .0028 hrs

Total Tc: .1272 hrs

-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
 $V = 16.1345 * (Sf**0.5)$

Paved surface:  
 $V = 20.3282 * (Sf**0.5)$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

.....  
TIME OF CONCENTRATION CALCULATOR  
.....

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .3000  
Hydraulic Length    100.00 ft  
2yr, 24hr P         2.7000 in  
Slope               .320000 ft/ft

Avg.Velocity           .27 ft/sec

Segment #1 Time:       .1021 hrs  
-----

Segment #2: Tc: TR-55 Shallow

Hydraulic Length    300.00 ft  
Slope               .200000 ft/ft  
Unpaved

Avg.Velocity           7.22 ft/sec

Segment #2 Time:       .0115 hrs  
-----

=====  
Total Tc:             .1137 hrs  
=====



-----  
 Tc Equations used...  
 -----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
 n = Mannings n  
 Lf = Flow length, ft  
 P = 2yr, 24hr Rain depth, inches  
 Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
 $V = 16.1345 * (Sf**0.5)$

Paved surface:  
 $V = 20.3282 * (Sf**0.5)$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
 Sf = Slope, ft/ft  
 Tc = Time of concentration, hrs  
 Lf = Flow length, ft

Type.... Runoff CN-Area  
Name.... C1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
-----	---	-----	%C	%UC	-----
Residential Districts - 1/2 acre	80	.135			80.00

COMPOSITE AREA & WEIGHTED CN ---> .135 80.00 (80)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1 acre	79	.190			79.00

COMPOSITE AREA & WEIGHTED CN ---> .190 79.00 (79)

.....

Type.... Runoff CN-Area

Name.... C3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1 acre	79	.280			79.00

COMPOSITE AREA & WEIGHTED CN ---> .280 79.00 (79)  
 .....

Type.... Runoff CN-Area  
Name.... C4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1 acre	79	.220			79.00

COMPOSITE AREA & WEIGHTED CN ---> .220 79.00 (79)

.....

Type.... Runoff CN-Area  
Name.... C5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1 acre	51	.320			51.00

COMPOSITE AREA & WEIGHTED CN ---> .320 51.00 (51)  
.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	13.700			69.00

COMPOSITE AREA & WEIGHTED CN ---> 13.700 69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Woods - fair	36	.450			36.00

COMPOSITE AREA & WEIGHTED CN ---> .450 36.00 (36)  
 .....



Type.... Runoff CN-Area  
Name.... C8

---

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/2 acre	54	1.100			54.00

COMPOSITE AREA & WEIGHTED CN --->                    1.100                    54.00 (54)

.....

Name.... LDLWVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-10 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 1 1

Reach Link Data = LDLWVL 1  
 Reach Length = 190.00 ft  
 Approx. Total Tt = .0224 hrs (based on Wtd.Q = .10 cfs)  
 Reach Channel = Ldlwvl 1 (Chn-Trapz.)  
 Overflow Elev. = 641.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 637.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
637.30	.00	.000	.0000	.00	.00	.00
637.31	.01	.000	.0044	.00	.01	.03
637.37	.19	.000	.0050	.00	.19	.35
637.44	.62	.001	.0056	.00	.62	.95
637.51	1.23	.001	.0062	.00	1.23	1.76
637.58	2.01	.002	.0068	.00	2.01	2.77
637.65	2.98	.002	.0074	.00	2.98	3.97
637.72	4.12	.003	.0080	.00	4.12	5.38
637.79	5.45	.003	.0086	.00	5.45	6.99
637.86	6.96	.004	.0092	.00	6.96	8.81
637.93	8.68	.004	.0099	.00	8.68	10.85
638.00	10.60	.005	.0105	.00	10.60	13.11
638.07	12.73	.006	.0111	.00	12.73	15.61
638.14	15.08	.007	.0117	.00	15.08	18.35
638.21	17.66	.008	.0123	.00	17.66	21.33
638.28	20.46	.008	.0129	.00	20.46	24.56
638.35	23.51	.009	.0135	.00	23.51	28.06
638.42	26.80	.010	.0141	.00	26.80	31.82
638.49	30.35	.011	.0147	.00	30.35	35.85
638.56	34.16	.012	.0154	.00	34.16	40.17

Name.... LDLWVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-10 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 1 1

Reach Link Data = LDLWVL 1  
 Reach Length = 190.00 ft  
 Approx. Total Tt = .0224 hrs (based on Wtd.Q = .10 cfs)  
 Reach Channel = Ldlwvl 1 (Chn-Trapz.)  
 Overflow Elev. = 641.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 637.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
638.63	38.23	.014	.0160	.00	38.23	44.77
638.70	42.58	.015	.0166	.00	42.58	49.67
638.77	47.20	.016	.0172	.00	47.20	54.86
638.84	52.11	.017	.0178	.00	52.11	60.37
638.91	57.32	.018	.0184	.00	57.32	66.19
638.98	62.82	.020	.0190	.00	62.82	72.33
639.05	68.63	.021	.0196	.00	68.63	78.79
639.12	74.75	.022	.0202	.00	74.75	85.59
639.19	81.19	.024	.0208	.00	81.19	92.73
639.26	87.96	.025	.0215	.00	87.96	100.21
639.33	95.05	.027	.0221	.00	95.05	108.04
639.40	102.48	.028	.0227	.00	102.48	116.22
639.47	110.25	.030	.0233	.00	110.25	124.77
639.54	118.38	.032	.0239	.00	118.38	133.70
639.61	126.85	.033	.0245	.00	126.85	142.99
639.68	135.69	.035	.0251	.00	135.69	152.67
639.75	144.89	.037	.0257	.00	144.89	162.74
639.82	154.47	.039	.0263	.00	154.47	173.20
639.89	164.42	.041	.0270	.00	164.42	184.05
639.96	174.75	.042	.0276	.00	174.75	195.30

Name.... LDLWVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - MH-10 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 1 1

