

**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Subcatchment 4S: AREA DRAINING TO CB 4**

Runoff = 1.38 cfs @ 12.05 hrs, Volume= 0.104 af

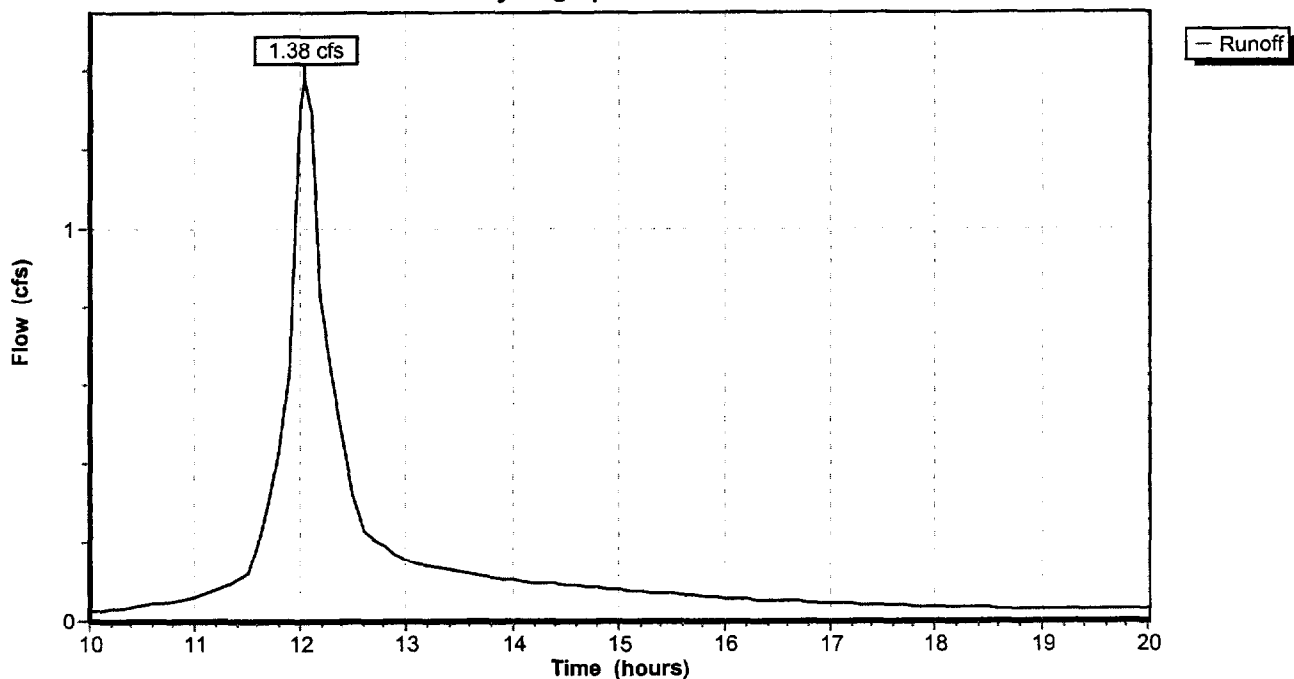
Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.120	98	IMPERVIOUS
0.230	72	WOODS, GOOD, "C"
0.200	74	GRASS, GOOD, "C"
0.550	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.2000	0.3		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	70	0.0857	2.3		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
6.4	170	Total			

**Subcatchment 4S: AREA DRAINING TO CB 4**

Hydrograph Plot



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Subcatchment 5S: AREA DRAINING TO CB 5**

Runoff = 0.99 cfs @ 12.04 hrs, Volume= 0.073 af

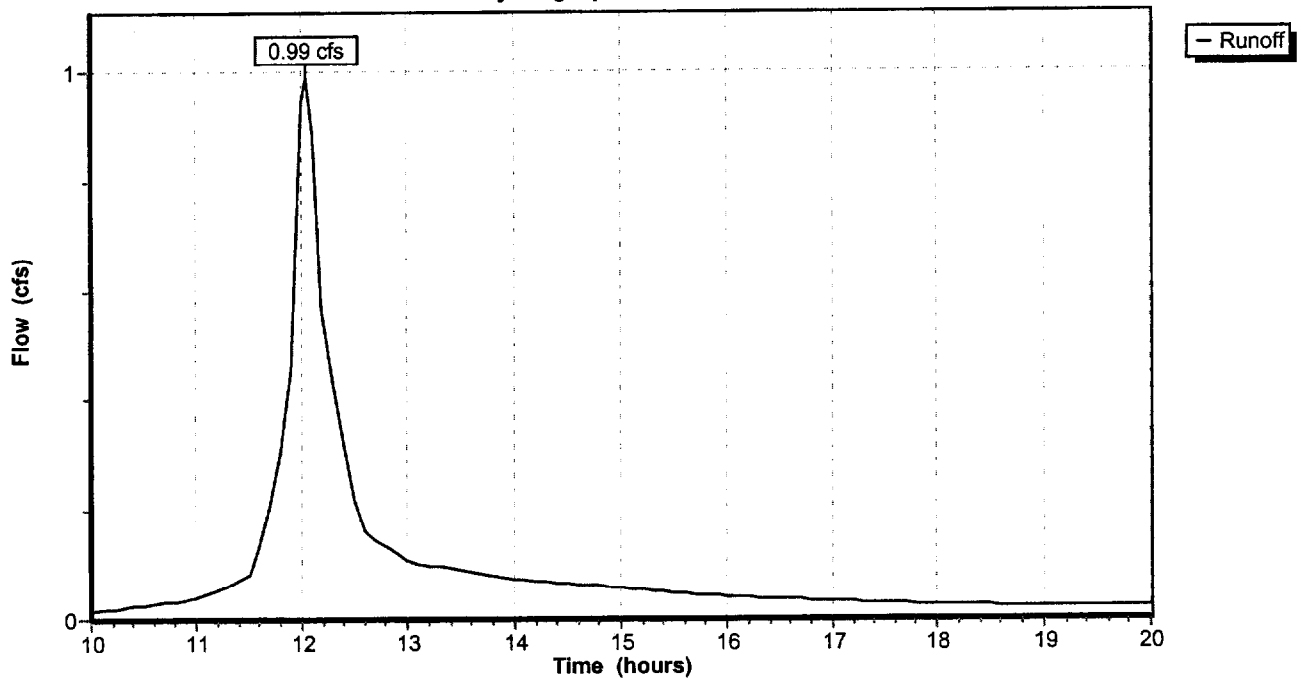
Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.070	98	IMPERVIOUS
0.180	72	WOODS, GOOD, "C"
0.150	74	GRASS, GOOD, "C"
0.400	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	90	0.2000	0.3		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	80	0.1250	2.8		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
5.9	170	Total			

**Subcatchment 5S: AREA DRAINING TO CB 5**

Hydrograph Plot



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Subcatchment 6S: AREA DRAINING TO CB 6**

Runoff = 1.77 cfs @ 11.99 hrs, Volume= 0.114 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Type III 24-hr Rainfall=4.70"

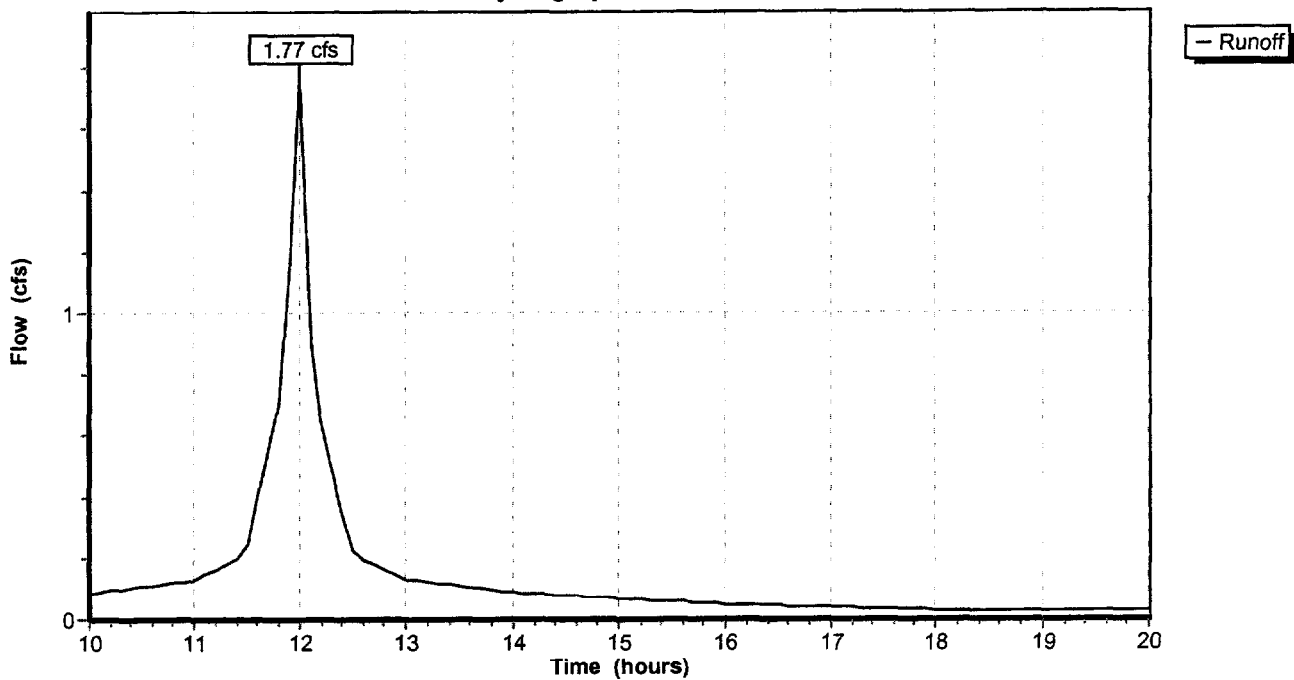
Area (ac)	CN	Description
0.380	98	IMPERVIOUS

