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THE YACHT CLUB AT SUMMER'S END
CORAL BAY, ST JOHN, USVI

MAJOR LAND DEVELOPMENT PERMIT APPLICATION
STORMWATER MANAGEMENT CALCULATIONS

Prepared for:

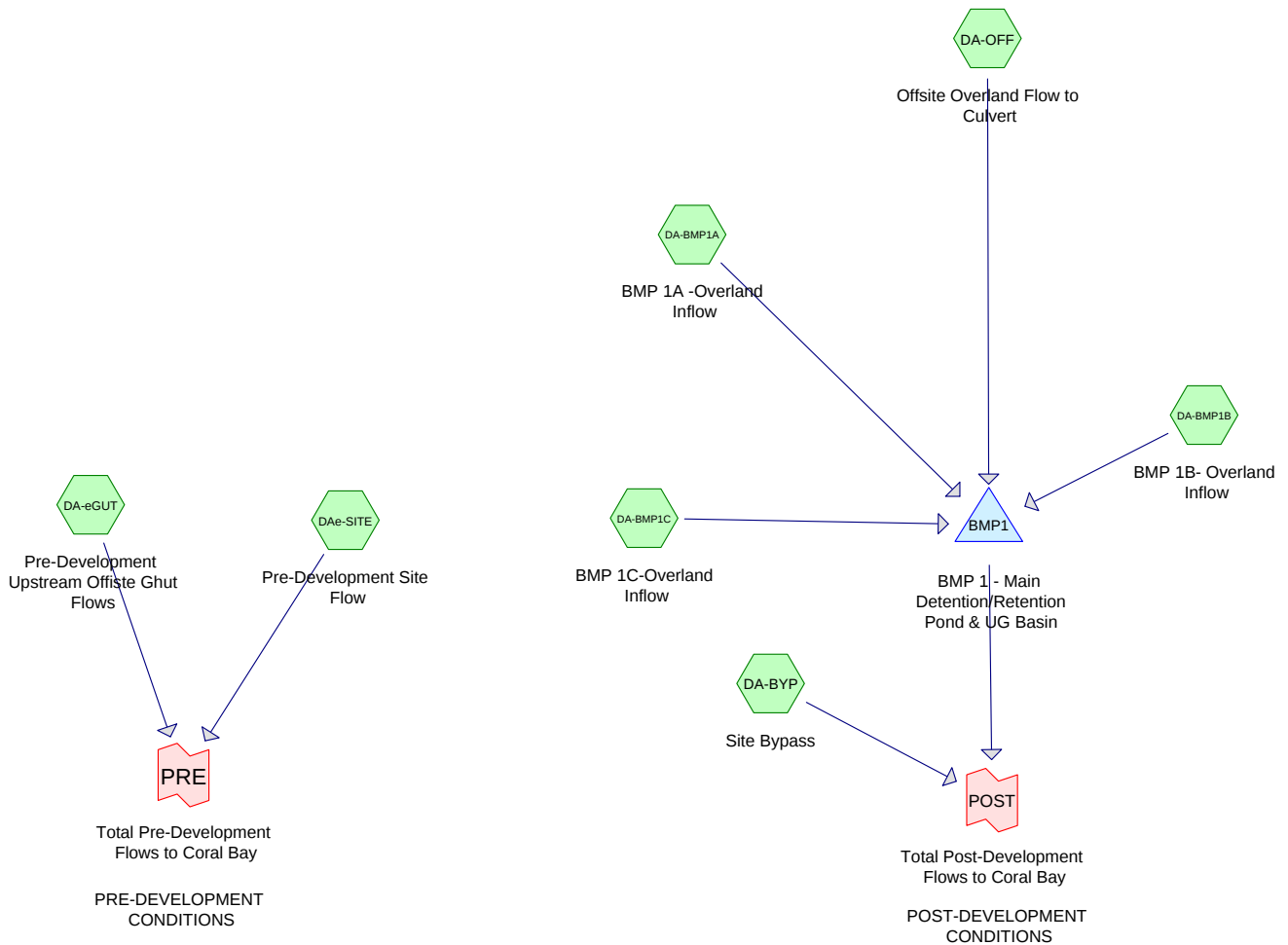
The Summer's End Group, LLC
5000 Estate Enighed, Suite 63
St. John, USVI 00830
Project No. 12-22



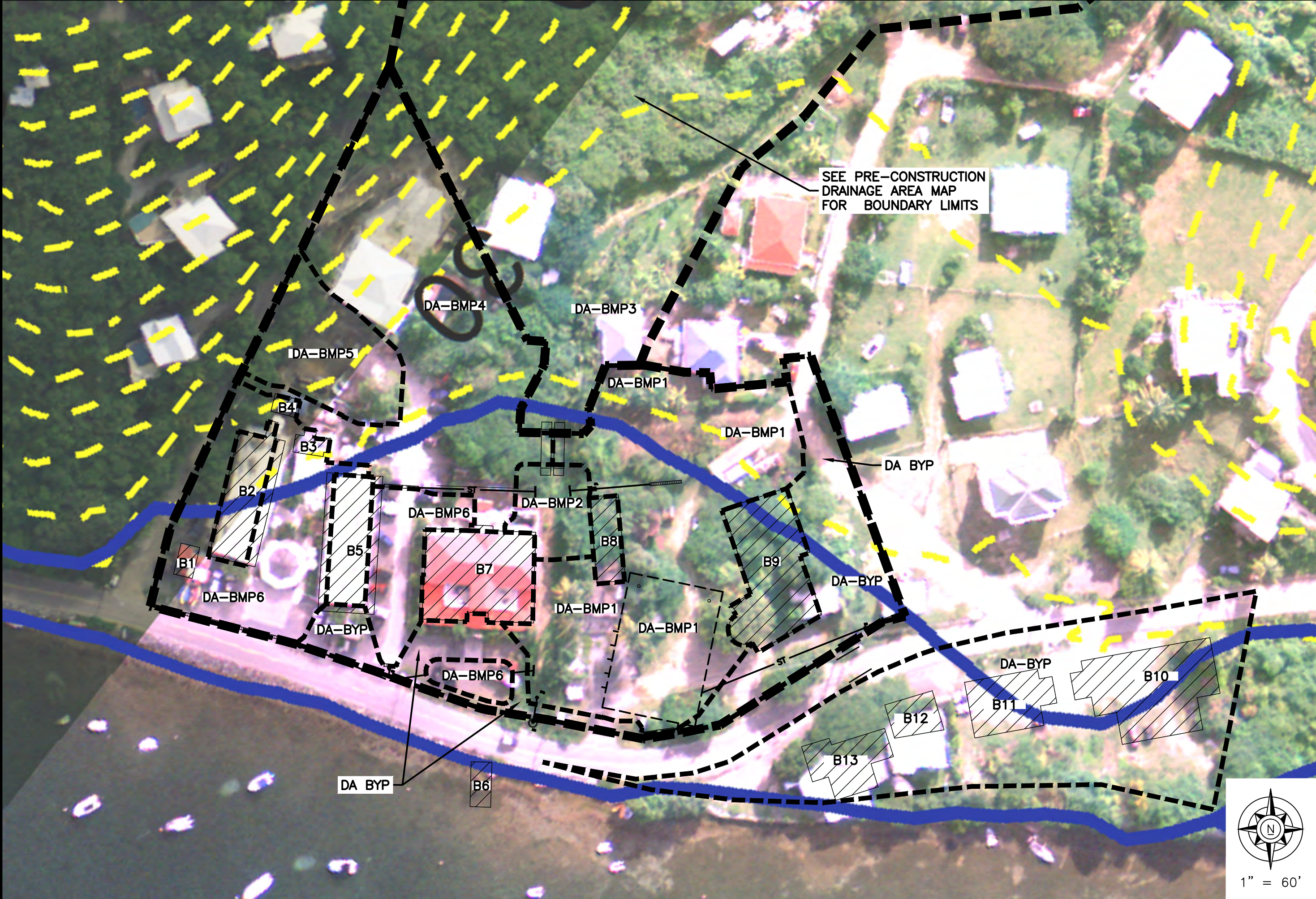
Joseph A. Mina

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Joseph A. Mina, PE
VI P.E. #1049E
Dated: 03-28-2014



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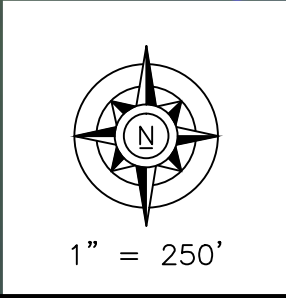
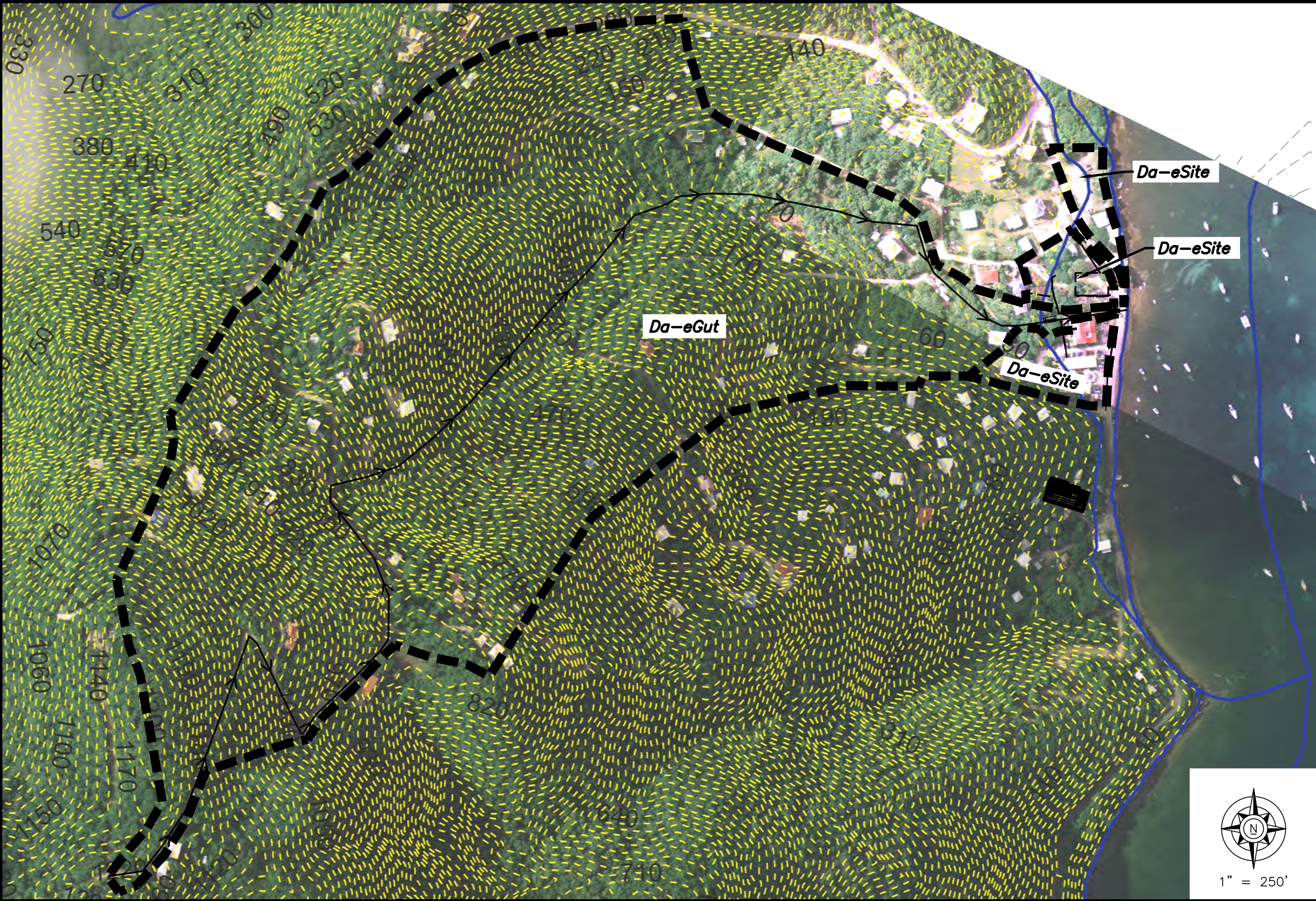
POST-CONSTRUCTION DRAINAGE AREA MAP

YACHT CLUB AT SUMMER'S END, CORAL BAY, ST. JOHN, USVI
CAIRONE & KAUPP, INCORPORATED

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PRE-CONSTRUCTION DRAINAGE AREA MAP

YACHT CLUB AT SUMMER'S END, CORAL BAY, ST. JOHN, USVI
CAIRONE & KAUPP, INCORPORATED

28MAR14

C700

Events for Link PRE: Total Pre-Development Flows to Coral Bay

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	34.41	34.41	0.00
2-Year	52.15	52.15	0.00
5 year	68.28	68.28	0.00
10 year	80.11	80.11	0.00
25 year	95.70	95.70	0.00
50 year	107.53	107.53	0.00
100 year	119.35	119.35	0.00

Events for Link POST: Total Post-Development Flows to Coral Bay

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	25.55	25.55	0.00
2-Year	47.19	47.19	0.00
5 year	66.73	66.73	0.00
10 year	79.67	79.67	0.00
25 year	95.60	95.60	0.00
50 year	107.53	107.53	0.00
100 year	119.44	119.44	0.00

Summary for Subcatchment DA-BMP1A: BMP 1A -Overland Inflow

Runoff = 0.72 cfs @ 0.09 hrs, Volume= 1,489 cf, Depth= 0.50"

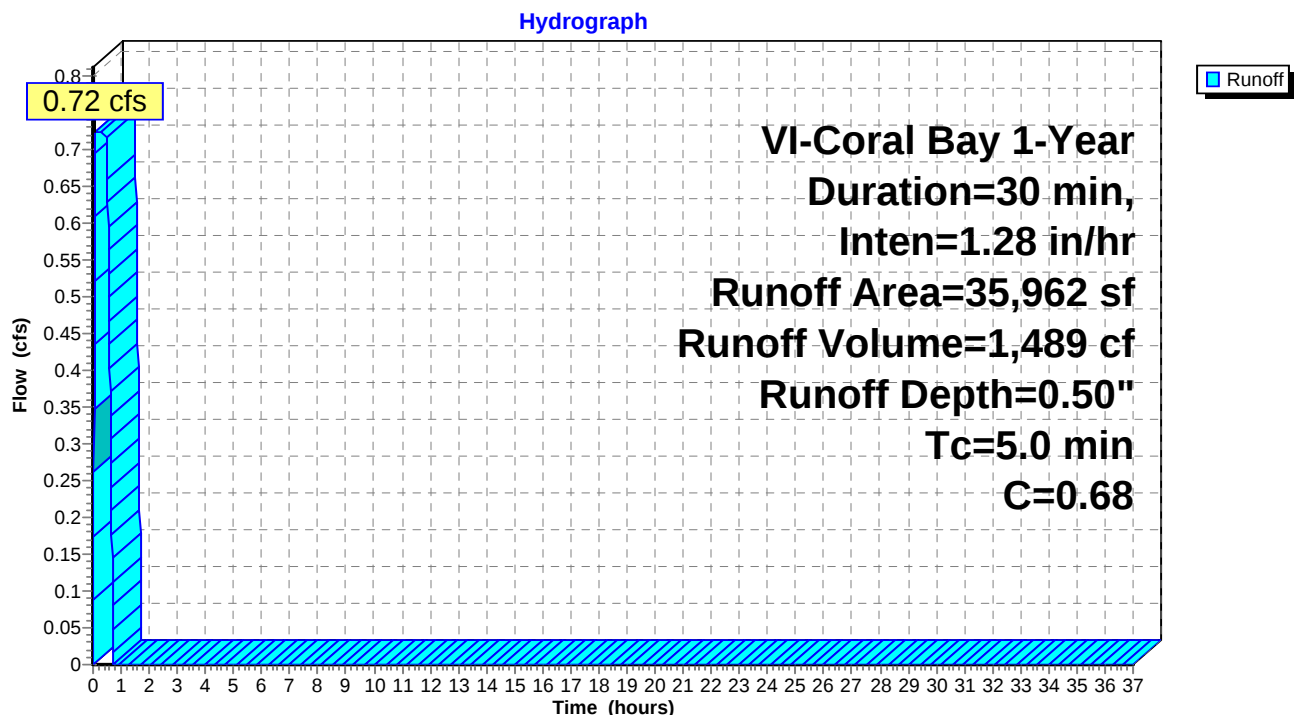
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
4,860	0.25	Wooded Areas
17,650	0.98	Impervious Areas
9,900	0.40	Vegetated Areas
3,552	0.60	Dirt/Gravel areas
35,962	0.68	Weighted Average
18,312		50.92% Pervious Area
17,650		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1A: BMP 1A -Overland Inflow



Summary for Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

Runoff = 0.52 cfs @ 0.09 hrs, Volume= 1,060 cf, Depth= 0.59"

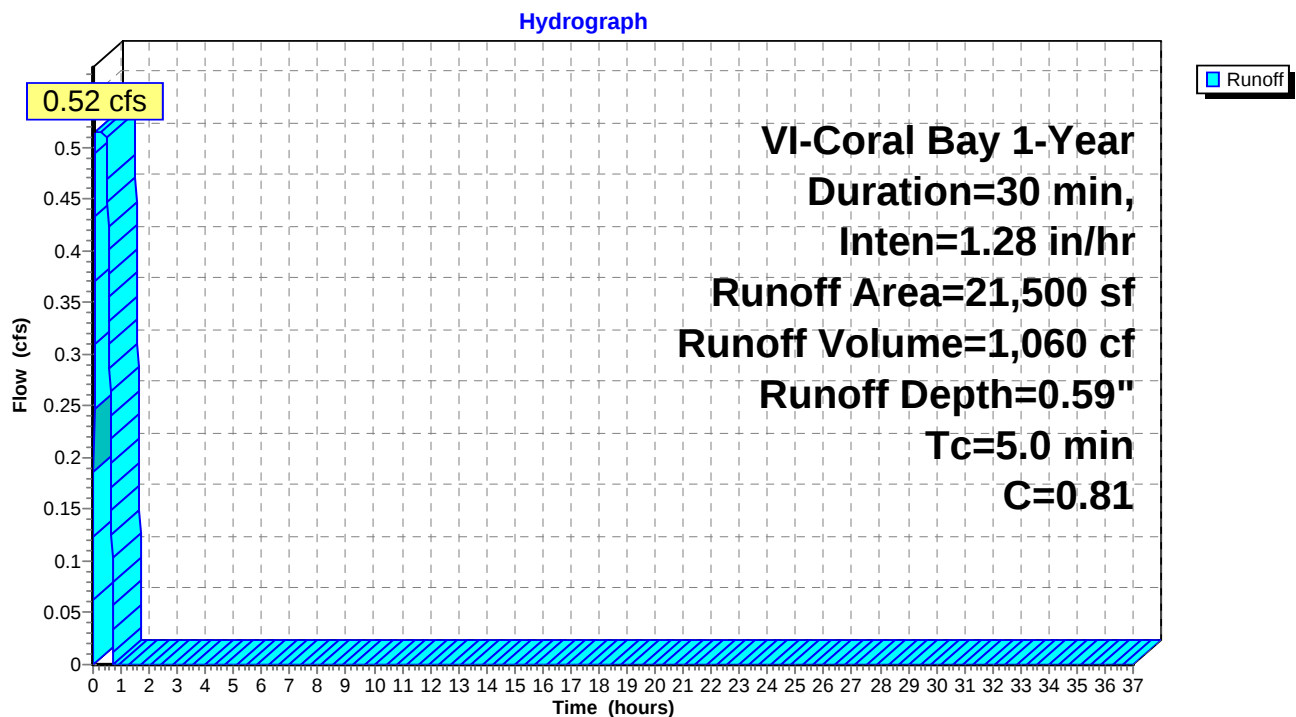
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,200	0.98	Impervious Areas
6,300	0.40	Vegetated Areas
0	0.60	Dirt/Gravel areas
21,500	0.81	Weighted Average
6,300		29.30% Pervious Area
15,200		70.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc Assumed

Subcatchment DA-BMP1B: BMP 1B- Overland Inflow



Summary for Subcatchment DA-BMP1C: BMP 1C-Overland Inflow

Runoff = 0.51 cfs @ 0.09 hrs, Volume= 1,046 cf, Depth= 0.62"

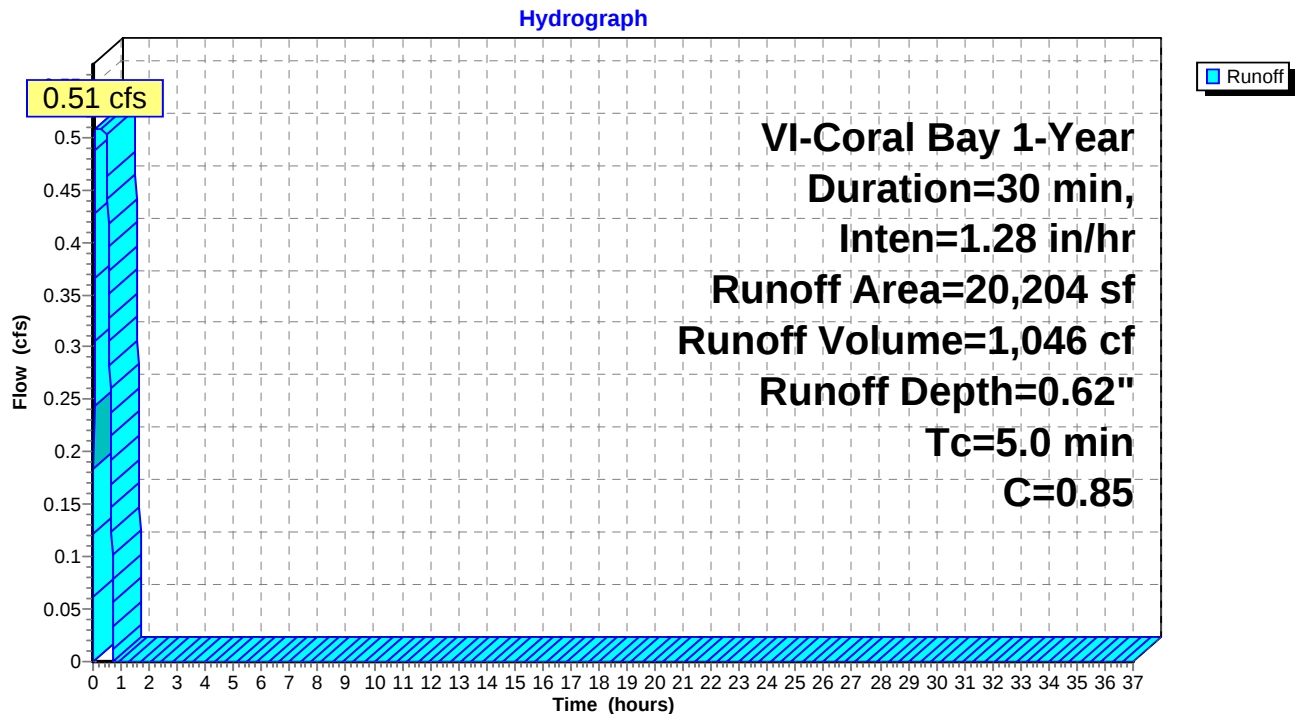
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,754	0.98	Impervious Areas
4,450	0.40	Vegetated Areas
0	0.60	Gravel roads, HSG C
20,204	0.85	Weighted Average
4,450		22.03% Pervious Area
15,754		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1C: BMP 1C-Overland Inflow



Summary for Subcatchment DA-BYP: Site Bypass

Runoff = 1.19 cfs @ 0.09 hrs, Volume= 2,437 cf, Depth= 0.56"