Reach Link Data = LDLWVL 1  
 Reach Length = 190.00 ft  
 Approx. Total Tt = .0224 hrs (based on Wtd.Q = .10 cfs)  
 Reach Channel = Ldlwvl 1 (Chn-Trapz.)  
 Overflow Elev. = 641.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 637.30 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
640.03	185.47	.044	.0282	.00	185.47	206.97
640.10	196.59	.046	.0288	.00	196.59	219.06
640.17	208.12	.048	.0294	.00	208.12	231.56
640.24	220.04	.051	.0300	.00	220.04	244.50
640.31	232.38	.053	.0306	.00	232.38	257.86
640.38	245.13	.055	.0312	.00	245.13	271.66
640.45	258.31	.057	.0318	.00	258.31	285.91
640.52	271.90	.059	.0325	.00	271.90	300.59
640.59	285.94	.062	.0331	.00	285.94	315.73
640.66	300.41	.064	.0337	.00	300.41	331.34
640.73	315.33	.066	.0343	.00	315.33	347.41
640.80	330.70	.069	.0349	.00	330.70	363.95
640.87	346.52	.071	.0355	.00	346.52	380.96
640.94	362.80	.074	.0361	.00	362.80	398.46
641.00	377.13	.076	.0366	.00	377.13	413.84

Name.... LDLWVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT 16 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 2 1

Reach Link Data = LDLWVL 2  
 Reach Length = 220.00 ft  
 Approx. Total Tt = .0142 hrs (based on Wtd.Q = 1.48 cfs)  
 Reach Channel = Ldlwvl 2 (Chn-Trapz.)  
 Overflow Elev. = 551.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 547.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
547.00	.00	.000	.0000	.00	.00	.00
547.01	.01	.000	.0102	.00	.01	.06
547.08	.47	.001	.0109	.00	.47	.88
547.16	1.49	.002	.0117	.00	1.49	2.33
547.24	2.93	.003	.0125	.00	2.93	4.24
547.32	4.75	.004	.0133	.00	4.75	6.56
547.40	6.93	.005	.0141	.00	6.93	9.28
547.48	9.47	.006	.0149	.00	9.47	12.38
547.56	12.36	.007	.0158	.00	12.36	15.87
547.64	15.61	.009	.0166	.00	15.61	19.74
547.72	19.21	.010	.0174	.00	19.21	23.99
547.80	23.17	.011	.0182	.00	23.17	28.65
547.88	27.50	.013	.0190	.00	27.50	33.70
547.96	32.21	.014	.0198	.00	32.21	39.15
548.04	37.29	.016	.0206	.00	37.29	45.02
548.12	42.76	.018	.0214	.00	42.76	51.30
548.20	48.63	.019	.0222	.00	48.63	58.02
548.28	54.91	.021	.0230	.00	54.91	65.17
548.36	61.59	.023	.0238	.00	61.59	72.76
548.44	68.70	.025	.0246	.00	68.70	80.80

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT 16 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 2 1

Reach Link Data = LDLWVL 2  
 Reach Length = 220.00 ft  
 Approx. Total Tt = .0142 hrs (based on Wtd.Q = 1.48 cfs)  
 Reach Channel = Ldlwvl 2 (Chn-Trapz.)  
 Overflow Elev. = 551.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 547.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
548.52	76.23	.027	.0255	.00	76.23	89.31
548.60	84.19	.029	.0263	.00	84.19	98.27
548.68	92.61	.031	.0271	.00	92.61	107.72
548.76	101.47	.033	.0279	.00	101.47	117.65
548.84	110.80	.036	.0287	.00	110.80	128.07
548.92	120.58	.038	.0295	.00	120.58	138.98
549.00	130.85	.040	.0303	.00	130.85	150.41
549.08	141.60	.043	.0311	.00	141.60	162.35
549.16	152.84	.045	.0319	.00	152.84	174.80
549.24	164.58	.048	.0327	.00	164.58	187.80
549.32	176.83	.051	.0335	.00	176.83	201.33
549.40	189.60	.053	.0343	.00	189.60	215.41
549.48	202.88	.056	.0352	.00	202.88	230.04
549.56	216.70	.059	.0360	.00	216.70	245.24
549.64	231.06	.062	.0368	.00	231.06	261.00
549.72	245.95	.065	.0376	.00	245.95	277.33
549.80	261.41	.068	.0384	.00	261.41	294.26
549.88	277.43	.071	.0392	.00	277.43	311.79
549.96	294.02	.074	.0400	.00	294.02	329.91
550.04	311.17	.077	.0408	.00	311.17	348.62

Name.... LDLWVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT 16 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 2 1

Reach Link Data = LDLWVL 2  
 Reach Length = 220.00 ft  
 Approx. Total Tt = .0142 hrs (based on Wtd.Q = 1.48 cfs)  
 Reach Channel = ldlwvl 2 (Chn-Trapz.)  
 Overflow Elev. = 551.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 547.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
550.12	328.92	.081	.0416	.00	328.92	367.97
550.20	347.26	.084	.0424	.00	347.26	387.93
550.28	366.19	.087	.0432	.00	366.19	408.53
550.36	385.72	.091	.0440	.00	385.72	429.74
550.44	405.88	.095	.0448	.00	405.88	451.62
550.52	426.65	.098	.0457	.00	426.65	474.15
550.60	448.04	.102	.0465	.00	448.04	497.32
550.68	470.08	.106	.0473	.00	470.08	521.17
550.76	492.75	.109	.0481	.00	492.75	545.69
550.84	516.08	.113	.0489	.00	516.08	570.90
550.92	540.05	.117	.0497	.00	540.05	596.77
551.00	564.69	.121	.0505	.00	564.69	623.36

Name.... LDLWVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT17 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 3 1

Reach Link Data = LDLWVL 3  
 Reach Length = 60.00 ft  
 Approx. Total Tt = .0051 hrs (based on Wtd.Q = 1.43 cfs)  
 Reach Channel = Ldlwvl 3 (Chn-Trapz.)  
 Overflow Elev. = 502.80 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 498.90 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
498.90	.00	.000	.0000	.00	.00	.00
498.91	.01	.000	.0028	.00	.01	.02
498.98	.31	.000	.0030	.00	.31	.42
499.06	.97	.000	.0032	.00	.97	1.20
499.14	1.92	.001	.0034	.00	1.92	2.27
499.22	3.11	.001	.0036	.00	3.11	3.60
499.30	4.54	.001	.0039	.00	4.54	5.18
499.38	6.20	.002	.0041	.00	6.20	6.99
499.46	8.09	.002	.0043	.00	8.09	9.05
499.54	10.22	.002	.0045	.00	10.22	11.34
499.62	12.57	.003	.0047	.00	12.57	13.88
499.70	15.17	.003	.0050	.00	15.17	16.66
499.78	18.00	.003	.0052	.00	18.00	19.69
499.86	21.08	.004	.0054	.00	21.08	22.98
499.94	24.41	.004	.0056	.00	24.41	26.52
500.02	28.00	.005	.0058	.00	28.00	30.32
500.10	31.84	.005	.0061	.00	31.84	34.40
500.18	35.94	.006	.0063	.00	35.94	38.74
500.26	40.32	.006	.0065	.00	40.32	43.37
500.34	44.97	.007	.0067	.00	44.97	48.27