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	150	0.0150	1.3		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.00"
0.5	70	0.0150	2.5		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.4	220	Total			

**Subcatchment 6S: AREA DRAINING TO CB 6**

Hydrograph Plot



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Subcatchment 10S: AREA DRAINING DIRECTLY TO STUDY POINT**

Runoff = 7.71 cfs @ 12.25 hrs, Volume= 0.786 af

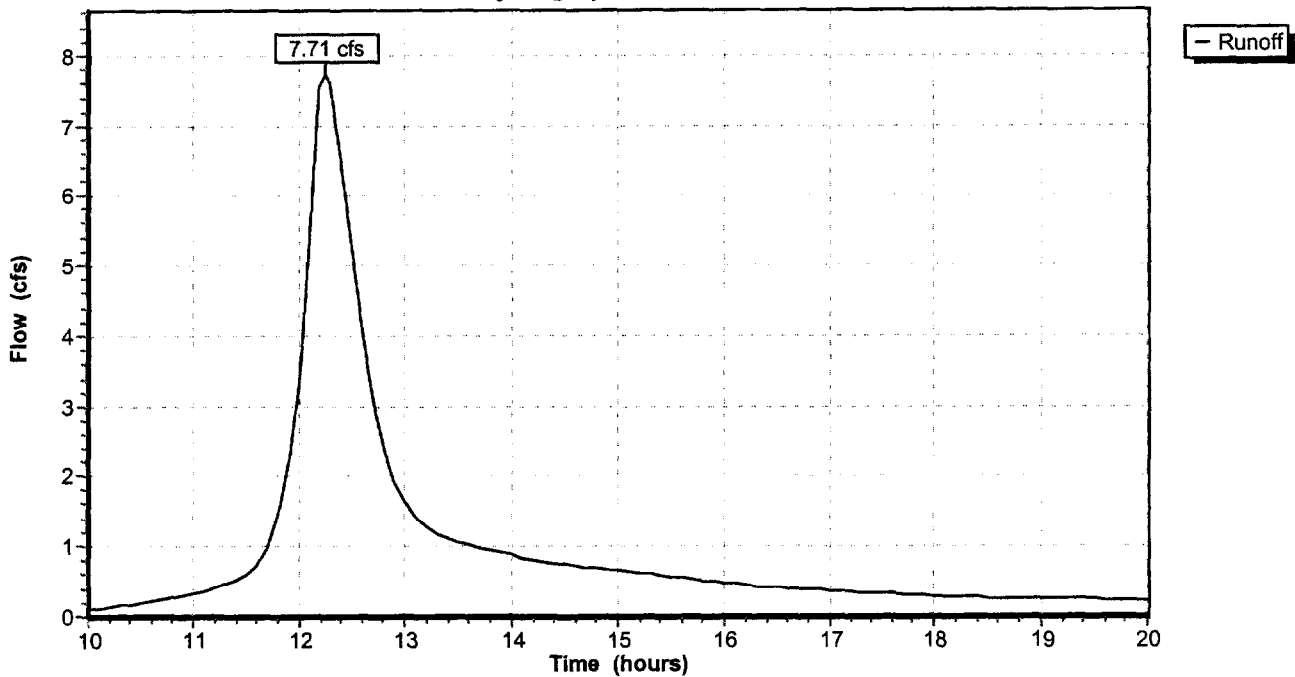
Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.220	98	IMPERVIOUS
1.630	72	WOODS, GOOD, "C"
1.250	74	GRASS, GOOD, "C"
1.380	79	WOODS, GOOD, "D"
4.480	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	150	0.0667	0.2		Sheet Flow, Grass: Dense n= 0.240 P2= 3.00"
8.6	740	0.0324	1.4		Shallow Concentrated Flow, Kv= 8.0 fps
21.2	890	Total			

**Subcatchment 10S: AREA DRAINING DIRECTLY TO STUDY POINT**

Hydrograph Plot



**Reach 1R: STORM DRAIN 1**

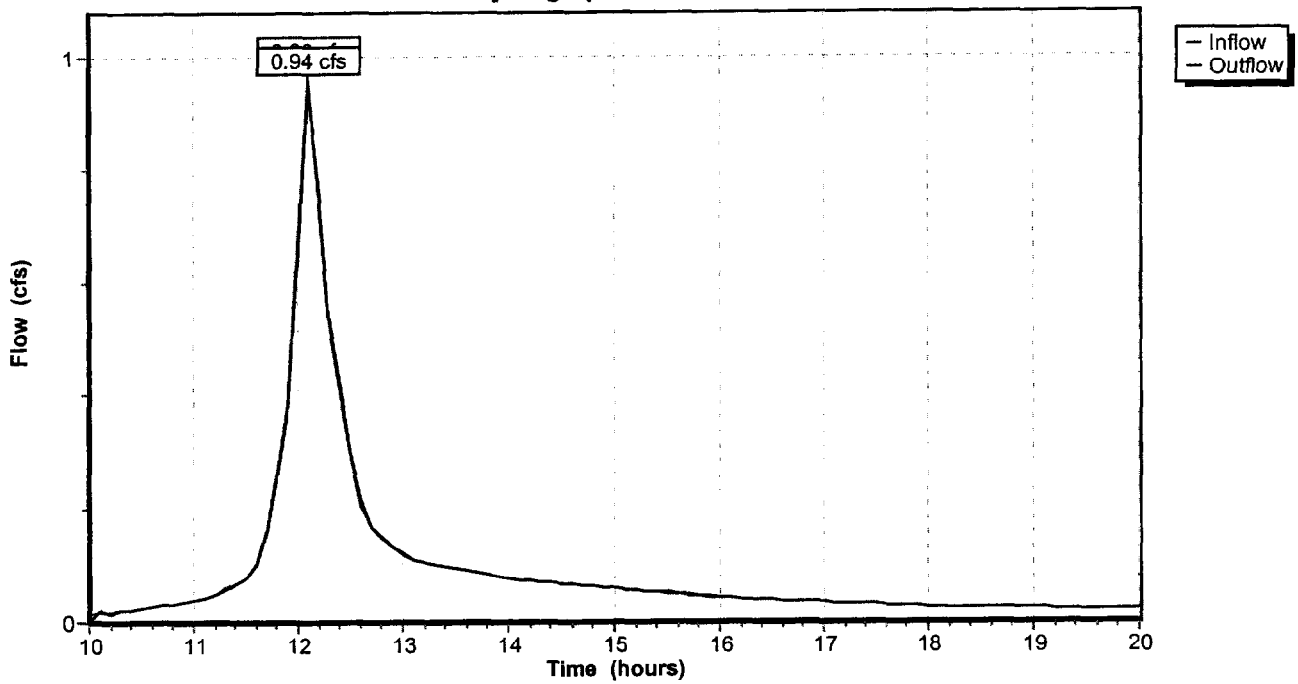
Inflow = 0.96 cfs @ 12.11 hrs, Volume= 0.075 af  
Outflow = 0.94 cfs @ 12.11 hrs, Volume= 0.075 af, Atten= 2%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 4.6 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.28'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 90.0' Slope= 0.0150 '/'