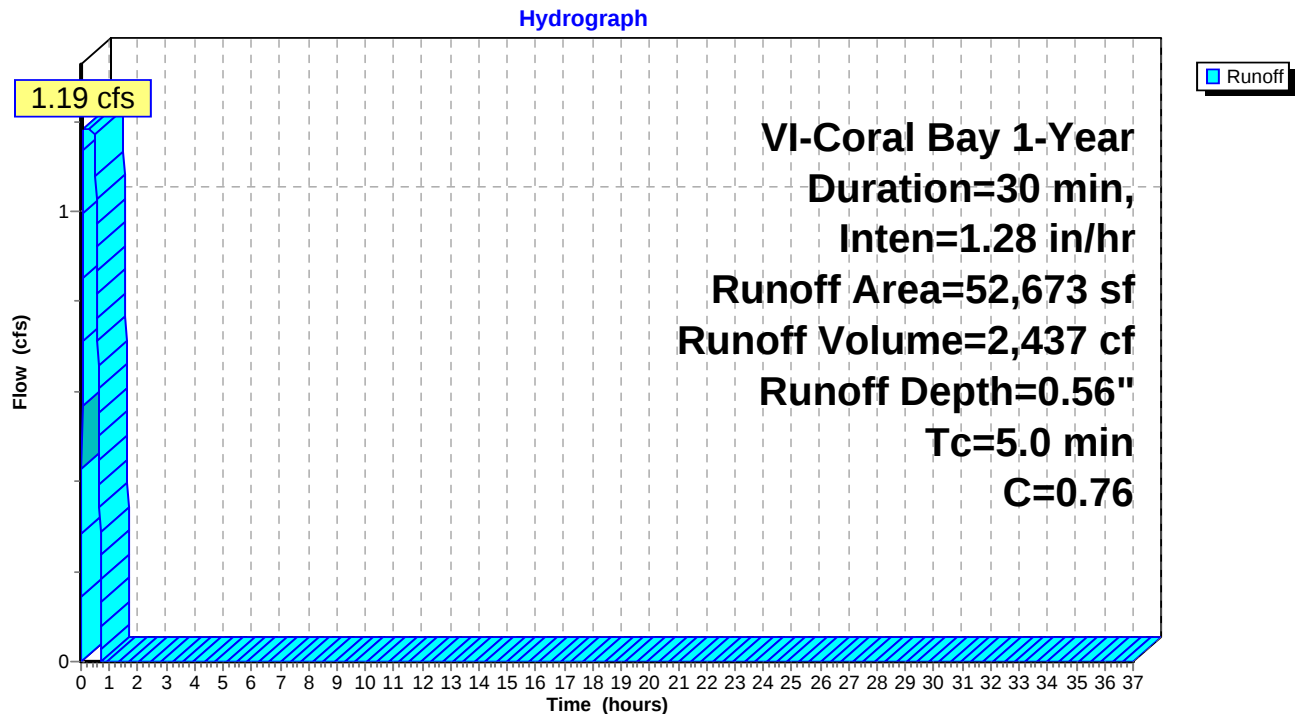
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
32,435	0.98	Impervious Areas
18,796	0.40	Vegetated Areas
1,442	0.60	Dirt/Gravel areas
52,673	0.76	Weighted Average
20,238		38.42% Pervious Area
32,435		61.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BYP: Site Bypass



Summary for Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows

Runoff = 32.03 cfs @ 0.50 hrs, Volume= 106,153 cf, Depth= 0.44"

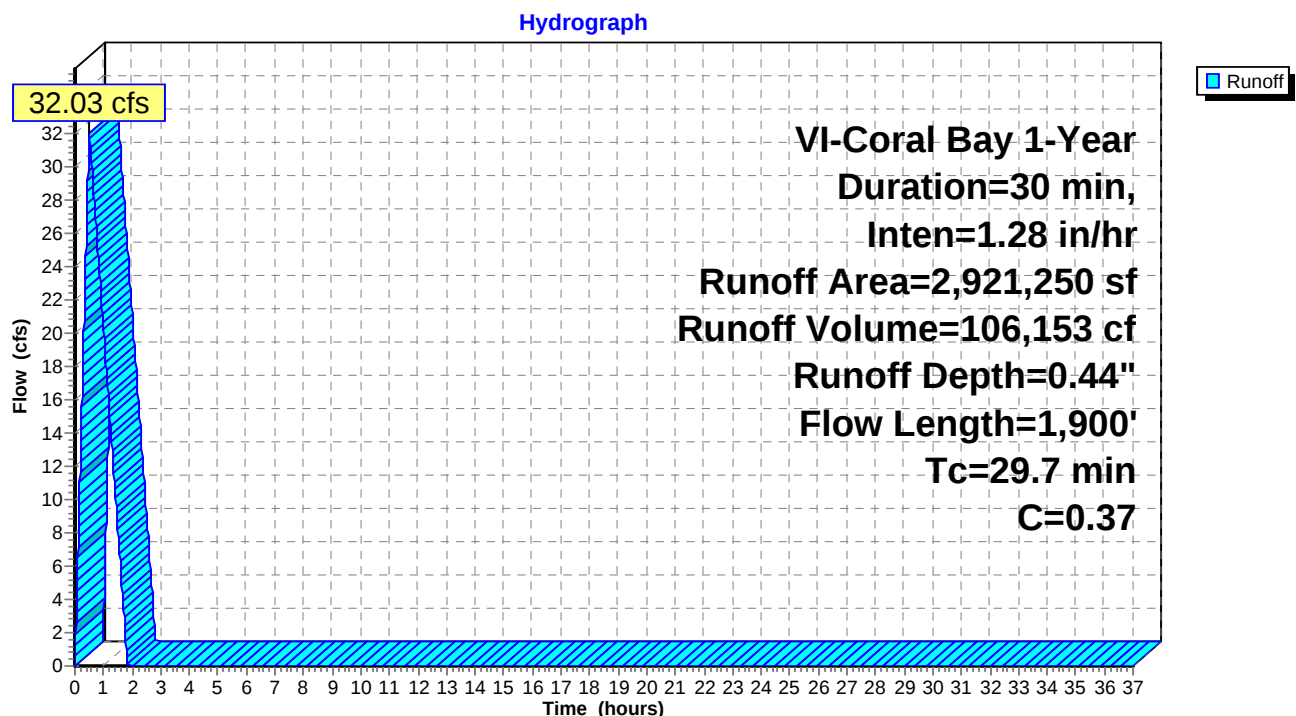
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
2,044,875	0.25	Wooded Areas
292,125	0.98	Impervious Areas
292,125	0.40	Vegetated Areas
292,125	0.60	Dirt/Gravel areas
2,921,250	0.37	Weighted Average
2,629,125		90.00% Pervious Area
292,125		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows



Summary for Subcatchment DA-OFF: Offsite Overland Flow to Culvert

Runoff = 31.93 cfs @ 0.50 hrs, Volume= 105,823 cf, Depth= 0.44"

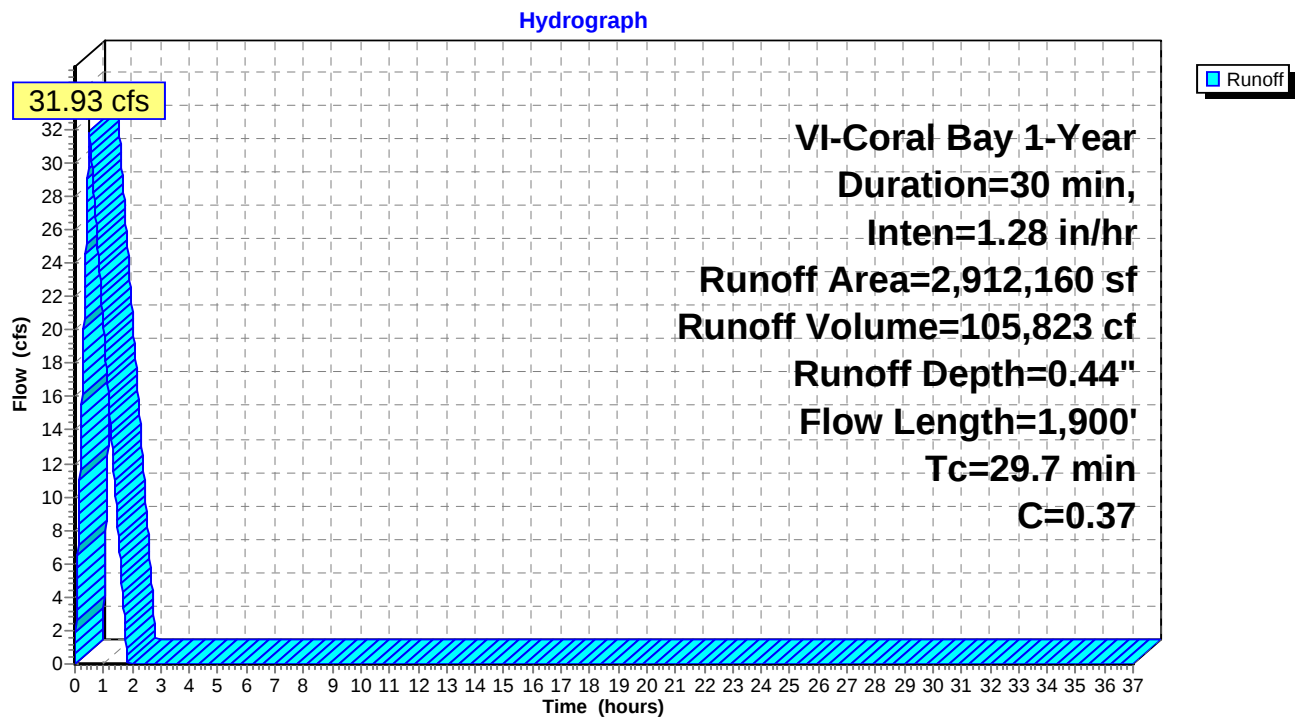
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
2,038,512	0.25	Wooded Areas
291,216	0.98	Impervious Areas
291,216	0.40	Vegetated Areas
291,216	0.60	Dirt/Gravel areas
2,912,160	0.37	Weighted Average
2,620,944		90.00% Pervious Area
291,216		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-OFF: Offsite Overland Flow to Culvert



Summary for Subcatchment DAe-SITE: Pre-Development Site Flow

Runoff = 2.38 cfs @ 0.09 hrs, Volume= 4,896 cf, Depth= 0.47"

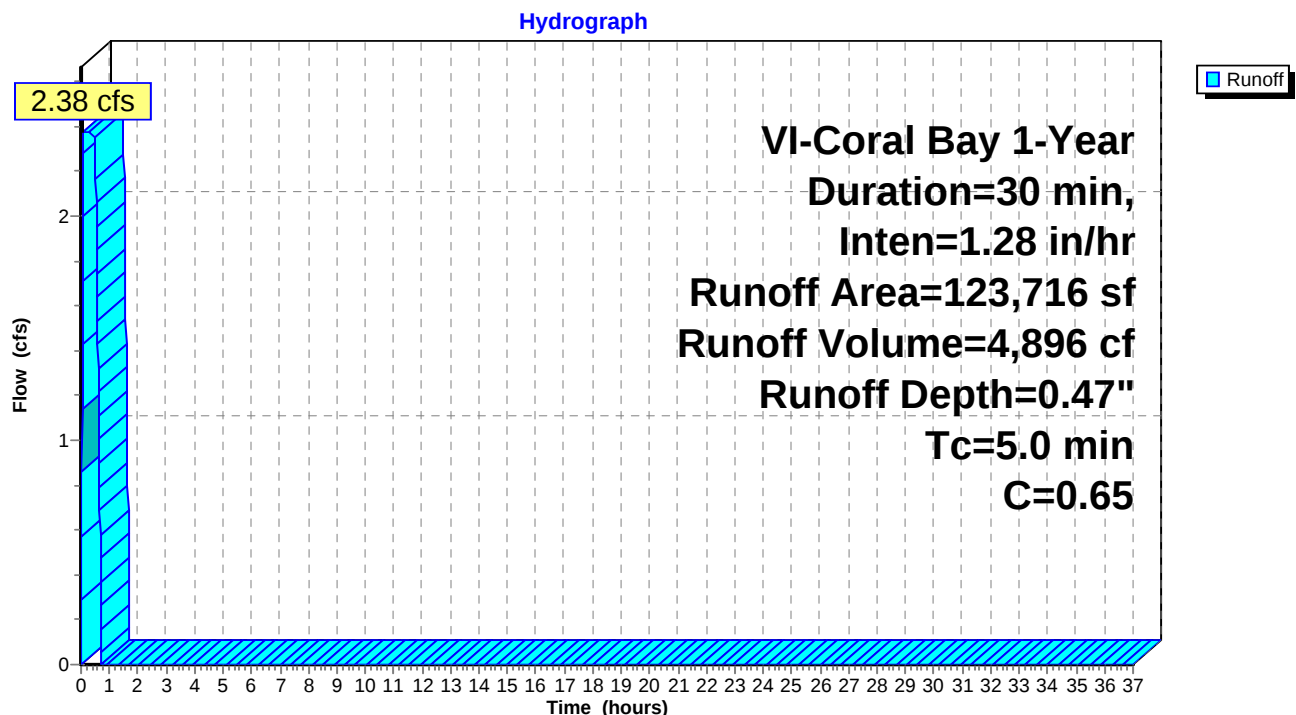
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 1-Year Duration=30 min, Inten=1.28 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
36,226	0.98	Impervious Areas
40,230	0.40	Vegetated Areas
47,260	0.60	Dirt/Gravel areas
123,716	0.65	Weighted Average
87,490		70.72% Pervious Area
36,226		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, MINIMUM Tc ASSUMED

Subcatchment DAe-SITE: Pre-Development Site Flow



Summary for Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Inflow Area = 2,989,826 sf, 11.37% Impervious, Inflow Depth = 0.44" for 1-Year event
 Inflow = 33.68 cfs @ 0.50 hrs, Volume= 109,417 cf
 Outflow = 25.55 cfs @ 0.77 hrs, Volume= 85,714 cf, Atten= 24%, Lag= 16.0 min
 Primary = 25.55 cfs @ 0.77 hrs, Volume= 85,714 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 Peak Elev= 4.02' @ 0.77 hrs Surf.Area= 13,145 sf Storage= 52,564 cf

Plug-Flow detention time= 257.8 min calculated for 85,691 cf (78% of inflow)
 Center-of-Mass det. time= 248.8 min (294.5 - 45.8)

Volume	Invert	Avail.Storage	Storage Description
#1	-2.00'	33,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	-1.50'	25,281 cf	66.00'W x 96.00'L x 4.20'H Prismatoid
			26,611 cf Overall x 95.0% Voids
		58,661 cf	Total Available Storage

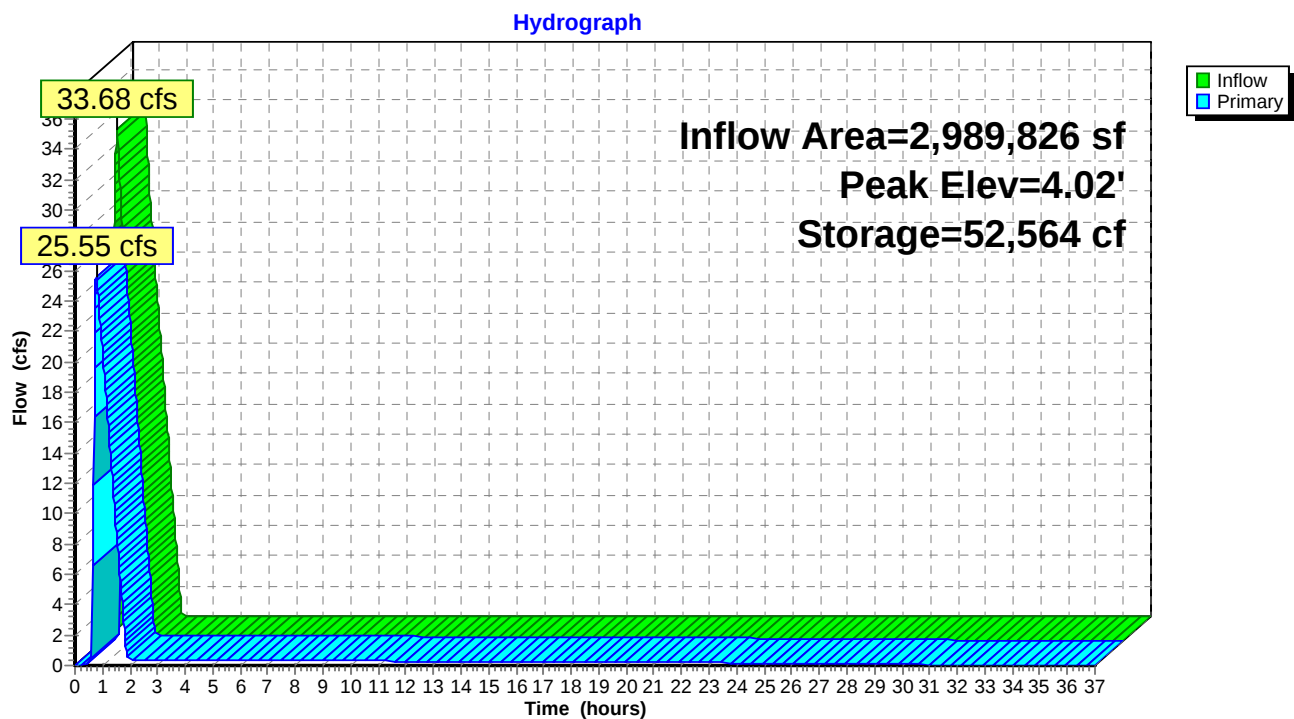
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
-2.00	2,990	0	0
-1.00	3,195	3,093	3,093
0.00	3,965	3,580	6,673
1.00	4,025	3,995	10,668
2.00	5,230	4,628	15,295
3.00	5,910	5,570	20,865
3.50	6,230	3,035	23,900
4.00	6,830	3,265	27,165
5.00	5,600	6,215	33,380

Device	Routing	Invert	Outlet Devices
#1	Device 2	0.75'	4.0" Vert. Orifice/Grate X 2.00 columns X 2 rows with 6.0" cc spacing C= 0.600
#2	Device 3	0.50'	3.0" W x 3.0" H Box OTS to MH 36" RCP L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.50' / 0.40' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.06 sf
#3	Primary	0.37'	36.0" Round 36" RCP under 107 L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.37' / 0.01' S= 0.0090 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#4	Primary	3.50'	25.0' long x 40.0' breadth Emergency Spillway over Road Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=25.54 cfs @ 0.77 hrs HW=4.02' TW=0.00' (Dynamic Tailwater)

3=36" RCP under 107 (Passes 0.43 cfs of 46.51 cfs potential flow)
 2=OTS to MH 36" RCP (Barrel Controls 0.43 cfs @ 6.95 fps)
 1=Orifice/Grate (Passes 0.43 cfs of 2.83 cfs potential flow)
 4=Emergency Spillway over Road (Weir Controls 25.11 cfs @ 1.94 fps)

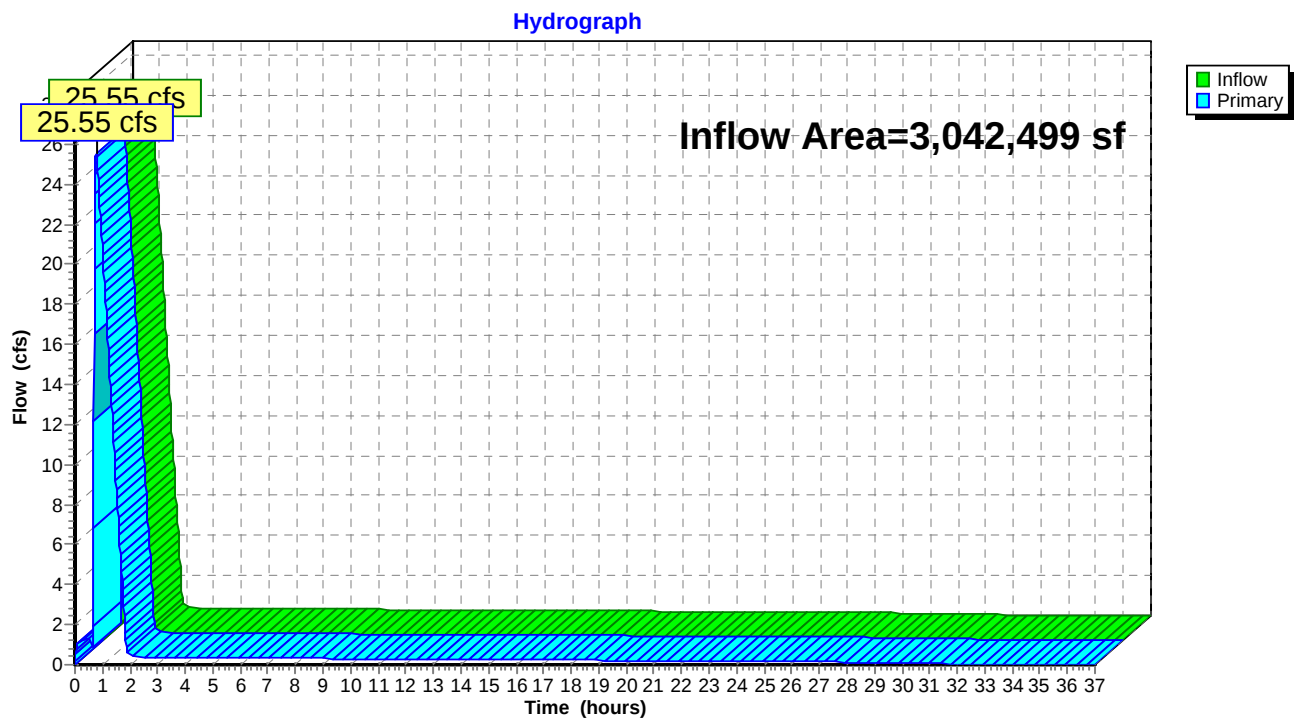
Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin



Summary for Link POST: Total Post-Development Flows to Coral Bay

Inflow Area = 3,042,499 sf, 12.24% Impervious, Inflow Depth > 0.35" for 1-Year event
Inflow = 25.55 cfs @ 0.77 hrs, Volume= 88,151 cf
Primary = 25.55 cfs @ 0.77 hrs, Volume= 88,151 cf, Atten= 0%, Lag= 0.0 min

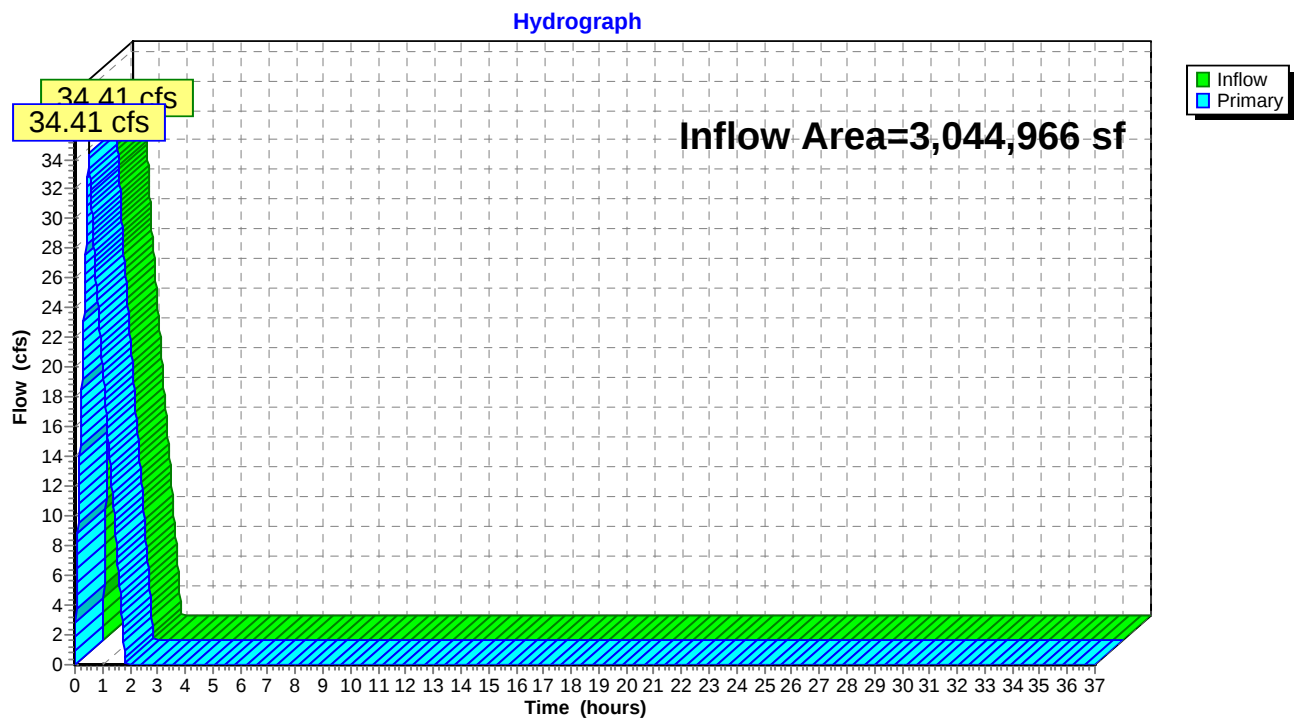
Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link POST: Total Post-Development Flows to Coral Bay