Name.... LDLWVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT17 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 3 1

Reach Link Data = LDLWVL 3  
 Reach Length = 60.00 ft  
 Approx. Total Tt = .0051 hrs (based on Wtd.Q = 1.43 cfs)  
 Reach Channel = Ldlwvl 3 (Chn-Trapz.)  
 Overflow Elev. = 502.80 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 498.90 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
500.42	49.90	.007	.0069	.00	49.90	53.47
500.50	55.12	.008	.0072	.00	55.12	58.96
500.58	60.62	.009	.0074	.00	60.62	64.75
500.66	66.43	.009	.0076	.00	66.43	70.84
500.74	72.53	.010	.0078	.00	72.53	77.24
500.82	78.94	.010	.0080	.00	78.94	83.96
500.90	85.66	.011	.0083	.00	85.66	90.99
500.98	92.70	.012	.0085	.00	92.70	98.36
501.06	100.06	.012	.0087	.00	100.06	106.05
501.14	107.74	.013	.0089	.00	107.74	114.08
501.22	115.76	.014	.0091	.00	115.76	122.45
501.30	124.12	.015	.0094	.00	124.12	131.16
501.38	132.82	.015	.0096	.00	132.82	140.23
501.46	141.86	.016	.0098	.00	141.86	149.65
501.54	151.26	.017	.0100	.00	151.26	159.43
501.62	161.02	.018	.0102	.00	161.02	169.58
501.70	171.13	.019	.0105	.00	171.13	180.09
501.78	181.62	.019	.0107	.00	181.62	190.99
501.86	192.48	.020	.0109	.00	192.48	202.26
501.94	203.71	.021	.0111	.00	203.71	213.93

Name.... LDLWVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\  
 Inflow HYG file = NONE STORED - CLVRT17 OUTLET 1  
 Outflow HYG file = NONE STORED - LDLWVL 3 1

Reach Link Data = LDLWVL 3  
 Reach Length = 60.00 ft  
 Approx. Total Tt = .0051 hrs (based on Wtd.Q = 1.43 cfs)  
 Reach Channel = Ldlwvl 3 (Chn-Trapz.)  
 Overflow Elev. = 502.80 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 498.90 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
502.02	215.33	.022	.0113	.00	215.33	225.98
502.10	227.33	.023	.0116	.00	227.33	238.43
502.18	239.73	.024	.0118	.00	239.73	251.27
502.26	252.51	.025	.0120	.00	252.51	264.52
502.34	265.71	.026	.0122	.00	265.71	278.18
502.42	279.30	.027	.0125	.00	279.30	292.26
502.50	293.32	.028	.0127	.00	293.32	306.76
502.58	307.74	.029	.0129	.00	307.74	321.67
502.66	322.58	.030	.0131	.00	322.58	337.02
502.74	337.85	.031	.0133	.00	337.85	352.80
502.80	349.58	.032	.0135	.00	349.58	364.92

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 652.70 ft  
 Increment = .10 ft  
 Max. Elev.= 665.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	652.700	665.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 1.5000 ft  
Upstream Invert = 652.70 ft  
Dnstream Invert = 644.10 ft  
Horiz. Length = 74.00 ft  
Barrel Length = 74.50 ft  
Barrel Slope = .11622 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .5000 (forward entrance loss)  
Kb = .018213 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.102  
T2 ratio (HW/D) = 1.249  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 654.35 ft ---> Flow = 7.58 cfs  
At T2 Elev = 654.57 ft ---> Flow = 8.66 cfs

Type.... Outlet Input Data  
Name.... Clvrt 13

Page 6.03

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt 15

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 615.70 ft  
Increment = .10 ft  
Max. Elev.= 625.00 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
----- Culvert-Circular TW SETUP, DS Channel	C0	---> TW	615.700	625.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular  
 -----  
 No. Barrels = 1  
 Barrel Diameter = 1.5000 ft  
 Upstream Invert = 615.70 ft  
 Dnstream Invert = 584.30 ft  
 Horiz. Length = 260.00 ft  
 Barrel Length = 261.89 ft  
 Barrel Slope = .12077 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
 Ke = .5000 (forward entrance loss)  
 Kb = .018213 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.100  
 T2 ratio (HW/D) = 1.246  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 617.35 ft ---> Flow = 7.58 cfs  
 At T2 Elev = 617.57 ft ---> Flow = 8.66 cfs

Type.... Outlet Input Data  
Name.... Clvrt 15

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs



Name.... Clvrt 17

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 515.90 ft  
 Increment = .10 ft  
 Max. Elev.= 525.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	515.900	525.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.5000 ft  
Upstream Invert = 515.90 ft  
Dnstream Invert = 498.90 ft  
Horiz. Length = 200.00 ft  
Barrel Length = 200.72 ft  
Barrel Slope = .08500 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .5000 (forward entrance loss)  
Kb = .009217 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.118  
T2 ratio (HW/D) = 1.264  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 518.69 ft ---> Flow = 27.16 cfs  
At T2 Elev = 519.06 ft ---> Flow = 31.05 cfs

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt 18

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 495.00 ft  
Increment = .10 ft  
Max. Elev.= 501.00 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
----- Culvert-Circular TW SETUP, DS Channel	C0	---> TW	495.400	501.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.5000 ft  
Upstream Invert = 495.40 ft  
Dnstream Invert = 473.60 ft  
Horiz. Length = 400.00 ft  
Barrel Length = 400.59 ft  
Barrel Slope = .05450 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .5000 (forward entrance loss)  
Kb = .009217 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.133  
T2 ratio (HW/D) = 1.280  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...