**Reach 1R: STORM DRAIN 1**

Hydrograph Plot



**Reach 2R: STORM DRAIN 2**

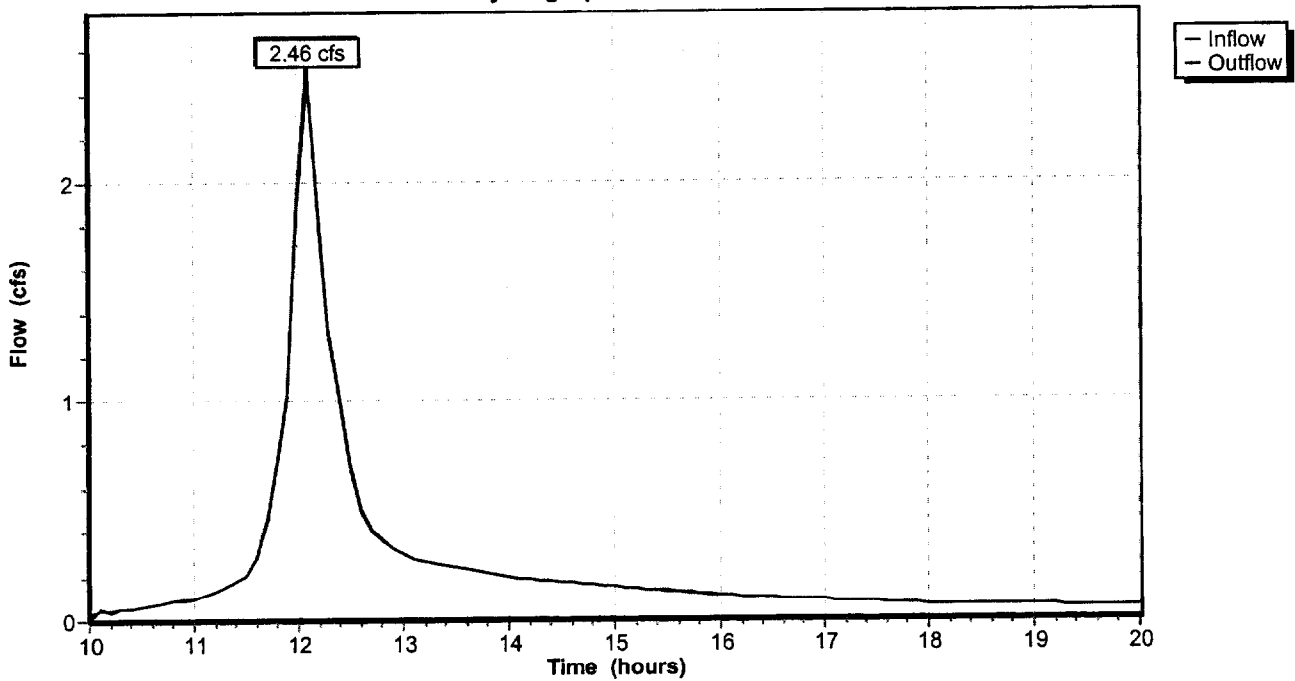
Inflow = 2.47 cfs @ 12.09 hrs, Volume= 0.193 af  
Outflow = 2.46 cfs @ 12.10 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 6.0 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.7 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.46'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 92.0' Slope= 0.0150 1/1"

**Reach 2R: STORM DRAIN 2**

Hydrograph Plot



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Reach 3R: STORM DRAIN 3**

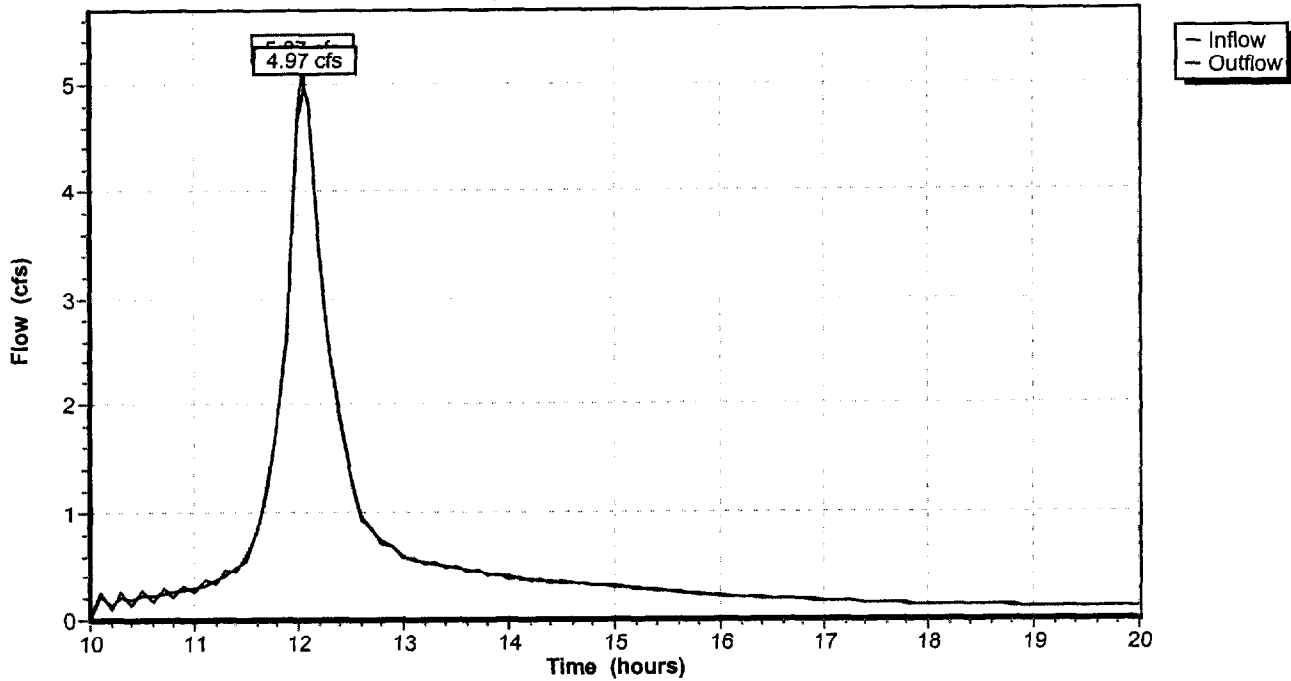
Inflow = 5.07 cfs @ 12.05 hrs, Volume= 0.412 af  
Outflow = 4.97 cfs @ 12.06 hrs, Volume= 0.412 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.2 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.3 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.69'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 92.0' Slope= 0.0150 '/'

**Reach 3R: STORM DRAIN 3**

Hydrograph Plot



**Reach 4R: STORM DRAIN 4**

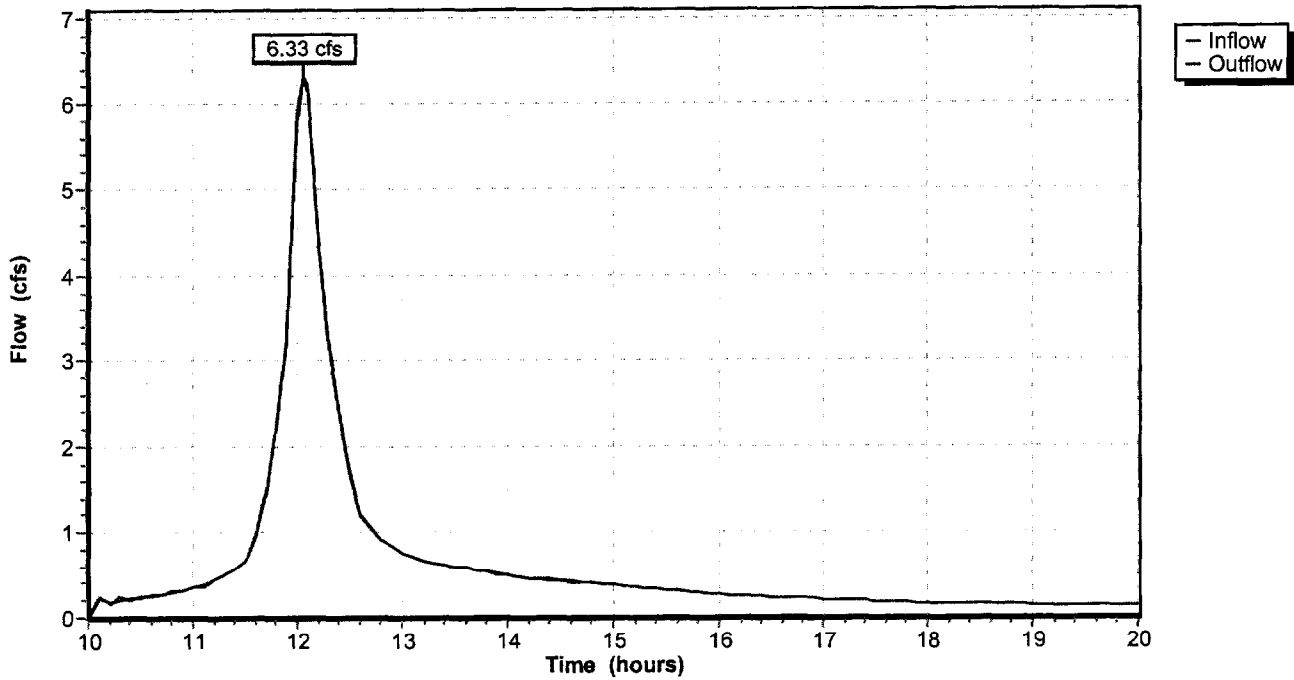
Inflow = 6.32 cfs @ 12.06 hrs, Volume= 0.515 af  
Outflow = 6.33 cfs @ 12.07 hrs, Volume= 0.515 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.6 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.6 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.80'  
Capacity at bank full= 8.59 cfs  
15.0" Diameter Pipe n= 0.012 Length= 95.0' Slope= 0.0151 1'

**Reach 4R: STORM DRAIN 4**

Hydrograph Plot





**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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**Reach 5R: STORM DRAIN 5**