Summary for Link PRE: Total Pre-Development Flows to Coral Bay

Inflow Area = 3,044,966 sf, 10.78% Impervious, Inflow Depth = 0.44" for 1-Year event
Inflow = 34.41 cfs @ 0.50 hrs, Volume= 111,049 cf
Primary = 34.41 cfs @ 0.50 hrs, Volume= 111,049 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link PRE: Total Pre-Development Flows to Coral Bay

Summary for Subcatchment DA-BMP1A: BMP 1A -Overland Inflow

Runoff = 1.10 cfs @ 0.09 hrs, Volume= 2,256 cf, Depth= 0.75"

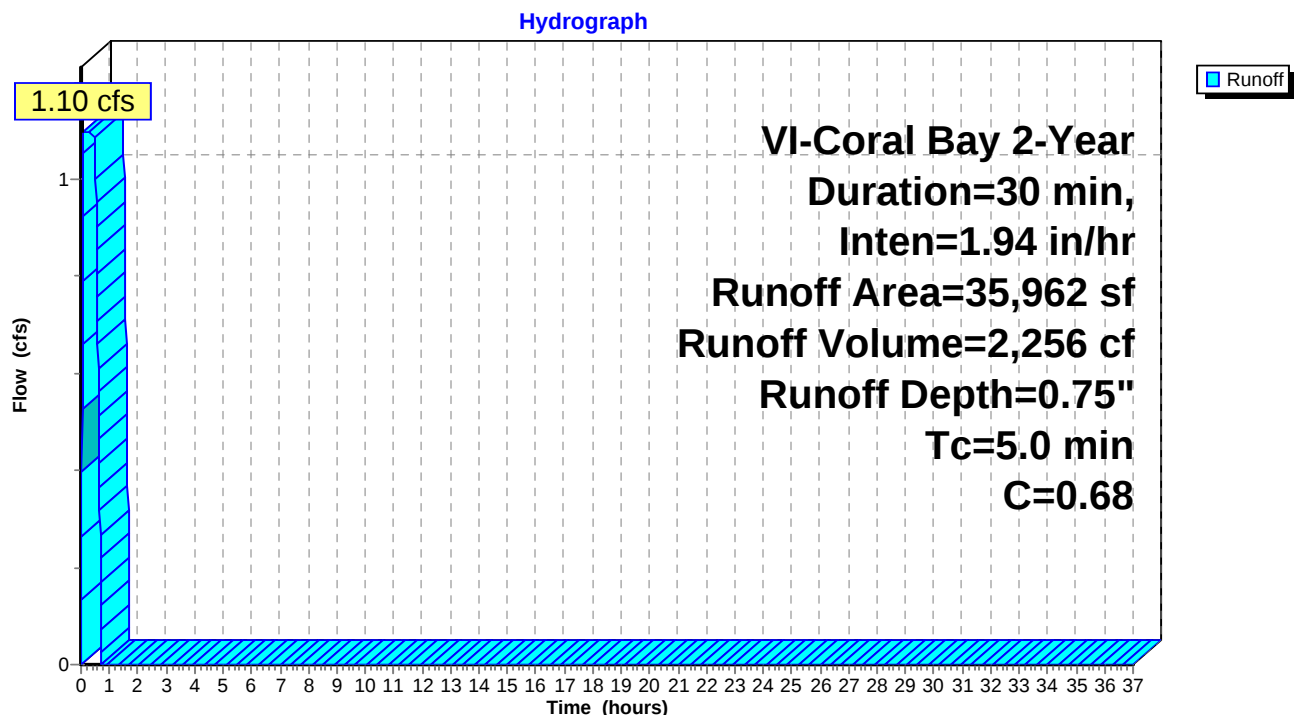
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
4,860	0.25	Wooded Areas
17,650	0.98	Impervious Areas
9,900	0.40	Vegetated Areas
3,552	0.60	Dirt/Gravel areas
35,962	0.68	Weighted Average
18,312		50.92% Pervious Area
17,650		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1A: BMP 1A -Overland Inflow



Summary for Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

Runoff = 0.78 cfs @ 0.09 hrs, Volume= 1,607 cf, Depth= 0.90"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

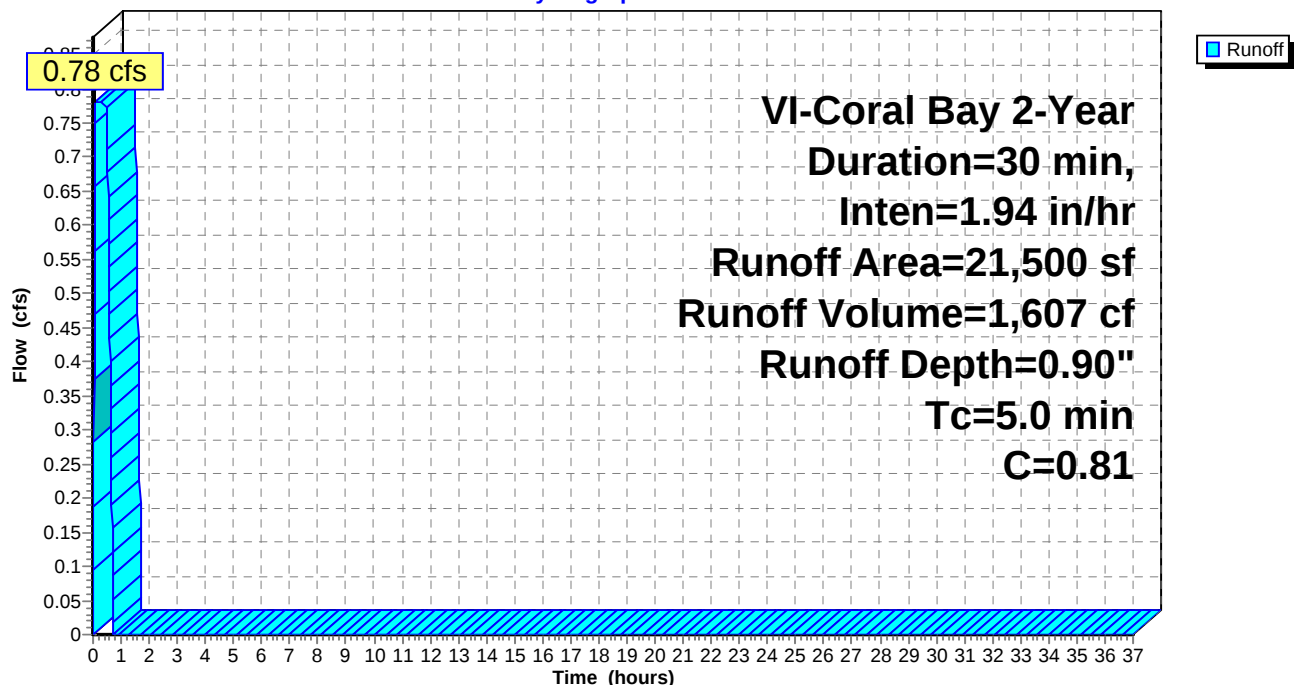
VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,200	0.98	Impervious Areas
6,300	0.40	Vegetated Areas
0	0.60	Dirt/Gravel areas
21,500	0.81	Weighted Average
6,300		29.30% Pervious Area
15,200		70.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

Hydrograph



Summary for Subcatchment DA-BMP1C: BMP 1C-Overland Inflow

Runoff = 0.77 cfs @ 0.09 hrs, Volume= 1,585 cf, Depth= 0.94"

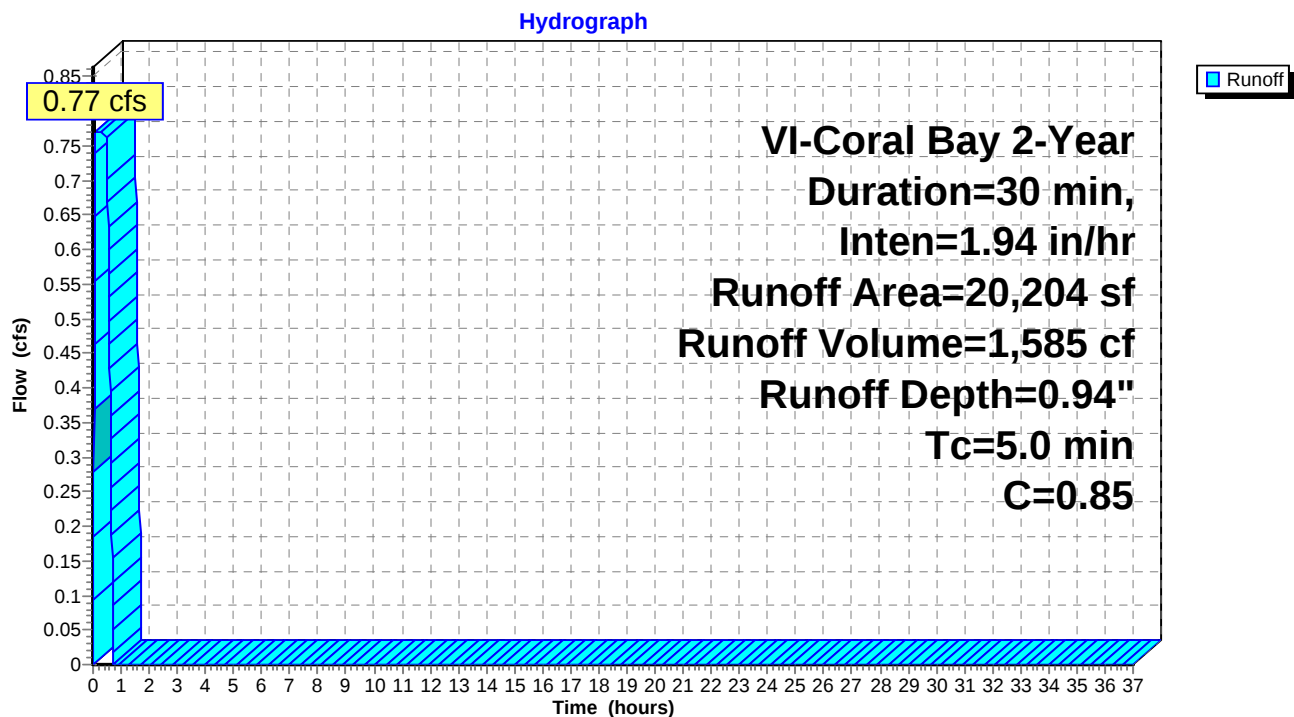
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,754	0.98	Impervious Areas
4,450	0.40	Vegetated Areas
0	0.60	Gravel roads, HSG C
20,204	0.85	Weighted Average
4,450		22.03% Pervious Area
15,754		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1C: BMP 1C-Overland Inflow



Summary for Subcatchment DA-BYP: Site Bypass

Runoff = 1.80 cfs @ 0.09 hrs, Volume= 3,694 cf, Depth= 0.84"

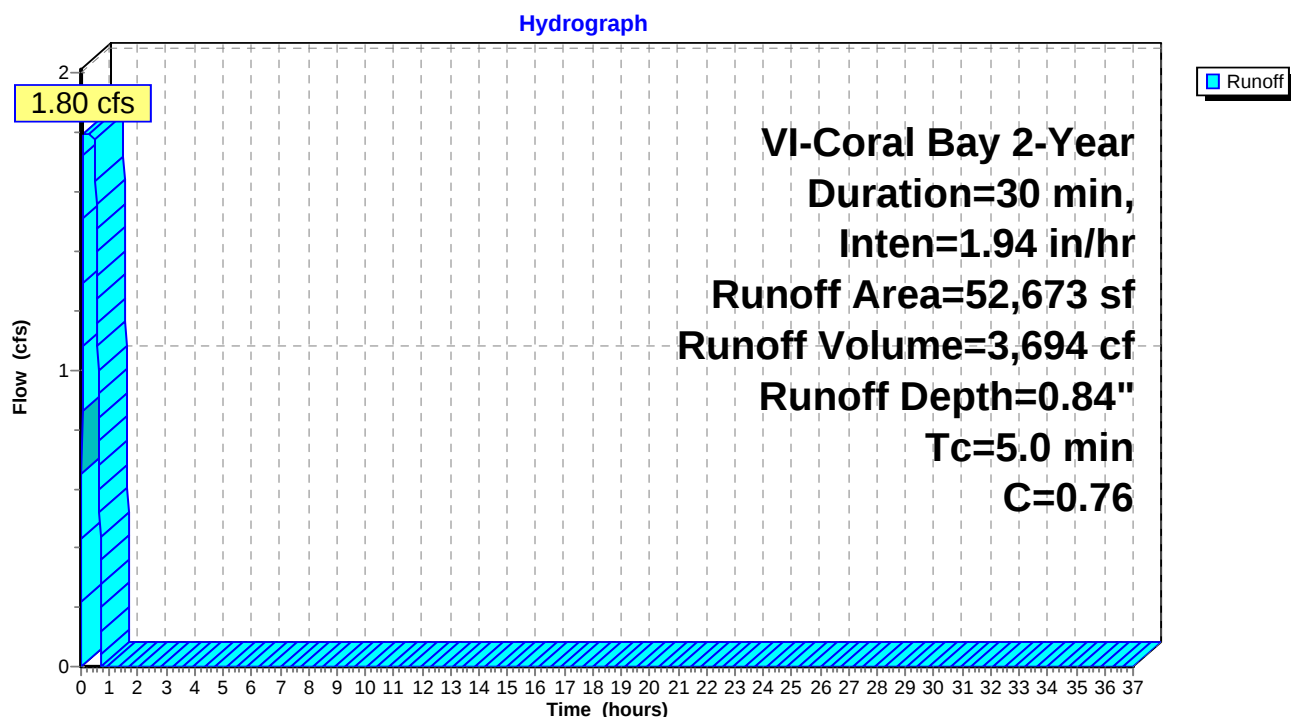
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
32,435	0.98	Impervious Areas
18,796	0.40	Vegetated Areas
1,442	0.60	Dirt/Gravel areas
52,673	0.76	Weighted Average
20,238		38.42% Pervious Area
32,435		61.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BYP: Site Bypass



Summary for Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows

Runoff = 48.54 cfs @ 0.50 hrs, Volume= 160,888 cf, Depth= 0.66"

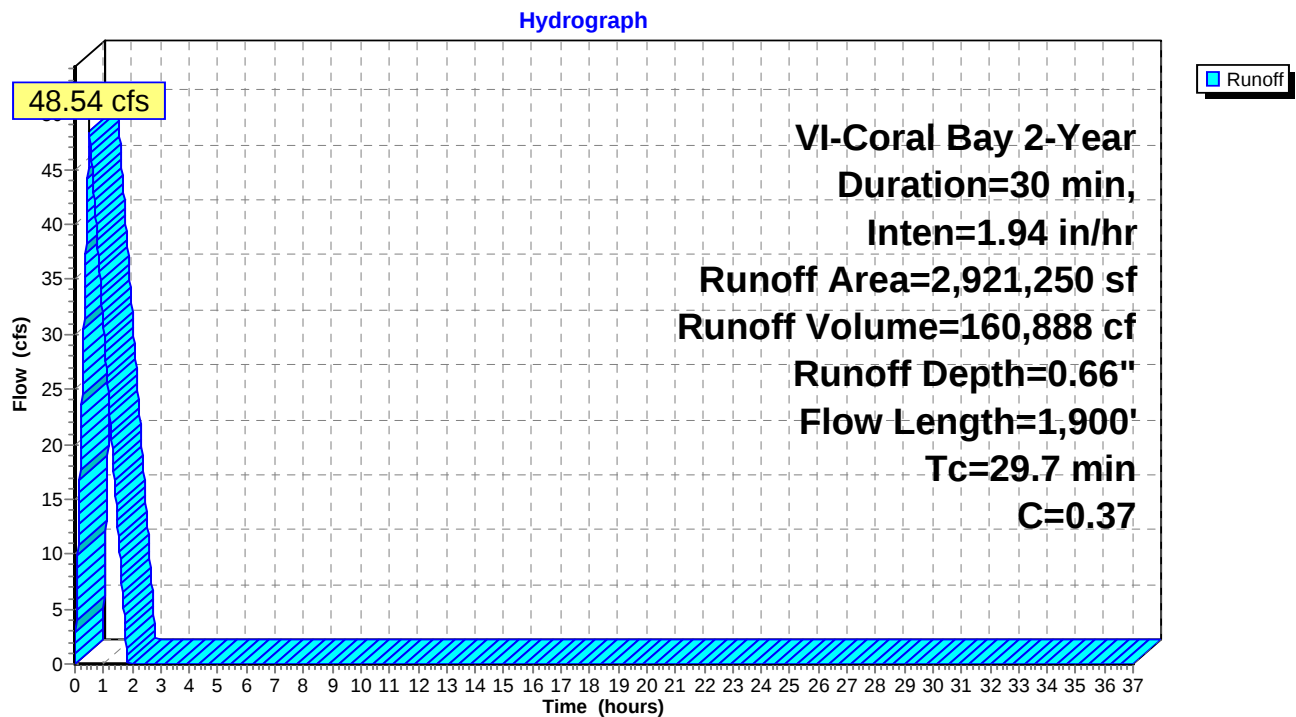
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
2,044,875	0.25	Wooded Areas
292,125	0.98	Impervious Areas
292,125	0.40	Vegetated Areas
292,125	0.60	Dirt/Gravel areas
2,921,250	0.37	Weighted Average
2,629,125		90.00% Pervious Area
292,125		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows



Summary for Subcatchment DA-OFF: Offsite Overland Flow to Culvert

Runoff = 48.39 cfs @ 0.50 hrs, Volume= 160,388 cf, Depth= 0.66"

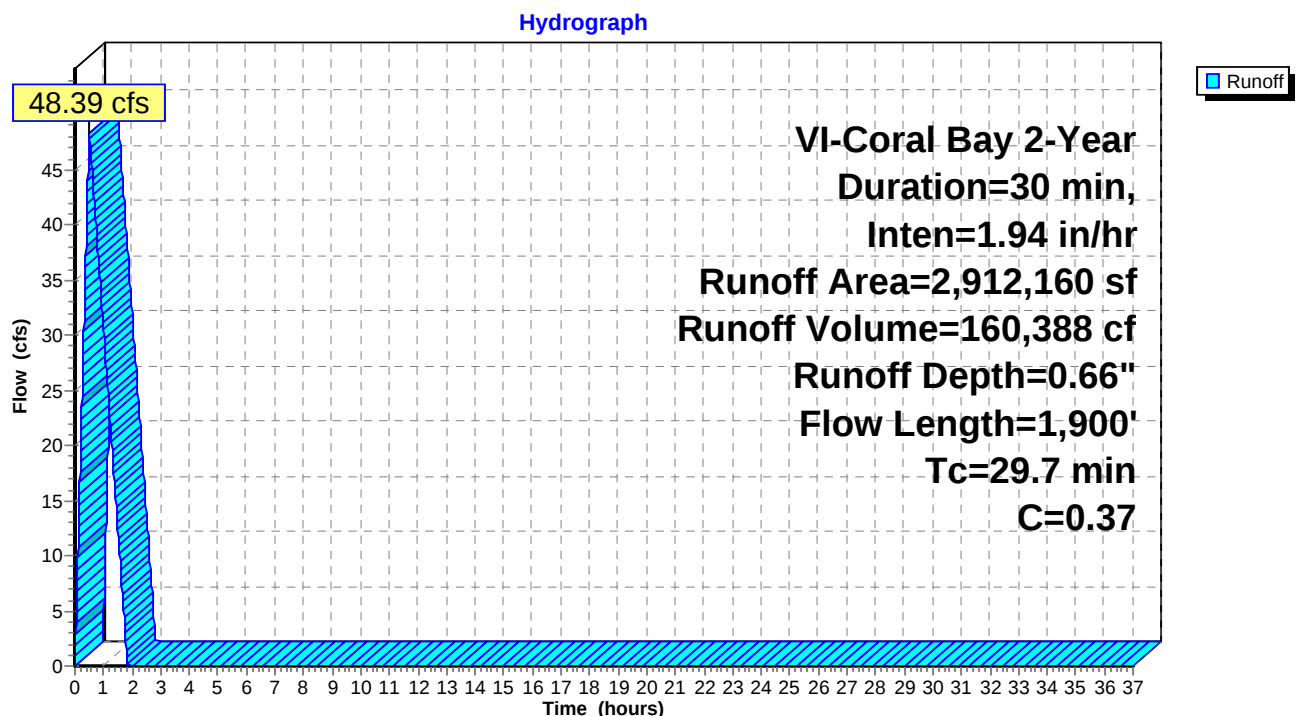
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
2,038,512	0.25	Wooded Areas
291,216	0.98	Impervious Areas
291,216	0.40	Vegetated Areas
291,216	0.60	Dirt/Gravel areas
2,912,160	0.37	Weighted Average
2,620,944		90.00% Pervious Area
291,216		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-OFF: Offsite Overland Flow to Culvert



Summary for Subcatchment DAe-SITE: Pre-Development Site Flow

Runoff = 3.61 cfs @ 0.09 hrs, Volume= 7,420 cf, Depth= 0.72"

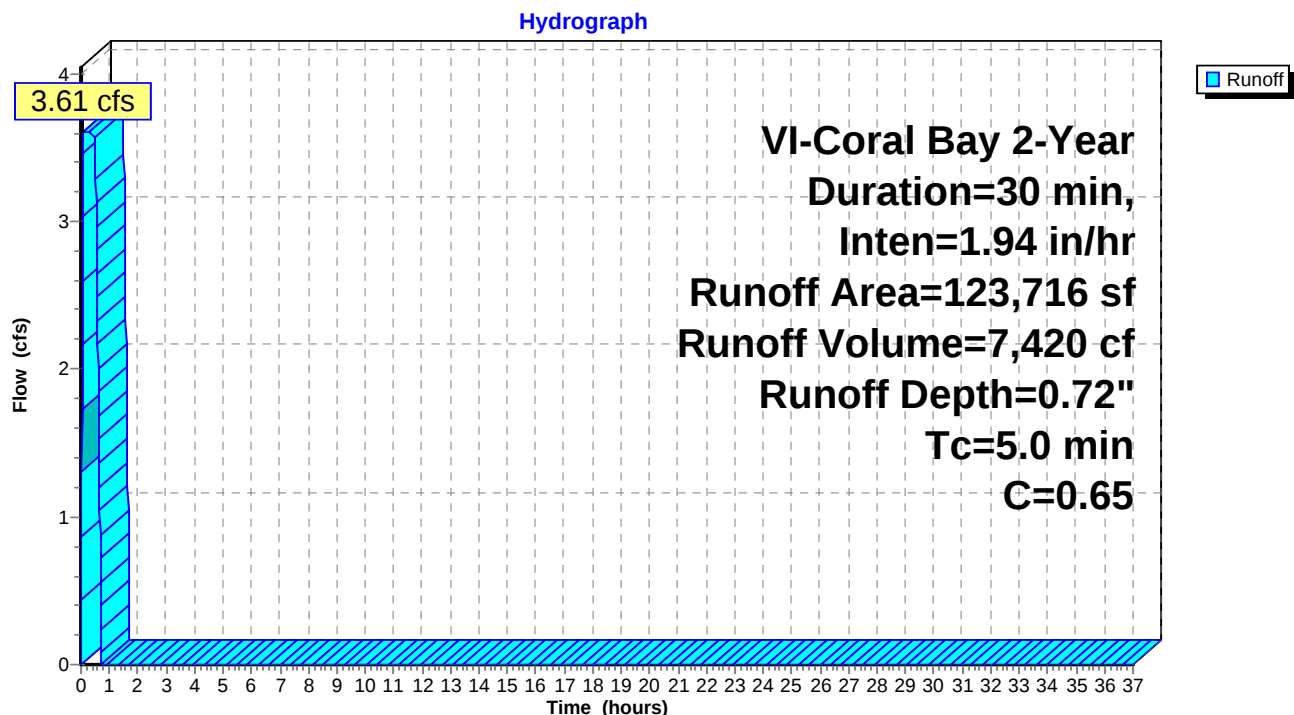
Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