At T1 Elev = 498.23 ft ---> Flow = 27.16 cfs  
At T2 Elev = 498.60 ft ---> Flow = 31.05 cfs

Type.... Outlet Input Data  
Name.... Clvrt 18

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File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 644.10 ft  
Increment = .10 ft  
Max. Elev.= 655.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	644.100	655.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
 Structure Type = Culvert-Circular

-----  
 No. Barrels = 1  
 Barrel Diameter = 1.5000 ft  
 Upstream Invert = 644.10 ft  
 Dnstream Invert = 637.30 ft  
 Horiz. Length = 111.00 ft  
 Barrel Length = 111.21 ft  
 Barrel Slope = .06126 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
 Ke = .0000 (forward entrance loss)  
 Kb = .018213 (per ft of full flow)  
 Kr = .0000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 0  
 Inlet Control K = .0010  
 Inlet Control M = .0010  
 Inlet Control c = .00100  
 Inlet Control Y = .0010  
 T1 ratio (HW/D) = .000  
 T2 ratio (HW/D) = -.014  
 Slope Factor = -.500

Use unsubmerged inlet control Form 0 equ. below T1 elev.  
 Use submerged inlet control Form 0 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 644.10 ft ---> Flow = 7.58 cfs  
 At T2 Elev = 644.08 ft ---> Flow = 8.66 cfs



OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Clvrt16

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 584.30 ft  
Increment = .10 ft  
Max. Elev.= 592.00 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
----- Culvert-Circular TW SETUP, DS Channel	C0	---> TW	584.300	592.000

Name.... Clvrt16

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = CO  
 Structure Type = Culvert-Circular  
 -----  
 No. Barrels = 1  
 Barrel Diameter = 2.0000 ft  
 Upstream Invert = 584.30 ft  
 Dnstream Invert = 576.30 ft  
 Horiz. Length = 80.00 ft  
 Barrel Length = 80.40 ft  
 Barrel Slope = .10000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
 Ke = .5000 (forward entrance loss)  
 Kb = .012411 (per ft of full flow)  
 Kr = .5000 (reverse entrance loss)  
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
 Inlet Control K = .0098  
 Inlet Control M = 2.0000  
 Inlet Control c = .03980  
 Inlet Control Y = .6700  
 T1 ratio (HW/D) = 1.110  
 T2 ratio (HW/D) = 1.257  
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
 interpolate between flows at T1 & T2...

At T1 Elev = 586.52 ft ---> Flow = 15.55 cfs  
 At T2 Elev = 586.81 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data  
Name.... Clvrt16

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 644.10 ft  
 Increment = .10 ft  
 Max. Elev.= 655.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	648.100	655.000

Type.... Outlet Input Data  
Name.... MH10 O-Flow

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 648.10 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 584.30 ft  
 Increment = .10 ft  
 Max. Elev.= 592.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	588.300	592.000

Type.... Outlet Input Data  
Name.... MH13 O-Flow

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 588.30 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.600000  
  
Weir TW effects (Use adjustment equation)

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs



Name.... Weir 17

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 515.90 ft  
 Increment = .10 ft  
 Max. Elev.= 525.00 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-Rectangular	W0	---> TW	520.000	525.000
TW SETUP, DS Channel				

Type.... Outlet Input Data  
Name.... Weir 17

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 520.00 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.600000  
  
Weir TW effects (Use adjustment equation)

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 652.70 ft  
 Increment = .10 ft  
 Max. Elev.= 665.00 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-Rectangular	W0	--->	TW	655.600	665.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 655.60 ft  
Weir Length = 50.00 ft  
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 615.70 ft  
 Increment = .10 ft  
 Max. Elev.= 625.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	620.000	625.000

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 620.00 ft  
Weir Length = 25.00 ft  
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Name.... Weir18

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinC.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 495.00 ft  
 Increment = .10 ft  
 Max. Elev.= 501.00 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-Rectangular	W0	--->	TW	499.000	501.000
TW SETUP, DS Channel					

---

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 499.00 ft  
Weir Length = 100.00 ft  
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs



Index of Starting Page Numbers for ID Names

---

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C5... 3.10, 4.05  
C6... 3.12, 4.06  
C7... 3.15, 4.07  
C8... 3.18, 4.08  
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MH13 O-Flow... 6.21

----- T -----

Tompkins County... 2.01

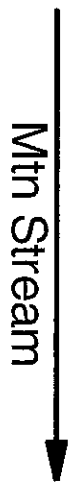
----- W -----

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Weir13... 6.25  
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PondPack Modeling Output

Basin D

D1



Mtn Stream

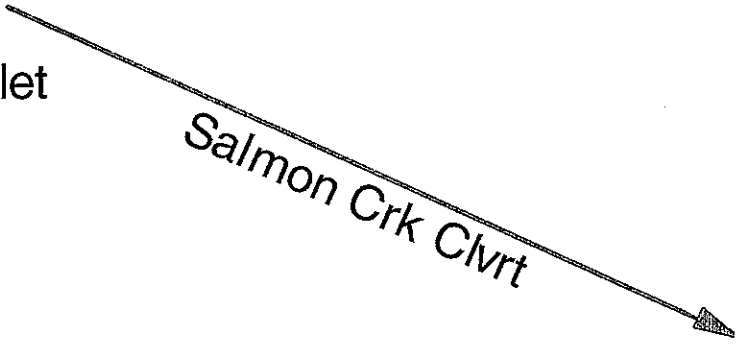


Culvert Inlet

Culvert O-Flow



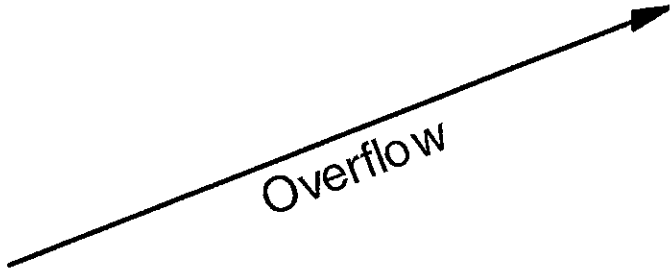
Overflow



Salmon Crk Culvert



Salmon Crk Outfall



Overflow

---

\*\*\*\*\* MASTER SUMMARY \*\*\*\*\*

Watershed..... Master Network Summary ..... 1.01

\*\*\*\*\* DESIGN STORMS SUMMARY \*\*\*\*\*

Tompkins County Design Storms ..... 2.01

\*\*\*\*\* TC CALCULATIONS \*\*\*\*\*

D1..... Tc Calcs ..... 3.01

\*\*\*\*\* CN CALCULATIONS \*\*\*\*\*

D1..... Runoff CN-Area ..... 4.01

\*\*\*\*\* OUTLET STRUCTURES \*\*\*\*\*

Culvert..... Outlet Input Data ..... 5.01

Weir..... Outlet Input Data ..... 5.04

MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID	
1	2.3000	Synthetic Curve	TypeII	24hr
5	3.4000	Synthetic Curve	TypeII	24hr
10	3.9000	Synthetic Curve	TypeII	24hr
25	4.6000	Synthetic Curve	TypeII	24hr
50	4.9000	Synthetic Curve	TypeII	24hr