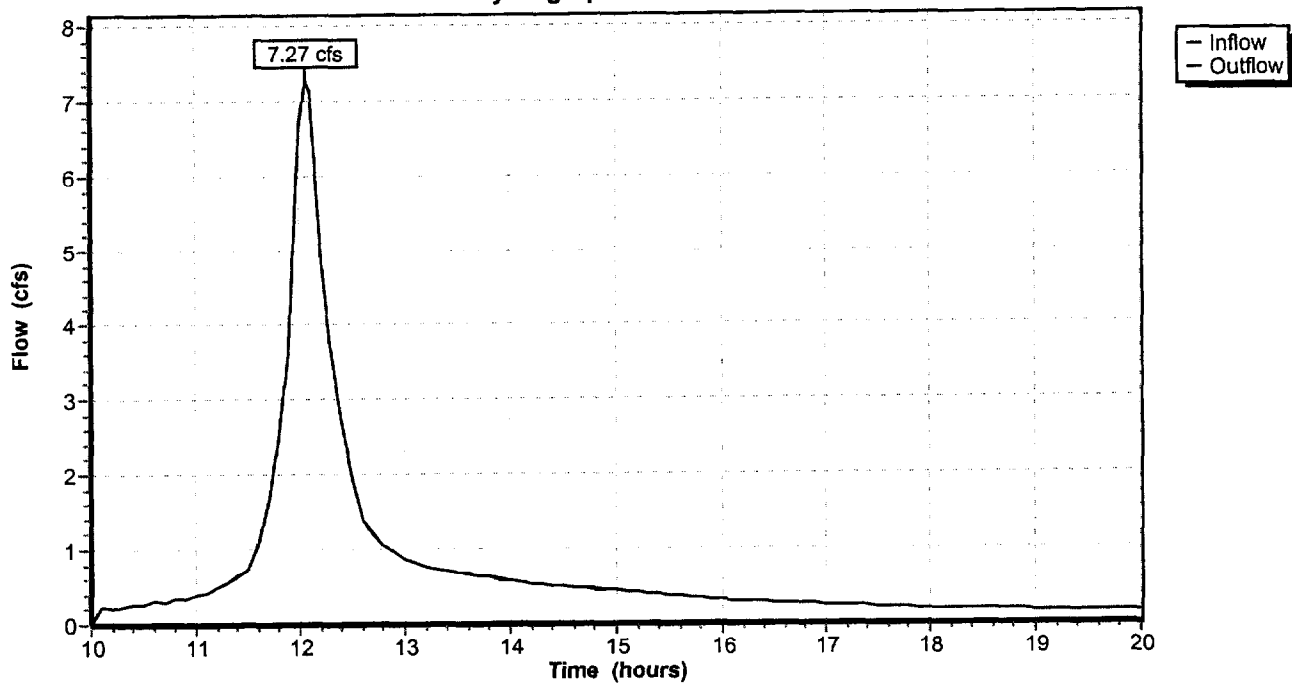
Inflow = 7.26 cfs @ 12.06 hrs, Volume= 0.588 af  
Outflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.8 fps, Min. Travel Time= 0.1 min  
Avg. Velocity= 3.7 fps, Avg. Travel Time= 0.2 min

Peak Depth= 0.88'  
Capacity at bank full= 8.61 cfs  
15.0" Diameter Pipe n= 0.012 Length= 35.0' Slope= 0.0151 1'

**Reach 5R: STORM DRAIN 5**

Hydrograph Plot



Reach 6R: STORM DRAIN 6

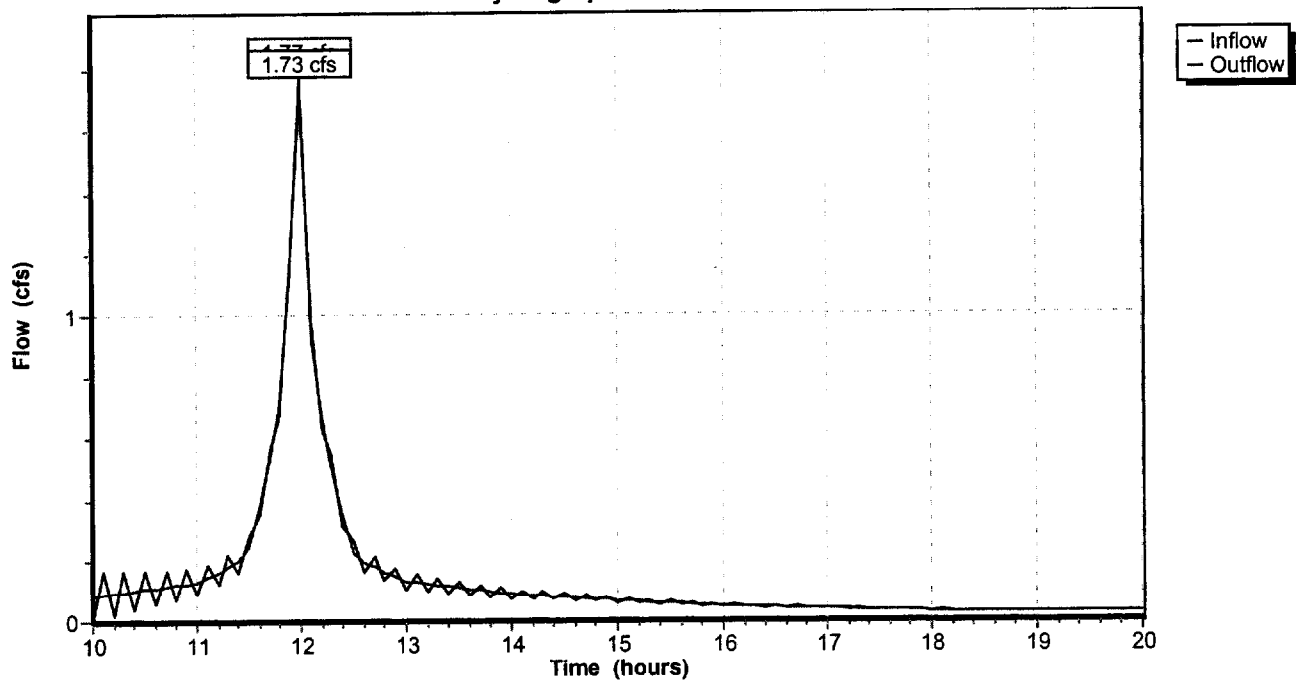
Inflow = 1.77 cfs @ 11.99 hrs, Volume= 0.114 af  
Outflow = 1.73 cfs @ 11.99 hrs, Volume= 0.113 af, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 5.4 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.38'  
Capacity at bank full= 8.50 cfs  
15.0" Diameter Pipe n= 0.012 Length= 19.0' Slope= 0.0147 1'

Reach 6R: STORM DRAIN 6

Hydrograph Plot



**Reach 7R: STORM DRAIN LEAVING VORTECH UNIT**

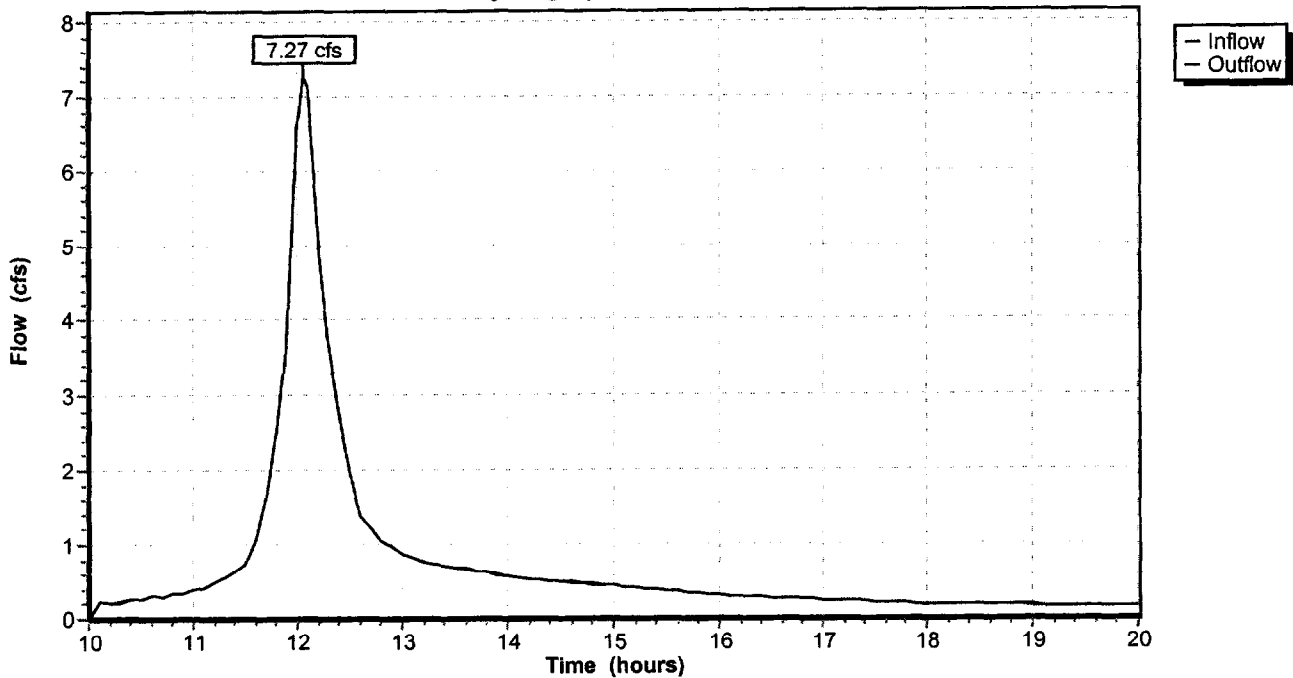
Inflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af  
Outflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.7 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.89'  
Capacity at bank full= 8.48 cfs  
15.0" Diameter Pipe n= 0.012 Length= 15.0' Slope= 0.0147 1'