VI-Coral Bay 2-Year Duration=30 min, Inten=1.94 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
36,226	0.98	Impervious Areas
40,230	0.40	Vegetated Areas
47,260	0.60	Dirt/Gravel areas
123,716	0.65	Weighted Average
87,490		70.72% Pervious Area
36,226		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, MINIMUM Tc ASSUMED

Subcatchment DAe-SITE: Pre-Development Site Flow



Summary for Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Inflow Area = 2,989,826 sf, 11.37% Impervious, Inflow Depth = 0.67" for 2-Year event
 Inflow = 51.04 cfs @ 0.50 hrs, Volume= 165,836 cf
 Outflow = 46.20 cfs @ 0.60 hrs, Volume= 142,132 cf, Atten= 9%, Lag= 6.1 min
 Primary = 46.20 cfs @ 0.60 hrs, Volume= 142,132 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 Peak Elev= 4.28' @ 0.60 hrs Surf.Area= 12,819 sf Storage= 54,324 cf

Plug-Flow detention time= 159.4 min calculated for 142,132 cf (86% of inflow)
 Center-of-Mass det. time= 152.7 min (198.4 - 45.8)

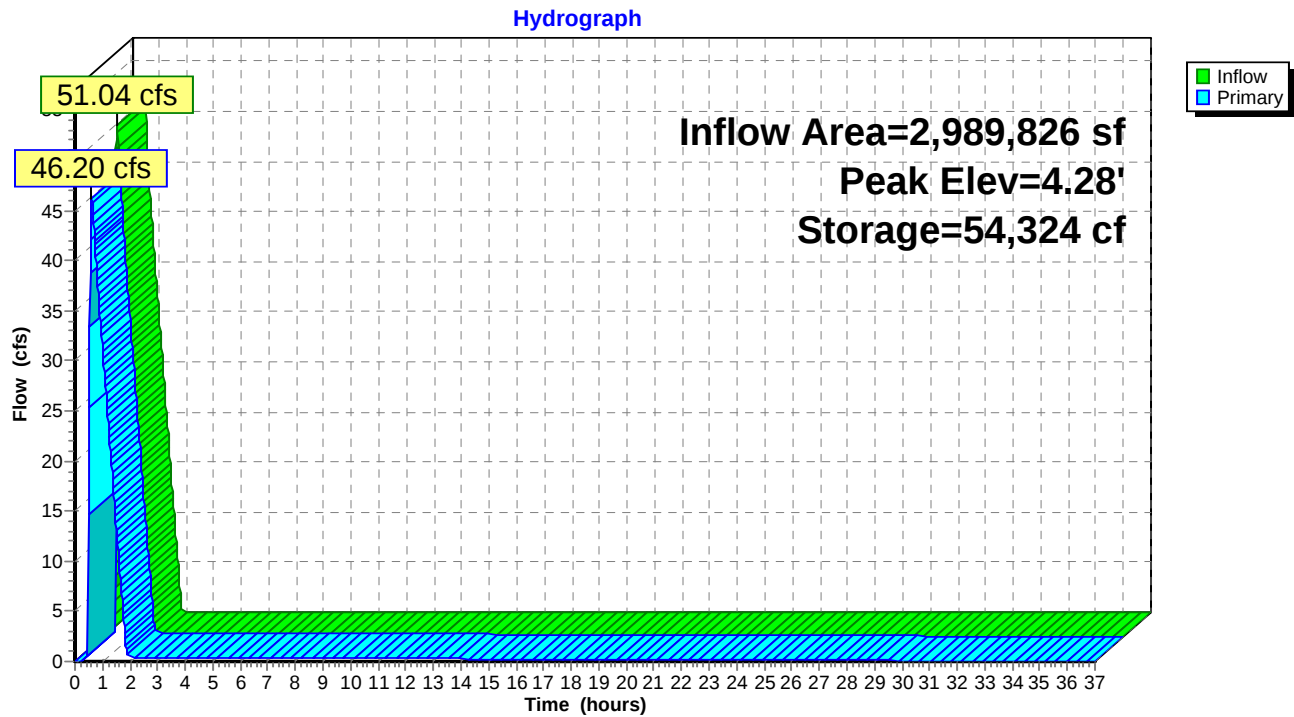
Volume	Invert	Avail.Storage	Storage Description
#1	-2.00'	33,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	-1.50'	25,281 cf	66.00'W x 96.00'L x 4.20'H Prismatoid
			26,611 cf Overall x 95.0% Voids
		58,661 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
-2.00	2,990	0	0
-1.00	3,195	3,093	3,093
0.00	3,965	3,580	6,673
1.00	4,025	3,995	10,668
2.00	5,230	4,628	15,295
3.00	5,910	5,570	20,865
3.50	6,230	3,035	23,900
4.00	6,830	3,265	27,165
5.00	5,600	6,215	33,380

Device	Routing	Invert	Outlet Devices
#1	Device 2	0.75'	4.0" Vert. Orifice/Grate X 2.00 columns X 2 rows with 6.0" cc spacing C= 0.600
#2	Device 3	0.50'	3.0" W x 3.0" H Box OTS to MH 36" RCP L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.50' / 0.40' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.06 sf
#3	Primary	0.37'	36.0" Round 36" RCP under 107 L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.37' / 0.01' S= 0.0090 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#4	Primary	3.50'	25.0' long x 40.0' breadth Emergency Spillway over Road Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=46.18 cfs @ 0.60 hrs HW=4.28' TW=0.00' (Dynamic Tailwater)

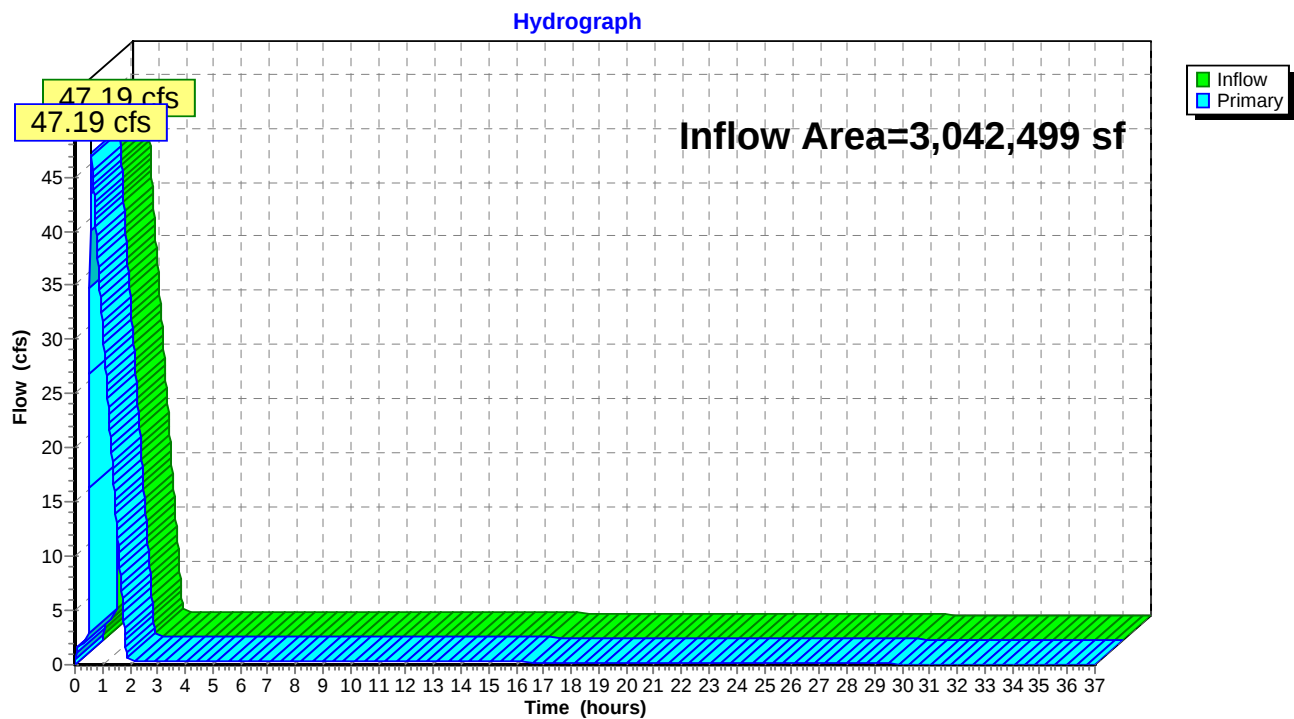
3=36" RCP under 107 (Passes 0.45 cfs of 49.24 cfs potential flow)
 2=OTS to MH 36" RCP (Barrel Controls 0.45 cfs @ 7.22 fps)
 1=Orifice/Grate (Passes 0.45 cfs of 2.96 cfs potential flow)
 4=Emergency Spillway over Road (Weir Controls 45.73 cfs @ 2.34 fps)

Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Summary for Link POST: Total Post-Development Flows to Coral Bay

Inflow Area = 3,042,499 sf, 12.24% Impervious, Inflow Depth > 0.58" for 2-Year event
Inflow = 47.19 cfs @ 0.60 hrs, Volume= 145,826 cf
Primary = 47.19 cfs @ 0.60 hrs, Volume= 145,826 cf, Atten= 0%, Lag= 0.0 min

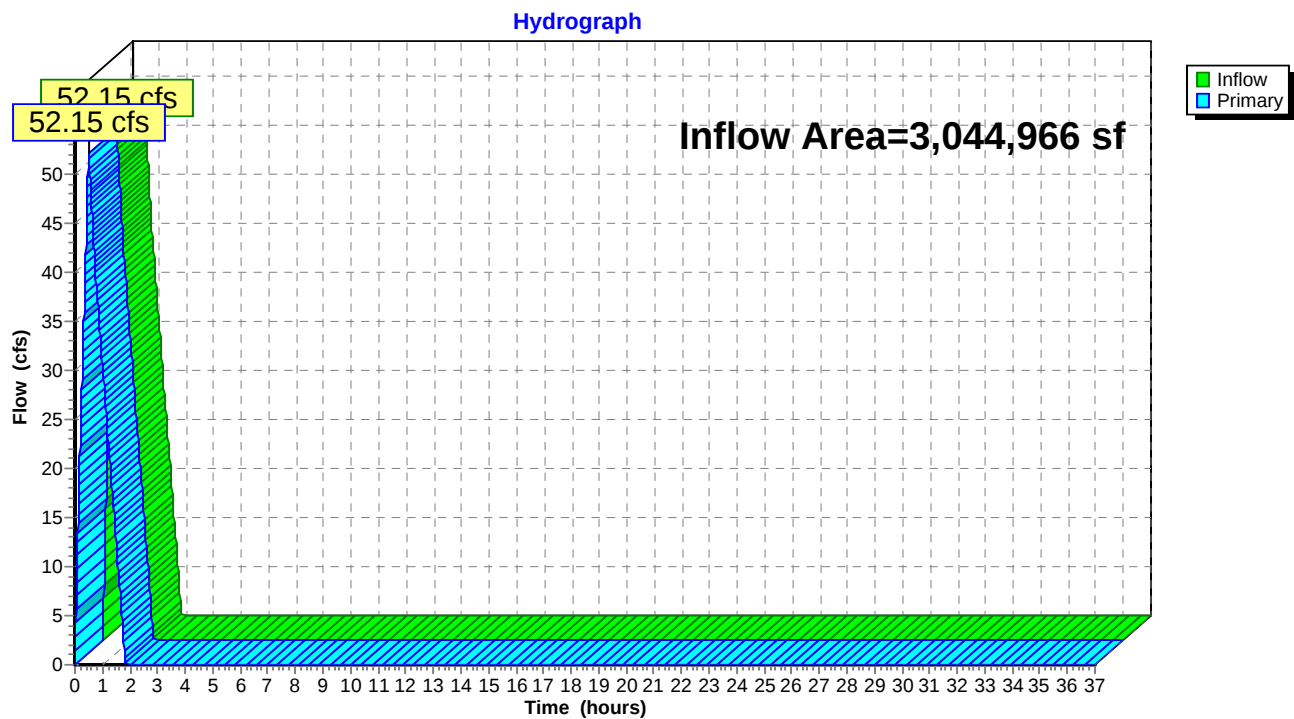
Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link POST: Total Post-Development Flows to Coral Bay

Summary for Link PRE: Total Pre-Development Flows to Coral Bay

Inflow Area = 3,044,966 sf, 10.78% Impervious, Inflow Depth = 0.66" for 2-Year event
Inflow = 52.15 cfs @ 0.50 hrs, Volume= 168,309 cf
Primary = 52.15 cfs @ 0.50 hrs, Volume= 168,309 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link PRE: Total Pre-Development Flows to Coral Bay

Summary for Subcatchment DA-BMP1A: BMP 1A -Overland Inflow

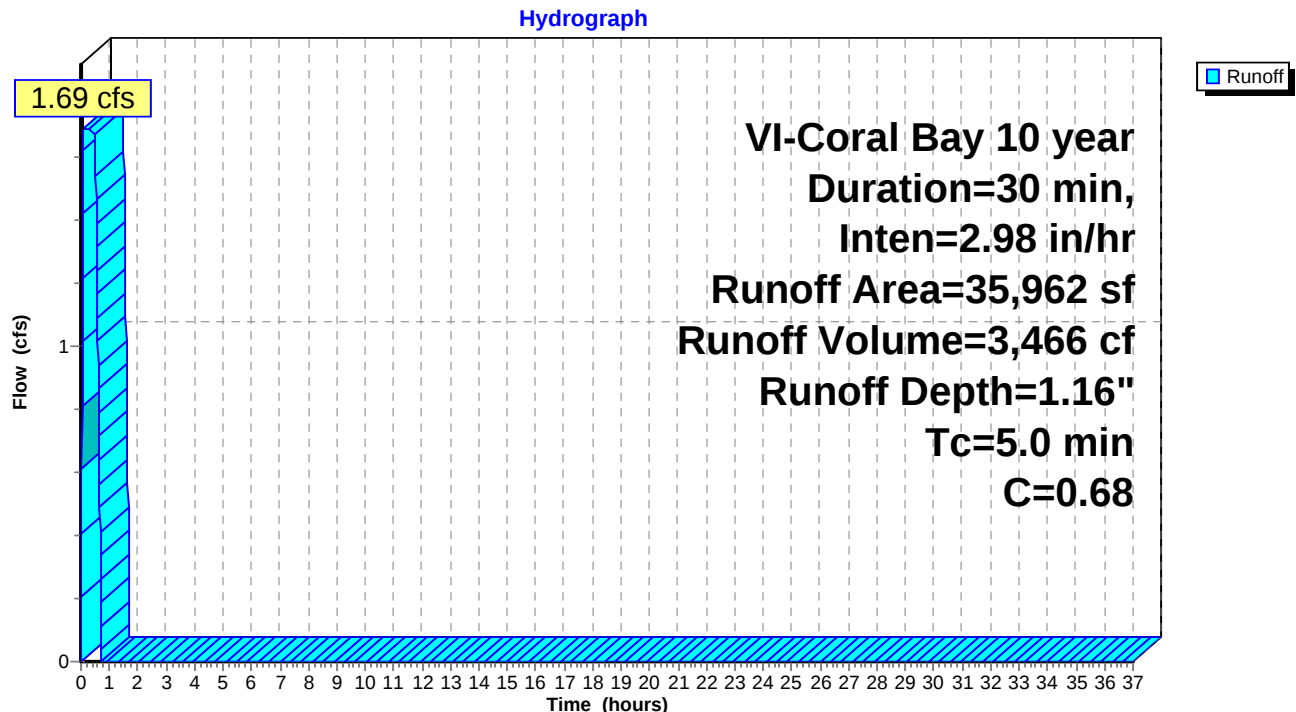
Runoff = 1.69 cfs @ 0.09 hrs, Volume= 3,466 cf, Depth= 1.16"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
4,860	0.25	Wooded Areas
17,650	0.98	Impervious Areas
9,900	0.40	Vegetated Areas
3,552	0.60	Dirt/Gravel areas
35,962	0.68	Weighted Average
18,312		50.92% Pervious Area
17,650		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1A: BMP 1A -Overland Inflow



Summary for Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

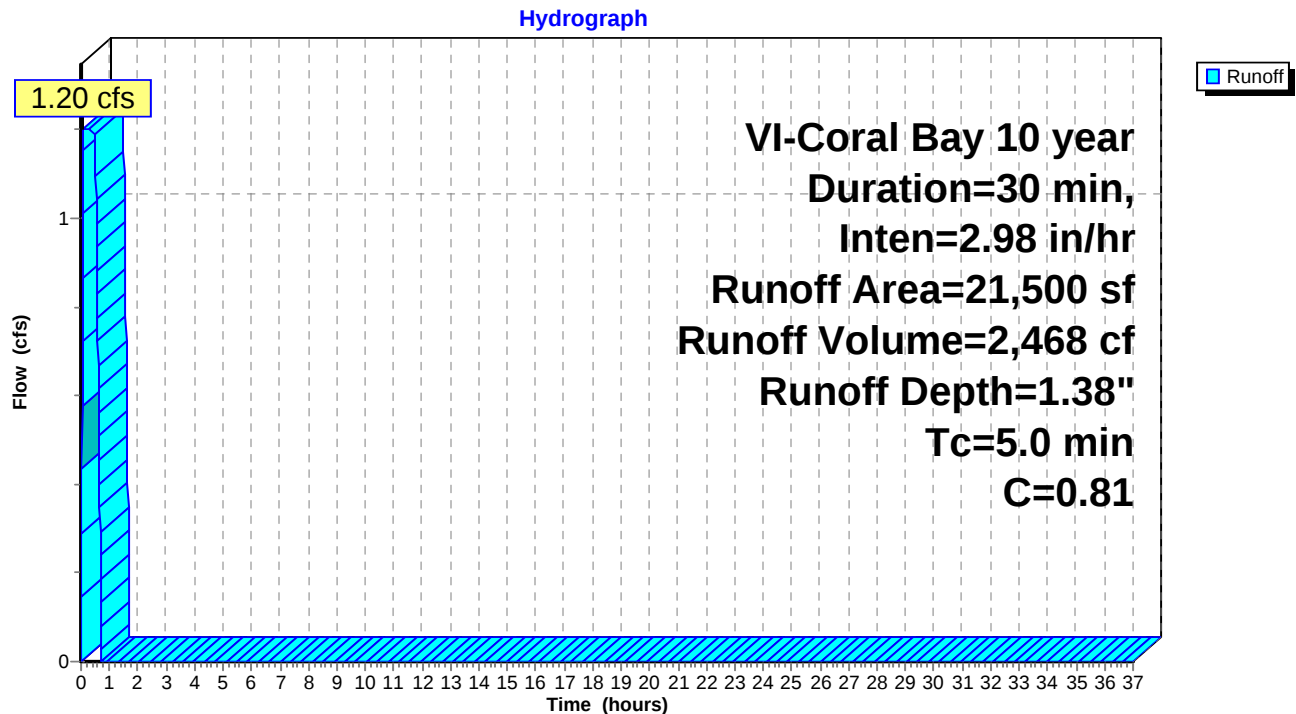
Runoff = 1.20 cfs @ 0.09 hrs, Volume= 2,468 cf, Depth= 1.38"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,200	0.98	Impervious Areas
6,300	0.40	Vegetated Areas
0	0.60	Dirt/Gravel areas
21,500	0.81	Weighted Average
6,300		29.30% Pervious Area
15,200		70.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1B: BMP 1B- Overland Inflow



Summary for Subcatchment DA-BMP1C: BMP 1C-Overland Inflow

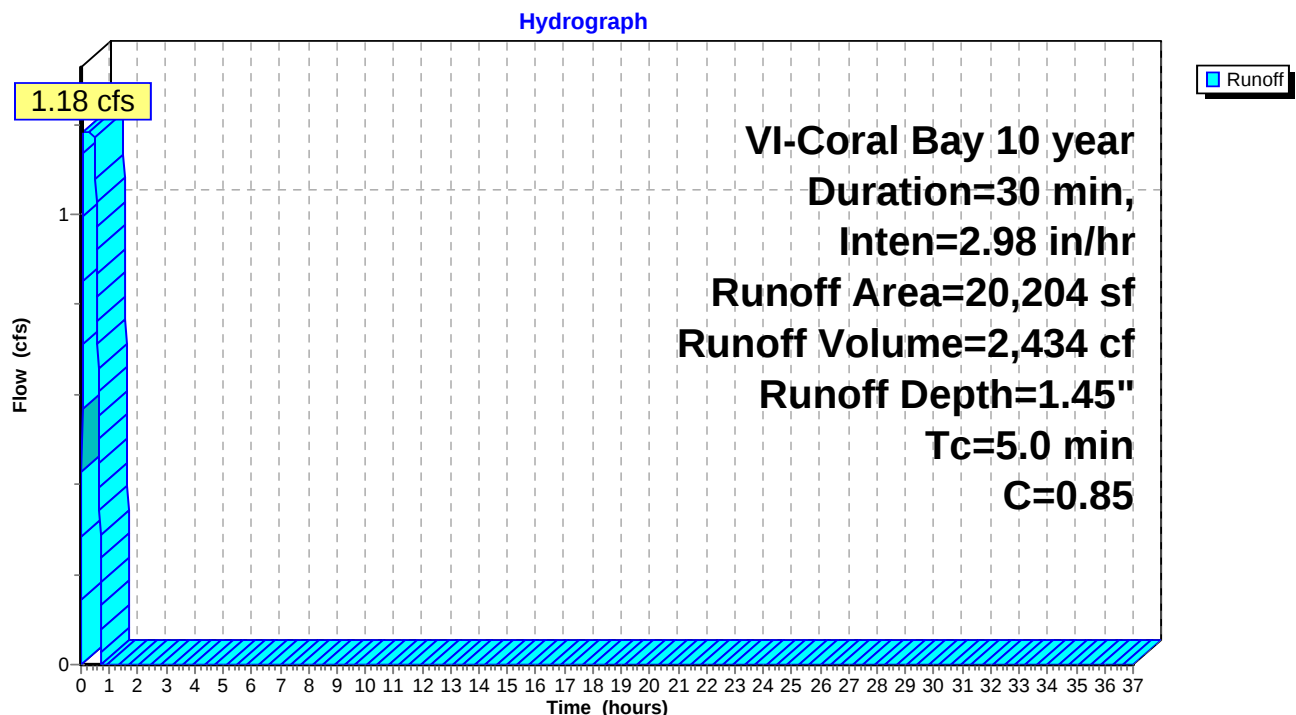
Runoff = 1.18 cfs @ 0.09 hrs, Volume= 2,434 cf, Depth= 1.45"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,754	0.98	Impervious Areas
4,450	0.40	Vegetated Areas
0	0.60	Gravel roads, HSG C
20,204	0.85	Weighted Average
4,450		22.03% Pervious Area
15,754		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1C: BMP 1C-Overland Inflow