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CULVERT INLETIN	POND	1	.726		12.1000	8.77		
CULVERT INLETIN	POND	5	1.627		12.1000	21.19		
CULVERT INLETIN	POND	10	2.092		12.1000	27.47		
CULVERT INLETIN	POND	25	2.781		12.1000	36.67		
CULVERT INLETIN	POND	50	3.087		12.1000	40.72		
+CULVERT INLETOUT	POND	1	.726		12.1000	8.51	490.75	.002
+CULVERT INLETOUT	POND	5	1.627		12.1000	20.97	491.76	.005
+CULVERT INLETOUT	POND	10	2.092		12.1000	27.30	492.20	.007
+CULVERT INLETOUT	POND	25	2.781		12.1000	36.60	492.68	.009
+CULVERT INLETOUT	POND	50	3.087		12.1000	40.70	492.80	.010
D1	AREA	1	.726		12.1000	8.77		
D1	AREA	5	1.627		12.1000	21.19		
D1	AREA	10	2.092		12.1000	27.47		
D1	AREA	25	2.781		12.1000	36.67		
D1	AREA	50	3.087		12.1000	40.72		

MASTER NETWORK SUMMARY  
SCS Unit Hydrograph Method

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

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
OVERFLOW	JCT	1	.000		.0500	.00		
OVERFLOW	JCT	5	.000		.0500	.00		
OVERFLOW	JCT	10	.000		.0500	.00		
OVERFLOW	JCT	25	.017		12.1000	1.98		
OVERFLOW	JCT	50	.046		12.1000	4.23		
*SALMON CRK OUTFL	JCT	1	.726		12.1000	8.51		
*SALMON CRK OUTFL	JCT	5	1.627		12.1000	20.97		
*SALMON CRK OUTFL	JCT	10	2.092		12.1000	27.30		
*SALMON CRK OUTFL	JCT	25	2.781		12.1000	36.60		
*SALMON CRK OUTFL	JCT	50	3.087		12.1000	40.70		

Type.... Design Storms  
Name.... Tompkins County

File... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinD.ppw

---

Title... Project Date: 11/19/2008  
Project Engineer: BMT  
Project Title: Ludlowville Storm Drainage  
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 1 yr  
Total Rainfall Depth= 2.3000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 5 yr  
Total Rainfall Depth= 3.4000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 3.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 25 yr  
Total Rainfall Depth= 4.6000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 50 yr  
Total Rainfall Depth= 4.9000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

```

:-----:
TIME OF CONCENTRATION CALCULATOR
:-----:

```

Segment #1: Tc: TR-55 Sheet

```

Mannings n      .3000
Hydraulic Length 100.00 ft
2yr, 24hr P     2.7000 in
Slope           .080000 ft/ft

```

Avg.Velocity .16 ft/sec

Segment #1 Time: .1778 hrs

Segment #2: Tc: TR-55 Shallow

```

Hydraulic Length 1500.00 ft
Slope           .090000 ft/ft
Unpaved

```

Avg.Velocity 4.84 ft/sec

Segment #2 Time: .0861 hrs

Segment #3: Tc: TR-55 Channel

```

Flow Area       20.0000 sq.ft
Wetted Perimeter 20.00 ft
Hydraulic Radius 1.00 ft
Slope           .120000 ft/ft
Mannings n      .0500
Hydraulic Length 1400.00 ft

```

Avg.Velocity 10.32 ft/sec

Segment #3 Time: .0377 hrs

```

=====
Total Tc:      .3015 hrs
=====

```



-----  
Tc Equations used...  
-----

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs  
n = Mannings n  
Lf = Flow length, ft  
P = 2yr, 24hr Rain depth, inches  
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:  
 $V = 16.1345 * (Sf**0.5)$

Paved surface:  
 $V = 20.3282 * (Sf**0.5)$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec  
Sf = Slope, ft/ft  
Tc = Time of concentration, hrs  
Lf = Flow length, ft

==== SCS Channel Flow =====

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600sec/hr)$$

- Where:
- R = Hydraulic radius
  - Aq = Flow area, sq.ft.
  - Wp = Wetted perimeter, ft
  - V = Velocity, ft/sec
  - Sf = Slope, ft/ft
  - n = Mannings n
  - Tc = Time of concentration, hrs
  - Lf = Flow length, ft

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Woods - grass combination - fair	76	15.100			76.00

COMPOSITE AREA & WEIGHTED CN --->            15.100                    76.00 (76)

.....

Name.... Culvert

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinD.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 489.20 ft  
 Increment = .01 ft  
 Max. Elev.= 496.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	489.200	496.000

Type.... Outlet Input Data  
Name.... Culvert

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinD.ppw

---

OUTLET STRUCTURE INPUT DATA

Structure ID = C0  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 3.0000 ft  
Upstream Invert = 489.20 ft  
Dnstream Invert = 486.00 ft  
Horiz. Length = 40.00 ft  
Barrel Length = 40.13 ft  
Barrel Slope = .08000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0220  
Ke = .9000 (forward entrance loss)  
Kb = .020700 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0340  
Inlet Control M = 1.5000  
Inlet Control c = .05530  
Inlet Control Y = .5400  
T1 ratio (HW/D) = .000  
T2 ratio (HW/D) = 1.385  
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.  
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,  
interpolate between flows at T1 & T2...  
At T1 Elev = 489.20 ft ---> Flow = 42.85 cfs  
At T2 Elev = 493.35 ft ---> Flow = 48.97 cfs