**Reach 7R: STORM DRAIN LEAVING VORTECH UNIT**

Hydrograph Plot



### Reach 8R: FLOW THROUGH WETLAND

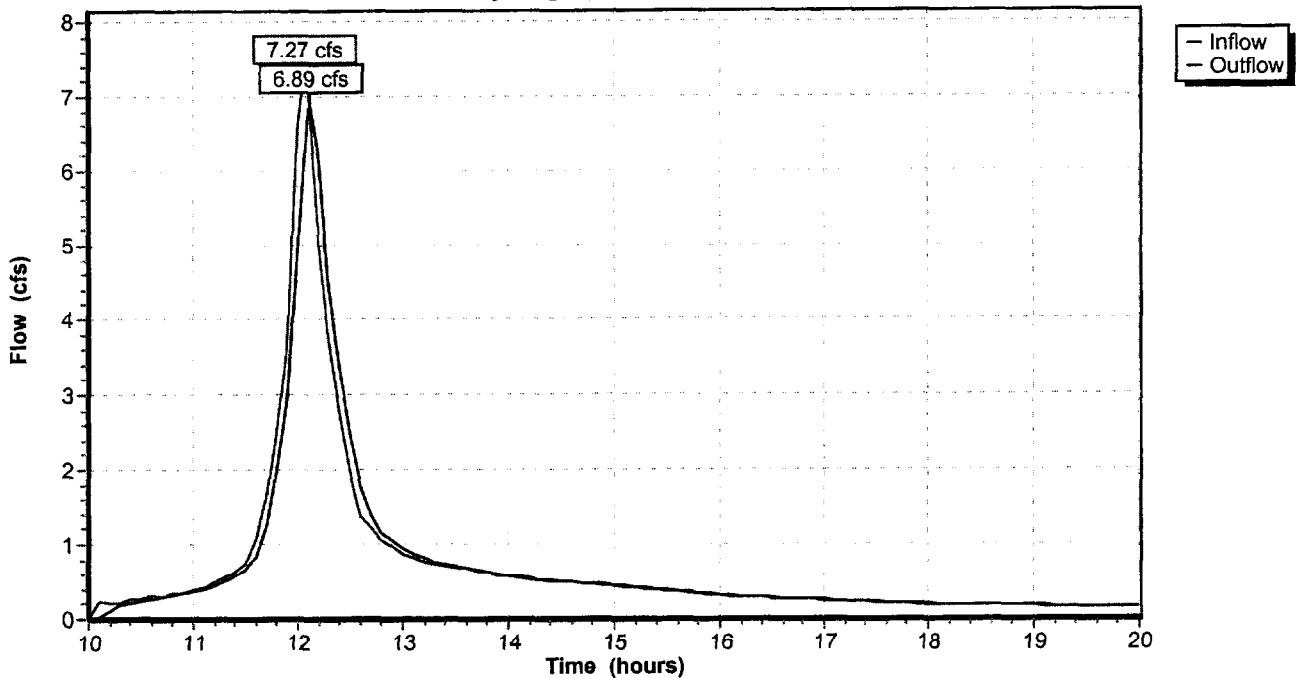
Inflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af  
Outflow = 6.89 cfs @ 12.12 hrs, Volume= 0.585 af, Atten= 5%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 1.2 fps, Min. Travel Time= 2.0 min  
Avg. Velocity = 0.4 fps, Avg. Travel Time= 5.8 min

Peak Depth= 0.31'  
Capacity at bank full= 16.02 cfs  
20.00' x 0.50' deep channel, n= 0.040 Length= 140.0' Slope= 0.0050 1'

### Reach 8R: FLOW THROUGH WETLAND

Hydrograph Plot



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=4.70"

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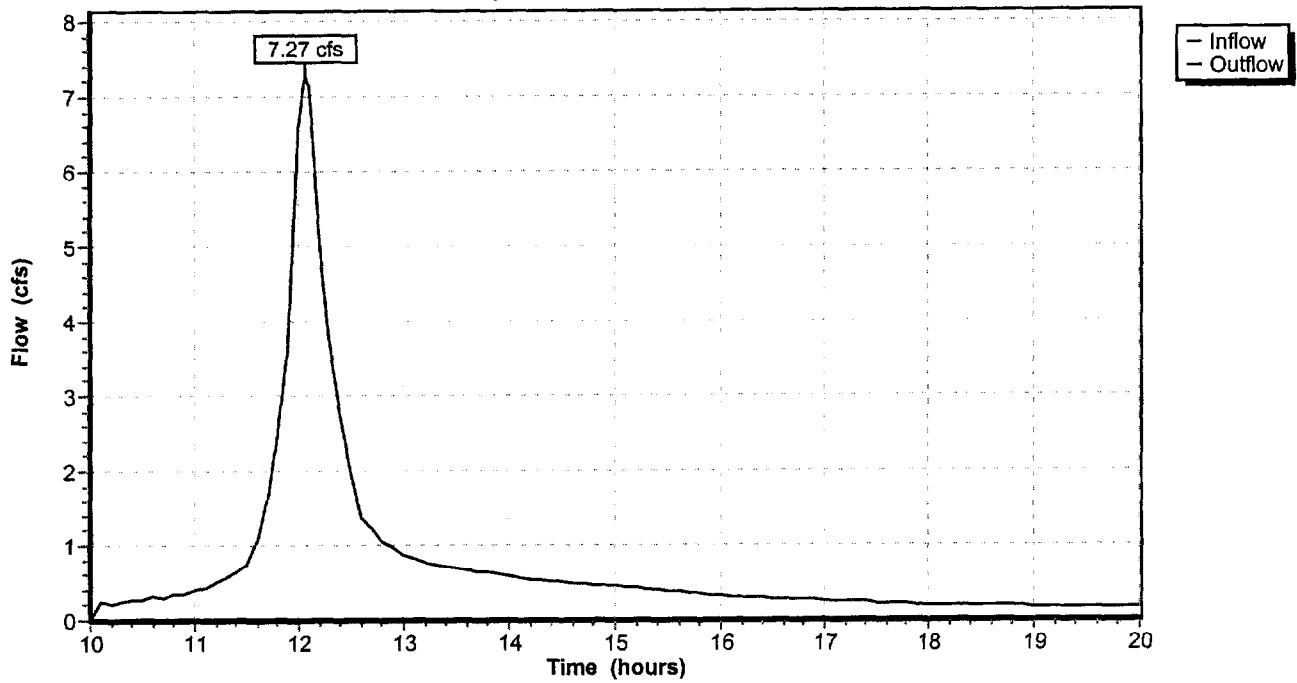
**Reach 10R:**

Inflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af  
Outflow = 7.27 cfs @ 12.07 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