Summary for Subcatchment DA-BYP: Site Bypass

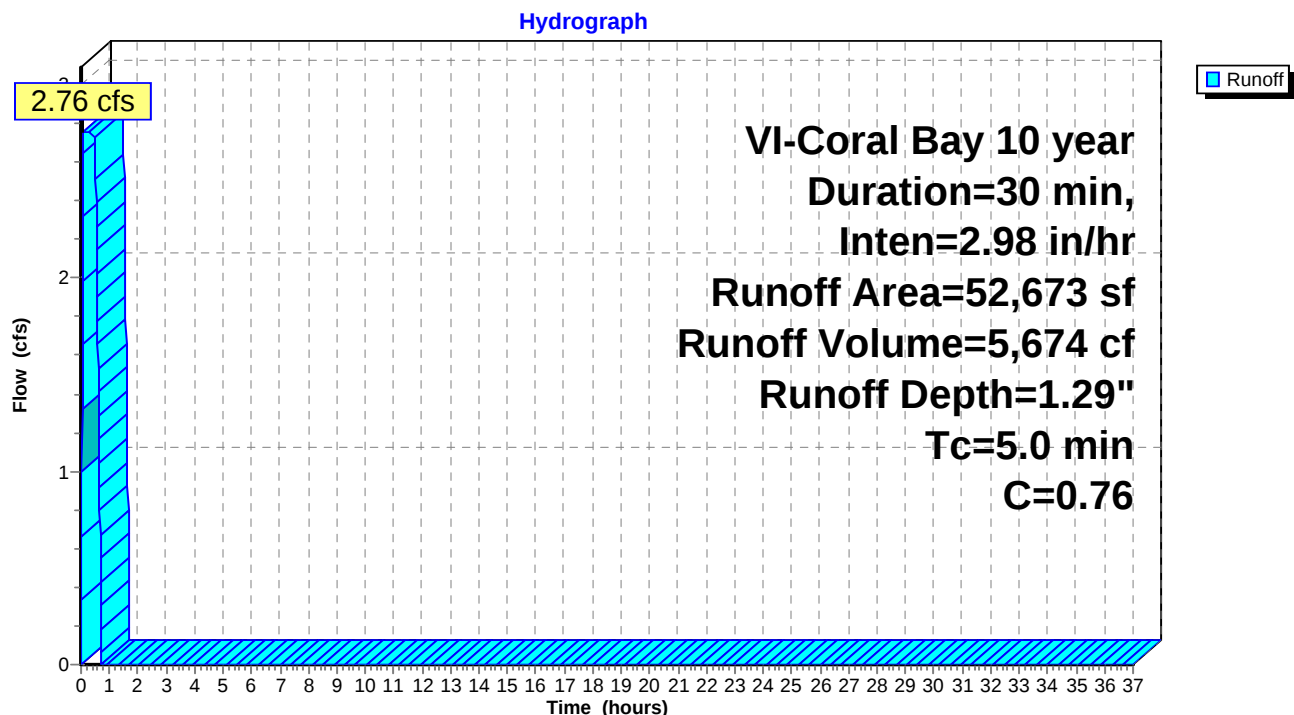
Runoff = 2.76 cfs @ 0.09 hrs, Volume= 5,674 cf, Depth= 1.29"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
32,435	0.98	Impervious Areas
18,796	0.40	Vegetated Areas
1,442	0.60	Dirt/Gravel areas
52,673	0.76	Weighted Average
20,238		38.42% Pervious Area
32,435		61.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BYP: Site Bypass



Summary for Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows

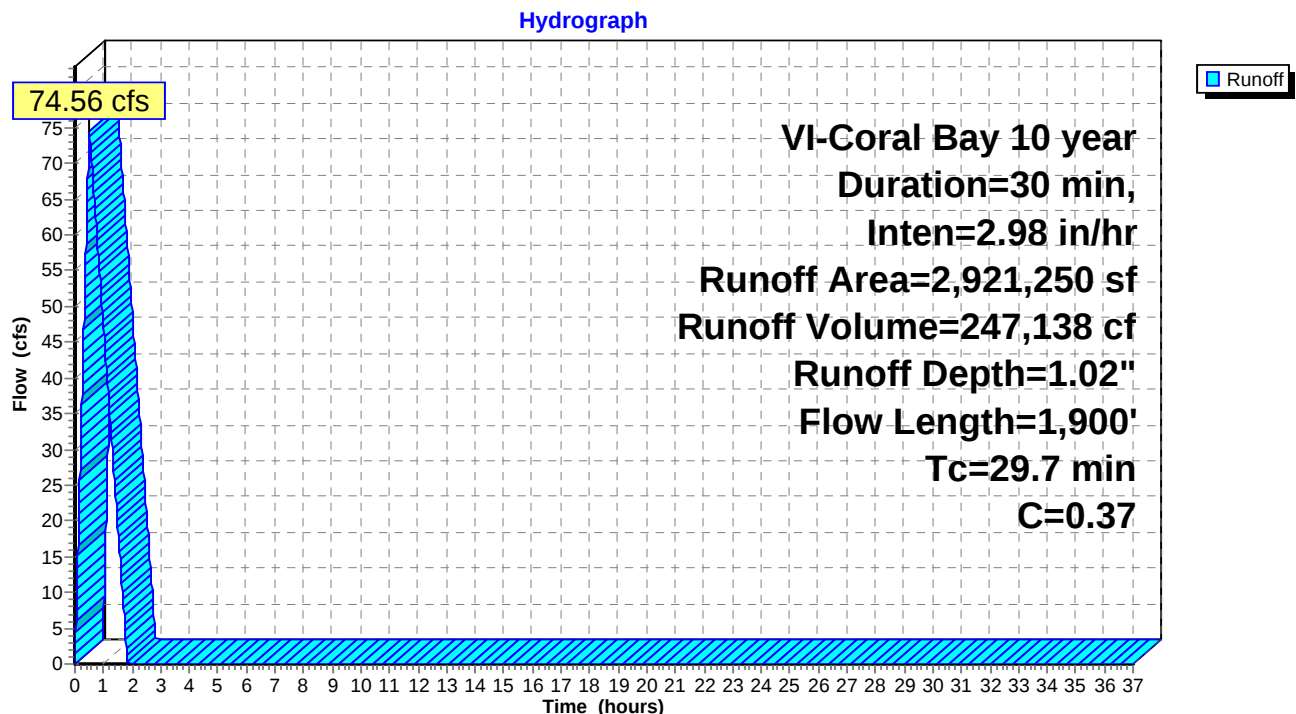
Runoff = 74.56 cfs @ 0.50 hrs, Volume= 247,138 cf, Depth= 1.02"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
2,044,875	0.25	Wooded Areas
292,125	0.98	Impervious Areas
292,125	0.40	Vegetated Areas
292,125	0.60	Dirt/Gravel areas
2,921,250	0.37	Weighted Average
2,629,125		90.00% Pervious Area
292,125		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows



Summary for Subcatchment DA-OFF: Offsite Overland Flow to Culvert

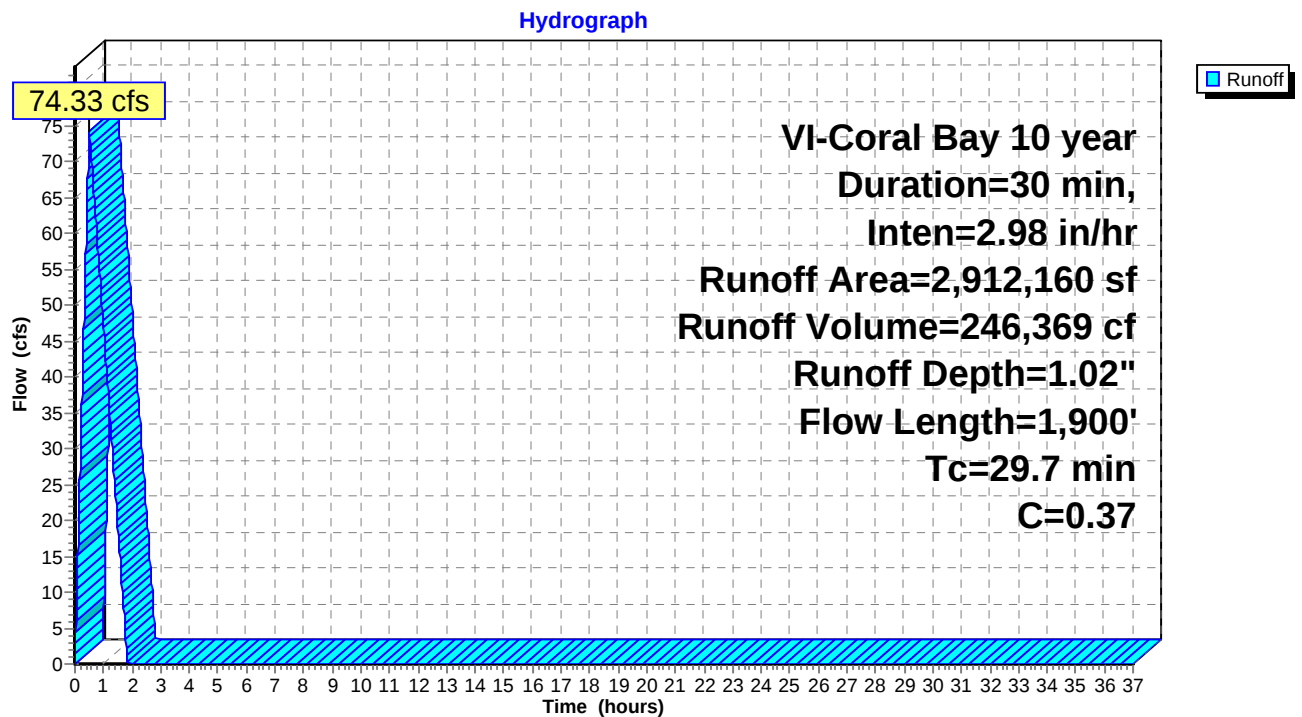
Runoff = 74.33 cfs @ 0.50 hrs, Volume= 246,369 cf, Depth= 1.02"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
2,038,512	0.25	Wooded Areas
291,216	0.98	Impervious Areas
291,216	0.40	Vegetated Areas
291,216	0.60	Dirt/Gravel areas
2,912,160	0.37	Weighted Average
2,620,944		90.00% Pervious Area
291,216		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-OFF: Offsite Overland Flow to Culvert



Summary for Subcatchment DAe-SITE: Pre-Development Site Flow

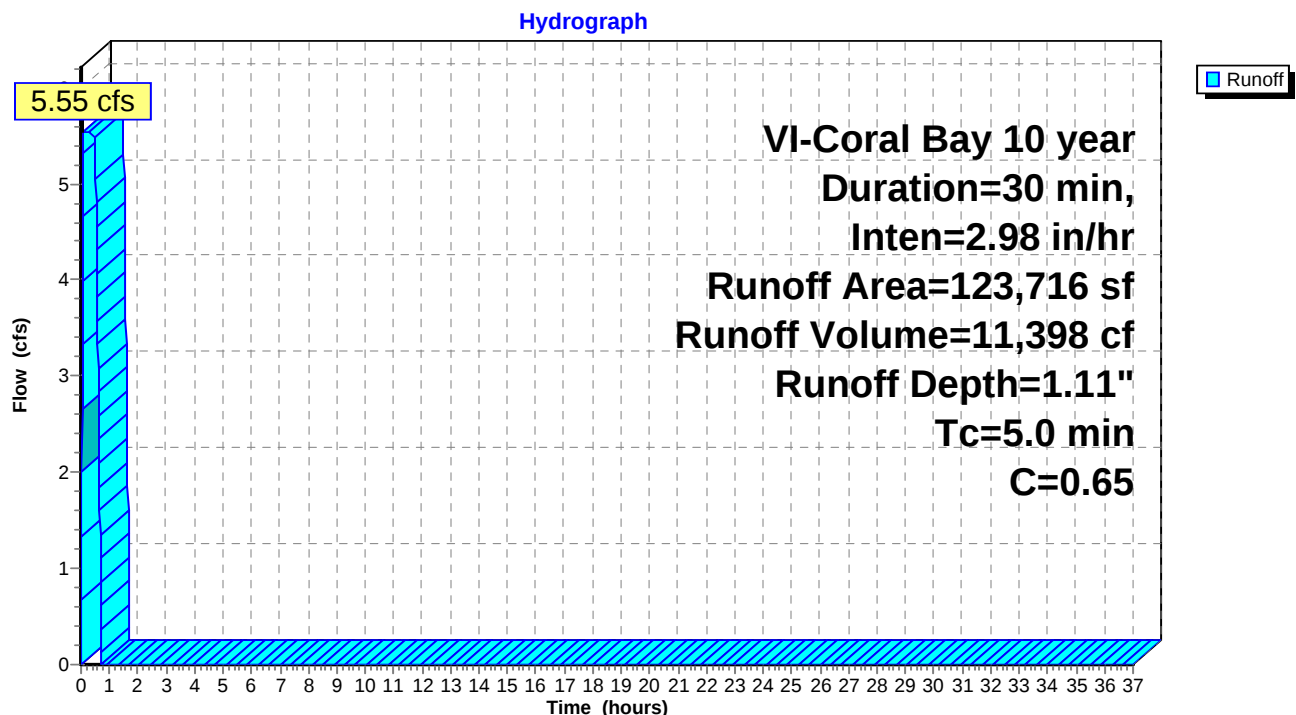
Runoff = 5.55 cfs @ 0.09 hrs, Volume= 11,398 cf, Depth= 1.11"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 10 year Duration=30 min, Inten=2.98 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
36,226	0.98	Impervious Areas
40,230	0.40	Vegetated Areas
47,260	0.60	Dirt/Gravel areas
123,716	0.65	Weighted Average
87,490		70.72% Pervious Area
36,226		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, MINIMUM Tc ASSUMED

Subcatchment DAe-SITE: Pre-Development Site Flow



Summary for Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Inflow Area = 2,989,826 sf, 11.37% Impervious, Inflow Depth = 1.02" for 10 year event
 Inflow = 78.40 cfs @ 0.50 hrs, Volume= 254,737 cf
 Outflow = 77.12 cfs @ 0.52 hrs, Volume= 231,033 cf, Atten= 2%, Lag= 1.1 min
 Primary = 77.12 cfs @ 0.52 hrs, Volume= 231,033 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 Peak Elev= 4.61' @ 0.52 hrs Surf.Area= 12,420 sf Storage= 56,360 cf

Plug-Flow detention time= 99.5 min calculated for 230,970 cf (91% of inflow)
 Center-of-Mass det. time= 95.4 min (141.2 - 45.8)

Volume	Invert	Avail.Storage	Storage Description
#1	-2.00'	33,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	-1.50'	25,281 cf	66.00'W x 96.00'L x 4.20'H Prismatoid
			26,611 cf Overall x 95.0% Voids
		58,661 cf	Total Available Storage

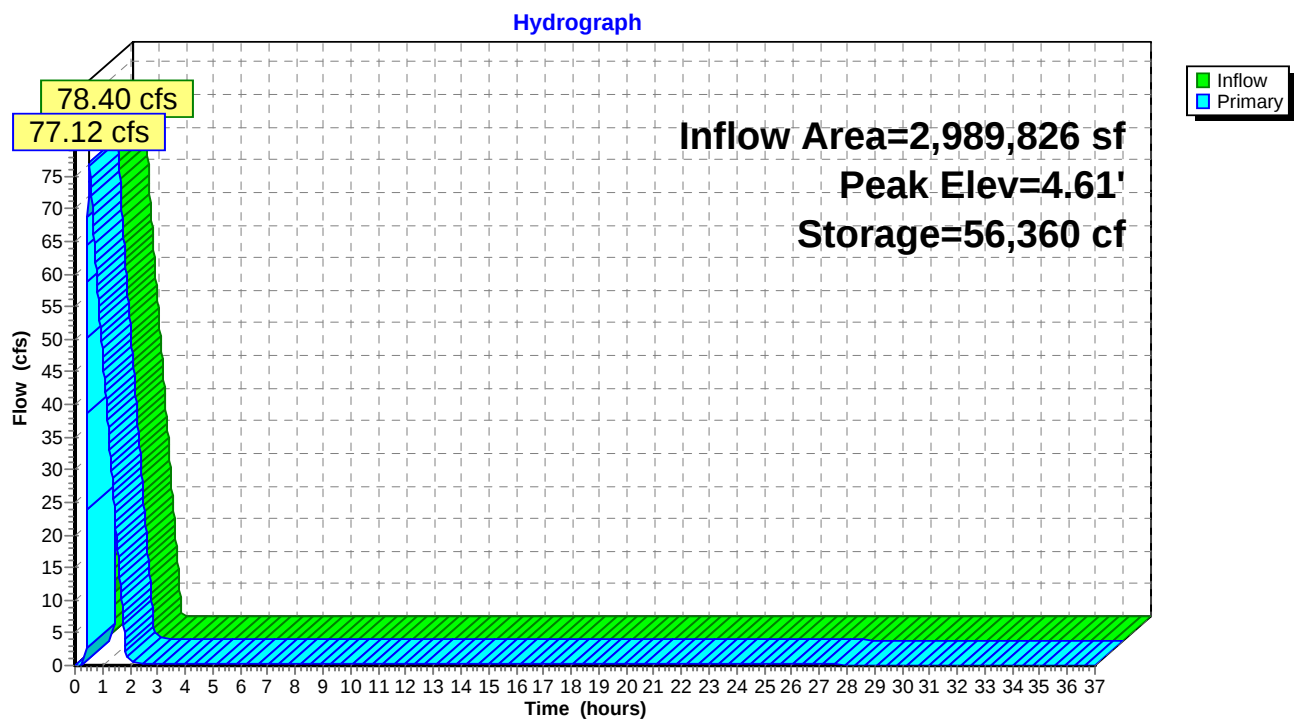
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
-2.00	2,990	0	0
-1.00	3,195	3,093	3,093
0.00	3,965	3,580	6,673
1.00	4,025	3,995	10,668
2.00	5,230	4,628	15,295
3.00	5,910	5,570	20,865
3.50	6,230	3,035	23,900
4.00	6,830	3,265	27,165
5.00	5,600	6,215	33,380

Device	Routing	Invert	Outlet Devices
#1	Device 2	0.75'	4.0" Vert. Orifice/Grate X 2.00 columns X 2 rows with 6.0" cc spacing C= 0.600
#2	Device 3	0.50'	3.0" W x 3.0" H Box OTS to MH 36" RCP L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.50' / 0.40' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.06 sf
#3	Primary	0.37'	36.0" Round 36" RCP under 107 L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.37' / 0.01' S= 0.0090 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#4	Primary	3.50'	25.0' long x 40.0' breadth Emergency Spillway over Road Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=77.10 cfs @ 0.52 hrs HW=4.61' TW=0.00' (Dynamic Tailwater)

3=36" RCP under 107 (Passes 0.47 cfs of 53.56 cfs potential flow)
 2=OTS to MH 36" RCP (Barrel Controls 0.47 cfs @ 7.53 fps)
 1=Orifice/Grate (Passes 0.47 cfs of 3.11 cfs potential flow)
 4=Emergency Spillway over Road (Weir Controls 76.63 cfs @ 2.77 fps)

Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

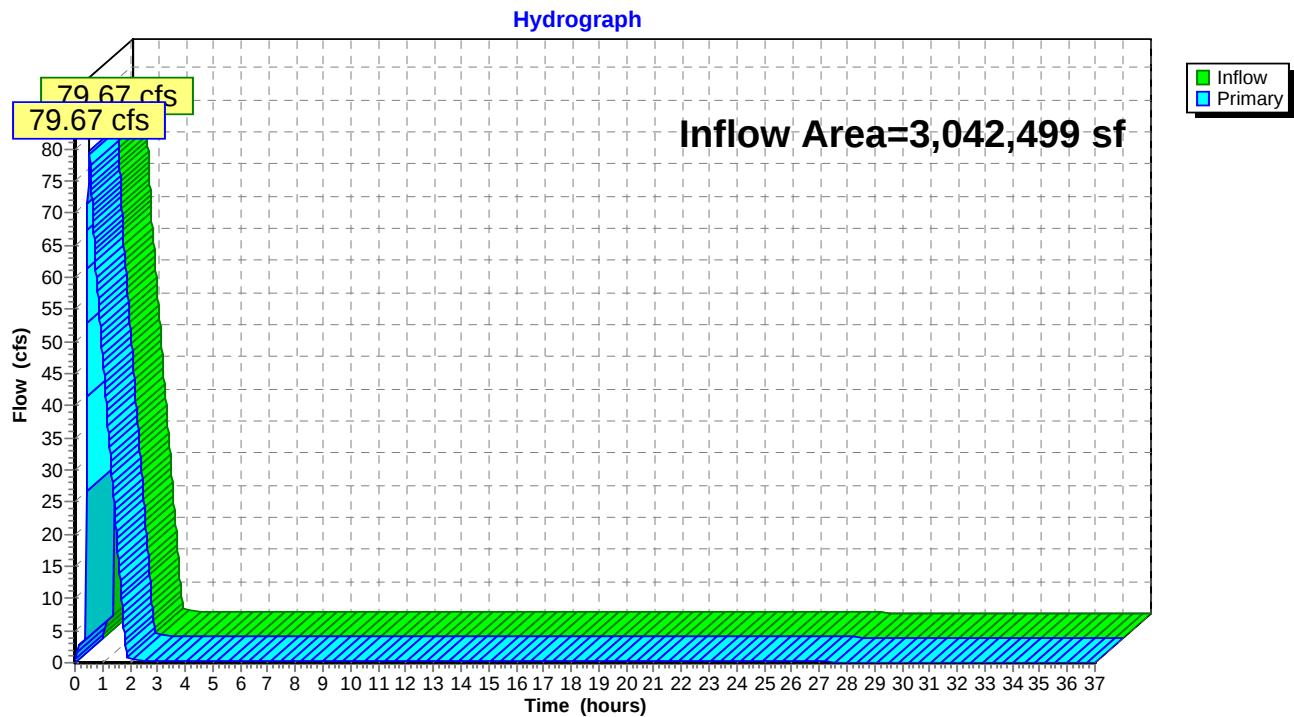


Summary for Link POST: Total Post-Development Flows to Coral Bay

Inflow Area = 3,042,499 sf, 12.24% Impervious, Inflow Depth > 0.93" for 10 year event
Inflow = 79.67 cfs @ 0.52 hrs, Volume= 236,706 cf
Primary = 79.67 cfs @ 0.52 hrs, Volume= 236,706 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link POST: Total Post-Development Flows to Coral Bay