OUTLET STRUCTURE INPUT DATA

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data  
Name.... Weir

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinD.ppw

---

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 489.20 ft  
Increment = .10 ft  
Max. Elev.= 496.00 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-Rectangular TW SETUP, DS Channel	W0	---> TW	492.500	496.000

OUTLET STRUCTURE INPUT DATA

Structure ID = W0  
Structure Type = Weir-Rectangular

-----  
# of Openings = 1  
Crest Elev. = 492.50 ft  
Weir Length = 10.00 ft  
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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

-----  
FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 40  
Min. TW tolerance = .01 ft  
Max. TW tolerance = .01 ft  
Min. HW tolerance = .01 ft  
Max. HW tolerance = .01 ft  
Min. Q tolerance = .00 cfs  
Max. Q tolerance = .00 cfs



Index of Starting Page Numbers for ID Names

---

----- C -----  
Culvert... 5.01

----- D -----  
D1... 3.01, 4.01

----- T -----  
Tompkins County... 2.01

----- W -----  
Watershed... 1.01  
Weir... 5.04

**Appendix B**  
**HY-8 Culvert Modeling**

CHECK CULVERT 5 W/ HY-8 ANALYSIS. → LANSINGVILLE

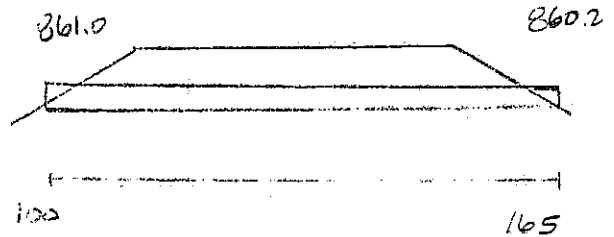
1 yr → 16.8 CFS  
25 yr → 61.5 CFS ⇒ INPUT 31 CFS → MAX CVLRT CAPACITY FROM POND PACK  
50 yr → 67.9 CFS

EMBANKMENT TOE DATA

USE CONCRETE PIPE ⇒ ADJUST "n"

• SA SQUARE EDGE W/ HEADWALL TO CONSIDER SKEW OF INLET

• n = 0.016 (SMOOTH STEEL)



CHECK HY-8 OUTPUT

↳ FOR 1 YEAR STORM (SINCE ALL FLOW IS THRU THE CULVERT)

HY-8 = 863.45'  
POND PACK = 863.49'

Lansingville Road Culvert.LST

CURRENT DATE: 11-26-2008  
 CURRENT TIME: 13:20:27

FILE DATE: 11-26-2008  
 FILE NAME: LNSNGVL

```

  CULVERT ANALYSIS
  HY-8, VERSION 6.1
  SITE DATA
  CULVERT SHAPE, MATERIAL, INLET
  INLET  OUTLET  CULVERT  BARRELS
  ELEV.  ELEV.  LENGTH  SHAPE  SPAN  RISE  MANNING  INLET
  NO.  (ft)  (ft)  (ft)  MATERIAL  (ft)  (ft)  n  TYPE
  1  860.98  860.22  61.01  1 RCP  2.00  2.00  .016  CONVENTIONAL
  2
  3
  4
  5
  6
  
```

SUMMARY OF CULVERT FLOWS (cfs) FILE: LNSNGVL DATE: 11-26-2008

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
863.45	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
864.22	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
865.23	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
866.22	31.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
867.99	37.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
869.68	42.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
871.59	47.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
873.71	52.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
876.50	57.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
880.42	62.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
886.01	67.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: LNSNGVL DATE: 11-26-2008

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
863.45	0.000	16.80	0.00	0.00
864.22	0.000	21.91	0.00	0.00
865.23	0.000	27.02	0.00	0.00
866.22	0.000	31.00	0.00	0.00
867.99	0.000	37.24	0.00	0.00
869.68	0.000	42.35	0.00	0.00
871.59	0.000	47.46	0.00	0.00
873.71	0.000	52.57	0.00	0.00
876.50	0.000	57.68	0.00	0.00
880.42	0.000	62.79	0.00	0.00
886.01	0.000	67.90	0.00	0.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

Lansingville Road Culvert.LST

CURRENT TIME: 13:20:27 FILE NAME: LNSNGVL  
 PERFORMANCE CURVE FOR CULVERT 1 - 1( 2.00 (ft) BY 2.00 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD- WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
16.80	863.45	2.47	2.47	5-S2n	1.38	1.47	1.27	1.06	7.98	5.03
21.91	864.22	3.25	3.06	2-M2c	2.00	1.66	1.66	1.22	7.88	5.40
27.02	865.23	4.25	4.17	2-M2c	2.00	1.81	1.81	1.37	9.02	5.71
31.00	866.22	5.19	5.24	2-M2c	2.00	1.93	1.93	1.47	10.05	5.92
37.24	867.99	6.91	7.01	6-FFc	2.00	2.00	2.00	1.62	11.85	6.20
42.35	869.68	8.54	8.70	6-FFc	2.00	2.00	2.00	1.73	13.48	6.41
47.46	871.59	10.41	10.61	6-FFc	2.00	2.00	2.00	1.84	15.11	6.60
52.57	873.71	12.65	12.73	6-FFc	2.00	2.00	2.00	1.94	16.73	6.77
57.68	876.50	15.53	15.10	4-S2n	2.00	2.00	1.90	2.03	18.85	6.93
62.79	880.42	19.45	17.75	4-S2n	2.00	2.00	1.90	2.12	20.52	7.08
67.90	886.01	25.03	20.61	4-S2n	2.00	2.00	1.90	2.20	22.19	7.22

El. inlet face invert 860.98 ft El. outlet invert 860.22 ft  
 El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

\*\*\*\*\* SITE DATA \*\*\*\*\* EMBANKMENT TOE \*\*\*\*\*  
 UPSTREAM STATION 100.00 ft  
 UPSTREAM ELEVATION 861.00 ft  
 UPSTREAM EMBANKMENT SLOPE (X:1) 1.00  
 DOWNSTREAM STATION 165.00 ft  
 DOWNSTREAM ELEVATION 860.20 ft  
 DOWNSTREAM EMBANKMENT SLOPE (X:1) 1.00