**Reach 10R:**

Hydrograph Plot



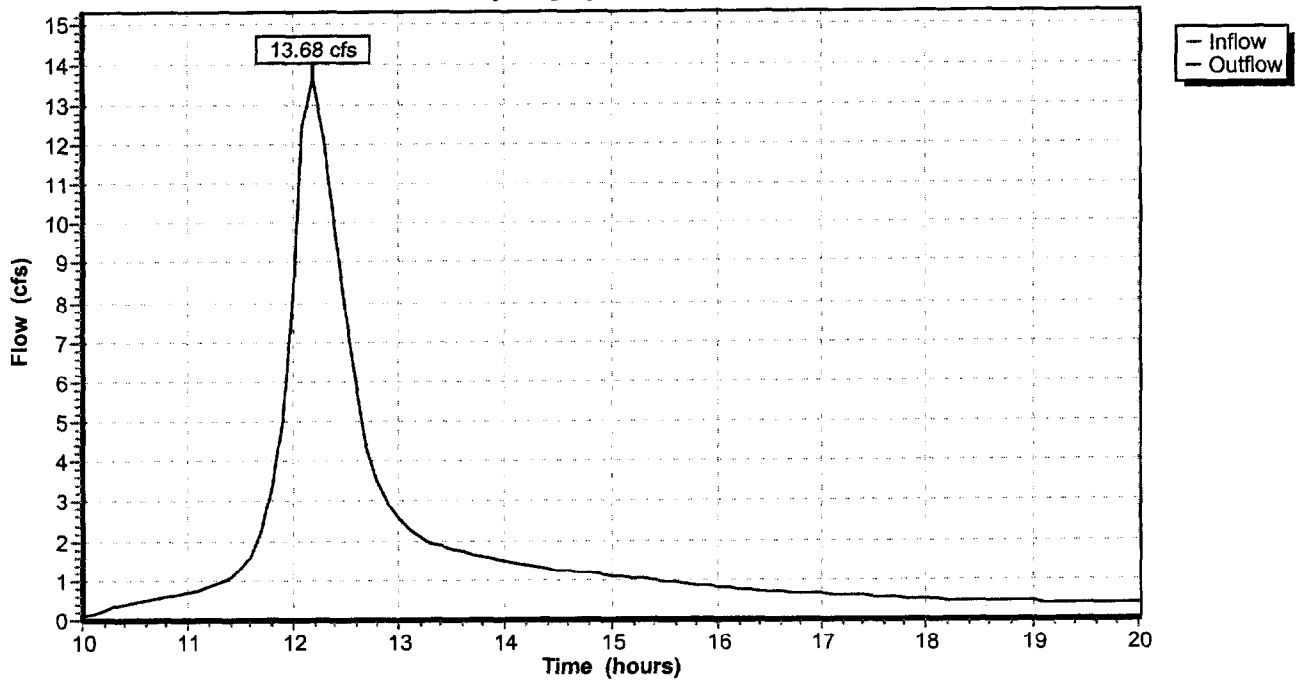
**Reach 100R:**

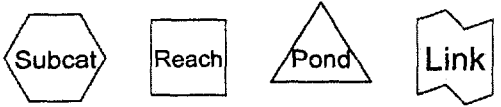
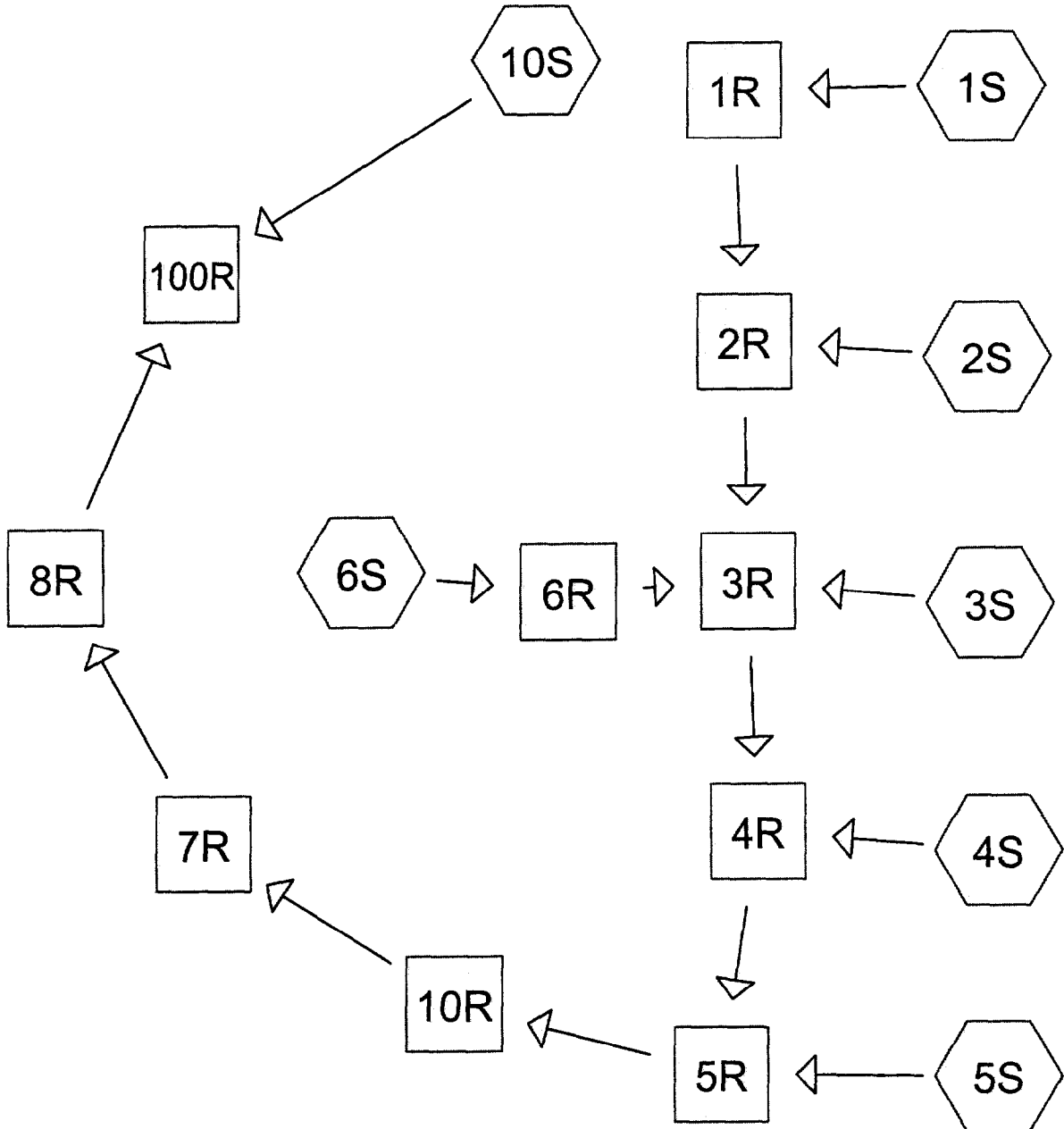
Inflow = 13.68 cfs @ 12.19 hrs, Volume= 1.372 af  
Outflow = 13.68 cfs @ 12.19 hrs, Volume= 1.372 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

**Reach 100R:**

Hydrograph Plot





Drainage Diagram for 00256 STARBIRD ROAD CONDOMINIUMS (POST)  
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**Subcatchment 1S: AREA DRAINING TO CB 1**

Runoff = 1.23 cfs @ 12.10 hrs, Volume= 0.095 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.060	98	IMPERVIOUS
0.100	72	WOODS, GOOD, "C"
0.250	74	GRASS, GOOD, "C"
0.410	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	130	0.1070	0.2		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.6	70	0.0570	1.9		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
9.9	200	Total			

**Subcatchment 2S: AREA DRAINING TO CB 2**

Runoff = 1.98 cfs @ 12.07 hrs, Volume= 0.151 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.110	98	IMPERVIOUS
0.210	72	WOODS, GOOD, "C"
0.330	74	GRASS, GOOD, "C"
0.650	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1400	0.2		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	70	0.0857	2.3		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
7.3	170	Total			

**Subcatchment 3S: AREA DRAINING TO CB 3**

Runoff = 1.76 cfs @ 12.08 hrs, Volume= 0.134 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
 Type III 24-hr Rainfall=5.50"



**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=5.50"

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Area (ac)	CN	Description
0.100	98	IMPERVIOUS
0.200	72	WOODS, GOOD, "C"
0.260	74	GRASS, GOOD, "C"
0.560	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	110	0.1450	0.3		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	80	0.1250	2.8		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
7.7	190	Total			

**Subcatchment 4S: AREA DRAINING TO CB 4**

Runoff = 1.76 cfs @ 12.05 hrs, Volume= 0.132 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	IMPERVIOUS
0.230	72	WOODS, GOOD, "C"
0.200	74	GRASS, GOOD, "C"
0.550	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.2000	0.3		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	70	0.0857	2.3		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
6.4	170	Total			

**Subcatchment 5S: AREA DRAINING TO CB 5**

Runoff = 1.27 cfs @ 12.04 hrs, Volume= 0.093 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.070	98	IMPERVIOUS
0.180	72	WOODS, GOOD, "C"
0.150	74	GRASS, GOOD, "C"
0.400	77	Weighted Average

**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=5.50"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	90	0.2000	0.3		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
0.5	80	0.1250	2.8		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
5.9	170	Total			

**Subcatchment 6S: AREA DRAINING TO CB 6**

Runoff = 2.08 cfs @ 11.99 hrs, Volume= 0.133 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.380	98	IMPERVIOUS

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	150	0.0150	1.3		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.00"
0.5	70	0.0150	2.5		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.4	220	Total			

**Subcatchment 10S: AREA DRAINING DIRECTLY TO STUDY POINT**

Runoff = 10.10 cfs @ 12.25 hrs, Volume= 1.012 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.220	98	IMPERVIOUS
1.630	72	WOODS, GOOD, "C"
1.250	74	GRASS, GOOD, "C"
1.380	79	WOODS, GOOD, "D"
4.480	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	150	0.0667	0.2		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.00"
8.6	740	0.0324	1.4		<b>Shallow Concentrated Flow,</b> Kv= 8.0 fps
21.2	890	Total			

**Reach 1R: STORM DRAIN 1**

Inflow = 1.23 cfs @ 12.10 hrs, Volume= 0.095 af  
Outflow = 1.22 cfs @ 12.11 hrs, Volume= 0.095 af, Atten= 2%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 5.0 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.32'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 90.0' Slope= 0.0150 '/'