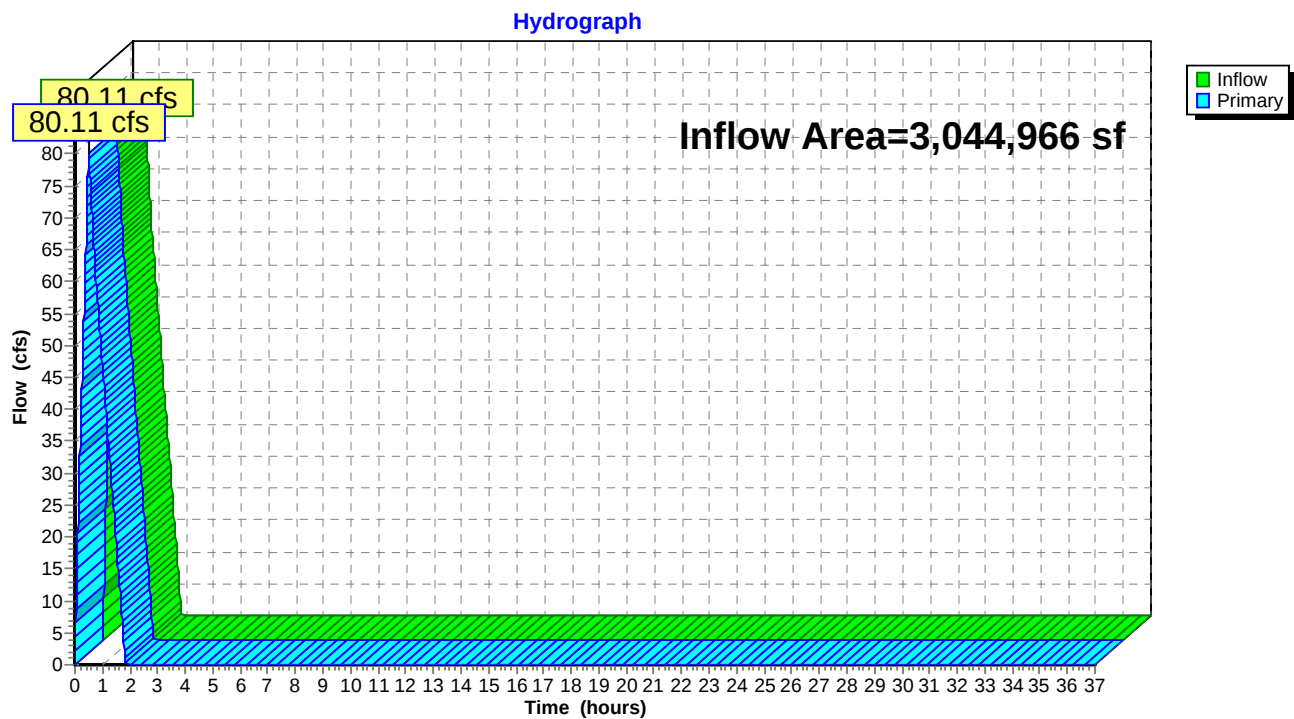


Summary for Link PRE: Total Pre-Development Flows to Coral Bay

Inflow Area = 3,044,966 sf, 10.78% Impervious, Inflow Depth = 1.02" for 10 year event
Inflow = 80.11 cfs @ 0.50 hrs, Volume= 258,536 cf
Primary = 80.11 cfs @ 0.50 hrs, Volume= 258,536 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link PRE: Total Pre-Development Flows to Coral Bay



Summary for Subcatchment DA-BMP1A: BMP 1A -Overland Inflow

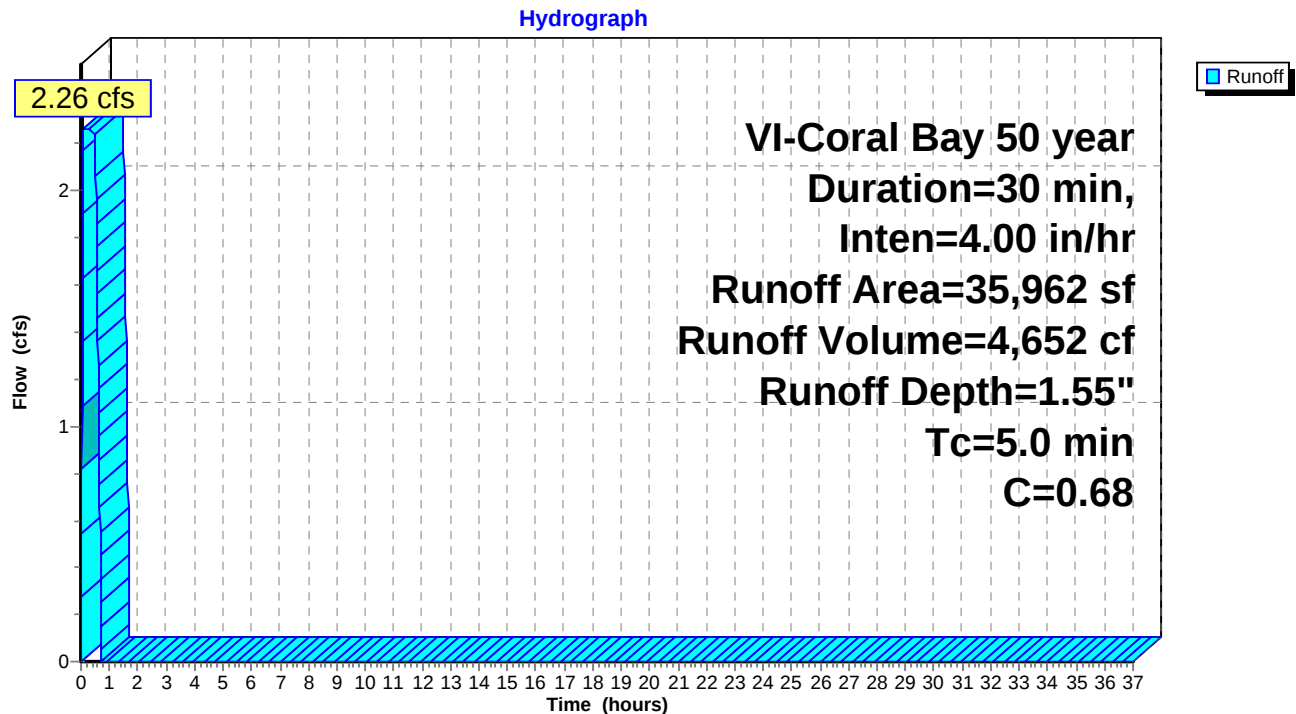
Runoff = 2.26 cfs @ 0.09 hrs, Volume= 4,652 cf, Depth= 1.55"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
4,860	0.25	Wooded Areas
17,650	0.98	Impervious Areas
9,900	0.40	Vegetated Areas
3,552	0.60	Dirt/Gravel areas
35,962	0.68	Weighted Average
18,312		50.92% Pervious Area
17,650		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1A: BMP 1A -Overland Inflow



Summary for Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

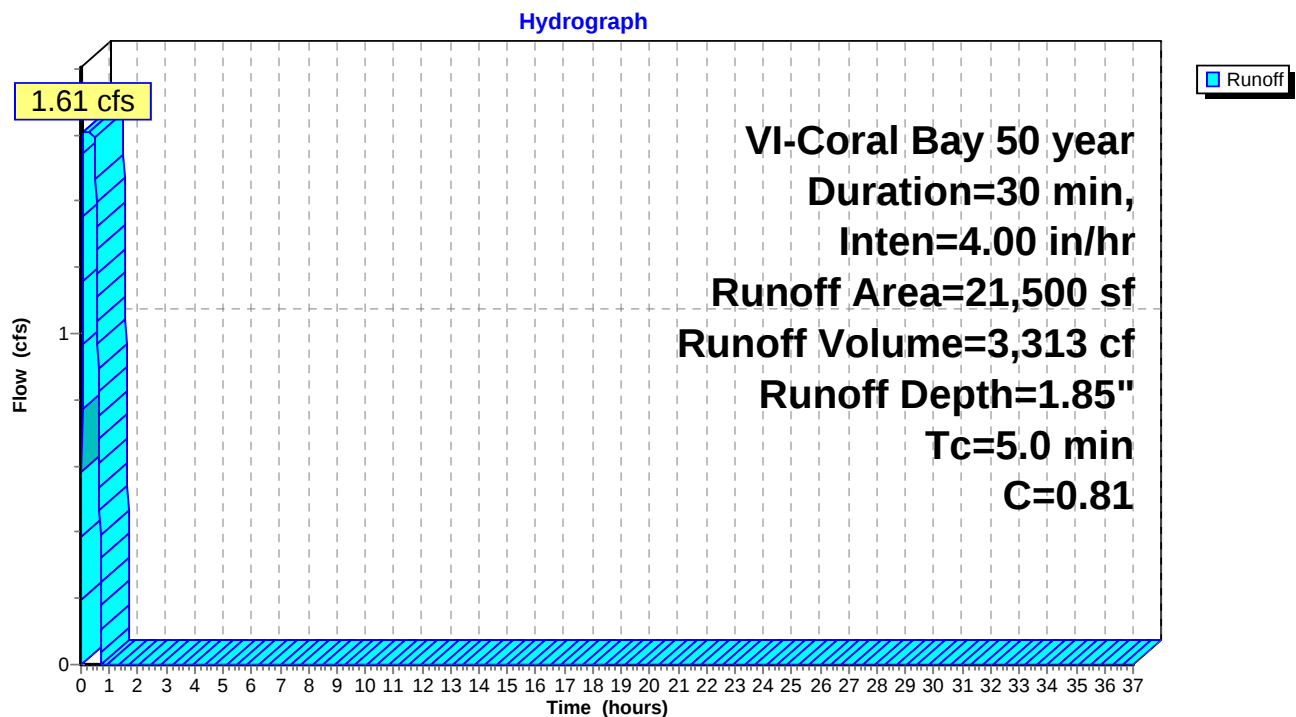
Runoff = 1.61 cfs @ 0.09 hrs, Volume= 3,313 cf, Depth= 1.85"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,200	0.98	Impervious Areas
6,300	0.40	Vegetated Areas
0	0.60	Dirt/Gravel areas
21,500	0.81	Weighted Average
6,300		29.30% Pervious Area
15,200		70.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1B: BMP 1B- Overland Inflow



Summary for Subcatchment DA-BMP1C: BMP 1C-Overland Inflow

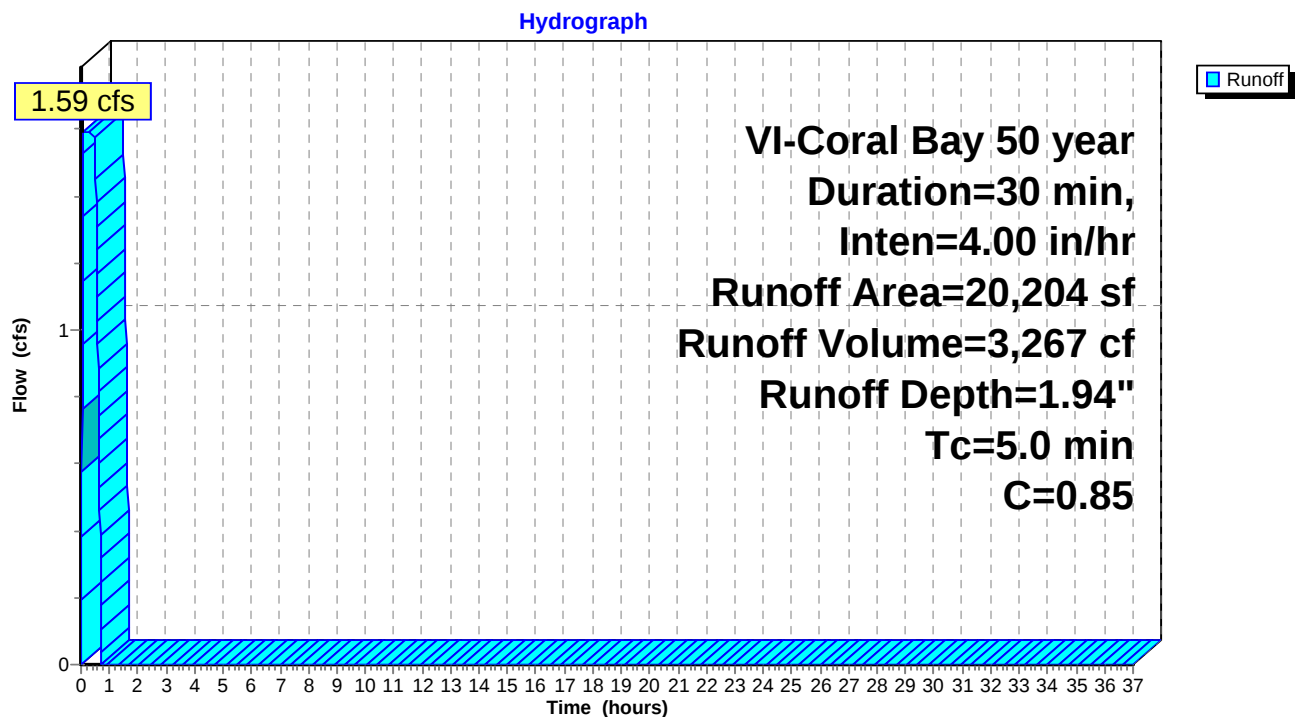
Runoff = 1.59 cfs @ 0.09 hrs, Volume= 3,267 cf, Depth= 1.94"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,754	0.98	Impervious Areas
4,450	0.40	Vegetated Areas
0	0.60	Gravel roads, HSG C
20,204	0.85	Weighted Average
4,450		22.03% Pervious Area
15,754		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1C: BMP 1C-Overland Inflow



Summary for Subcatchment DA-BYP: Site Bypass

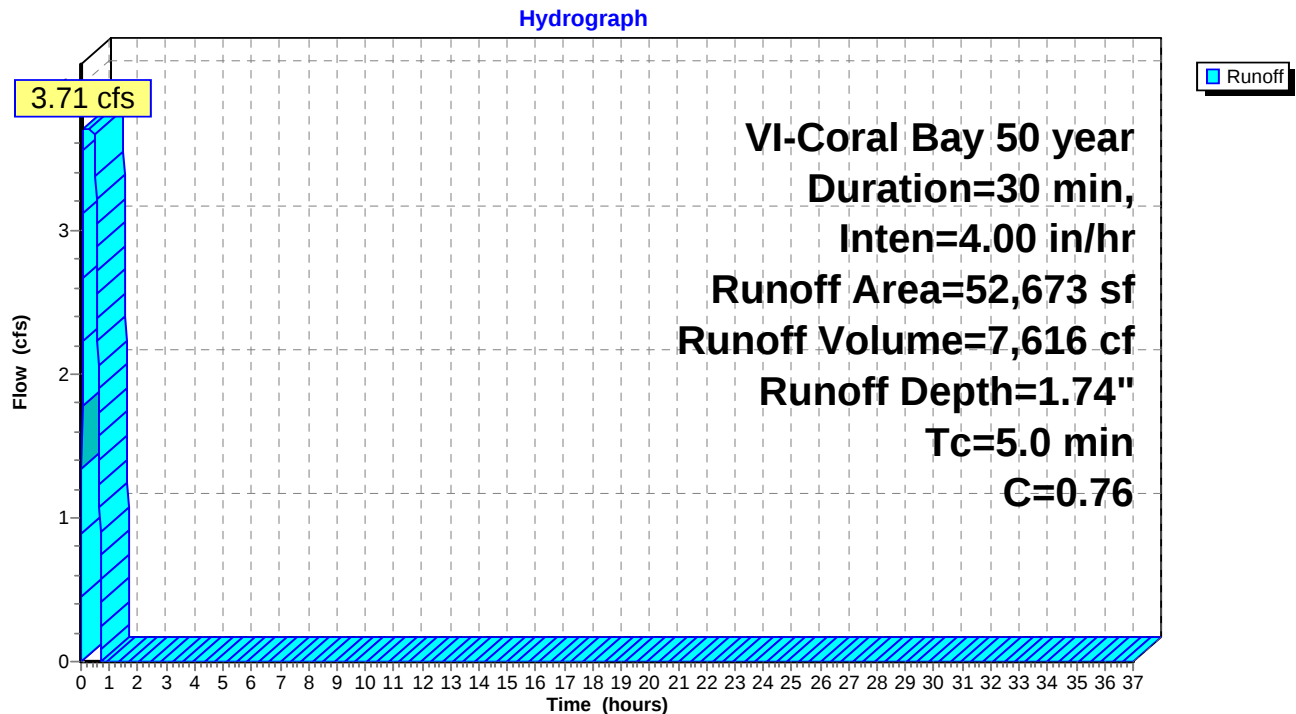
Runoff = 3.71 cfs @ 0.09 hrs, Volume= 7,616 cf, Depth= 1.74"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
32,435	0.98	Impervious Areas
18,796	0.40	Vegetated Areas
1,442	0.60	Dirt/Gravel areas
52,673	0.76	Weighted Average
20,238		38.42% Pervious Area
32,435		61.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BYP: Site Bypass



Summary for Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows

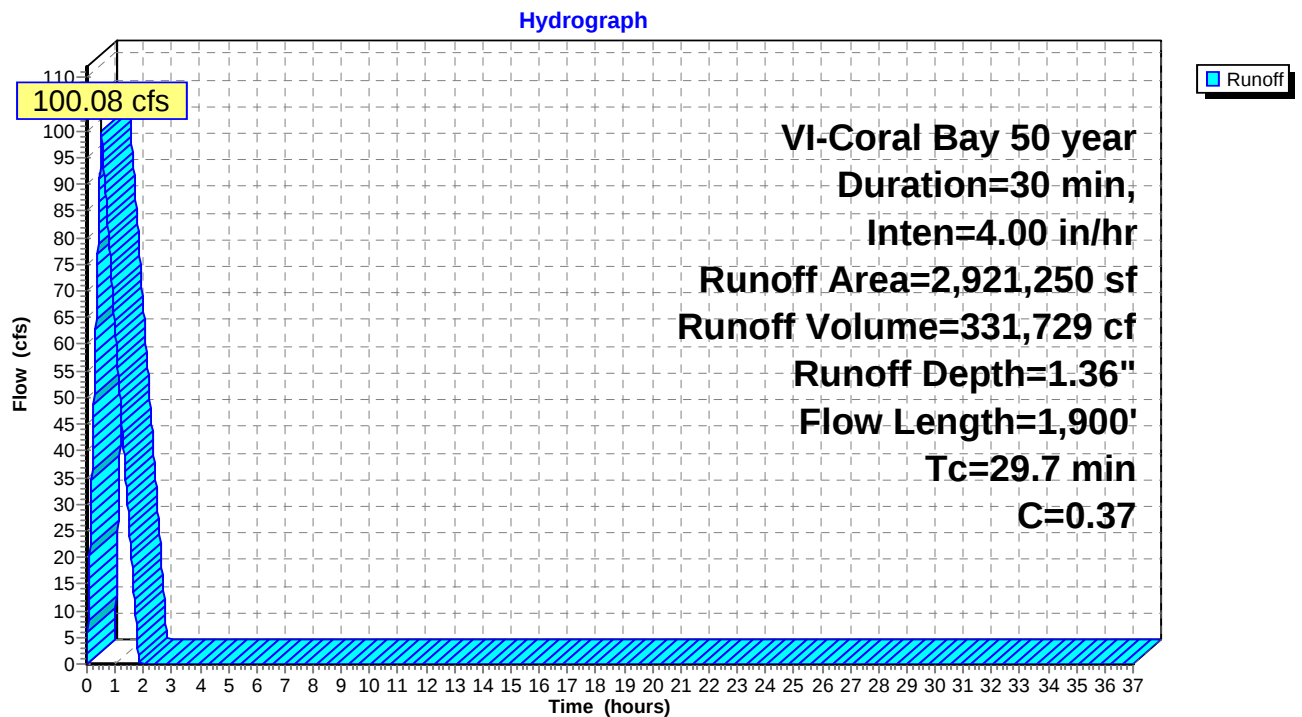
Runoff = 100.08 cfs @ 0.50 hrs, Volume= 331,729 cf, Depth= 1.36"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
2,044,875	0.25	Wooded Areas
292,125	0.98	Impervious Areas
292,125	0.40	Vegetated Areas
292,125	0.60	Dirt/Gravel areas
2,921,250	0.37	Weighted Average
2,629,125		90.00% Pervious Area
292,125		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows



Summary for Subcatchment DA-OFF: Offsite Overland Flow to Culvert

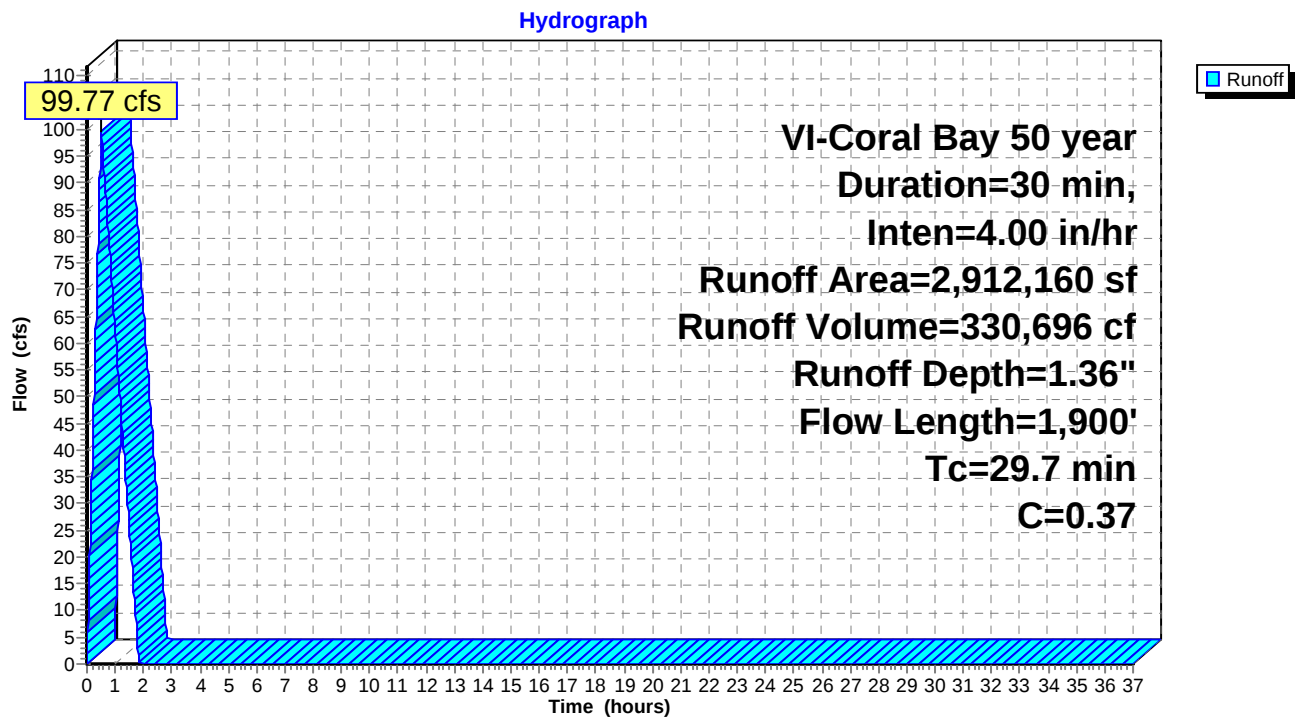
Runoff = 99.77 cfs @ 0.50 hrs, Volume= 330,696 cf, Depth= 1.36"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
2,038,512	0.25	Wooded Areas
291,216	0.98	Impervious Areas
291,216	0.40	Vegetated Areas
291,216	0.60	Dirt/Gravel areas
2,912,160	0.37	Weighted Average
2,620,944		90.00% Pervious Area
291,216		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-OFF: Offsite Overland Flow to Culvert



Summary for Subcatchment DAe-SITE: Pre-Development Site Flow

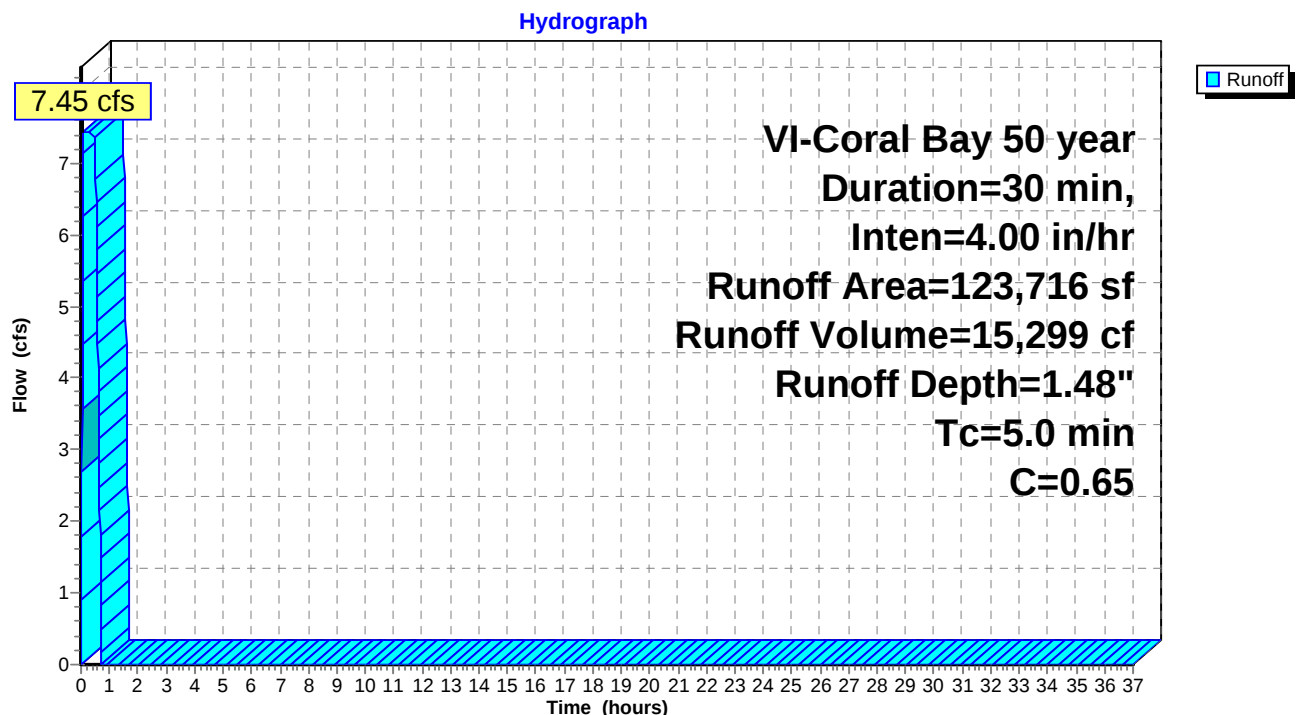
Runoff = 7.45 cfs @ 0.09 hrs, Volume= 15,299 cf, Depth= 1.48"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 50 year Duration=30 min, Inten=4.00 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
36,226	0.98	Impervious Areas
40,230	0.40	Vegetated Areas
47,260	0.60	Dirt/Gravel areas
123,716	0.65	Weighted Average
87,490		70.72% Pervious Area
36,226		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, MINIMUM Tc ASSUMED