\*\*\*\*\* CULVERT DATA SUMMARY \*\*\*\*\*  
 BARREL SHAPE CIRCULAR  
 BARREL DIAMETER 2.00 ft  
 BARREL MATERIAL CONCRETE  
 BARREL MANNING'S n 0.016  
 INLET TYPE CONVENTIONAL  
 INLET EDGE AND WALL SQUARE EDGE WITH HEADWALL  
 INLET DEPRESSION NONE

□ 3

CURRENT DATE: 11-26-2008 FILE DATE: 11-26-2008  
 CURRENT TIME: 13:20:27 FILE NAME: LNSNGVL

TAILWATER

\*\*\*\*\* REGULAR CHANNEL CROSS SECTION \*\*\*\*\*  
 BOTTOM WIDTH 2.00 ft  
 SIDE SLOPE H/V (X:1) 1.0  
 CHANNEL SLOPE V/H (ft/ft) 0.032  
 MANNING'S n (.01-0.1) 0.040  
 CHANNEL INVERT ELEVATION 860.20 ft  
 CULVERT NO.1 OUTLET INVERT ELEVATION 860.22 ft

\*\*\*\*\* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

Lansingville Road Culvert.LST

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
16.80	861.28	0.852	1.08	5.03	2.16
21.91	861.45	0.852	1.25	5.40	2.49
27.02	861.59	0.852	1.39	5.71	2.78
31.00	861.70	0.852	1.50	5.92	2.99
37.24	861.85	0.852	1.65	6.20	3.29
42.35	861.96	0.852	1.76	6.41	3.51
47.46	862.06	0.852	1.86	6.60	3.72
52.57	862.16	0.852	1.96	6.77	3.91
57.68	862.25	0.853	2.05	6.93	4.10
62.79	862.34	0.853	2.14	7.08	4.28
67.90	862.42	0.853	2.22	7.22	4.44

~~~~~  
 ~~~~~ ROADWAY OVERTOPPING DATA ~~~~~  
 ~~~~~

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	50.00 ft
CREST LENGTH	1000.00 ft
OVERTOPPING CREST ELEVATION	865.00 ft

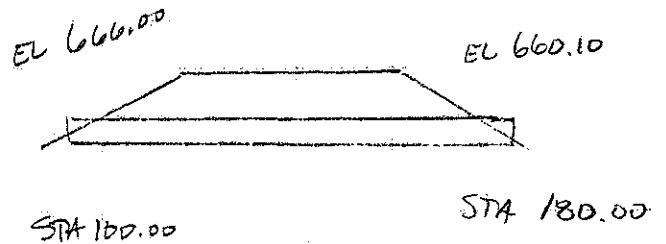
~~~~~  
 □

CHECK CULVERT 12 w/ HY-8 ANALYSIS → CLVERT 12

1YR → 38.2 CFS  
25 YR → 213.6 CFS  
SD YR → 241.6 CFS

EMBANKMENT DATA

"n" = 0.024 CORR. STEEL



COMPARE POND PACK w/ HY-8

- WEIR ELEV = 670.5 (BYPASSES CULVERT DOWN LUDLOWVILLE RD)
- FROM HY-8, CULVERT HANDLES ≈ 90-95 CFS BEFORE OVERFLOWING TO LUDLOWVILLE ROAD.
- POND PACK RESULTS 87-97 CFS

∴ CULVERT 12 CHECKS

CURRENT DATE: 11-26-2008  
CURRENT TIME: 15:01:03

FILE DATE: 11-26-2008  
FILE NAME: CLVRT12

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
UAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
3 C 3 SITE DATA 3 CULVERT SHAPE, MATERIAL, INLET 3
3 U AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
3 L 3 INLET OUTLET CULVERT 3 BARRELS
3 V 3 ELEV. ELEV. LENGTH 3 SHAPE SPAN RISE MANNING INLET 3
3 NO. 3 (ft) (ft) (ft) 3 MATERIAL (ft) (ft) n TYPE 3
3 1 3 665.59 660.65 67.20 3 1 CMPA 4.75 3.17 .024 CONVENTIONAL 3
3 2 3 3
3 3 3 3
3 4 3 3
3 5 3 3
3 6 3 3
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAU

```

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AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
SUMMARY OF CULVERT FLOWS (cfs) FILE: CLVRT12 DATE: 11-26-2008

```

| ELEV (ft) | TOTAL | 1   | 2   | 3   | 4   | 5   | 6   | ROADWAY     | ITR |
|-----------|-------|-----|-----|-----|-----|-----|-----|-------------|-----|
| 667.86    | 38.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 668.68    | 58.5  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 669.68    | 78.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 670.99    | 99.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 672.66    | 119.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 674.67    | 139.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 677.00    | 160.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 679.66    | 180.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 682.63    | 200.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 684.64    | 213.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 689.52    | 241.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00        | 0   |
| 0.00      | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | OVERTOPPING |     |