**Reach 2R: STORM DRAIN 2**

Inflow = 3.17 cfs @ 12.09 hrs, Volume= 0.247 af  
Outflow = 3.16 cfs @ 12.09 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 6.5 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 2.9 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.53'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 92.0' Slope= 0.0150 '/'

**Reach 3R: STORM DRAIN 3**

Inflow = 6.27 cfs @ 12.05 hrs, Volume= 0.514 af  
Outflow = 6.25 cfs @ 12.06 hrs, Volume= 0.513 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.6 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.6 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.80'  
Capacity at bank full= 8.57 cfs  
15.0" Diameter Pipe n= 0.012 Length= 92.0' Slope= 0.0150 '/'

**Reach 4R: STORM DRAIN 4**

Inflow = 7.97 cfs @ 12.06 hrs, Volume= 0.645 af  
Outflow = 7.98 cfs @ 12.07 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs  
Max. Velocity= 7.9 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.8 fps, Avg. Travel Time= 0.4 min

**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=5.50"

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Peak Depth= 0.95'

Capacity at bank full= 8.59 cfs

15.0" Diameter Pipe n= 0.012 Length= 95.0' Slope= 0.0151 '/'

**Reach 5R: STORM DRAIN 5**

Inflow = 9.18 cfs @ 12.06 hrs, Volume= 0.738 af

Outflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 8.0 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 4.0 fps, Avg. Travel Time= 0.1 min

Peak Depth= 1.10'

Capacity at bank full= 8.61 cfs

15.0" Diameter Pipe n= 0.012 Length= 35.0' Slope= 0.0151 '/'

**Reach 6R: STORM DRAIN 6**

Inflow = 2.08 cfs @ 11.99 hrs, Volume= 0.133 af

Outflow = 2.03 cfs @ 11.99 hrs, Volume= 0.133 af, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 5.7 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.3 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.42'

Capacity at bank full= 8.50 cfs

15.0" Diameter Pipe n= 0.012 Length= 19.0' Slope= 0.0147 '/'

**Reach 7R: STORM DRAIN LEAVING VORTECH UNIT**

Inflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af

Outflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 7.9 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 3.9 fps, Avg. Travel Time= 0.1 min

Peak Depth= 1.14'

Capacity at bank full= 8.48 cfs

15.0" Diameter Pipe n= 0.012 Length= 15.0' Slope= 0.0147 '/'

**Reach 8R: FLOW THROUGH WETLAND**

Inflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af

Outflow = 8.77 cfs @ 12.12 hrs, Volume= 0.735 af, Atten= 5%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.3 fps, Min. Travel Time= 1.8 min

Avg. Velocity = 0.4 fps, Avg. Travel Time= 5.3 min

**00256 STARBIRD ROAD CONDOMINIUMS (POST)**

Type III 24-hr Rainfall=5.50"

Prepared by SEBAGO TECHNICS INC

Page 6

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9/27/01

Peak Depth= 0.36'

Capacity at bank full= 16.02 cfs

20.00' x 0.50' deep channel, n= 0.040 Length= 140.0' Slope= 0.0050 '/'

**Reach 10R:**

Inflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af  
Outflow = 9.19 cfs @ 12.07 hrs, Volume= 0.738 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

**Reach 100R:**

Inflow = 17.44 cfs @ 12.19 hrs, Volume= 1.747 af  
Outflow = 17.44 cfs @ 12.19 hrs, Volume= 1.747 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

# **Exhibit 2**

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## **Erosion & Sedimentation Control Plan**

## **EROSION AND SEDIMENT CONTROL PLAN**

### **Condominiums Starbird Road Portland, Maine**

#### **General**

This plan has been developed to provide a strategy for dealing with soil erosion and sedimentation during and after the construction of the four proposed multi-family detached condominiums and associated pavement off Starbird Road in Portland. This plan is based on the Standards and Specifications for Erosion Prevention as contained in the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices (dated March 1991).

The development proposal consists of constructing four new buildings with a total of 12 units that will have approximately 16,500 square feet of footprint. Associated paved access drives, parking areas, sidewalks, and stormwater management facilities are also proposed. Landscaped areas will be retained throughout the site.

#### **Construction Phase**

In order to protect the soil, water, wetland, and wildlife resources of this development and adjacent lands, only those areas necessary to construct the building, utilities, and parking areas will be disturbed.

Equipment anticipated to be used for construction includes backhoe(s), truck(s), loader(s), bulldozer(s), cement trucks, asphalt paver, and roller. The following actions will be taken:

1. Those areas undergoing actual construction will be left in an untreated or unvegetated condition for a maximum of 14 days from final grading of the loam. Loam will be stockpiled for future use and protected from erosion losses by mulch and filter fabric barriers. The contractor shall determine the location of such stockpiles at the time of construction.
2. Prior to clearing and grubbing, filter fabric fencing will be staked across the slope(s), on the contour, at or just below the limits of clearing or grubbing, and/or just above any adjacent property line or wetland to protect against construction related erosion
3. All silt fencing will be inspected, replaced and/or repaired weekly, as well as immediately following any significant rainfall or snowmelt. Sediment will be removed and returned to the site when it reaches 1/3 the fence height.

4. Any fill used on the site will meet DOT Standard 703.18 for common borrow and DOT Standard 703.06(b) for sub base aggregate.
5. If final seeding of the disturbed areas is not completed by September 15th of the year of the construction, then on that date these areas will be graded and smoothed, then prepared to be seeded to a winter cover crop of Rye at the rate of 112 lbs./acre or 3-lbs./1000 sq. ft. The Rye seeding will be preceded by an application of 3 tons of lime and 1,000 lbs. of 10-10-10 fertilizer or its equivalent. If the Rye seeding cannot be completed by October 1st, then on that date, hay mulch will be applied at the rate of 2 tons per acre to provide winter protection. If Rye does not make adequate growth by December 1st, then on that date, hay mulch will be applied at the rates specified under Vegetation Plan #4.
6. During the construction phase, intercepted sediment will be returned to the site and regraded onto open areas. Post seeding sediment, if any, will be hauled to a disposal area approved by the Town Engineer.
7. During winter construction, all finished slopes 8% and greater are to be permanently netted, and any mulch application shall not allow for soil visibility.

#### **Vegetation Plan**

Revegetation measures will commence immediately upon completion of construction except as noted under paragraph 5 above. All disturbed areas not otherwise stabilized will be graded, smoothed, and prepared for final seeding as follows:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface.
2. In lieu of soil tests, agricultural limestone will be spread at the rate of three tons per acre. 10-20-20 fertilizer will follow at the rate of 800 lbs. per acre. These two soil amendments will be incorporated into the soil prior to seeding.
3. Following seed bed preparation, any sediment-stormwater detention structures, swale areas, fill areas, and back slopes will be seeded to a mixture of 35% Creeping Red Fescue, 6% Red Top, 24% Kentucky Bluegrass, 10% Perennial Ryegrass, 20% Annual Ryegrass, and 5% White Dutch Clover. The lawn areas will be seeded to a premium turf mixture of bluegrass and/or Fescue with a seeding rate of 2-3 lbs. per 1,000 square feet.

\* Lawn quality sod may be substituted for seed only.

4. Hay mulch at the rate of 100 lbs. per 1,000 square feet or a hydro-application of asphalt, wood, or paper fiber will be applied following seeding. A suitable binder, such as Curasol or Terratack, will be used on hay mulch for wind control. At a minimum, the soil must be covered.



5. All filter fabric barriers will remain in place until seedings have become 75% established and then removed within 10 days.

**Inspections/Monitoring**

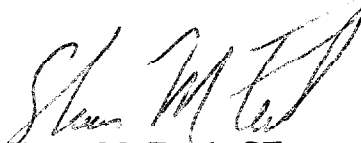
Maintenance measures shall be applied as needed during the entire construction cycle. After each rainfall, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuing function.

Following the temporary and/or final seedings, the contractor shall inspect the site semimonthly until the seedings have been established. Established means a minimum of 85%-90% of areas vegetated with vigorous growth. Reseeding shall be carried out by the contractor with follow-up inspections in the event of any failures until vegetation is adequately established.

Prepared by:

SEBAGO TECHNICS, INC.

Gregory J. Boulette  
Project Engineer



Shawn M. Frank, PE  
Professional Engineer

SMF/GJB:gjb/jc  
May 18, 2001

# **Exhibit 3**

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## **Purchase & Sale Agreement**

1c

# OFFER TO PURCHASE REAL ESTATE

BE IT KNOWN, the undersigned,

*BROWN DEVELOPMENT COY* (Buyer), offers to purchase from

*THOMAS S.T.I. INC.* (Owner), real estate known as

City/Town of *PORTLAND*, County of *umberland*  
State of *ME.*, said property more particularly described as:

and containing *16 + ACRES* square feet of land, more or less.