Subcatchment DAe-SITE: Pre-Development Site Flow



Summary for Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Inflow Area = 2,989,826 sf, 11.37% Impervious, Inflow Depth = 1.37" for 50 year event
 Inflow = 105.24 cfs @ 0.50 hrs, Volume= 341,929 cf
 Outflow = 104.04 cfs @ 0.51 hrs, Volume= 318,224 cf, Atten= 1%, Lag= 0.8 min
 Primary = 104.04 cfs @ 0.51 hrs, Volume= 318,224 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 Peak Elev= 4.85' @ 0.51 hrs Surf.Area= 12,120 sf Storage= 57,808 cf

Plug-Flow detention time= 73.0 min calculated for 318,138 cf (93% of inflow)
 Center-of-Mass det. time= 70.0 min (115.8 - 45.8)

Volume	Invert	Avail.Storage	Storage Description
#1	-2.00'	33,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	-1.50'	25,281 cf	66.00'W x 96.00'L x 4.20'H Prismatoid
			26,611 cf Overall x 95.0% Voids
		58,661 cf	Total Available Storage

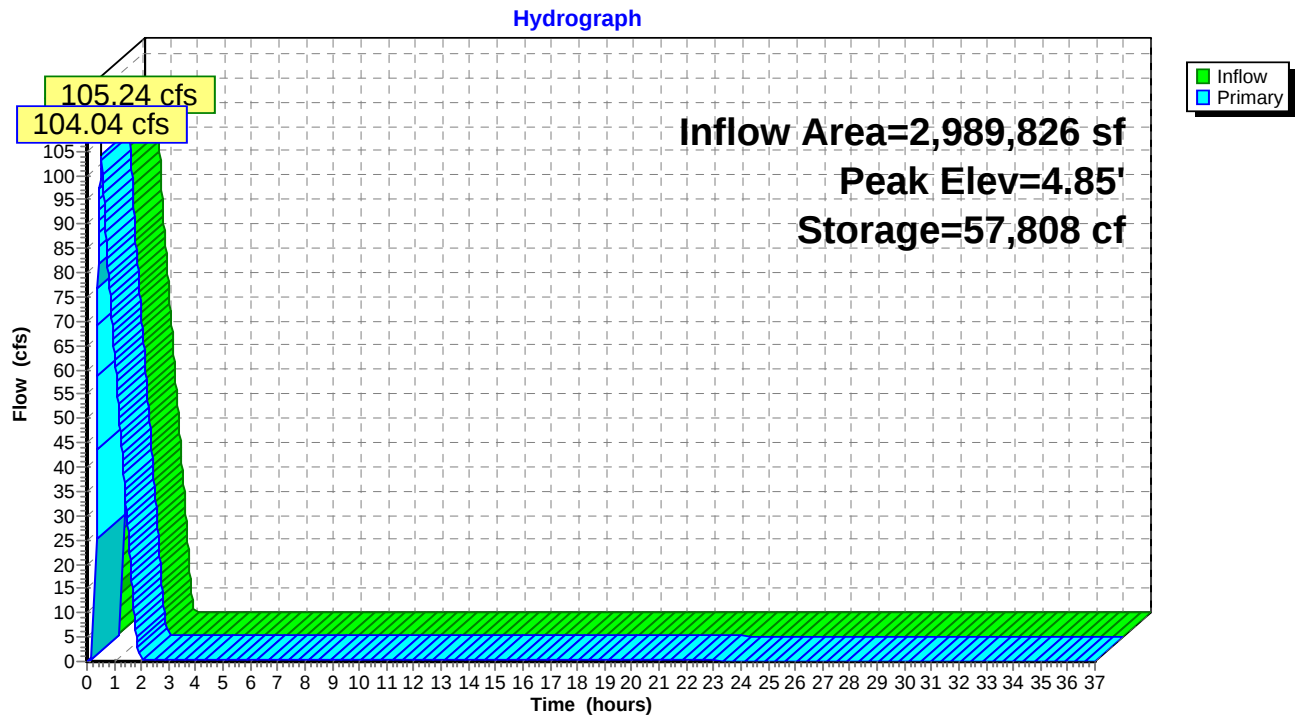
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
-2.00	2,990	0	0
-1.00	3,195	3,093	3,093
0.00	3,965	3,580	6,673
1.00	4,025	3,995	10,668
2.00	5,230	4,628	15,295
3.00	5,910	5,570	20,865
3.50	6,230	3,035	23,900
4.00	6,830	3,265	27,165
5.00	5,600	6,215	33,380

Device	Routing	Invert	Outlet Devices
#1	Device 2	0.75'	4.0" Vert. Orifice/Grate X 2.00 columns X 2 rows with 6.0" cc spacing C= 0.600
#2	Device 3	0.50'	3.0" W x 3.0" H Box OTS to MH 36" RCP L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.50' / 0.40' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.06 sf
#3	Primary	0.37'	36.0" Round 36" RCP under 107 L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.37' / 0.01' S= 0.0090 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#4	Primary	3.50'	25.0' long x 40.0' breadth Emergency Spillway over Road Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=103.92 cfs @ 0.51 hrs HW=4.85' TW=0.00' (Dynamic Tailwater)

3=36" RCP under 107 (Passes 0.49 cfs of 57.49 cfs potential flow)
 2=OTS to MH 36" RCP (Barrel Controls 0.49 cfs @ 7.76 fps)
 1=Orifice/Grate (Passes 0.49 cfs of 3.22 cfs potential flow)
 4=Emergency Spillway over Road (Weir Controls 103.44 cfs @ 3.07 fps)

Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

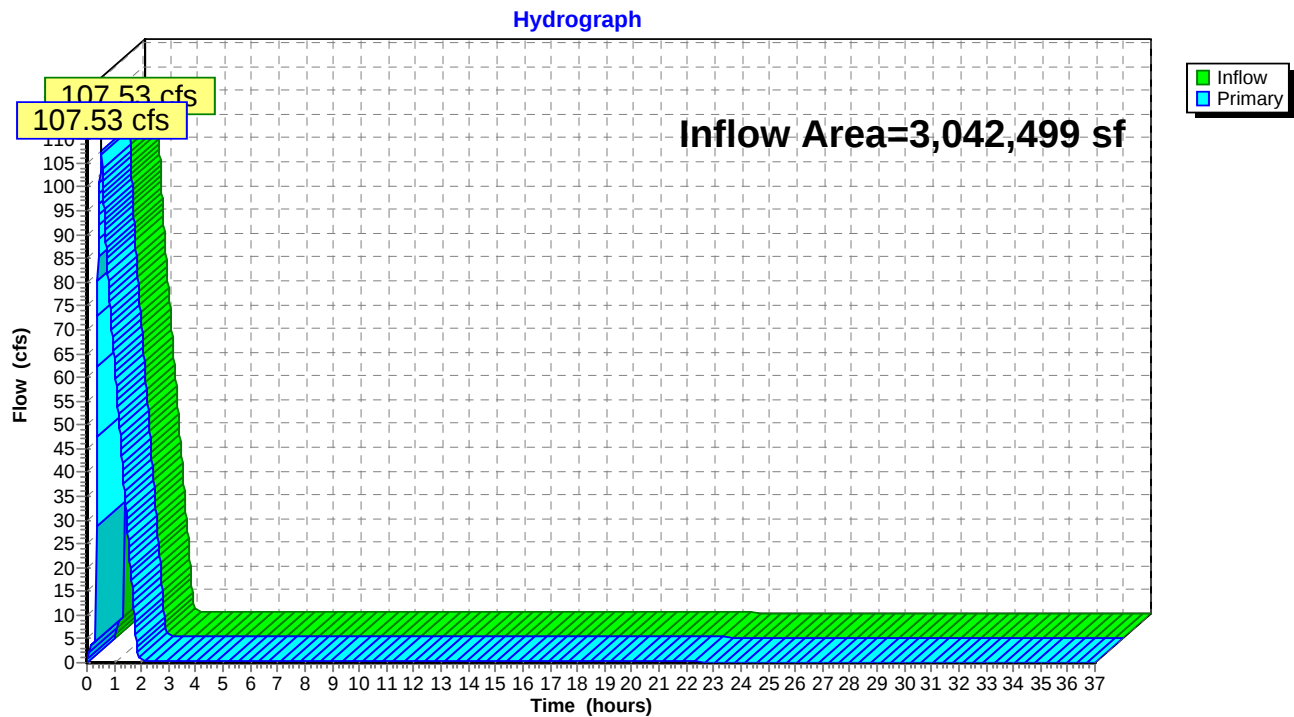


Summary for Link POST: Total Post-Development Flows to Coral Bay

Inflow Area = 3,042,499 sf, 12.24% Impervious, Inflow Depth > 1.29" for 50 year event
Inflow = 107.53 cfs @ 0.51 hrs, Volume= 325,840 cf
Primary = 107.53 cfs @ 0.51 hrs, Volume= 325,840 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link POST: Total Post-Development Flows to Coral Bay

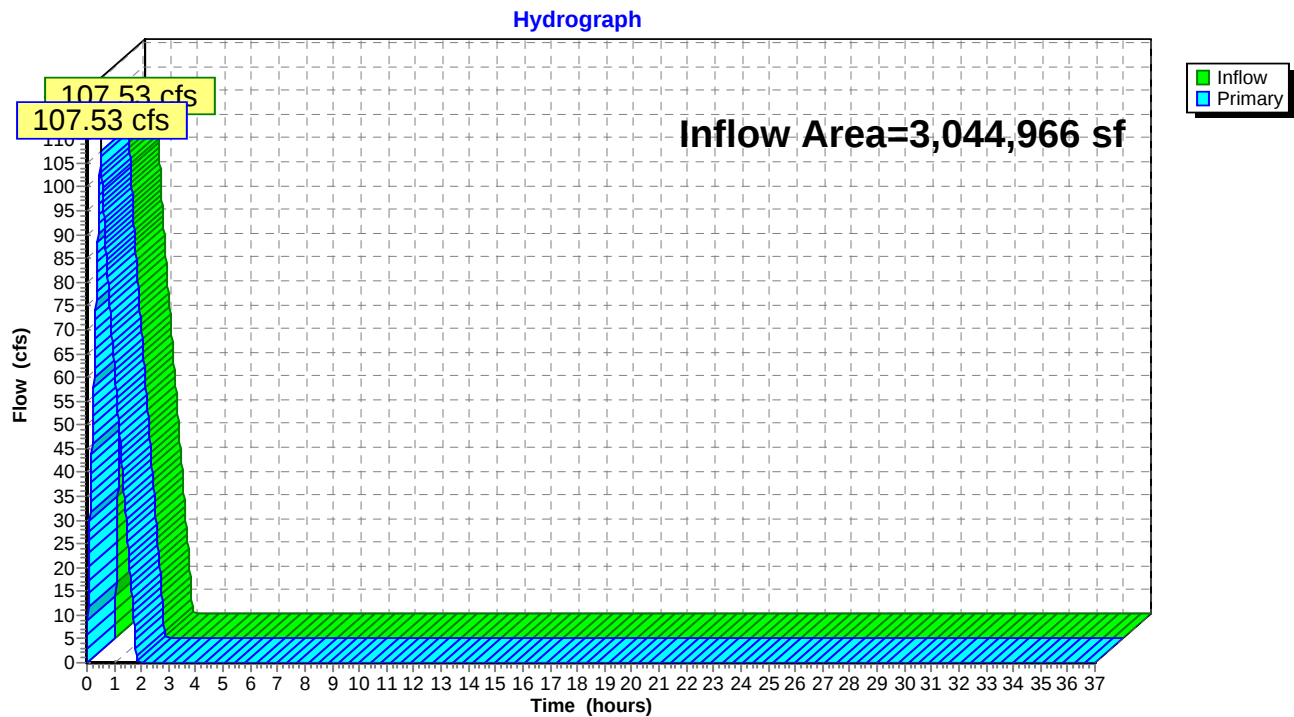


Summary for Link PRE: Total Pre-Development Flows to Coral Bay

Inflow Area = 3,044,966 sf, 10.78% Impervious, Inflow Depth = 1.37" for 50 year event
Inflow = 107.53 cfs @ 0.50 hrs, Volume= 347,028 cf
Primary = 107.53 cfs @ 0.50 hrs, Volume= 347,028 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link PRE: Total Pre-Development Flows to Coral Bay



Summary for Subcatchment DA-BMP1A: BMP 1A -Overland Inflow

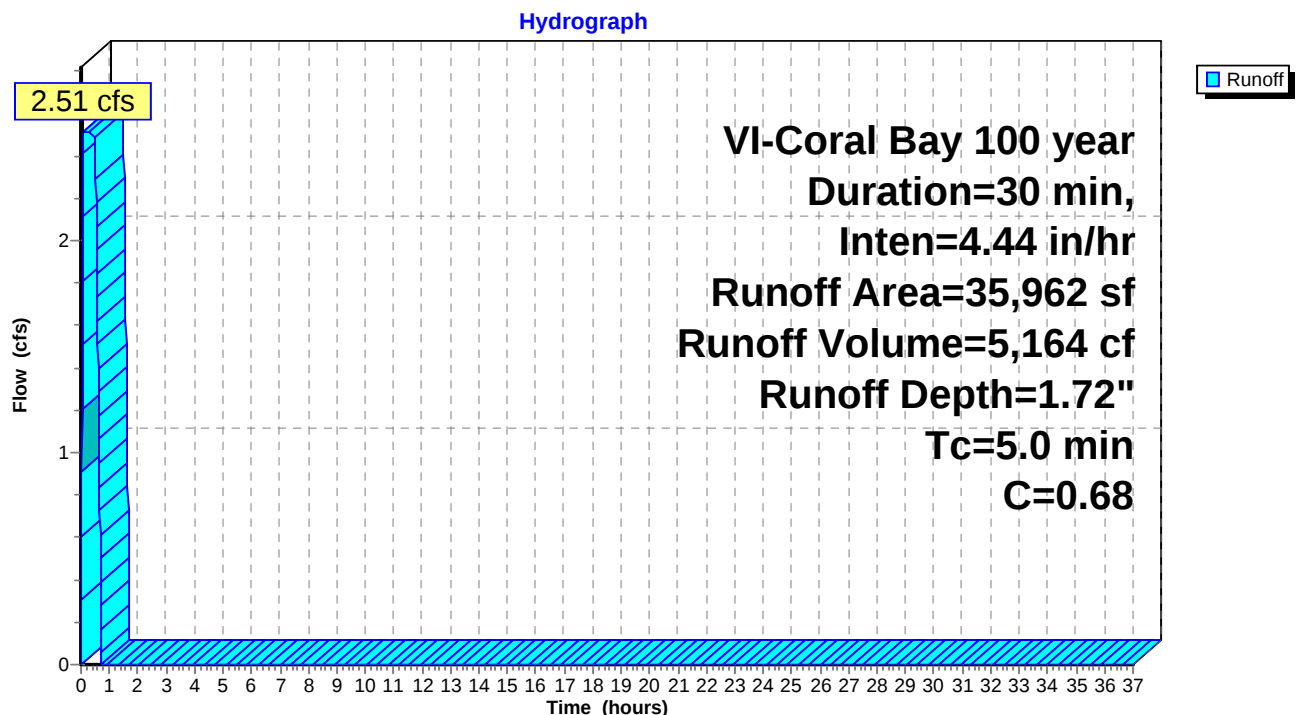
Runoff = 2.51 cfs @ 0.09 hrs, Volume= 5,164 cf, Depth= 1.72"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
4,860	0.25	Wooded Areas
17,650	0.98	Impervious Areas
9,900	0.40	Vegetated Areas
3,552	0.60	Dirt/Gravel areas
35,962	0.68	Weighted Average
18,312		50.92% Pervious Area
17,650		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1A: BMP 1A -Overland Inflow



Summary for Subcatchment DA-BMP1B: BMP 1B- Overland Inflow

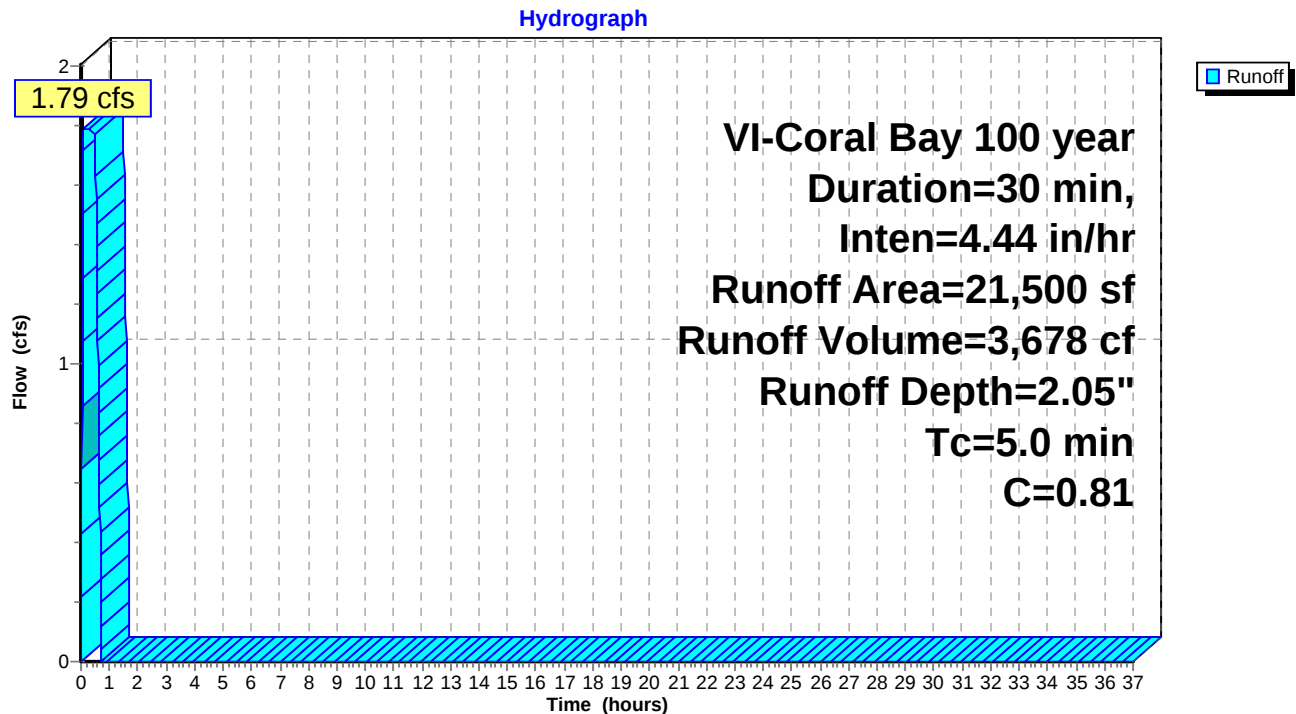
Runoff = 1.79 cfs @ 0.09 hrs, Volume= 3,678 cf, Depth= 2.05"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,200	0.98	Impervious Areas
6,300	0.40	Vegetated Areas
0	0.60	Dirt/Gravel areas
21,500	0.81	Weighted Average
6,300		29.30% Pervious Area
15,200		70.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1B: BMP 1B- Overland Inflow



Summary for Subcatchment DA-BMP1C: BMP 1C-Overland Inflow

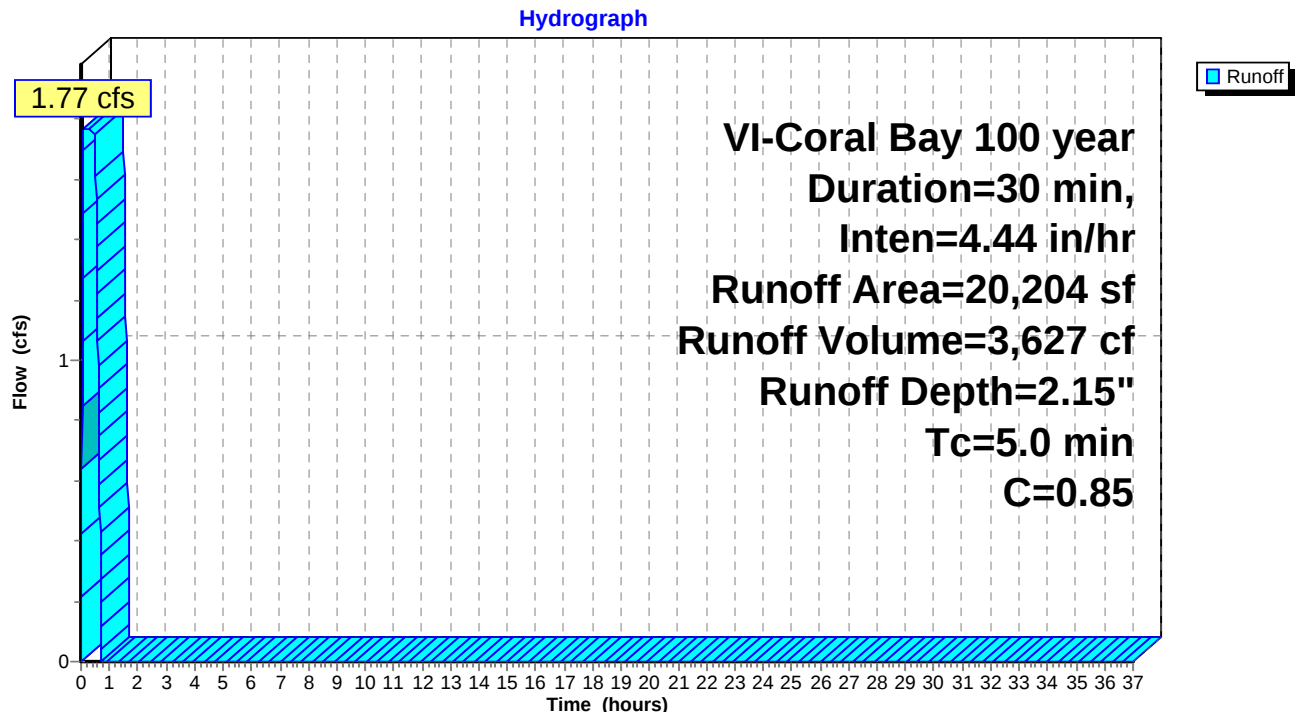
Runoff = 1.77 cfs @ 0.09 hrs, Volume= 3,627 cf, Depth= 2.15"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
15,754	0.98	Impervious Areas
4,450	0.40	Vegetated Areas
0	0.60	Gravel roads, HSG C
20,204	0.85	Weighted Average
4,450		22.03% Pervious Area
15,754		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BMP1C: BMP 1C-Overland Inflow