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: CLVRT12 DATE: 11-26-2008

```

| HEAD ELEV (ft) | HEAD ERROR (ft) | TOTAL FLOW (cfs) | FLOW ERROR (cfs) | % FLOW ERROR |
|----------------|-----------------|------------------|------------------|--------------|
| 667.86         | 0.000           | 38.20            | 0.00             | 0.00         |
| 668.68         | 0.000           | 58.54            | 0.00             | 0.00         |
| 669.68         | 0.000           | 78.88            | 0.00             | 0.00         |
| 670.99         | 0.000           | 99.22            | 0.00             | 0.00         |
| 672.66         | 0.000           | 119.56           | 0.00             | 0.00         |
| 674.67         | 0.000           | 139.90           | 0.00             | 0.00         |
| 677.00         | 0.000           | 160.24           | 0.00             | 0.00         |
| 679.66         | 0.000           | 180.58           | 0.00             | 0.00         |
| 682.63         | 0.000           | 200.92           | 0.00             | 0.00         |
| 684.64         | 0.000           | 213.60           | 0.00             | 0.00         |
| 689.52         | 0.000           | 241.60           | 0.00             | 0.00         |

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AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

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CLVRT12.LST

CURRENT TIME: 15:01:03

FILE NAME: CLVRT12

AA

PERFORMANCE CURVE FOR CULVERT 1 - 1( 4.75 (ft) BY 3.17 (ft)) CMPA

AA

| DIS-<br>CHARGE<br>FLOW<br>(cfs) | HEAD-<br>WATER<br>ELEV.<br>(ft) | INLET<br>CONTROL<br>DEPTH<br>(ft) | OUTLET<br>CONTROL<br>DEPTH<br>(ft) | FLOW<br>TYPE<br><F4> | NORMAL<br>DEPTH<br>(ft) | CRIT.<br>DEPTH<br>(ft) | OUTLET<br>DEPTH<br>(ft) | TW<br>DEPTH<br>(ft) | OUTLET<br>VEL.<br>(fps) | TW<br>VEL.<br>(fps) |
|---------------------------------|---------------------------------|-----------------------------------|------------------------------------|----------------------|-------------------------|------------------------|-------------------------|---------------------|-------------------------|---------------------|
| 38.20                           | 667.86                          | 2.27                              | 2.27                               | 1-S2n                | 0.83                    | 1.42                   | 0.84                    | 0.21                | 11.86                   | 6.72                |
| 58.54                           | 668.68                          | 3.09                              | 3.09                               | 1-S2n                | 1.06                    | 1.82                   | 1.02                    | 0.41                | 14.54                   | 7.68                |
| 78.88                           | 669.68                          | 4.09                              | 4.09                               | 5-S2n                | 1.27                    | 2.16                   | 1.30                    | 0.58                | 14.66                   | 8.41                |
| 99.22                           | 670.99                          | 5.39                              | 5.39                               | 5-S2n                | 1.48                    | 2.44                   | 1.52                    | 0.74                | 15.60                   | 9.00                |
| 119.56                          | 672.66                          | 7.07                              | 7.07                               | 5-S2n                | 1.68                    | 2.66                   | 1.74                    | 0.87                | 16.33                   | 9.51                |
| 139.90                          | 674.67                          | 9.08                              | 9.08                               | 5-S2n                | 1.89                    | 2.84                   | 1.96                    | 1.00                | 16.86                   | 9.95                |
| 160.24                          | 677.00                          | 11.41                             | 11.41                              | 5-S2n                | 2.11                    | 3.03                   | 2.19                    | 1.11                | 17.38                   | 10.34               |
| 180.58                          | 679.66                          | 14.07                             | 10.01                              | 6-S2n                | 2.37                    | 3.17                   | 2.45                    | 1.22                | 17.83                   | 10.69               |
| 200.92                          | 682.63                          | 17.04                             | 12.81                              | 6-S2n                | 2.76                    | 3.17                   | 3.07                    | 1.32                | 17.20                   | 11.02               |
| 213.60                          | 684.64                          | 19.05                             | 14.71                              | 6-S2n                | 3.17                    | 3.17                   | 3.07                    | 1.38                | 18.29                   | 11.20               |
| 241.60                          | 689.52                          | 23.93                             | 19.32                              | 6-S2n                | 3.17                    | 3.17                   | 3.07                    | 1.51                | 20.68                   | 11.59               |

AA

El. inlet face invert 665.59 ft El. outlet invert 660.65 ft

El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

AA

\*\*\*\*\* SITE DATA \*\*\*\*\* EMBANKMENT TOE \*\*\*\*\*

UPSTREAM STATION 100.00 ft  
 UPSTREAM ELEVATION 666.00 ft  
 UPSTREAM EMBANKMENT SLOPE (X:1) 2.00  
 DOWNSTEAM STATION 180.00 ft  
 DOWNSTEAM ELEVATION 660.10 ft  
 DOWNSTEAM EMBANKMENT SLOPE (X:1) 2.00

\*\*\*\*\* CULVERT DATA SUMMARY \*\*\*\*\*

BARREL SHAPE PIPE ARCH  
 BARREL SPAN 4.75 ft  
 BARREL RISE 3.17 ft  
 BARREL MATERIAL STEEL OR ALUMINUM  
 BARREL MANNING'S n 0.024  
 INLET TYPE CONVENTIONAL  
 INLET EDGE AND WALL PROJECTING  
 INLET DEPRESSION NONE

AA  
□

CURRENT DATE: 11-26-2008  
CURRENT TIME: 15:01:03

FILE DATE: 11-26-2008  
FILE NAME: CLVRT12

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\*\*\*\*\* REGULAR CHANNEL CROSS SECTION \*\*\*\*\*

BOTTOM WIDTH 6.00 ft  
 SIDE SLOPE H/V (X:1) 2.0  
 CHANNEL SLOPE V/H (ft/ft) 0.100  
 MANNING'S n (.01-0.1) 0.050  
 CHANNEL INVERT ELEVATION 660.10 ft  
 CULVERT NO.1 OUTLET INVERT ELEVATION 660.65 ft

\*\*\*\*\* UNIFORM FLOW RATING CURVE FOR DOWNSTEAM CHANNEL

CLVRT12.LST

| FLOW<br>(cfs) | W.S.E.<br>(ft) | FROUDE<br>NUMBER | DEPTH<br>(ft) | VEL.<br>(f/s) | SHEAR<br>(psf) |
|---------------|----------------|------------------|---------------|---------------|----------------|
| 38.20         | 660.86         | 1.363            | 0.76          | 6.72          | 4.72           |
| 58.54         | 661.06         | 1.381            | 0.96          | 7.68          | 6.00           |
| 78.88         | 661.23         | 1.392            | 1.13          | 8.41          | 7.08           |
| 99.22         | 661.39         | 1.400            | 1.29          | 9.00          | 8.02           |
| 119.56        | 661.52         | 1.405            | 1.42          | 9.51          | 8.87           |
| 139.90        | 661.65         | 1.409            | 1.55          | 9.95          | 9.65           |
| 160.24        | 661.76         | 1.413            | 1.66          | 10.34         | 10.37          |
| 180.58        | 661.87         | 1.416            | 1.77          | 10.69         | 11.05          |
| 200.92        | 661.97         | 1.419            | 1.87          | 11.02         | 11.68          |
| 213.60        | 662.03         | 1.421            | 1.93          | 11.20         | 12.06          |
| 241.60        | 662.16         | 1.424            | 2.06          | 11.59         | 12.85          |

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 ~~~~~ ROADWAY OVERTOPPING DATA ~~~~~  
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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	50.00 ft
CREST LENGTH	1000.00 ft
OVERTOPPING CREST ELEVATION	670.50 ft

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