The purchase price offered is \$	
Deposit herewith paid	\$
Further deposit upon signing sales agreement	\$
Balance at closing	\$ _____
<b>Total purchase price</b>	<b>\$</b>

This offer is conditional upon the following terms:

1. This offer is subject to Buyer obtaining a real estate mortgage for no less than \$ payable over *N/A* years with interest not to exceed % at customary terms with a firm commitment thereto *N/A* days from date hereof.
2. This offer is further subject to Buyer obtaining a satisfactory home inspection report and termite/pest report within *N/A* days from date hereof.
3. Owner shall pay broker *0*, a commission of \$ upon closing.
4. Said property is to be sold free and clear of all encumbrances, by good and marketable title, with full possession to said property available to Buyer at date of closing.
5. The parties agree to execute a standard purchase and sales agreement on the terms contained within days from acceptance of this offer.
6. The closing shall occur on or before *PLANNING BO APPROVAL*, at the public recording office, unless such other time and place shall be agreed upon.
7. Other terms:

8. This offer shall remain open until \_\_\_\_\_ o'clock, \_\_\_\_\_, 19 \_\_\_\_\_ and if not accepted by said time this offer shall be deemed rescinded and all deposits shall be refunded.

Signed this *1st* day of *DECEMBER* *2000*

Broker

Buyer

Date

Buyer

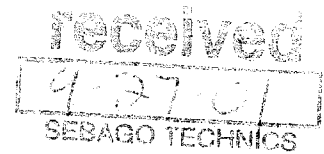
Date

*12/01/00*  
*12/01/00*

# Exhibit 4

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Evaluation of Fill Stability



## **R. W. Gillespie & Associates, Inc.**

CONSULTING GEOTECHNICAL & ENVIRONMENTAL SPECIALISTS

25 September 2001

Mr. Shaun Frank, P.E.  
Sebago Technics, Inc.  
P.O. Box 1339  
Westbrook, ME 04098

Subject: Evaluation of Fill Stability  
Extension of Starbird Road  
Portland, Maine  
RWG&A Project No. 572-28

Dear Shaun:

In accordance with your request, we have evaluated stability of fill placed along an extension of Starbird Road to accommodate construction of a new sewer line in the Capisic Street. The fill was placed along the west side of the lots on the west side of Capisic Street, and extends about 420 feet from the former end of Starbird Road to lands of Fox and Dozer.

Observations show the fill is primarily sand with varying amounts of gravel and shot rock fragments. Inclusions of silty clay were also noted in sections of the fill embankment. Overall height is in the range of five to about 18 feet based on cross-sections provided to us, and field observations. Discussions with you indicate the fill was placed by end dumping from trucks, and dozed into its present grade; no compactive effort was applied during placement. It appears the fill was placed over existing grade that probably included topsoil and minor amounts of vegetation. Our observations did not show any distress such as tension cracking, gross crest settlement, sloughing, or sink hole type depressions.

The development associated with the extension of Starbird Road includes four townhouse buildings with three units in each building. Construction will be two-story wood frame with conventional footings, frost walls, and a slab-on-grade first floor. The added load of the structures to in-situ stresses is small, and will not have significant impact on stability of the fill.

# R. W. Gillespie & Associates

Page 2 of 2

Based on the information provided to us, and our field observations, it is our opinion that the slope is stable in its present configuration, and will not be significantly influenced by addition of the structures; however, the fill is probably loose, and local settlements, as well as settlement of organic layers (topsoil), may affect foundation and/or slab performance.

We trust the foregoing meets your present needs, and if you have any questions or if we may be of further service, please contact us.

Very truly yours,  
R.W. GILLESPIE & ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Robert W. Gillespie". The signature is written in a cursive style with a large initial "R".

Robert W. Gillespie, P.E.

RWG:ci

**Site Review Pre-Application**  
**Multi-Family/Attached Single Family Dwellings/Two-Family Dwelling**  
**or Commercial Structures and Additions Thereto**

In the interest of processing your application in the quickest possible manner, please complete the Information below for Site Plan Review

**NOTE\*\*If you or the property owner owes real estate or personal property taxes or user charges on ANY PROPERTY within the City, payment arrangements must be made before permits of any kind are accepted.**

Brown Development Corporation

Applicant

10-10-01

Application Date

P.O. Box 7022

Scarborough, ME 04070-7022

Applicant's Mailing Address

Shawn M. Frank, P.E.

c/o Sebago Technics, Inc.

Consultant/Agent

Starbird Road Condominiums

Project Name/Description

Starbird Road

Address Of Proposed Site

(207)856-0277 / (207)856-2206

Applicant/Agent Daytime telephone and FAX

224/A/1

Assessor's Reference, Chart#, Block, Lot#

Proposed Development (Check all that apply)  New Building  Building Addition  Change of Use  Residential  Office  Retail

Manufacturing  Warehouse/Distribution  Parking Lot  Other(Specify) \_\_\_\_\_

12 condominiums in 4 buildings 1.40 ac

Proposed Building Square Footage and /or # of Units

Acreage of Site

Contract Zone

Zoning

Major Site Plan  \_\_\_\_\_

Minor Site Plan \_\_\_\_\_

You must Include the following with you application:

1) A Copy of Your Deed or Purchase and Sale Agreement

2) 9 sets of Site Plan packages containing the information found in the attached sample plans and checklist.

(Section 14-522 of the Zoning Ordinance outlines the process, copies are available for review at the counter, photocopies are \$ 0.25 per page)

I hereby certify that I am the Owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if an approval for the proposed project or use described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this approval at any reasonable hour to enforce the provisions of the codes applicable to this approval.

Signature of applicant: 	Date: <u>10/24/01</u>
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Site Review Fee: Major \$500.00 Minor 400.00

This application is for site review ONLY, a Building Permit application and associated fees will be required prior to construction.

**CITY OF PORTLAND, MAINE  
SITE PLAN CHECKLIST**

Starbird Road Condominiums  
Project Name, Address of Project

\_\_\_\_\_  
I.d. Number

Submitted () & Date	Item	Required Information	Section 14-525 (b,c)
_____	(1)	Standard boundary survey (stamped by a registered surveyor, at a scale of not less than 1 inch to 100 feet and including:	1
_____	(2)	Name and address of applicant and name of proposed development	a
_____	(3)	Scale and north points	b
_____	(4)	Boundaries of the site	c
_____	(5)	Total land area of site	d
_____	(6)	Topography - existing and proposed (2 feet intervals or less)	e
_____	(7)	Plans based on the boundary survey including:	2
_____	(8)	Existing soil conditions	a
_____	(9)	Location of water courses, marshes, rock outcroppings and wooded areas	b
_____	(10)	Location, ground floor area and grade elevations of building and other structures existing and proposed, elevation drawings of exterior facades, and materials to be used	c
_____	(11)	Approximate location of buildings or other structures on parcels abutting the site	d
_____	(12)	Location of on-site waste receptacles	e
_____	(13)	Public utilities	e
_____	(14)	Water and sewer mains	e
_____	(15)	Culverts, drains, existing and proposed, showing size and directions of flows	e
_____	(16)	Location and dimensions, and ownership of easements, public or private rights-of-way, both existing and proposed	f
_____	(17)	Location and dimensions of on-site pedestrian and vehicular accessways	g
_____	(18)	Parking areas	g
_____	(19)	Loading facilities	g
_____	(20)	Design of ingress and egress of vehicles to and from the site onto public streets	g
_____	(21)	Curb and sidewalks	g
_____	(22)	Landscape plan showing:	h
_____	(23)	Location of existing proposed vegetation	h
_____	(24)	Type of vegetation	h
_____	(25)	Quantity of plantings	h
_____	(26)	Size of proposed landscaping	h
_____	(27)	Existing areas to be preserved	h
_____	(28)	Preservation measures to be employed	h
_____	(29)	Details of planting and preservation specifications	h
_____	(30)	Location and dimensions of all fencing and screening	i
_____	(31)	Location and intensity of outdoor lighting system	j
_____	(32)	Location of fire hydrants, existing and proposed	k
_____	(33)	Written statement	c
_____	(34)	Description of proposed uses to be located on site	1
_____	(35)	Quantity and type of residential, if any	1
_____	(36)	Total land area of the site	b2
_____	(37)	Total floor area and ground coverage of each proposed building and structure	b2
_____	(38)	General summary of existing and proposed easements or other burdens	c3
_____	(39)	Method of handling solid waste disposal	4



_____	(40)	Applicant's evaluation of availability of off-site public facilities, including sewer, water and streets	5
_____	(41)	Description of any problems of drainage or topography, or a representation that there are none	6
_____	(42)	An estimate of the time period required for completion of the development	7
_____	(43)	A list of all state and federal regulatory approvals to which the development may be subject	8
_____	(44)	The status of any pending applications	8
_____	(45)	Anticipated timeframe for obtaining such permits	h8
_____	(46)	A letter of non jurisdiction	h8
_____	(47)	Evidence of financial and technical capability to undertake and complete the development including a letter from a responsible financial institution stating that it has reviewed the planned development and would seriously consider financing it when approved.	

Note: Depending on the size and scope of the proposed development, the Planning Board or Planning Authority may request additional information, including (but not limited to):

- drainage patterns and facilities;
- erosion and sedimentation controls to be used during construction;
- a parking and/or traffic study;
- a noise study;
- an environmental impact study;
- a sun shadow study;
- a study of particulates and any other noxious emissions; and
- a wind impact analysis.

Other comments:

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