Summary for Subcatchment DA-BYP: Site Bypass

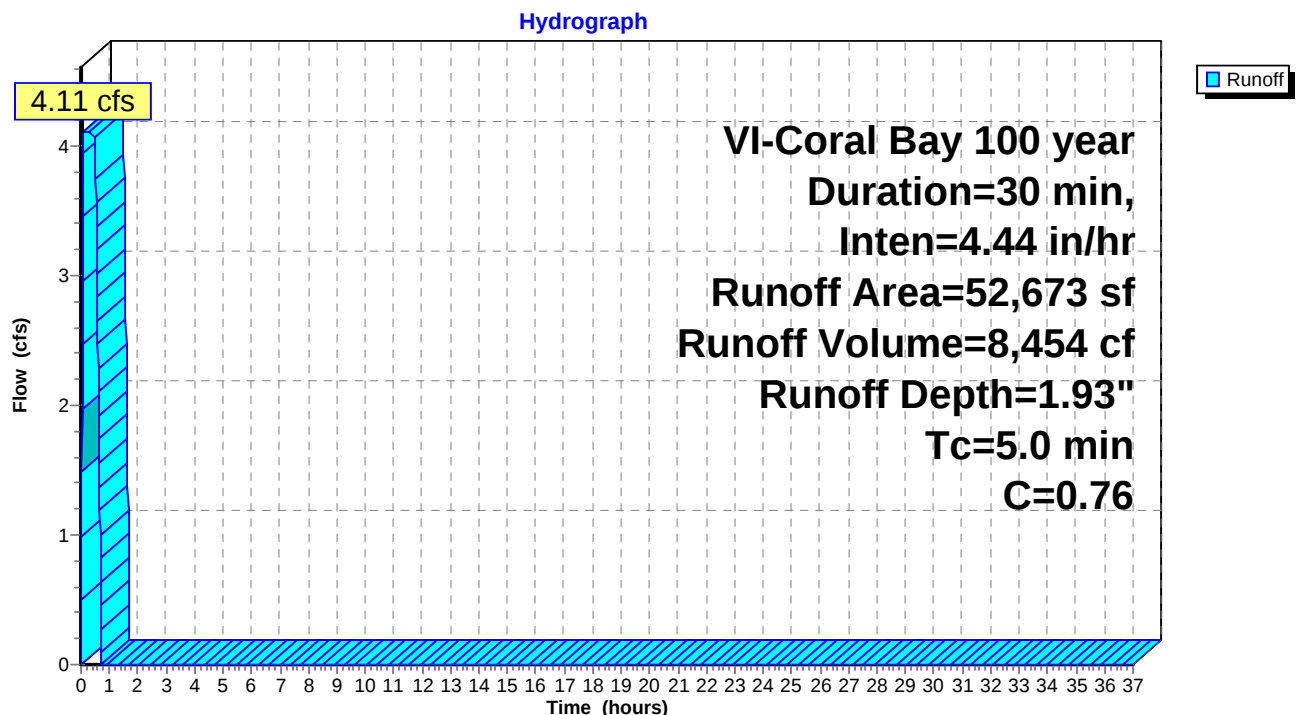
Runoff = 4.11 cfs @ 0.09 hrs, Volume= 8,454 cf, Depth= 1.93"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
32,435	0.98	Impervious Areas
18,796	0.40	Vegetated Areas
1,442	0.60	Dirt/Gravel areas
52,673	0.76	Weighted Average
20,238		38.42% Pervious Area
32,435		61.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Mimimun Tc Assumed

Subcatchment DA-BYP: Site Bypass



Summary for Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows

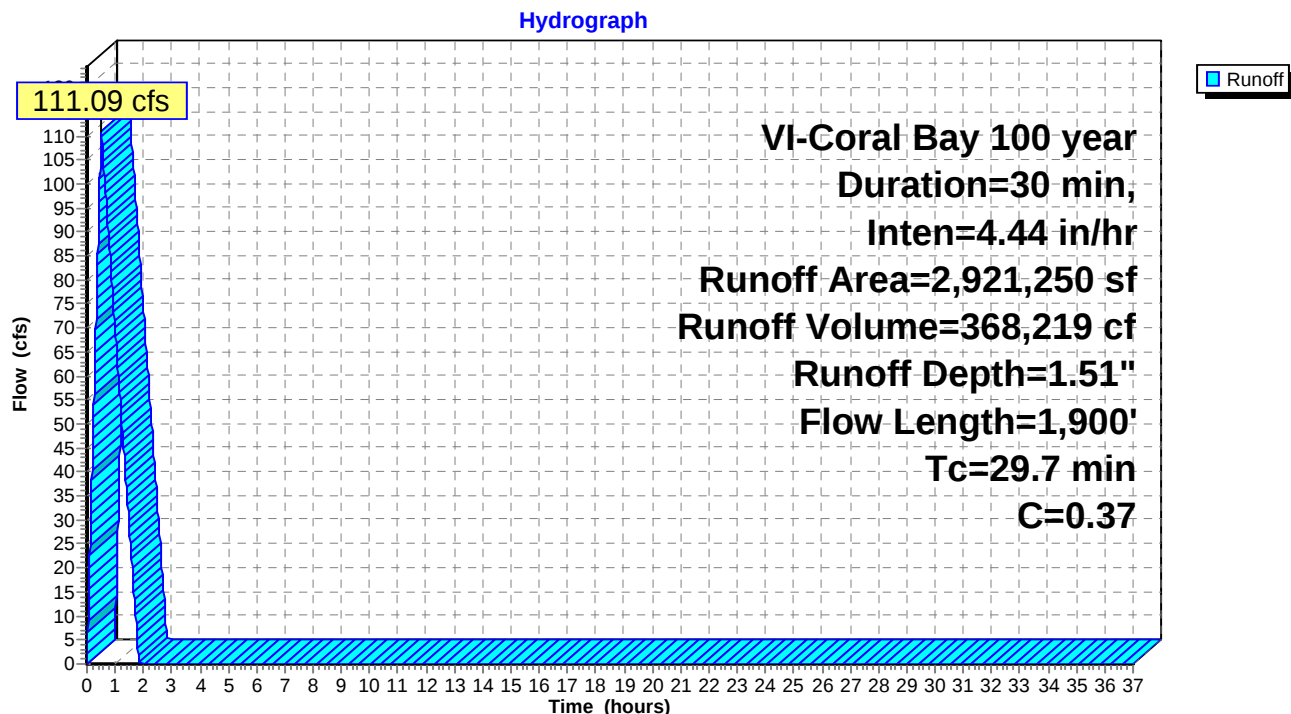
Runoff = 111.09 cfs @ 0.50 hrs, Volume= 368,219 cf, Depth= 1.51"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
2,044,875	0.25	Wooded Areas
292,125	0.98	Impervious Areas
292,125	0.40	Vegetated Areas
292,125	0.60	Dirt/Gravel areas
2,921,250	0.37	Weighted Average
2,629,125		90.00% Pervious Area
292,125		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-eGUT: Pre-Development Upstream Offiste Ghut Flows



Summary for Subcatchment DA-OFF: Offsite Overland Flow to Culvert

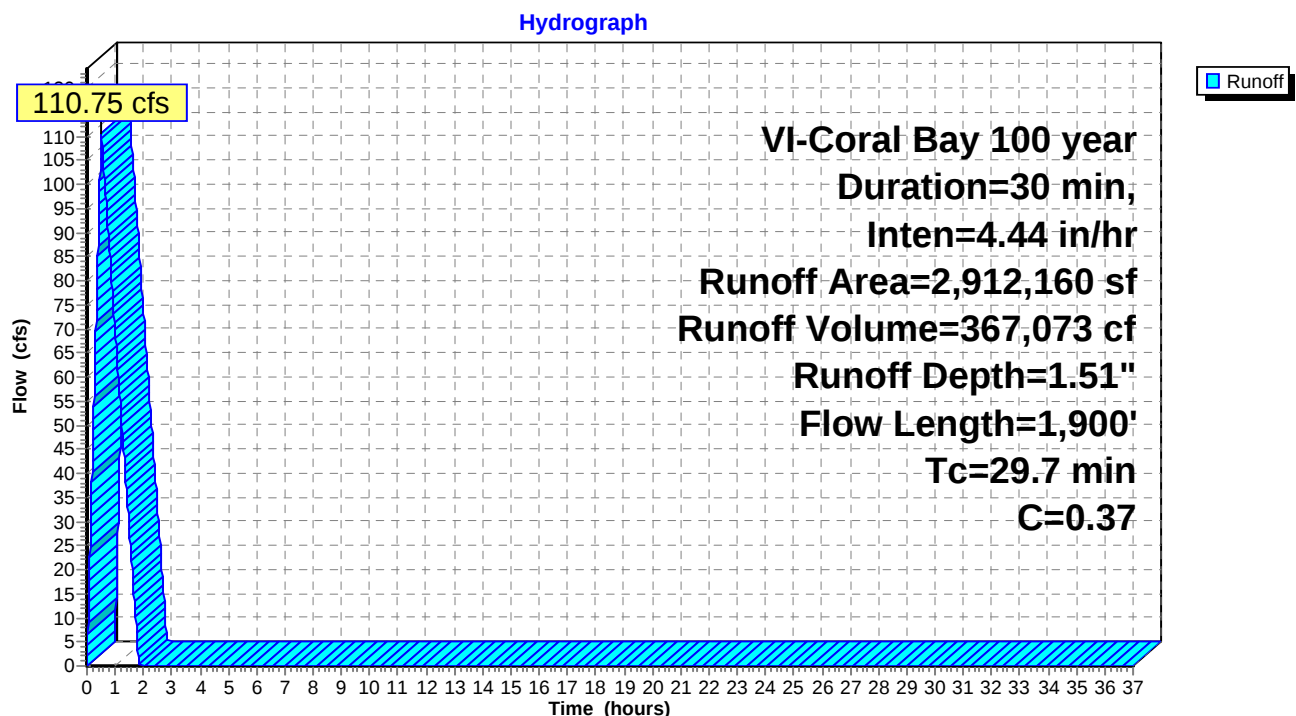
Runoff = 110.75 cfs @ 0.50 hrs, Volume= 367,073 cf, Depth= 1.51"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
2,038,512	0.25	Wooded Areas
291,216	0.98	Impervious Areas
291,216	0.40	Vegetated Areas
291,216	0.60	Dirt/Gravel areas
2,912,160	0.37	Weighted Average
2,620,944		90.00% Pervious Area
291,216		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3	100	0.0500	0.07		Sheet Flow, Wooded Sheet Woods: Dense underbrush n= 0.800 P2= 4.32"
5.2	300	0.1500	0.97		Shallow Concentrated Flow, Wooded Shallow Conc Forest w/Heavy Litter Kv= 2.5 fps
2.2	1,500	0.0500	11.50	184.01	Channel Flow, Ghut Flow Area= 16.0 sf Perim= 12.0' r= 1.33' n= 0.035
29.7	1,900	Total			

Subcatchment DA-OFF: Offsite Overland Flow to Culvert



Summary for Subcatchment DAe-SITE: Pre-Development Site Flow

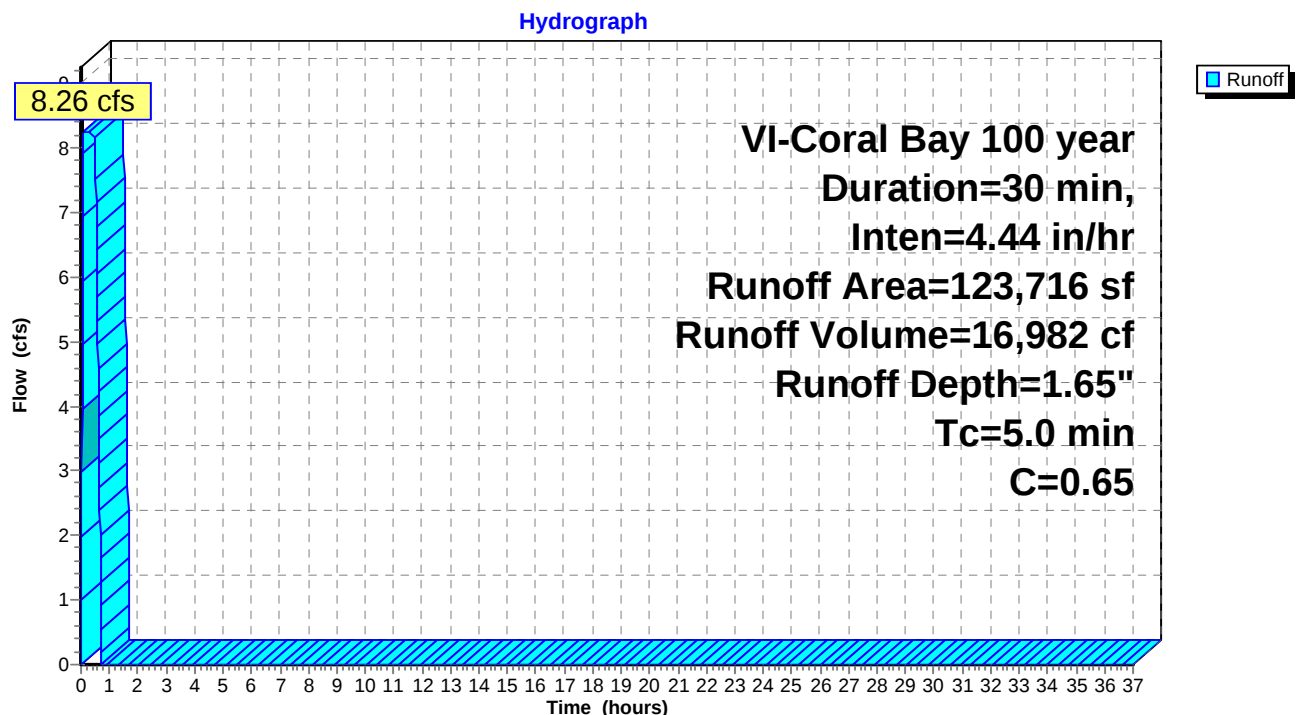
Runoff = 8.26 cfs @ 0.09 hrs, Volume= 16,982 cf, Depth= 1.65"

Runoff by Rational method, Rise/Fall=1.0/2.7 xTc, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 VI-Coral Bay 100 year Duration=30 min, Inten=4.44 in/hr

Area (sf)	C	Description
0	0.25	Wooded Areas
36,226	0.98	Impervious Areas
40,230	0.40	Vegetated Areas
47,260	0.60	Dirt/Gravel areas
123,716	0.65	Weighted Average
87,490		70.72% Pervious Area
36,226		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, MINIMUM Tc ASSUMED

Subcatchment DAe-SITE: Pre-Development Site Flow



Summary for Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

Inflow Area = 2,989,826 sf, 11.37% Impervious, Inflow Depth = 1.52" for 100 year event
 Inflow = 116.81 cfs @ 0.50 hrs, Volume= 379,542 cf
 Outflow = 115.55 cfs @ 0.51 hrs, Volume= 355,836 cf, Atten= 1%, Lag= 0.8 min
 Primary = 115.55 cfs @ 0.51 hrs, Volume= 355,836 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs
 Peak Elev= 4.95' @ 0.51 hrs Surf.Area= 11,998 sf Storage= 58,376 cf

Plug-Flow detention time= 66.1 min calculated for 355,836 cf (94% of inflow)
 Center-of-Mass det. time= 62.9 min (108.6 - 45.8)

Volume	Invert	Avail.Storage	Storage Description
#1	-2.00'	33,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	-1.50'	25,281 cf	66.00'W x 96.00'L x 4.20'H Prismatoid
			26,611 cf Overall x 95.0% Voids
		58,661 cf	Total Available Storage

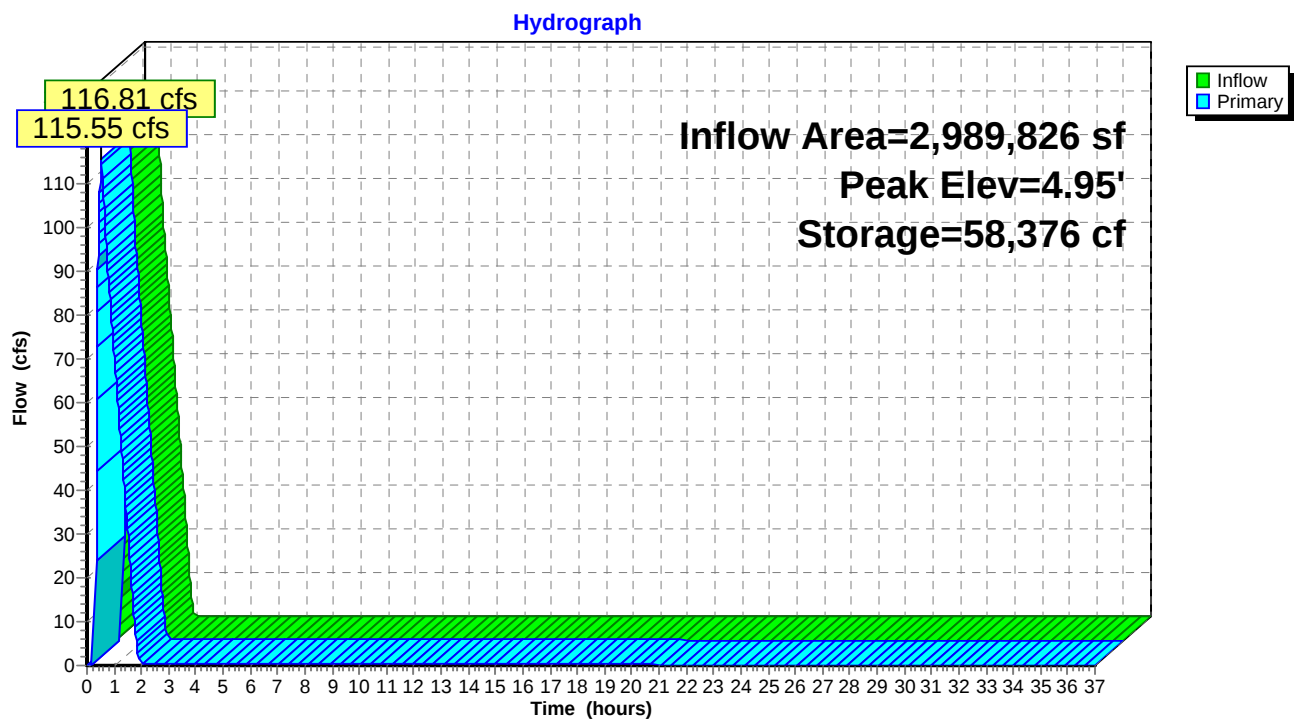
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
-2.00	2,990	0	0
-1.00	3,195	3,093	3,093
0.00	3,965	3,580	6,673
1.00	4,025	3,995	10,668
2.00	5,230	4,628	15,295
3.00	5,910	5,570	20,865
3.50	6,230	3,035	23,900
4.00	6,830	3,265	27,165
5.00	5,600	6,215	33,380

Device	Routing	Invert	Outlet Devices
#1	Device 2	0.75'	4.0" Vert. Orifice/Grate X 2.00 columns X 2 rows with 6.0" cc spacing C= 0.600
#2	Device 3	0.50'	3.0" W x 3.0" H Box OTS to MH 36" RCP L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.50' / 0.40' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.06 sf
#3	Primary	0.37'	36.0" Round 36" RCP under 107 L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.37' / 0.01' S= 0.0090 ' / Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#4	Primary	3.50'	25.0' long x 40.0' breadth Emergency Spillway over Road Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=115.43 cfs @ 0.51 hrs HW=4.95' TW=0.00' (Dynamic Tailwater)

3=36" RCP under 107 (Passes 0.49 cfs of 59.02 cfs potential flow)
 2=OTS to MH 36" RCP (Barrel Controls 0.49 cfs @ 7.85 fps)
 1=Orifice/Grate (Passes 0.49 cfs of 3.27 cfs potential flow)
 4=Emergency Spillway over Road (Weir Controls 114.94 cfs @ 3.17 fps)

Pond BMP1: BMP 1 - Main Detention/Retention Pond & UG Basin

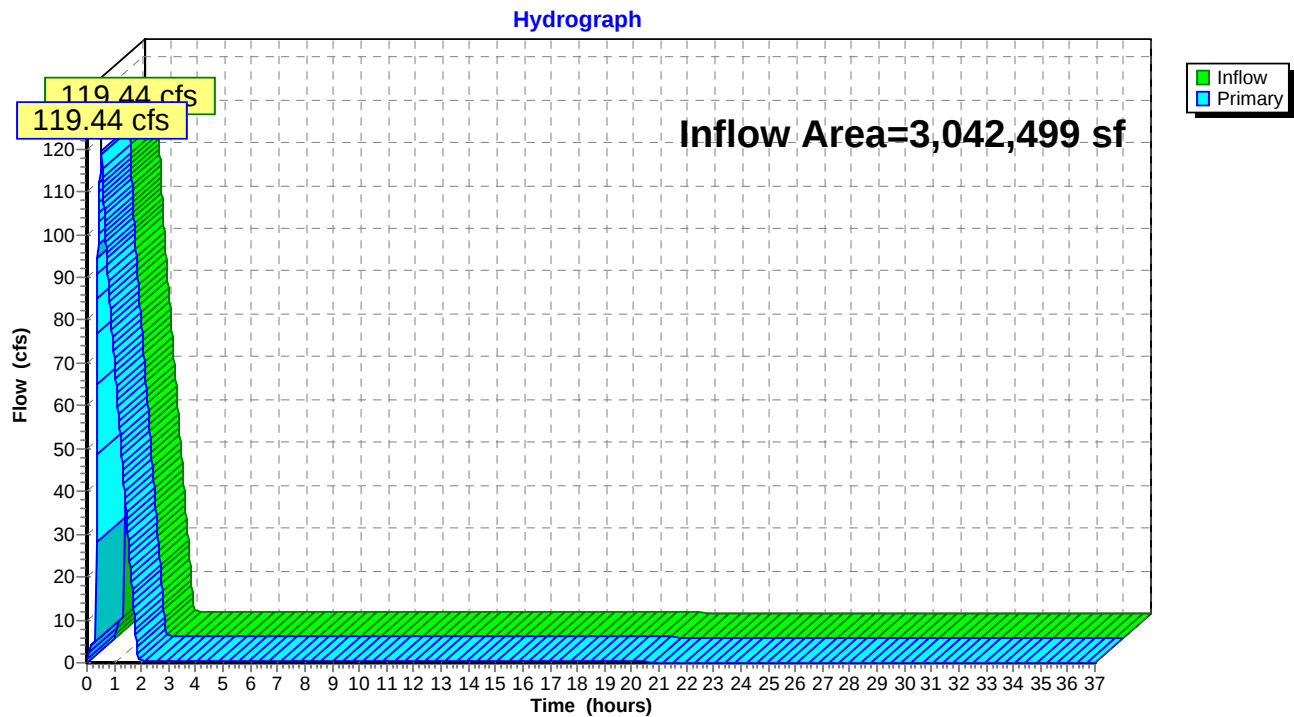


Summary for Link POST: Total Post-Development Flows to Coral Bay

Inflow Area = 3,042,499 sf, 12.24% Impervious, Inflow Depth > 1.44" for 100 year event
Inflow = 119.44 cfs @ 0.51 hrs, Volume= 364,290 cf
Primary = 119.44 cfs @ 0.51 hrs, Volume= 364,290 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link POST: Total Post-Development Flows to Coral Bay



Summary for Link PRE: Total Pre-Development Flows to Coral Bay

Inflow Area = 3,044,966 sf, 10.78% Impervious, Inflow Depth = 1.52" for 100 year event
Inflow = 119.35 cfs @ 0.50 hrs, Volume= 385,201 cf
Primary = 119.35 cfs @ 0.50 hrs, Volume= 385,201 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-37.00 hrs, dt= 0.01 hrs

Link PRE: Total Pre-Development Flows to Coral Bay

